

**LESSONS FROM THE DEVELOPMENT OF A MATERNITY  
MANAGED CLINICAL NETWORK IN A LOW  
VOLUME RURAL CONTEXT**

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# Contents

List of Figures.....	xi
List of Tables.....	xii
Thesis Abstract.....	xiv
Author’s Declaration.....	xvi
Acknowledgements.....	xvii
<b>Chapter One</b> .....	<b>1</b>
1.1 Aim of the Thesis.....	1
1.2 Outline of the Thesis.....	3
1.3 Timeline of the Thesis.....	6
<b>Chapter Two: Literature Review</b> .....	<b>8</b>
2.1 Search Methodology on Clinical Networks.....	8
2.2 Clinical Networks — An Organisational Answer?.....	10
<u>2.2.1 Inequality of Health Care Outcomes</u> .....	10
<u>2.2.2 Inequalities of Access</u> .....	11
<u>2.2.3 ‘Unwarranted Variation’ of Outcome</u> .....	11
<u>2.2.4 Suboptimal Health Care Delivery</u> .....	11
<u>2.2.5 International Unwarranted Variation in Health Care</u> .....	11
2.3 International Clinical Networks — USA.....	12
2.4 International Clinical Networks — UK.....	13
<u>2.4.1 Development of Managed Clinical Networks in Scotland and England</u> .....	18
<u>2.4.2 Clinical Leaders and Clinical Innovation</u> .....	18
2.5 Managing Across Diverse Networks of Care: A Systematic Literature Review of Networks of Care.....	20
<u>2.5.1 Network Structures</u> .....	20
<u>2.5.2 Network Management</u> .....	21
<u>2.5.3 Network Governance</u> .....	22
2.6 Mandated vs Voluntary Networks: Delivering Health Care through MCNs: Lessons from the North.....	24
“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University	

2.7 International Clinical Networks — Europe.....	26
2.8 Clinical Networks — Australia .....	27
<u>2.8.1 Clinical Networks in South Australia</u> .....	27
<u>2.8.2 Clinical Networks in New South Wales</u> .....	29
<u>2.8.3 Clinical Networks in Western Australia</u> .....	35
<u>2.8.4 Clinical Networks in Victoria</u> .....	39
<u>2.8.5 Clinical Networks in Queensland</u> .....	41
2.9 Summary of Literature Review of Clinical Networks.....	44
2.10 Quality of Rural Obstetric Outcomes.....	45
<u>2.10.1 International</u> .....	45
<u>2.10.2 Australia</u> .....	48
<u>2.10.3 Victoria</u> .....	50
<u>2.10.4 The ‘Urban Myth’ about the Quality of</u> <u>Rural Maternity Services</u> .....	51
<u>2.10.5 Volume vs Outcome</u> .....	53
<u>2.10.6 Clinical Effectiveness</u> .....	54
<u>2.10.7 The AGREE Tool: A Validated Tool for</u> <u>Appraisal of Clinical Guidelines</u> .....	60
<u>2.10.8 Available Guidelines in Obstetrics</u> .....	61
2.11 Summary and Conclusion.....	63
<b>Chapter Three: The Rural Context of this Thesis</b> .....	64
3.1 Geography of Corangamite Shire.....	64
3.2 Demography of Corangamite Shire.....	66
3.3 Hospitals and Maternity Services in Corangamite Shire.....	67
<u>3.3.1 Camperdown Maternity Service</u> .....	69
<u>3.3.2 Terang Maternity Service</u> .....	69
<u>3.3.3 Timboon Maternity Service</u> .....	69
<u>3.3.4 Referral Patterns and Referral Decision Making</u> <u>for Corangamite Maternity Services</u> .....	70
<u>3.3.5 Maternity Care Pathway in Corangamite Shire</u> .....	74
<u>3.3.6 Rural Maternity Initiative</u> .....	75
3.4 Quality of Outcomes of Maternity Services in Corangamite Shire Compared with other Victorian Hospitals.....	76

<u>3.4.1 Methodology</u> .....	77
<u>3.4.2 Implications of Corangamite Shire Perinatal Statistics</u> .....	82
<b>Chapter Four: Thesis Methodology</b> .....	84
4.1 Introduction.....	94
4.2 Validity in the Empiricist and Postmodernist Traditions.....	86
4.3 The Researcher’s Stance.....	89
4.4 A Narrative of the Development of this Research Project.....	90
4.5 Ethics.....	93
<u>4.5.1 Australian Regulation for Ethical Health Research</u> .....	93
<u>4.5.2 NHMRC Principles of Ethical Research</u> .....	94
<u>4.5.3 The Ethics of Study Three</u> .....	95
<u>4.5.4 The Ethics of Studies One, Two and Four</u> .....	95
4.6 Summary.....	97
<b>Chapter Five: Study One — ‘Corangamite Maternity Services: What Was and What Could Be’</b> .....	98
5.1 Introduction.....	98
<u>5.1.1 Aim of Study One</u> .....	98
<u>5.1.2 Methodology of Study One</u> .....	98
<u>5.1.3 Participants in Study One</u> .....	98
<u>5.1.4 Instruments of Study One</u> .....	100
<u>5.1.5 Study One Procedure</u> .....	101
<u>5.1.6 Study One Analysis</u> .....	102
5.2 Data Analysis of Study One.....	104
5.3 Theme One: Networking.....	106
<u>5.3.1 Defining the Network</u> .....	118
<u>5.3.2 Inter-hospital Relationships within the Network</u> .....	108
<u>5.3.3 Sharing Workforce</u> .....	109
<u>5.3.4 Continuity of Service</u> .....	110
<u>5.3.5 Relationship with ‘the Boss’ — Government, Department of Human Services Victoria and CMCN</u> .....	111
<u>5.3.6 Model of Care</u> .....	113
Consumer focus.....	114

Longitudinal care of childbearing women.....	116
Local versus regional care.....	117
Visions for future models of care.....	119
5.4 Theme Two: Workforce.....	121
<u>5.4.1 Workforce Shortage</u> .....	121
<u>5.4.2 Workforce Ageing and Lack of Succession</u> .....	124
<u>5.4.3 Scope of Practice and Skills</u> .....	127
5.5 Theme Three: Relationships.....	130
<u>5.5.1 Teamwork</u> .....	130
<u>5.5.2 Pressure to Centralise</u> .....	132
<u>5.5.3 Clinical Leadership</u> .....	132
<u>5.5.4 Relationship of CMCN with the Regional Hospital</u> .....	135
<u>5.5.5 Service Adapted to the Community</u> .....	137
<u>5.5.6 Relationship of CMCN with the Community</u> .....	138
5.6 Theme Four: Other.....	139
<u>5.6.1 Funding</u> .....	139
<u>5.6.2 Safety, Risk and Quality Assurance</u> .....	141
<u>5.6.3 Education</u> .....	146
<u>5.6.4 Change Management</u> .....	148
5.7 Results and Discussion of Study One.....	150

## **Chapter Six: Study Two — Development and Collapse of**

<b>Corangamite Managed Clinical Network</b> .....	152
6.1 Introduction.....	152
<u>6.1.1 Aim of Study Two</u> .....	152
<u>6.1.2 Methodology of Study Two</u> .....	152
<u>6.1.3 Participants in Study Two</u> .....	154
Steering committee.....	154
Quality guidelines and protocols subcommittee.....	155
Workforce subcommittee.....	156
Education subcommittee.....	156
<u>6.1.4 Instruments and Procedure for Study Two</u> .....	156
<u>6.1.5 Study Two Analysis</u> .....	157
6.2 Results for Study Two.....	157

<u>6.2.1 Preparation for Cooperation between Maternity Services in Corangamite Shire</u> .....	157
<u>6.2.2 Development of Corangamite Managed Clinical Network</u> .....	159
<u>6.2.3 Activity of the CMCN Steering Committee</u> .....	161
<u>6.2.4 Quality Assurance Activities within CMCN</u> .....	164
Terms of reference and goals of the quality guidelines and protocols committee.....	164
Quality assurance activities.....	165
Impact of CMCN clinical practice guidelines.....	168
Implementation and distribution of clinical practice guidelines.....	169
<u>6.2.5 Educational Activities of CMCN</u> .....	170
Education subcommittee terms of reference and goals.....	170
Outcomes from the education subcommittee.....	170
Educational needs analysis.....	170
Funding educational events within CMCN.....	172
Recommended core competencies.....	172
Educational events.....	173
Obstetric emergencies training program.....	176
<u>6.2.6 Workforce Development Activities within CMCN</u> .....	178
Workforce: terms of reference and goals.....	178
Workforce survey.....	178
Midwifery workforce survey responses.....	178
GP workforce survey February 2006 .....	179
Workforce shortage within CMCN.....	180
On-call arrangements in Corangamite Shire 2006–2008.....	182
Movement of clinicians.....	184
Enhanced Midwifery Skills in Collaboration Model of Maternity Care.....	185
Demonstration of the managed clinical network model.....	189
<u>6.2.7 Funding of the Corangamite Managed Clinical Network</u> .....	191
<u>6.2.8 Collapse of a Network</u> .....	191

6.3 Study Two Discussion.....	193
<u>6.3.1 Education</u> .....	193
<u>6.3.2 Quality Assurance and Clinical Practice Guideline Activity</u> .....	194
<u>6.3.3 Discussion of Workforce Committee Activity</u> .....	197
<u>6.3.4 Development of CMCN Team Resilience and Fragility</u> .....	198
<u>6.3.5 Conclusion of Study Two</u> .....	198
<b>Chapter Seven: Clinical Audit in the Corangamite Managed Clinical Network</b> .....	200
7.1 Introduction.....	200
<u>7.1.1 Aim of Study Three</u> .....	200
<u>7.1.2 Methodology of Study Three</u> .....	200
<u>7.1.3 Participants in Study Three</u> .....	201
<u>7.1.4 Study Three Procedure</u> .....	201
<u>7.1.5 Implementation of Information Technology-based Information Tool</u> .....	204
<u>7.1.6 Implementation of the Victorian Maternity Record</u> .....	204
<u>7.1.7 Analysis</u> .....	205
7.2 Results of Study Three.....	205
<u>7.2.1 Numbers of Births in Corangamite Shire Hospitals</u> .....	205
<u>7.2.2 Spontaneous Labour</u> .....	206
<u>7.2.3 Inductions within CMCN</u> .....	207
<u>7.2.4 Caesarean Sections within CMCN</u> .....	207
<u>7.2.5 Epidural/Spinal Anaesthesia during Labour and Delivery in Camperdown, Terang and Timboon</u> .....	208
<u>7.2.6 Forceps Deliveries within CMCN</u> .....	209
<u>7.2.7 Postpartum Haemorrhage</u> .....	209
7.3 Study Three Discussion.....	210
<u>7.3.1 Numbers of Births in Corangamite Shire hospitals</u> .....	210
<u>7.3.2 Spontaneous Labour</u> .....	211
<u>7.3.3 Indications for Induction of Labour</u> .....	211
<u>7.3.4 Increased Rate of Vaginal Birth after Caesarean Section</u> .....	213

<u>7.3.5 Anaesthesia</u> .....	213
<u>7.3.6 Forceps Deliveries</u> .....	214
<u>7.3.7 Postpartum Haemorrhage</u> .....	214
<u>7.3.8 Concluding Comments</u> .....	216

## **Chapter Eight: Study Four — ‘The Corangamite Managed**

<b>Clinical Network — What Happened?’</b> .....	217
8.1 Introduction.....	217
<u>8.1.1 Aim of Study Four</u> .....	217
<u>8.1.2 Methodology of Study Four</u> .....	217
<u>8.1.3 Study Four Participants</u> .....	217
<u>8.1.4 Study Four Instruments</u> .....	219
<u>8.1.5 Study Four Procedure</u> .....	220
<u>8.1.6 Study Four Analysis</u> .....	221
8.2 Results of Study Four.....	222
<u>8.2.1 Theme One: Being a Network</u> .....	223
Participants’ perception of the network’s achievements and impact.....	223
Problems experienced in the network.....	224
<u>8.2.2 Theme Two: Maternity Service Delivery</u> .....	226
Sharing workforce.....	226
Model of care development.....	227
Network influence on ways of working.....	230
After hours work.....	231
<u>8.2.3 Theme Three: Internal Network Relationships</u> .....	231
Teamwork and conflict.....	231
Relationships across hospital boundaries.....	234
Role of the project coordinator.....	235
Timboon withdrawal.....	235
<u>8.2.4 Theme Four: Relationships External to the Network</u> .....	236
Relationship with Warrnambool obstetricians and administration.....	236
Relationship with Department of Human Services Victoria .....	238



Regional network.....	239
<u>8.2.5 Theme Five: Education, Quality Assurance and</u>	
<u>Risk Management Education</u> .....	239
Quality assurance and clinical audit.....	241
Clinical guidelines.....	244
Risk management.....	249
8.3 Study Four Limitations and Discussion.....	251
8.4 Study Four Conclusions.....	254
<b>Chapter Nine: Conclusion — Lessons Learnt from</b>	
<b>the Development of Corangamite Managed Clinical Network</b> .....	257
9.1 Introduction.....	257
9.2 Comparison of the Findings of Corangamite Managed	
Clinical Network with the Literature.....	258
9.3 How Management of CMCN Compares with the	
Literature on Network Management.....	258
<u>9.3.1 Network Structure</u> .....	259
<u>9.3.2 Network Management</u> .....	261
<u>9.3.3 Network Governance</u> .....	265
<u>9.3.4 Power over Policy and Strategy in CMCN</u> .....	266
9.4 Diffusion of Innovations and the Culture of Health Care	
Organisations.....	268
<u>9.4.1 CMCN as a learning organisation</u> .....	269
<u>9.4.2 Innovation and organisational receptivity</u> .....	274
9.5 Areas for Further Study.....	276
9.6 Conclusion.....	277
<b>Appendices</b> .....	278
<b>Appendix One: Managed Clinical Networks in the United Kingdom</b> .....	279
<b>Appendix Two: Key Lessons for Network Management in Health</b>	
<b>Care from Networks <i>Briefing</i></b> .....	288
<b>Appendix Three: Perinatal Data Collection For, Hardcopy</b> .....	290
<b>Appendix Four: Submission for Funding of the Corangamite</b>	
<b>Managed Clinical Network</b> .....	292

<b>Appendix Five: Corangamite Managed Clinical Network Meeting</b>	
Etiquette.....	306
<b>Appendix Six: Interview Questions for Study One.....</b>	<b>308</b>
<b>Appendix Seven: Corangamite Managed Clinical Network</b>	
Steering Committee.....	310
<b>Appendix Eight: Memorandum of Understanding — Corangamite</b>	
Managed Clinical Network.....	314
<b>Appendix Nine: Terms of Reference and Goals of the Quality,</b>	
Guidelines and Protocols Committee.....	320
<b>Appendix Ten: CMCN Clinical Practice Guidelines.....</b>	<b>323</b>
<b>Appendix Eleven: Terms of Reference CMCN Education</b>	
Subcommittee.....	410
<b>Appendix Twelve: Terms of Reference CMCN Workforce</b>	
Subcommittee.....	413
<b>Appendix Thirteen: Results of the CMCN Midwifery Workforce</b>	
Survey, March 2006.....	416
<b>Appendix fourteen: CMCN Maternity Audit Forums.....</b>	<b>422</b>
<b>Appendix Fifteen: CMCN Clinical Audit Data.....</b>	<b>426</b>
<b>Reference list.....</b>	<b>432</b>

## List of Figures

- Figure 1.1:** Timeline for the development of Corangamite Managed Clinical Network and Studies One to Four
- Figure 2.1:** Clinical Effectiveness Cycle
- Figure 2.2:** Overview of the SIGN guideline development process
- Figure 3.1:** Map of the spatial relationship of Timboon, Terang and Camperdown
- Figure 3.2:** Age structure of Corangamite Shire and Victoria, 2006 (enumerated data)
- Figure 3.3:** Algorithm for management of preterm labour in Corangamite Shire
- Figure 4.1** Roles of researchers involved in studies one to four
- Figure 5.1:** Representation of grounded theory analysis, from Punch
- Figure 6.1:** Committee structure of CMCN
- Figure 6.2:** GPs in Corangamite with obstetric, obstetric anaesthetic and caesarean skills, January 2006–January 2008
- Figure 6.3:** Distribution of GPs across CMCN, August 2008
- Figure 6.4:** Algorithm of progression of a woman with an uncomplicated pregnancy in the EMSiC model
- Figure 6.5:** Algorithm of the progress of a woman with a complicated pregnancy in the EMSiC model.
- Figure 7.1:** Clinical effectiveness cycle
- Figure 9.1:** Competing values model of culture types for organisation
- In the Appendices:**
- Figure 7.2:** Number of births per hospital 2000–2007
- Figure 7.3:** Reasons for induction of labour within CMCN during 2005 compared with state average as a percentage of total inductions
- Figure 7.4:** Reasons for induction of labour within CMCN, 2006
- Figure 7.5:** Reasons for induction of labour within CMCN, 2007
- Figure 7.6:** Rate of caesarean sections as a percentage of total births in Camperdown, Terang and Timboon 2000–2007
- Figure 7.7:** Emergency caesarean section according to hospital
- Figure 7.8:** Forceps deliveries in CMCN as a percentage of total births in Camperdown, Terang and Timboon 2000–2007
- Figure 7.9:** Postpartum haemorrhage in Camperdown, Timboon, and Terang 2000–2007

## List of Tables

**Table 3.1:** Demography of the research locale

**Table 3.2:** Numbers of midwives and doctors in Corangamite Shire hospitals, October, 2004

**Table 3.3:** Total births and confinements in Corangamite Shire compared with other Victorian rural areas, urban Level II and Level III hospitals, 1996–2004

**Table 3.4:** Birth weights in Corangamite Shire compared with other Victorian rural, urban excluding Level III, and Level III hospitals, 1996–2004

**Table 3.5:** Types of birth in the Corangamite Shire compared with other rural, urban excluding Level III, and Level III hospitals, in Victoria, 1996–2004

**Table 3.6:** Apgar scores for births in Corangamite Shire, other rural, urban excluding Level III, and Level III hospitals in Victoria, 1996–2004

**Table 5.1:** Interviewees' roles in CMCN and pseudonyms assigned to them

**Table 6.1** Tasks completed by the Quality Guidelines and Protocols Committee

**Table 6.2** Process for identification and adaptation of evidence based guidelines.

**Table 6.3** Guidelines developed and approved within the CMCN

**Table 6.4** Guidelines developed within the CMCN for which approval had not been completed

**Table 6.5** CMCN process for updating clinical practice guidelines

**Table 6.6** Key tasks of the CMCN education committee

**Table 6.7:** Summary of results from educational needs analysis survey within CMCN

**Table 6.8** Core Competencies for clinicians in the CMCN

**Table 6.9** CMCN educational events

**Table 6.10** CMCN Educational experiences for midwives to learn acoucheur skills

**Table 6.11** Midwives responses to the workforce survey

**Table 6.12:** Travel by doctors within CMCN

**Table 6.13** Attributes of the Proposed Enhanced Midwifery Skills in Collaboration (EMSiC) for CMCN

**Table 6.14** Where and when presentations were made about the CMCN

**Table 8.1:** Interviewees' roles in CMCN and pseudonyms assigned to them

**Table 9.1:** Corangamite Managed Clinical Network and the key features identified by Mannion, Davies and Marshall of a learning organisation

**Table 9.2:** Characteristics of culture types in the competing values framework

**In the Appendices:**

**Table 7.1:** Numbers of births in CMCN per calendar year by hospital and in total

**Table 7.2:** Percentage of births occurring from spontaneous onset of labour within CMCN

**Table 7.3:** Percentages of deliveries that are caesarean sections in CMCN 2000–2005

**Table 7.4:** Parity of mothers birthing in CMCN in 2007 as a percentage of total births in each hospital

**Table 7.5:** Numbers of vaginal births after caesarean section in CMCN 2006–2007 in Camperdown, Timboon and Terang

**Table 7.6:** Epidural anaesthesia for multiparous births within CMCN from 2000 to 2005 as a percentage of total multipara births

**Table 7.7:** Epidural Anaesthesia for primiparous births in Camperdown, Terang and Timboon 2000–2005 as a percentage of total primiparous births

**Table 7.8:** Epidural Anaesthesia for all women within CMCN 2006 and 2007

**Table 7.9:** Percentage of total births in which a postpartum haemorrhage occurred in Camperdown, Terang and Timboon 2000-2007

## Thesis Abstract

This thesis describes the rise and fall of a small rural maternity managed clinical network: the Corangamite Managed Clinical Network (CMCN). Although the context of the CMCN is a rural maternity service, the network themes are relevant to health care everywhere because of the lessons that can be drawn.

The managed clinical network model addresses three important contemporary rural health issues: the struggles of small health services to enact quality assurance, to provide continuing professional development and to attract clinicians. Over the past twenty years, there has been a sharp decline in the number of rural maternity services in Australia. Maternity service models that are sustainable in the current health service environment are required. The successes of Corangamite Managed Clinical Network (CMCN) show what can be achieved in a low volume, rural maternity service. The failures of the CMCN are a cautionary tale for those interested in network development.

The thesis comprises four studies that used quantitative and qualitative methods to examine the development of the CMCN. The researcher adopted a relativist ontology and subjectivist epistemology and used naturalistic research methodologies. She performed literature reviews to build an historical case; interviews and grounded theory to assess what the actors believed about the maternity services and network; participant observation and narrative inquiry to describe what happened and how, and finally a quantitative clinical audit to provide a different perspective of clinical and educational activity within the CMCN. In this way a comprehensive picture of the CMCN is painted. The depiction enables detailed analysis of the CMCN to occur.

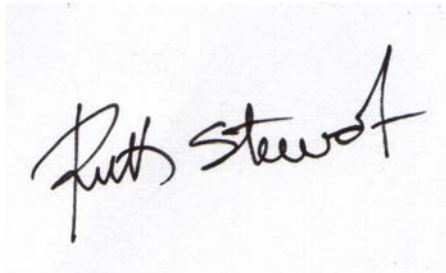
This thesis measures the CMCN against four theoretical models that have been used to qualitatively evaluate health services: systems thinking, the learning organisation, the diffusion of innovation within organisations and criteria for receptivity to innovation within them, organisational culture and service performance. Using these models this thesis finds that the CMCN performed as a clinical microsystem in an unsupportive macrosystem. It was a learning organisation under command of a less reflective

organisation. It was receptive to innovation and its diffusion within a context that did not support innovation and finally, the CMCN displayed health service cultural characteristics that have been associated with high performing health services and the regional health service culture did not. It is noteworthy that these contradistinctions occurred in the rural context.

The CMCN achieved its aims to provide maternity services using a patient-centred model, to share expertise and resources between the hospitals, to deliver a quality assurance program, to facilitate local team-based multidisciplinary professional development and to develop a sustainable workforce model. The CMCN was internally strong with a good management structure and committed clinicians. Yet despite these strengths, it collapsed. The tragic flaw of the CMCN that spelt its end was that it did not fully engage with a culturally dissonant regional health service management.

## **Author's Declaration**

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

A handwritten signature in black ink on a light-colored background. The signature reads "Ruth Stewart" in a cursive, flowing script.

Ruth Alison Stewart



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# Chapter One

## 1.1 Aim of the Thesis

The aim of this thesis is to describe the rise and fall of a managed clinical network (MCN) for rural maternity services in Corangamite Shire, south-west Victoria, Australia.

This study is important for two reasons. The first is that isolated rural maternity services have struggled to meet the changing requirements for quality assurance and continuing professional development and to attract a new generation of clinicians. The MCN model addresses each of these issues. What can be learnt from the attempt to implement a maternity MCN in Corangamite Shire in South-west Victoria is instructive for policy makers, managers and clinicians with an interest in rural maternity care. The successes of Corangamite Managed Clinical Network show what can be achieved in a low volume rural maternity service. The failures can be used as a cautionary tale for those interested in pursuing a similar path.

The second reason this study is important is that it examines the establishment of a clinical network in detail. There is increasing interest in clinical networks internationally and domestically. The Australian Department of Health and Ageing in its current program of reform is establishing Medicare Locals and Local Hospital Networks.(1,2) The language used in the planning of these is consistent with the concept of the clinical network. There is concern, however, that these reforms may not achieve the aims of the national health reform agenda.(3,4) This study will make a significant and timely contribution to knowledge about the design and implementation of clinical networks for the rural Australian context.

The researcher has been a resident and general practitioner (GP) obstetrician in Corangamite since 1989 and in that role has worked with midwives, GPs and specialist obstetricians in the region to provide maternity care. She participated in the design and

“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University

development of Corangamite Managed Clinical Network with clinical colleagues and worked in a voluntary capacity as medical adviser to the network. A great many rural maternity services have been closed in Australia over the past twenty years.<sup>(5)</sup> The researcher wished to evaluate MCN models for rural maternity services for the benefit of health service policy makers.

In 2008, when the Corangamite MCN was approaching maturity, the network collapsed. An analysis of this collapse forms a major part of the thesis. The researcher's planned evaluation of the impact of the network was no longer possible, as the network development was incomplete and the network clinical practice guidelines had not been adopted by any of the hospitals in the region. After reflection the researcher decided to build on her existing work to study what had happened both in the development and the collapse of this rural maternity MCN for the benefit of others interested in the development of clinical networks.

This thesis examines the experiences of a particular clinical network, Corangamite Managed Clinical Network. An MCN is a particular type of clinical network. The definition of a clinical network used in this thesis follows Goodwin, <sup>6</sup>, Peck, Freeman and Posaner's definition of a network as:

any moderately stable pattern of ties or links between organisations or between organisations and individuals, where those ties represent some form of recognisable accountability (however weak and however often overridden), whether formal or informal in character, whether weak or strong, loose or tight, bounded or unbounded.<sup>(6p21)</sup>

Therefore a clinical network is one which operates in a clinical environment.

The definition of a *managed* clinical network is more precisely given. Defined in an NHS Scotland Management Executive Letter in 1999, MCNs are:

Linked groups of health professionals and organisations from primary, secondary and tertiary care working in a co-ordinated manner, unconstrained by

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<sup>1</sup>Professor Perri 6 is a noted British social scientist. He changed his name from David Ashworth to Perri 6 in 1983. He was not an academic at the time. Many years later he said he was amused by the notion of '6, P' appearing in academic papers. 6 worked for Demos, a centre-left think tank with close ties to New Labour in the 1990s. He is currently Chair in Public Management at Queen Mary, University of London, see <[http://en.wikipedia.org/wiki/Perri\\_6](http://en.wikipedia.org/wiki/Perri_6)>.

"Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context" Ruth Stewart, Doctoral Thesis, Flinders University

existing professional and [organisational] boundaries to ensure the equitable provision of high quality and clinically effective services.(7webpage)

This definition is the most widely used, and will thus be used in this thesis.

There are many clinical networks in Australia but usually they do not conform to the definition of an MCN. These networks will be discussed in Chapter Two, and in Chapter Nine Corangamite Managed Clinical Network will be compared briefly to other Australian networks.

## **1.2 Outline of the Thesis**

This introductory first chapter states the thesis aims and provides definitions of key concepts.

Chapter Two outlines what is known about clinical networks and MCNs, undertaking a detailed review of the literature on clinical networks, beginning with the United States (US) Regional Medical Program of the 1960s and 1970s. A discussion of the development of clinical networks in the United Kingdom (UK) follows, together with a detailed examination of the development of the concept of a managed clinical network. The notion of ‘wicked problems’ is also introduced, as applied to health care and clinical networks.

An account is then given of clinical network activity in various states in Australia. What is known about the impact of the rural medical context on obstetric outcomes internationally and in Australia is examined, followed by a discussion of what is known about the relationship between the volume of clinical cases and the quality of clinical outcomes. Finally, a description is given of attempts to address the gap between best practice and actual clinical practice using the concept of the ‘clinical effectiveness cycle’.

Chapter Three moves the reader from the general to the particular, looking at the rural context of the specific network under consideration in this thesis, including a description of the geography and demographics of the Corangamite Shire. A detailed

comparison is made of obstetric outcomes between 1996 and 2004 in the Corangamite Shire with other rural sites, with urban non-Level III hospitals,(8) and with the deliveries of singleton cephalic deliveries to well mothers in Level III urban hospitals during the same interval. This comparison establishes the existing level of service and quality of care in Corangamite Shire's maternity services relative to other Victorian maternity services.

Chapter Four establishes the research paradigm used in this thesis, providing an account of the ontology and epistemology underlying the choices made in the design of the four studies that form the research project. The stance of the researcher and the contingencies that influenced the study design are described, together with a narrative as to why the project was undertaken in this way, including its mixed methodology. Finally, an explanation is offered as to how this thesis complies with Australian regulations on ethical research.

Chapters Five to Eight contain detailed description of the experimental design of each study in this thesis. Chapter Five, focusing on Study One, analyses semi-structured interviews of selected key stakeholders in Corangamite Managed Clinical Network. Interviewees were asked about the strengths, weaknesses, opportunities and threats to their maternity service before and after the development of the MCN. The interviews are analysed using 'grounded theory', which has enabled theories to be developed about key stakeholders' perceptions of the likely impact of Corangamite Managed Clinical Network on Corangamite Shire maternity services.

Chapter Six presents Study Two, which is a participant observation study of the development of Corangamite Managed Clinical Network. Using contemporaneous observations of the primary researcher, as recorded in a diary, and primary documents produced by Corangamite Managed Clinical Network (minutes of meetings, clinical guidelines, promotional flyers for educational events, letters and emails), it describes what was done, where, how and by whom, as well as what was achieved. The study follows a narrative of the development and closure of the network.

Chapter Seven contains Study Three, a quantitative analysis of clinical outcomes in Corangamite Shire hospitals between 2005 and 2008, the interval described in Study

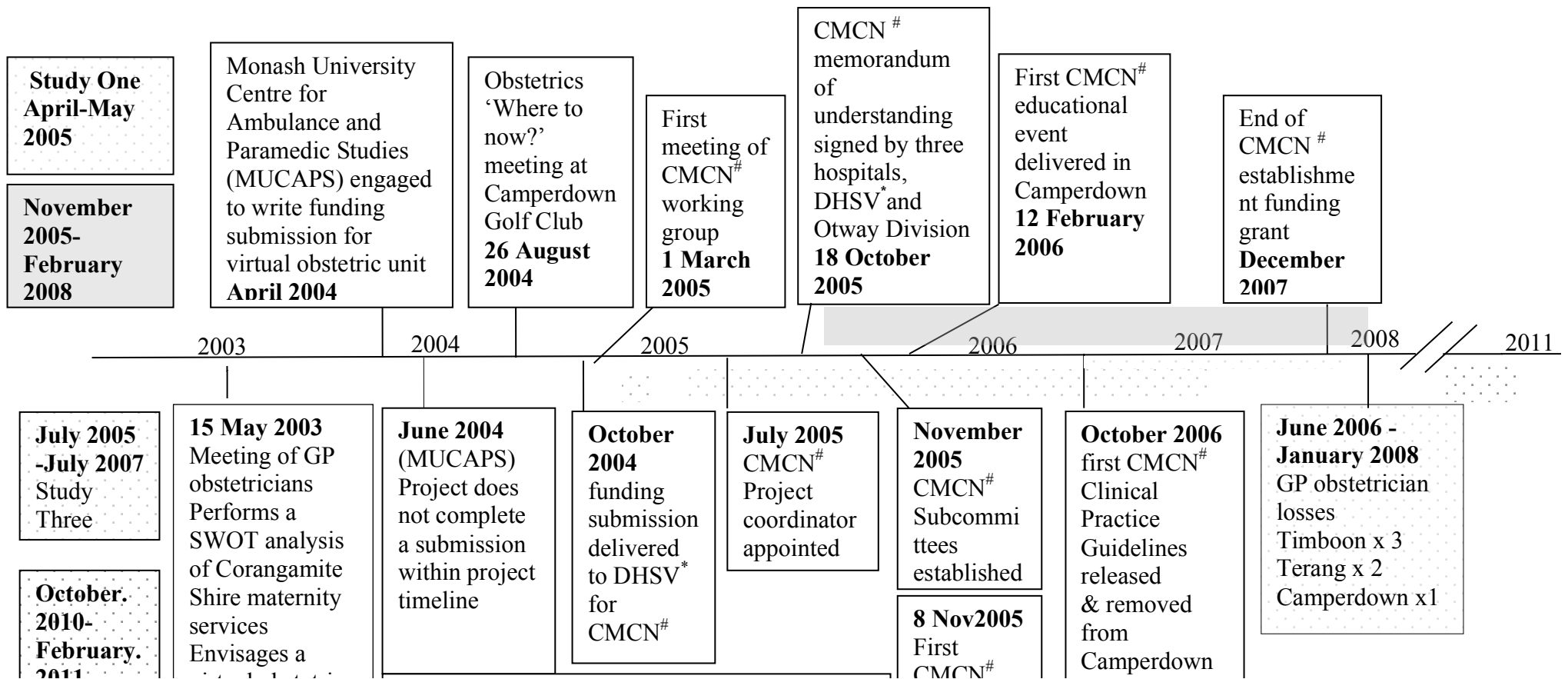
Two. These data have small numbers and do not reach statistical significance. Trends that were observed in clinical outcomes within the network are presented.

The final study in the thesis, Study Four, is described in Chapter Eight. Semi-structured interviews were held in 2011 with available participants within Corangamite Managed Clinical Network to identify what participants thought had been achieved during the life of the network. Interviews also explored interviewees' perceptions of what caused the collapse of the network. Interviews were analysed using grounded theory, allowing theories to be developed about the achievements and problems of the network.

Chapter Nine draws together the findings of the four studies, with reference to the key lessons for managing networks developed by Goodwin, 6, Peck, Freeman and Posaner.(6,9) A framework of barriers and facilitators to establishing a maternity managed clinical network in a low volume rural context is developed. The findings from the four studies are also compared with the body of knowledge about clinical networks, as discussed in the literature review in Chapter Two, together with some of the recent academic work in health services management. Lessons for observers, participants and policy makers with an interest in clinical networks are drawn from the particular case of Corangamite Managed Clinical Network. It is hoped these lessons will be instructive in the development of clinical networks as part of the Australian government's newly announced prospective health reforms.

### **1.3 Timeline of the Thesis**

Figure 1.1 below shows the stages of development of this thesis and the studies undertaken for it. It serves as a map to the reader.





## **Chapter Two: Literature Review**

This chapter discusses the literature relevant to managed clinical networks (MCNs) in low volume rural contexts. It begins with a detailed review of the literature on clinical networks. The Regional Medical Program (RMP) in the United States of America (USA) between 1966 and 1973 is examined, the development of clinical networks in the United Kingdom (UK) is discussed and a detailed examination is made of the development of the concept of an MCN. Recent clinical network activity in Australia is then examined. What is known about the impact of the rural medical context on obstetric outcomes internationally and in Australia is then examined, followed by an examination of what is known about the relationship between volume of clinical cases and the quality of clinical outcomes. Finally, a description is given of attempts to address the gap between optimal care and actual clinical practice using the concept of the ‘clinical effectiveness cycle’. Chapter Two will move the reader from the general to the particular, examining the specific context of the Corangamite Managed Clinical Network.

### **2.1 Search Methodology on Clinical Networks**

A literature search of clinical networks and rural obstetric outcomes was undertaken using the electronic database EBSCO and the phrases ‘Clinical Network’ or ‘MCN and Rural or regional or remote’ or the MeSH term ‘Regional Medical Program’. No synonyms for network were used and only articles in English or with an English language abstract were selected. This search elicited 1047 papers. The abstracts of accessible papers were read. Some were about anatomical networks and were rejected; many were about the work of clinical research networks, and these were also rejected. In the USA of the 1960s and 1970s ‘Regional Medical Programs’

proliferated. There were many case studies of Regional Medical Programs, in different specialities. Many of these references could not be accessed because they were published in small journals before 1980 and have not been made available electronically, while hard copies of most of these journals from that era are not in Australian libraries. The decision was made, of necessity, to access only those papers that were electronically available or those referred to in articles in the last twenty years that could be accessed in hard copy in Australia. A search for ‘clinical’ AND ‘network’ elicited more recent papers with greater relevance to the research topic.

The search for papers on rural obstetrics was undertaken in May 2003. The following databases were searched using the terms Obstetric\* AND rural or remote or country. The following were located: RURAL (272 records), Ausport Med (200 records), APAIS-Health (10 records), Australian\_Medical\_Index\_AMI (39 records), CINCH-Health (0 records), Health\_&\_Society (12 records), Drug (1 record), ATSIhealth (10 records). Of these, articles that examined quality of outcomes, and factors influencing quality of outcomes, were read. ‘Snowballing’ was also a useful means of locating material. Using the references found in these articles additional relevant papers were located, and over the intervening years new articles were read as they were published. In total, 141 articles were read, of which eighty-nine were found to be relevant to a discussion of quality of outcomes, while twenty-seven are referred to in this discussion.

The technique of snowballing was also used to identify publications and reports from the British National Health Service (NHS) and Australian state and territory government departments of health. Accessing such reports was often more difficult, however, as Uniform Resource Locators (URLs) frequently led to webpages stating ‘The page cannot be found’, with a paragraph below saying ‘The page you are looking for might have been removed, had its name changed or is temporarily unavailable’. Sometimes the publication could be traced using the employing institution of the chief investigator and searching the web archives of that institution, or by performing a Google search of the World Wide Web. A Google Scholar search for ‘Managed Clinical Network’ was also performed, providing some useful papers. The results of Google searches were, however, inconsistent, varying from one day to the next without explanation. This inconsistency did lead to some happy outcomes, “Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University

however: a report exhaustively searched for in NHS archives at one point was discovered six months later in a Google search for MCNs in England.

Recommendations of relevant resources were also sought from other researchers. It was only through such an inquiry that the webpages for government reports and academic papers published on New South Wales clinical networks were found.

The webpages of clinical networks in the UK and Australia were found by snowballing, with each clinical network website searched for references to other clinical networks.

## **2.2 Clinical Networks — An Organisational Answer?**

Clinical networks have been developed in Australia and internationally as a response to problems identified in existing systems of health care. In this section the ‘wicked problems’ (10) to which networks are considered an answer will be examined briefly. The clinical network will be defined, and so too the specific model of the managed clinical network (MCN).

The literature speaks of the increased complexity and fragmentation (10-12) of health care systems. Guthrie, Davies, Greig, Rushmer, Walter, Duguid et al. (13) suggest that these are examples of wicked problems. Wicked problems are enmeshed in real life and not readily defined so their solution is likewise indefinite, where a ‘plurality of objectives held by pluralities of politics makes it impossible to pursue unitary aims’ (10p160). Amid such pluralism it is difficult to determine if you have achieved resolution. (10) Wicked problems defy simple solutions.

### **2.2.1 Inequality of Health Care Outcomes**

Significant inequities in health outcomes occur in Australia. Australian health outcomes are some of the best in the world. In 2008 the life expectancy for an Australian male was 79 years and for an Australian female 84 years. (14) Australian residents have one of the best life expectancies in the world, yet the gross statistics

conceal unpleasant truths. If you are an Indigenous Australian man your life expectancy is 11.5 years less than the life expectancy of a non-Indigenous Australian male. If you are an Indigenous Australian male living remotely, the statistics are worse. In the Northern Territory there is a difference of 14.2 years between the life expectancy of Indigenous and non-Indigenous Australian men, and 9.7 years between Indigenous and non-Indigenous women in the Northern Territory. Our systems of health care have not delivered desired health outcomes to those most in need.

### **2.2.2 Inequalities of Access**

Inequities of access to health care exist in Australia,(15-20) in the UK (21-23) and in the USA.(24-29)

### **2.2.3 ‘Unwarranted Variation’ of Outcome**

Research in Australia has demonstrated unwarranted variation of outcomes.(30,31)

### **2.2.4 Suboptimal Health Care Delivery**

Often, the health care that is delivered is not as good as it could be. Knowledge about what interventions improve outcomes in health care is accumulating, but there is often a considerable lag between the determination of what is optimal care and the implementation of it in routine health care. There is a gap between what is known should be done and what is actually done.(32,33)

### **2.2.5 International Unwarranted Variation in Health Care**

Australia is not alone in this dilemma; internationally there is also evidence of unwarranted variation of outcome in health care.(29,33-37) The Committee on Quality of Health Care in America of the Institute of Medicine stated that

The American health care delivery system is in need of fundamental change. Many patients, doctors, nurses and health care leaders are concerned that the care delivered is not, essentially, the care we should receive.(38p1)

The 1995 Calman-Hine report in Britain also highlighted the gap between knowledge and practice.(39)

In Australia, the UK and the USA clinical networks have been proposed as an answer to some of the wicked problems found in the health system.(7,39-43) At a policy level, clinical networks offer a way to coordinate services for a given medical specialty, disease or patient cohort across broad geographical areas unhindered by institutional boundaries.

In their comprehensive review of networks of care, Goodwin, 6<sup>1</sup>, Peck, Freeman, and Posaner,(6) define an inter-organisational or multi-organisational network as:

any moderately stable pattern of ties or links between organisations or between organisations and individuals, where those ties represent some form of recognisable accountability (however weak and however often overridden), whether formal or informal in character, whether weak or strong, loose or tight, bounded or unbounded ... (p21)

It is proposed by Goodwin, 6, Peck, Freeman, and Posaner (6) and by Edwards (43) that networks make more efficient use of staff, reduce professional and organisational boundaries, share good practice, are patient focused and improve access to care.

### **2.3 International Clinical Networks — USA**

There have been examples of clinical networks in several countries around the world. Between 1968 and 1973 the US federal government funded a system of Regional Medical Programs (RMPs).

In the beginning the intent of the legislation was to create a partnership consisting of major segments of health providers, educators, public and voluntary health agencies and other health resources. While these new ‘co-operative arrangements’ were to be carried out with an emphasis on heart disease, cancer, stroke and related diseases ... the overall objective was to

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<sup>1</sup>Professor Perri 6 is a noted British social scientist. He changed his name from David Ashworth to Perri 6 in 1983. He was not an academic at the time. Many years later he said he was amused by the notion of ‘6, P’ appearing in academic papers. 6 worked for Demos, a centre-left think tank with close ties to New Labour in the 1990s. He is currently Chair in Public Management at Queen Mary, University of London, see <[http://en.wikipedia.org/wiki/Perri\\_6](http://en.wikipedia.org/wiki/Perri_6)>.)  
“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University

make high quality medical care more uniformly available to every American.(44p425)

Fifty-six RMPs were formed and many reports on their activities were published in the American health literature. They place an emphasis on education of doctors and nurses and on disseminating new knowledge. There was variable political support for the RMPs from the US Health Education and Welfare Department and varying success among programs (45-48) but ‘Those involved in the program believe RMP has proven its worth and provided many improvements in the health care system’.(44p425) Whatever the success of the RMPs, their funding was cancelled towards the end of the Richard Nixon presidency in the context of a dispute between Congress and the Administration about funding, which passed to the courts for resolution. Funding of the program ceased in 1974.(44) For more than thirty years there was no national coordinated program to develop clinical networks in USA, that is, until now. President Barak Obama’s health reforms, which will be enacted in January 2012, will introduce Accountable Care Organizations (ACOs), which have many of the features of clinical networks. ACOs will be based on certain defining principles. These are:

- (1) Provider-led organizations with a strong base of primary care that are collectively accountable for quality and total per capita costs across the full continuum of care for a population of patients.
- (2) Payments linked to quality improvements that also reduce overall costs.
- (3) Reliable and progressively more sophisticated performance measurement, to support improvement and provide confidence that savings are achieved through improvements in care.(49p983)

As the ACOs develop it will become apparent how closely they resemble clinical networks.

## 2.4 International Clinical Networks — UK

British interest in health care networks began in 1995 with the Calman-Hine report (39) which contained a case study demonstrating the power of health care delivery networks. The report noted with concern that in the UK there were apparent variations in recorded treatment outcomes and that cancer survival rates in the UK were lower than in other parts of Europe. The report also noted that there had been significant advances in the management of cancer and took special note of the ‘patient-centred approach’ and relationship between cancer survival and patterns of care. The Calman-Hine group concluded that the time had come for change.

In ‘A Policy Framework for Commissioning Cancer Services’ (39) the Calman-Hine group developed general principles to govern the provision of cancer care. The first principle was that ‘All patients should have access to a uniformly high quality of care in the community or hospital wherever they may live to ensure the maximum possible cure rates and best quality of life. Care should be provided as close to the patient’s home as is compatible with high quality, safe and effective treatment’.(39p6) Other principles focused on the importance of a patient-centred approach; good communication with patients, families and carers; the necessity for public and professional education about screening and early recognition of cancer; the centrality of the primary care team in cancer care; and, finally, the importance of cancer registries and monitoring of treatment and outcomes.

The Calman-Hine group recommended that ‘a new structure for cancer services’ (39p7 ) should be built, based on a network of expertise in cancer care, with three levels of care: primary care (the focus of care); secondary care in cancer units in district general hospitals; and tertiary care in designated cancer centres. The services were to be planned ‘to minimise travelling times whilst maintaining the highest standards of specialist care, using local expertise and agreed protocols. In particular this network is one of proficiency and not of buildings’.(p7 ) This patient-centred, primary care focused service network was a dramatic change from the hierarchical structures that had prevailed in the NHS up to that time.(50) Cancer services across the UK began networking in 1996.(51)

In 1998 the Scottish Office Review of Acute Services (52) responded to the adverse effects on the provision of high quality health service in rural areas of decreased working hours of junior doctors and increasing subspecialisation, by developing the idea of MCNs,(12) which would focus on services and patients rather than buildings and organisations.(7)

Before devolution of the NHS, the Scottish Office of the NHS published policy directed to all Health Boards, NHS Trusts, their planning partners and GPs in the form of Management Executive Letters (MELs). Since devolution of the NHS, the NHS Scottish Executive has published such policy in Health Department Letters (HDLs). In their tenth MEL of 1999,(7) the Scottish Executive outlined the introduction of MCNs. An HDL in 2002 (53) from the Scottish Executive reiterated support for clinical networks and MCNs.(7) It strengthened the call for integration of networks with the Health Boards and consumer participation at all stages, and called for explicit clinical governance and quality assurance activities within MCNs. Again in 2007, after the Kerr report, 'Building a Health Service fit for the future',(54) the Scottish Executive reiterated its support for MCNs in an HDL, noting the integrated and integral role MCNs should play in NHS Scotland, and emphasising that while MCNs should align with national guidance, local autonomy is critical.(55)

Between 1999 and 2007 the concept of the MCN became less radical. Whereas the 1999 policy directive allowed MCNs to take on some of the core Health Board and Trust functions, including holding contracts with consultants and even controlling budgets, later directives make it clear that MCNs were to integrate services across boundaries, working closely with the management of Health Boards to influence, rather than create, policy and strategic direction.

The MCN model has all the advantages of networks: a clinical focus, flexibility and responsiveness to local issues, combined with management support. In the various iterations of MELs, and then HDLs, NHS Scotland has refined the characteristics of an MCN.



In MEL 10 (1999), MCNs were defined, as ‘Linked groups of health professionals and organisations from primary, secondary and tertiary care, working in a co-ordinated manner, unconstrained by existing professional and health board boundaries, to ensure equitable provision of high quality clinically effective services’. (7webpage) This original definition is the one most widely quoted in the literature. In this MEL it was proposed that MCNs could focus on a specific disease, a specialty or a specific function.

In practice the term is seen as permitting a variety of arrangements operating at different possible scales beginning with local primary and acute care and extending to regional and even national level. The geographical area likely to be involved is smaller with common and general conditions and is larger with more specific conditions and more specialized services. The exact nature of a network depends on its rationale and purpose. (7webpage)

MCNs’ core principles were redefined in the 2007 HDL (55) in light of eight years of practical experience. These are summarised below:

1. Each MCN must have clarity about its management arrangements, including the appointment of a ‘lead clinician’ recognised as having overall responsibility for the functioning of the network. Each network must also present an annual report to the Health Board, which must also be available to the public.
2. Each network must have a defined structure that sets out the points at which the service is to be delivered, and the connections between them, achieved by mapping the journey of care. The structure must indicate clearly the ways in which the network relates to the wider planning function of the bodies to which it is accountable.
3. Each network must have an annual work plan, setting out, with the agreement of those responsible for delivering services, the intended service improvements and, where possible, quantifying the benefits to service users and their families.
4. Each network must use a documented evidence base. All the professionals who work in the network must practice in accordance with the evidence base and the general principles governing networks.

5. Each network must be multi-disciplinary and multi-professional. MCNs may cover NHS and local authority/social care services. There must be clarity about the role of each professional in the network.
6. Each network should include representation by service users and the voluntary sector in its management arrangements, and must provide them with suitable support. Each network should develop mechanisms for capturing service users and carers' views, and have clear policies on improving access to services, the dissemination of information to service users and carers, and on the nature of that information.
7. Each network must have a quality assurance program that has been developed in accordance with the arrangements set out by NHS Quality Improvement Scotland.
8. Networks' educational and training potential should be used to the full, in particular through exchanges between those working in the community and primary care and those working in hospitals or specialist centres. Professionals involved in the network should participate in a program of continuous professional development and appraisal systems that assess competence.
9. There must be evidence that the potential for networks to generate better value for money has been explored.

These core values describe the Scottish Executive's ideal managed clinical network, how it should be constructed and how it should operate. The practice within existing MCNs, and the reports on development, implementation and evaluations of MCNs as described in the literature will now be examined.

MCNs have been created for particular conditions, such as Coronary Heart Disease,(57-60) Cerebrovascular Disease,(61-63) Vascular Disease, Cancer (51,56,64-72) and Paediatrics (73-78) in services such as Home Parenteral Nutrition, child protection and unscheduled care.(79) A Google search for MCNs was performed, as was a manual search of NHS websites in England, Scotland and Wales. Networks discovered by this means are listed in the table found in Appendix One. Many, but not all of the listed MCNs have websites, and the URLs of known websites are also listed. It is highly likely that there are more MCNs not revealed by these search tactics.

Common themes in the networks identified in the search and published papers are seamless patient care pathways, strong networked links across traditional professional boundaries and hierarchies, effective clinical governance arrangements and agreement on what clinical information is collected and how it is shared. The term ‘clinical governance’, which is central to MCNs, was defined in 1998 by Scally and Donaldson as: ‘A system through which ... organisations are accountable for continuously improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish’.(80p62) Clinical networks have a diversity of participating professionals and increased equity of service provision. Multi-site and multi-professional models of working, including teamwork and collaboration within networks, enable flexibility and dynamism, and even evolution and change.(81)

#### **2.4.1 Development of MCNs in Scotland and England**

There are many more MCNs in Scotland than in England, Wales or Northern Ireland. This may be because the concept was developed in Scotland but more likely reflects the different management and governance styles of the NHS in each of the countries that make up the UK. In 1999, subsequent to the Calman-Hine report in which clinical networks were first proposed, the NHS was devolved, splitting into four entities; one each in England, Scotland, Wales and Northern Ireland. Each of them tackled the challenge of producing higher quality and improved safety, reducing inequalities, and moving care into the community in their own way.(13) Fundamental policy differences within NHS England and NHS Scotland underlie their different approaches to integration, quality and equity.

NHS England has followed the theory and practice of New Public Management, which emphasises contractual relationships as the carrot and audit and quality improvement schemes as the sticks driving change. In England there has been an increasing emphasis on centrally set targets and regulation; market forces drive purchasing and commissioning of care from the NHS and alternative providers. In this environment clinical networks’ commands are issued from on high and clinicians and facilities compete for the resources which flow down, linked to these commands.(82)

In contrast in Scotland, where the political tenor is less conservative, NHS Scotland explicitly rejected the market philosophy espoused in the south and encouraged the fourteen Scottish Health Boards to directly manage acute and community providers with control achieved by group processes and a more collaborative regulation via NHS Quality Improvement Scotland.(7) Each Health Board focuses on the particular needs of their locale. This is the environment in which the MCN was born.

#### **2.4.2 Clinical Leaders and Clinical Innovation**

Papers evaluating clinical networks emphasise that the establishment of clinical networks is a difficult and slow process (50) relying on ‘animateurs’/lead clinicians. Warning bells were ringing in management literature in the mid-1990s, and networks were hailed as an easy answer to many of the problems in health services. Pragmatists knew that there were no easy answers. Bate (83) carried out a case study of the struggles experienced over two years as a hospital community changed from a hierarchy to a networked community: ‘Certainly this study may be taken as a warning that [establishing a network] is a much more difficult process than we have been led to believe. So many things can, and in this case did, go wrong’.(83p508) In 1996, Ferlie and Pettigrew commented that networks can ‘rapidly deteriorate if known players are pulled out ... networks may represent a volatile form of organization, with short life cycle effects’,(50s95) with the potential to ‘proliferate, soaking up a lot of time while delivering very little’.(83p508) But there were signs of hope in these papers too; networks enable change: ‘Certainly our study confirms that network organisations are much more change-friendly: no one would deny that major change occurred in the trust, and not just in culture, but in processes, structures, systems and behaviour’.(83p509)

A number of papers have reported the experiences of specific MCNs. These will now be examined.

The initial success of a network often depends on its lead clinicians.(43,66,84) Greene et al (85) comment that the key facilitator of professional engagement in changing clinical practice was ‘network leadership by enthusiastic clinicians, with a clear vision for an effective and equitable system of ... care, and a commitment to

collaboration’.(p461) Ferlie and Pettigrew (50s95) quote a respondent: ‘A face you  
“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University 18

know and recognise is key'. Evaluating the West of Scotland Cancer Network, Hamilton, Sullivan, Donnan, Taylor, Ikenwilo, and Scott (86) state that,

The MCN infrastructure proved fragile; when the manager left after 10 months, and was not replaced, its progress was solely dependent on the lead clinician. He was very much 'in control' in the early stages of network development as he single-handedly created the vision for the MCN, designed it and set its work patterns in the early stages. This was recognised in interviews, with one interviewee saying that '[the MCN is down to] the personal drive of one man. (p4)

Guthrie, Davies, Greig, Rushmer, Walter, Duguid et al suggest that as a network matures the reliance on one or two individuals lessens. 'Three out of four of the MCNs studied adopted distributed leadership arrangements, and leadership became part of overall MCN processes, rather than a structural issue involving a singular or even collective role'.(13p41)

There are tensions between the desire of medical professionals to govern their own practice and of managers to manage the processes. Articles written on this vary in their evaluation of the problem. Authors in the management literature, such as Ferlie and Addicott,(36,50,82,87,88) applaud the increased power of managers to influence practice, and medical practitioners writing in the medical journals (68,86) applaud increased opportunity for clinicians to exercise control over activities within health services.

## **2.5 Managing Across Diverse Networks of Care: A Systematic Literature Review of Networks of Care**

In 2004 Goodwin, 6, Peck, Freeman and Posaner (6) undertook a systematic literature review: *Managing Across Diverse Networks of Care*. They examined literature from public and private sectors looking for what had been learnt about management, governance, leadership and policy in health and social care and, in particular, for the enablers of effective development and leadership of networks. They summarised the

implications for managing networks in health care according to network structure, management and governance. Their work is an authoritative account of network activity. In *Networks Briefing: Key Lessons for Network Management in Health Care* (2004), the NHS Service Delivery and Organisation R&D Programme adapted Goodwin et al's research findings.(9) Guthrie, Davies, Greig, Rushmer, Walter, Duguid et al (13) followed in 2010 with a review of Scottish MCNs, comparing the early self-initiated MCNs with those established by mandate of NHS Scotland. The findings of these two major studies will now be examined.

### **2.5.1 Network Structures**

Goodwin et al propose three key active network types, each with its own strengths and weaknesses. They are (9p3):

- Enclave networks: with a flat internal structure and no central authority. These networks are often most successful in the sharing of information and ideas among professionals with a common interest
- Hierarchical networks have an organisational core and authority to regulate the work of members via joint provision, inspection and/or accreditation. They are most successful in coordinating and controlling a pre-defined task that involves a complex division of labour
- Individualistic networks are those in which an individual or organisation develops a loose association of affiliates. They are often based on the procurement of a service through negotiation of contracts. Individualistic networks are highly responsive to change and are most successful for exploring innovations and flexible working practices.

Goodwin et al recognise that in practice most networks exhibit traits of more than one type of network.

### **2.5.2 Network Management**

Goodwin, Peck, Freeman, and Posaner suggest ten key lessons for managing networks, with each type of network requiring different management styles (9p3):

1. Achieve a position of centrality within the network. Centrality is crucial in individualistic and hierarchical networks. Network coordination should be

- financed, proactive and ‘in-control’. Where there are competing interests, consider employing a neutral manager or agency.
2. Have a clear mission statement and unambiguous rules of engagement, particularly within hierarchical networks.
  3. Be inclusive — ensure all agencies and individuals gain ownership of the network, especially within enclave networks, but also helpful in hierarchical ones.
  4. Large networks should be avoided — they incur high administrative costs and lead to inertia in all networks.
  5. Develop strategies for network cohesion. Joint finance arrangements, pooled budgets, agreed care protocols and common targets help promote cohesion across hierarchical and enclave networks, as does the removal of physical and jurisdictional boundaries. A ‘boundary spanner’ acting as an intermediary between organisations and agencies allows individualistic networks to function effectively and helps hierarchical networks engage with peripheral agencies. IT can be a key enabler in promoting network cohesion across all network types.
  6. Ownership may be facilitated by formalised contracts and agreements since clear and established operational procedures can lead to trust and understanding. However, over-regulation of hierarchical networks should be avoided.
  7. Actively engage respected professional leaders who will promote the network to peers (all networks).
  8. Avoid network capture by, for example, a professional elite or a dominant organisational culture (all networks).
  9. Respond to the needs of network members in such a way that the network remains relevant and worthwhile (all networks).
  10. Professionals in networks must provide a mandate to allow managers to manage and govern their activities (individualistic, hierarchical).

### **2.5.3 Network Governance**

Goodwin, 6, Peck, Freeman, and Posaner also examined network governance, making the following recommendations to those who manage networks (9p3).

- All regulators ‘outside’ a network face a common problem in terms of having authority to enforce their power.
- Enclave and individualistic networks tend to be self-governing, with little formal accountability; mandated networks often work poorly because network members have not accepted the authority required for them to be governed in this way. This can be called the ‘governance gap’.
- Potential solutions to this governance gap include providing incentives (individualistic networks) or building upon already shared principles (enclave networks) for members to agree to a system of self-regulation and governance.
- Networks based on the use of contracts along a care pathway might engender compliance, but evidence suggests such networks are less effective in integrating care provision than managed networks or single organisations.
- Government targets, audit and incentive arrangements need to be harmonised to promote and reward working in networks.

See the key characteristics of network strengths and weaknesses in Appendix Two.

Networks that didn’t survive to maturity do not appear in the literature. While factors that facilitate the development of clinical networks have been examined, the barriers to the establishment of MCNs have not been as clearly articulated.



## **2.6 Mandated vs Voluntary Networks: Delivering Health Care through MCNs: Lessons from the North**

In 2010 Guthrie, Davies, Greig, Rushmer, Walter, Duguid et al (13) examined four MCNs to test the applicability of the findings of Goodwin, 6, Peck, Freeman and Posaner's (6) earlier literature review of mandated and voluntary MCNs in Scotland and England. Voluntary MCNs are those that formed after the first MEL in 1999 (7) when a group of clinicians and managers saw that the model offered opportunities to their services. Mandated MCNs are those that formed after the NHS Scotland HDL in 2002 (53) that mandated all Health Boards to create MCNs for coronary heart disease, stroke and diabetes by the end of 2003 (HDL no. 69).

There was generally consistency between Guthrie et al (13) and Goodwin et al's (6) findings on clinical networks, although the differentiation between the activities of mandated and voluntary networks was more blurred than had been anticipated, with the two network types sharing some characteristics in their development and activities. The descriptors 'mandated' and 'voluntary' seemed to be points on a spectrum rather than distinct entities; voluntary association preceded mandated MCN status in all MCNs studied. Those MCNs labelled as voluntary were officially defined as MCNs before 2002; those labelled as mandated formalised their network status during or after 2002. That said, mandated MCNs faced less initial resistance from Health Boards, and following mandating of MCNs, the voluntary MCNs interacted more with their Health Boards and gained more support, but ran the risk of losing the strong engagement of clinicians because of that closer bond with the Health Board. A tension was noted in all MCNs, whether mandated or voluntary, between organisational objectives and clinical interests.

Guthrie et al (13) found that the governance of MCNs by management through negotiation and facilitation or 'smoothing relationships' was accepted and successful. It was noted that the governance was effectively shared in a distributed way between a core team of lead clinicians and network managers. They also identified the establishment of working groups to progress issues of mutual interest as a key aspect of MCN structure and found that these groups only worked if participants felt that

they were doing something useful. Where this was not the case participants disengaged and the MCN became less inclusive. Guthrie et al (13) observed that whilst MCNs may be mandated, engagement cannot be enforced by structural means. Engagement is achieved by listening, facilitation, negotiation and consensus building; it is the priceless key to success in an MCN.

In the four MCNs examined by Guthrie et al (13) bridge building between primary, secondary and tertiary levels of care emerged as a key purpose. The hoped for seamless patient journey had not emerged within the networks for coronary heart disease but progress towards that goal had occurred; it had progressed further in the diabetes networks. Relationships with the Health Boards were more problematic, with a clash of cultures between the 'soft' management style of the networks (collaboration, negotiation, facilitation) and the 'hard' governance measures (performance management, and directives) of Health Boards. In 2006 Guven-Uslu (89) also noted conflict between clinicians and management, which resulted in barriers to knowledge sharing and performance improvement. Participants of the MCNs studied by Guthrie et al observed that an MCN can encourage and facilitate, but it cannot ensure that certain things happen. This was termed 'a gap between power and responsibility'.(13p103) Another inherent tension in MCNs occurred between the expectation that evidence-based health care would be implemented and the expectation that the network would be locally responsive. In rural parts of a network, evidence-based guidelines could be difficult to implement, perhaps because they were not devised for the rural context; 'although the "gold standard" might suggest doing something in a specific way, this would not always deliver the best service for local people'.(13p105)

In 2006 Guven-Uslu quoted Pettigrew, Ferlie and McKee (90) as saying that 'strategic change is best supported by networks which are informal and purposeful for its members rather than top down and bureaucratic'.(89p99) This description sounds like Goodwin, 6, Peck, Freeman, and Posaner's individualistic and enclave networks.(9) In a study of cancer MCNs in England, Addicott, McGivern and Ferlie (82) found that the imperatives of organisational restructuring and a focus on meeting governmental targets had distorted the initial knowledge sharing purpose of the networks and resulted in a superficial adoption of the network model, which therefore had limited

"Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context" Ruth Stewart, Doctoral Thesis, Flinders University

impact on organisational processes. Cancer networks in England were mandated networks; they were more hierarchical in structure (88) and were found to be responding to the directives of the NHS Executive rather than to internal clinical concerns. In English cancer networks, incentives were not provided to close the governance gap between network members and the network management team. The ‘good’ of networks seems to be found in the ability to share ‘good knowledge’, such as the implementation of evidence-based practice.

Addicott and Ferlie (87) analysed the power relations within English cancer networks and found that

resources and power were predominantly only shared amongst a bounded group of elite medical professionals (not senior managers) from large teaching hospitals, while the interests of smaller district hospitals were seemingly ignored. There were boundaries within these networks, where only some (elite) groups were permitted to dominate the distribution of resources and power.(p402)

The powerful medical professionals overrode the network management team. Less powerful clinicians covertly resisted by non-compliance. The elite medical professionals obtained the status they desired for their own hospital and their own position but the network-wide changes in clinical practice were not achieved. This is what Goodwin, 6, Peck, Freeman and Posaner (9) describe as network capture.

## **2.7 International Clinical Networks — Europe**

Clinical networks exist in France for cancer,(91,92) for uro-oncology in Germany,(93) and in nephrology in Italy.(94) Each of these networks shares some, but not all, of the characteristics of the British networks.

Since the demise of the US Regional Medical Program, clinical networks have not been pursued in the USA. Integrated models of care such as Social Health Maintenance Organisations and programs of all-inclusive care for the elderly share

some of the language of networking but form part of the managed care programs that select specific patients into a program and manage their care within that system, as opposed to the coordination of care for all patients passing through networked services as occurs in the British, European and Australian model of the clinical network. This may be changing with the emergence of Obama's ACOs.(95)

## **2.8 Clinical Networks — Australia**

In Australia there has been much interest in networks, and the creation of clinical networks has gained pace in the last five years. Clinical networks have been established in South Australia, Western Australia, New South Wales and Victoria. The clinical networks in each state are different and will be described in turn.

### **2.8.1 Clinical Networks in South Australia**

In September 2003 the integrated Cardiac Assessment Regional network (iCARnet) was established. The clinical lead in this network was a cardiologist, and participation by rural hospitals and clinicians was voluntary. Since the creation of iCARnet there has been a significant reduction in the disparities between cardiac disease incidence and outcomes in metropolitan and regional south-eastern South Australia. A state-wide network, iCnetSA, was launched in 2006 to spread the type of activity occurring within iCARnet across South Australia.(31) The aim of iCnetSA was to improve patient safety and patient outcomes, eliminating cardiovascular health inequalities between rural and metropolitan South Australia. SA Health has produced a position paper on state-wide clinical networks (41) to 'provide a way forward with the establishment of clinical networks' (p3) in other specialities.

In May 2007 SA Health published 'Statewide Clinical Networks',(96) a framework for delivering optimal health care. The intent was 'to ensure services across all clinical groups are provided on a networked basis to facilitate skill acquisition, maintenance, recruitment and retention of clinical staff and to improve service quality and patient safety'.(96p2)They were also seen as a vehicle to 'increase the level of clinician involvement in supporting and advising the Department of Health on the

development and implementation of state-wide clinical plans, and to assist in monitoring their implementation and advising on any issues that may arise'. (96p3) It is clear from the 2007 document that SA Health is looking for solutions to wicked problems.

It was hoped that state-wide clinical networks would provide solutions to problems such as continuity of care across service boundaries; remedy inequities of health outcome and service access across the rural–urban divide; grow demand for services in a time of financial restraint, workforce shortage and poor distribution of resources; as well to resolve the tension between volume versus outcomes and service delivery to low volume areas. The final issues that South Australian networks were designed to meet in order to optimise care were improvement of equity of access to education and research. These are all wicked problems, with the characteristically difficult-to-define 'stopping point' or clearly defined resolution of the problem.

The South Australian framework makes clear reference to the work of Goodwin et al,(6,9) although SA Health defines the three types of network as enclave, hierarchical and *coordinated care* networks; the third being a hybrid between hierarchical and enclave types, which aligns with the 2007 iterations of the MCN model as it is 'focused on clinical practice rather than on institutions. The emphasis is on clinical management, service improvement and partnerships'.(96p4)

*Coordinated care networks* were the model chosen for implementation in South Australia. Clear governance models were outlined and resourcing was to be provided by realignment of existing budget allocations within the services. Evaluation would occur with monthly activity and performance indicator reporting to the Portfolio Performance Review Committee, which in turn would report to the Minister's Health Performance Council.

There are eleven state-wide clinical networks created by SA Health; each in a specific clinical realm. They are the:

- Cancer Clinical Network
- Cardiology Clinical Network

- Child Health Clinical Network
- Maternal Clinical Network
- Mental Health Clinical Network
- Older People Clinical Network
- Orthopaedic Clinical Network
- Palliative Clinical Network
- Rehabilitation Clinical Network
- Renal Clinical Network
- Stroke Clinical Network

These are clearly mandated networks designed to meet external goals. It is likely therefore that there will be difficulties engaging clinicians and making significant changes to clinical practice. Given that resources are to be allocated to the networks from existing budgets it is also likely that they will struggle to obtain sufficient funding for administrative support. There are no evaluations of these networks in the public realm so it remains to be seen whether the high hopes with which these clinical networks have been launched will be fulfilled.

### **2.8.2 Clinical Networks in New South Wales**

In 1999 the New South Wales (NSW) state health minister initiated a review of the NSW health system, in response to growing public concern and clinician frustrations about the quality of the NSW health service.(97) The 1999 review led to the establishment in 2002 of the Greater Metropolitan Transition Taskforce (GMITT) which examined services across Sydney.(98) The GMITT was entrusted with the twin goals of establishing clinical networks for specialist health services and developing a master plan for the equitable delivery of health services for Sydney. Medical specialists, nurses and allied health practitioners were drawn together in this project, but not GPs or consumers. ‘Although many involved doctors knew their colleagues from scientific meetings, few had ever met to plan metropolitan-wide services and none had done this with nurses and allied health colleagues’.(98p597) In 2002 the GMITT received \$64 million dollars from the NSW government to implement the changes. This taskforce produced the Report of the Greater Metropolitan Services Implementation Group.(99)

This report held few surprises about the difficulties needing attention: staff morale, clinical leadership; clinician involvement in policy and planning, people working in relative isolation (silos) across geographic areas, increased integration of primary, secondary, and tertiary care, coordination of services, networking of hospital-based clinicians, engagement of patients in decision making; and the need for a population view of care.(100p398)

These are wicked problems.

In 2003, the ‘Cam Affair’ (101) drew a great deal of public attention to the problems at the Camden and Campbelltown hospitals on the southern outskirts of Sydney. Public concern was building. There were two complementary and independent reviews of the outcomes of GMTT, the audit of the greater metropolitan services implementation and transition process by Gaston and Rice in 2003 (102) and the Phelan Report in 2005.(103) As a result of the recommendations of these reviews the permanent successor to the GMTT, the Greater Metropolitan Clinical Taskforce (GMCT), was established. Under the auspices of the GMTT and then the GMCT eleven state-wide clinical networks were established, beginning in 2002.

The delivery of health care in NSW was still under scrutiny; reform was called for.(33) In 2008 the Honourable Justice Peter Garling undertook a review of NSW health, delivered in November that year. The report is a comprehensive and lucid description of a health service struggling to respond to rapidly changing conditions. ‘We are on the brink of seeing whether the public system can survive and flourish or whether it will become a relic of better times’.(33p3) The GMCT responded to the Garling Report, making the following statement:

The Garling Report and its recommendations present a rare opportunity to undertake major reform of NSW Health. The report is a catalyst for change. It provides a framework for all involved in the delivery of public health services. Its focus is on the need for an integrated, evidenced based patient centred system. The need to reduce the variability of care, provide equity of access and outcome for all, is at the core of the Report.(104p3)

Included in the Garling Report were four pillars of change, one of which was the Agency for Clinical Innovation (ACI), which would enlarge upon the work of the GMCT. The government responded and in March 2010 an ACI chair was appointed.

In the Determination of Functions for the ACI, signed in December 2009 by the then Minister for Health NSW, the role and purpose of the agency is determined as ‘to work with other public health organisations to improve healthcare for patients and the public by rapidly developing and spreading new ways of caring for patients which represent evidence based best practice’.(105p1)One of the functions identified for the ACI is, ‘To support appropriate clinician networks, taskforces and clinical practice groups to assist in undertaking the Agency’s functions and to involve patients, carers and other members of the community in the work of the Agency’ . (105p2) Inherent in these functions is a tension between the traditional hierarchical command and control structure of health departments and the new networking management style. Whether the ACI continues to develop and encourage the collaborative, facilitative management that engages clinicians at the grass roots or becomes an institution that develops, distributes and dictates clinical change from above remains to be seen.

On the ACI website the following clinical networks are listed.(40webpage)

1. Aged Health
2. Anaesthesia Perioperative Care
3. Blood and Marrow Transplant
4. Brain Injury Rehabilitation
5. Severe Burn Injury
6. Cardiology
7. Endocrine
8. Gastroenterology
9. Intellectual Disability
10. Gynaecological Oncology
11. Musculoskeletal
12. Neurosurgery
13. Nuclear Medicine
14. Nutrition—Home Enteral Nutrition
15. Nutrition—Nutrition in Hospitals



16. Ophthalmology
17. Pain Management
18. Radiology
19. Renal Services
20. Respiratory Medicine
21. Spinal Cord Injury
22. Stroke Services
23. Transition Care
24. Trauma
25. Urology

There are varying levels of development and activity apparent in these networks.

The ACI website states that:

clinical networks' achievements are numerous and significant, and have:

- brought together clinicians from facilities across the greater metropolitan region and beyond to identify the key issues in that specialty
- established working groups to develop consensus documents to guide next steps
- developed collaborative approaches — e.g. standardised assessment and treatment protocols, models of care, benchmarks for services
  - shared staffing and resources across facilities to improve patient access
  - utilised consumers to keep thinking patient-focussed
  - provided staff training in various forms—conferences, seminars, webcasts, study groups and courses in conjunction with tertiary education institutions, opportunities to work in other facilities etc.
  - Introduced uniform data collection systems to provide clinicians with data to guide changes in practice
  - facilitated clinical research and the dissemination of results
  - developed patient resources such as booklets, websites, directories, fact sheets, DVDs etc. to ensure that patients and their carers have a good understanding of the issues they face at diagnosis, during treatment and afterwards.(40webpage)

The Department of Health NSW through these several stages of review have established and strengthened a group of networks and have identified what is necessary to build upon the work of these networks. Under the umbrella of the ACI a clear governance structure has been developed for the networks. What follows is a reflection on what can be surmised about the ACI networks from their publications on webpages and in reports.

Most of the networks display interdisciplinary teams in committees. In many of the networks' activities, the contribution of medical, nursing and allied health professions in planning, delivery, and participation can be seen. In some of the networks the integration of the professions is less developed, there being parallel committees or activities for the different professions.

The structures of the NSW clinical networks vary from horizontal enclave to hierarchical networks. Most but not all of the networks have consumer participation. Only the Musculoskeletal network specifies GP involvement. The position of the consumer within the networks is not always clear. Reference to consumer participation needs to be searched for in the documents. In the Neurosurgical network, 'Services ... *are planned by and for clinicians* and consumers and most importantly, equity of access and outcome for patients who need neurosurgical services'.(40webpage) The emphasis is mine. It is likely that the primacy of the clinician in the service reflects editorial, rather than network focus, but one cannot be certain. The absence of mention of GPs as members or of general practice organisations as stakeholders in the networks makes it highly likely that they are not involved in any but the Musculoskeletal network.

There is a strong focus on the development of clinical guidelines, data collection and quality assurance processes. All networks demonstrate this activity.

The expansion of existing metropolitan networks into whole-of-state networks makes it likely that these networks will be metro-centric. Of the twenty-five NSW clinical networks, four (Endocrine, Renal, Respiratory and Stroke) have rural working groups. The Anaesthesia Perioperative Care network includes rural and regional in its network model. The Burns network has held an educational event for rural health

professionals. In most of the NSW networks there is a low level of engagement with rural or regional health care.

The question that remains is whether the NSW networks will successfully respond to the challenge of being a mandated network: ‘mandated networks often work poorly because members have not accepted the authority required for them to be governed in this way’.(9p3) Networks *Briefings* suggests that enclave networks need to build ‘upon already shared principles ... for members to agree to a system of self-regulation and governance’.(9p3)

The networks for brain injury rehabilitation, for musculoskeletal conditions, respiratory conditions and for trauma, were all built on pre-existing alliances, which implies that there were shared principles. Of the twenty-four networks under the ACI umbrella most have been in existence for more than five years. Only the networks for intellectual disability, musculoskeletal and respiratory conditions, established in 2010, 2009 and 2007 respectively, have been in existence for less than five years. Time will tell if network participants will accept the authority of the network leadership team.

There is at least some quality assurance activity in each network. While publication on a website does not equate with meaningful clinical network activity, assessment of the volume of network activity can be made based on activities described on the network webpages (40) and in the overview of network activity published in 2006.(19)

While all of the networks record activity from 2007 to 2010, not all networks are equally active or cohesive. The Aged Care, Diabetes, Ophthalmology and Urology networks all comment on the difficulty of maintaining clinician engagement. Given that comment, it is unlikely that these networks maintain meaningful interaction with a broad range of clinicians working in the field. These networks have fewer activities and produce fewer documents. In the network formed to bridge the gap in care for children with chronic diseases who have grown too old to be accommodated by a paediatric service, there is difficulty engaging adult clinicians in the network. The problem of the disappearing patient pathway is not being solved by the activities of the network. The Radiology network notes that developing consumer-focused activity

“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University 33

has been challenging for their network. This probably reflects poor consumer engagement with the network. The Nuclear Medicine network notes that it has been a major challenge to get all nuclear medicine units to work together *as* a network. Many of the networks do exhibit signs of strong engagement with clinicians, however, as well as producing numerous activities and documents.

The Neonatal Transport Service deserves mention here even though it is not identified with the ACI. A 2008 report for the National Audit office in the United Kingdom (106) describes the New South Wales' Neonatal Transport Service as a network and identifies this network and the similar Victorian Newborn Emergency Transport System to be particularly sophisticated neonatal networks.

The elements that constitute this quality and sophistication include: communications and administration systems; transport techniques; centralised decision-making and oversight bodies; data sharing infrastructures; best practice guidelines; reporting mechanisms (both inside and outside the network); the use of consultative committees; procedures to boost family involvement; quality improvement provisions; and evaluation exercises (in particular, those allowing benchmarking).(106ppviii,x)

There has not been a formal evaluation of the NSW networks since the Garling Report, but it would seem that collaborative and facilitative management that engages clinicians at the grass roots is not being achieved by all of the networks, and that some of the networks develop, distribute and dictate clinical change from above.

Martin Van Der Weyden in writing about the Camden and Campbelltown hospital problems notes: 'Ironically, the Macarthur Health Service's quality policy statement ... outlined a commitment to the principles of customer focus, strong leadership, striving for optimal care, evidence of outcomes, and a culture of improving. But the Cam affair illustrates that, for our hospitals, there is more to quality than rhetoric'.(101p101) The same may be said for NSW networks.

### **2.8.3 Clinical Networks in Western Australia**

As in the eastern states, Western Australia has been through a process of examination of the adequacy and quality of their state health service. A Health Reform Committee was formed in Western Australia in March 2003. The terms of reference for the "Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context" Ruth Stewart, Doctoral Thesis, Flinders University

review ‘required the Committee to develop a vision for the WA health system while ensuring that the growth of the health budget was sustainable’.(107pv) The report found that there was a clear need for change in the public health system for the same reasons that change was needed in NSW and South Australia.

A fundamental reprioritisation of the public health system is needed, and should be carried out over the next decade in a systematic and integrated way. An increased focus on health promotion, improved interface between general practice and the public health system and enhanced community-based care, mental health and Aboriginal health services will not only improve the health status of Western Australians, but will reduce the growth in demand for hospital emergency care and beds ... Investment is needed to assist people to navigate the health system. This includes both technology to facilitate the movement of information throughout the health system, such as electronic health records and unique patient identifiers, and in clinical guidelines to bring greater consistency to clinical practice.(107ppv,vi)

A commitment was made in the WA Department of Health (Strategic Intent 2005–2010) to ‘[i]ncreasing clinical leadership through the implementation and development of clinical networks’.(108p12) The 2008 document *WA Health Delivering Reform* (109) defines and describes the role of ‘health networks are collaborative groups of interested people and organisations including health professionals, patients, carers, consumers and others. The key functions of health networks include planning services, developing policy, defining performance measures, developing protocols, investing in people and influencing priorities on how resources are to be allocated’.(109p23 )

On an overview of health networks and network leadership it is stated that, ‘The major functions of Health Networks are: to plan and develop evidence based policy and practice, state-wide clinical governance, transformational leadership and engagement, strategic partnerships, and evaluation and monitoring systems’.(110webpage)

Throughout the WA government literature, the terms ‘clinical network’ and ‘health network’ are used interchangeably (in each individual publication only one term is “Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University 35

used: the choice of descriptor seems to lie with the author). Each WA health network is led by one or two lead clinicians and a small advisory group. This is similar to the distributed leadership group as noted by Guthrie et al (13) for Scottish networks. Support is provided by the Health Networks Branch of the Government of Western Australia Department of Health or by individual agencies in the areas of aged care, cancer and palliative care and genomics. The network leads are people with appropriate clinical and management experience and qualifications. They are appointed for two years. Each network has a small executive advisory group to assist in the leadership and coordination of the network. Network membership is drawn from key stakeholders and clinical experts from within Western Australia and includes consumer representation. The membership is multi-sectoral (including consumers) and multidisciplinary (including allied health workers and specialists, and in nine networks generalist medical practitioners as well). Each network also receives reports from working groups on specific projects.(111)

The WA networks can be seen to be more strategically directed than either the SA or NSW networks. In the eastern states the agenda for each network is set by the network participants within the framework of goals and objectives set by the state departments of health. In NSW the governance structure of the networks is clearly defined. In Western Australia the *goals* are defined:

The Health Networks are focusing strongly on developing and implementing new models of care. A model of care broadly says how health services are best delivered for a particular condition, service or population group. It outlines what should be delivered, who should provide it, and where it should be provided. It outlines the roles and responsibilities of health services and community partners, such as the primary care and non-government sectors, ensuring patients receive seamless, cost effective, patient-focused care. They emphasise least intrusive care at the earliest intervention point. (109p23)

The purpose of these networks is reform of the way that health care is delivered; the networks are a vehicle for change management.

Health networks connect a diverse range of stakeholders who share the common aim of improving patient care. These people take their shared ideas and experiences from the health networks back into their work places and personal networks. As a result of this, since the inception of the health networks, a rich variety of initiatives have commenced that draw on the various models of care to guide clinical service improvement. These initiatives are being undertaken in all health sectors and vary greatly in their scope.(112)

The WA Department of Health's directed networking is a more radical revisioning of health care at all levels than has occurred in other states. In Western Australia the reform explicitly involves primary, secondary and tertiary care reform in the public health system, focusing on creating a seamless patient journey.(107p19) In NSW the reform involves multidisciplinary teams and focuses on health care in public hospitals; it does not engage the primary care sector.

The first five health networks in WA were established in the period 2005–2006. They were the Aged Care, Cancer, Neurosciences and the Senses, Child and Youth networks. Another eight were established in 2006–2007 and another two in the following year. According to the WA Department of Health website (113) there are now seventeen clinical networks under their jurisdiction:

- Aged Care
- Cancer and Palliative Care
- Cardiovascular
- Child and Youth
- Digestive
- Diabetes and Endocrine
- Falls Prevention
- Genomics
- Infections and Immunology
- Injury and Trauma
- Mental Health Community Network
- Musculoskeletal
- Neurosciences and the Senses

- Primary Care
- Renal
- Respiratory
- Women's and Newborns

The level of activity in WA health networks is high. In the last quarter of 2009, eighty-nine projects were identified in the implementation phase of the four Chronic Disease Models of Care, selected as first priority for implementation (diabetes, heart failure, chronic obstructive pulmonary disease and chronic kidney disease). The number of activities or projects per health network for implementation of the models of care ranges from three in each of the Injury and Trauma and Neurosciences networks, to thirty-two in the Diabetes and Endocrine networks. As expected, there is a lot of activity in the high priority chronic diseases networks, but activity is also high in the Children and Youth, Aged Care and Musculoskeletal networks.(112,114)

#### **2.8.4 Clinical Networks in Victoria**

In 2007 the Health Options Review, an internal Department of Health document that is not available for public scrutiny, is reported to have identified networks as one of a number of strategies to 'manage demand for health services and escalating costs'.(115webpage) Networks were proposed 'as a mechanism for strengthening clinical and service provision, by bringing together groups of individuals from different organisations and professional groups to drive system change and improvement in the operational effectiveness and efficiency of public health services'.(115webpage) Since then, eight clinical networks have been established. The first networks established were for the specialty areas of cancer, maternity and newborn, stroke and emergency care. Networks for the specialty areas of renal health, cardiac, palliative care and paediatrics were established later.

All Victorian networks have clinical leadership, multidisciplinary and consumer membership, a clear governance structure, with working groups and subcommittees for specific areas of interest, and secretariat support from the Department of Human Services Victoria. Some of the networks have network facilitators or coordinators. Each network has identified priority areas, which have driven the initial work of each



network.(116) It is expected that these will evolve and change over time. The priority areas identified are gaps in service delivery, including inequity of access to specialist services for outer metropolitan and rural areas, variation in clinical practice across services or sectors, strengthening continuity of care across organisational boundaries, changing models of care and improving service delivery, and finally the challenge for the clinical workforce of maintaining appropriate clinical skills.(116)

The guiding principles of clinical networks in Victoria are as follows (117webpage):

- Engaging clinical leaders and key stakeholders in state-wide service planning, policy and clinical reforms.
- Focusing on the patient and the community by increasing participation, partnerships, communication and responsibility.
- Improving patient care in terms of quality, access, appropriateness and integration.
- Providing a focus on improving and promoting links between country and metropolitan health services.
- Driving an increased focus on the provision of co-ordinated health strategies.
- Facilitating the alignment of strategic and operational functions of the health system.
- Promoting continuous improvement in all services and clinical practices by developing and advising on the implementation of evidence-based practice and referral and support structures between and within health services with an emphasis on clinical management and partnerships.
- Ensuring accountability and reporting arrangements for the network are clearly defined and the networks' operation and dealings with all stakeholders are transparent.

These principles are very similar to those guiding network developments in other states. However, detailed information on the activities of Victorian networks is not easy to obtain. The Emergency Care network has had a lot of activity but access to documents on its website is restricted. Links to the publications by other organisations are published but such clearing house activity falls well below the stated principles of

the networks to ensure that the networks' operation and dealings with all stakeholders are transparent. Newsletters reporting the activities of the networks are available on the website but this is limited information on the activities of the network for the interested outsider.

Generally the Victorian networks show less focus on health care system reform. The document that initiated the creation of the Victorian clinical networks, the *Health Options Review*, (115webpage) cannot be accessed by the public and it is therefore not possible for this researcher to assess how true to the intent of their creation Victorian networks are. However, there is little evidence of the networks meeting the stated guiding principles (117) of focusing on the patient and the community and improving patient care in terms of access, and there is limited evidence of the networks providing a focus on improving and promoting links between country and metropolitan health services.

To date the major activity of most of the networks has been in data collection and provision of educational activities. This perhaps suggests these networks are in the initiation phase. The networks all have clinical leads, and some have working groups and subcommittees. The structure is hierarchical, with high profile clinicians in leadership roles and a focus on dissemination of information from the executive to the hospitals. The patient journey is not a focus of the Victorian networks; engagement at leadership group level with consumers, the primary care and general practice community has been limited to the Emergency, Renal and Palliative Care networks. Geographical representation is variable, with regional and rural hospital clinicians not playing strong roles in leadership groups.(118-123) It cannot be said that this is network capture as the networks may never have been intended to be more inclusive in their membership. The Maternity and Newborn network is the exception, with urban, regional and rural as well as GP and consumer representation on its leadership group.(122) Goodwin et al's (6,9) findings would suggest that clinician and consumer engagement in the Victorian networks will be poor.

As mentioned in the discussion of NSW networks, The Victorian Neonatal Emergency Transfer scheme which operates within the Maternity and Newborn network attracted favourable comment in the international technical review of "Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context" Ruth Stewart, Doctoral Thesis, Flinders University 40

neonatal networks performed by Hallsworth, Farrands, Oortwijn, and Hatziaandreu for the National Audit Office of the United Kingdom.(106)

### **2.8.5 Clinical Networks in Queensland**

In Queensland public concern about the safety of public hospital care flared after the Bundaberg scandal.(124) In response, Queensland Health was subjected to two external reviews, known as the Forster and Davies reviews.

In September 2005 the Forster Report, (the Queensland Health Systems Review Final Report) (125) made very similar findings to those of the Garling Report in NSW.(33) Forster found that the generally good level of service provided by Queensland Health was,

experiencing unprecedented demand pressures. It is showing increasing signs of strain and in some cases is failing. Service demand is fuelled by population growth, advances in medicine and new technology, critical staff shortages across all professions including doctors, nurses and allied health professions, shortages in critical infrastructure such as emergency theatres and intensive care beds and limited service capability in areas such as mental health and Indigenous health.(125piii)

The review also considered the poor health status of Queenslanders with respect to obesity, smoking and suicide, and community access to primary health care services, as well as the increased demand this places on the Queensland Health service.

In the November 2005 report (126) of the Queensland Public Health Commission of Inquiry, Geoffrey Davies wrote:

there were five deficiencies which together contributed to the unfortunate situations examined by this Inquiry in Bundaberg, Hervey Bay, Townsville, Rockhampton, Charters Towers and Prince Charles Hospitals. It may be reasonably inferred that they contributed to similar problems in other hospitals. They were:

- (a) An inadequate budget defectively administered;
- (b) A defective administration of area of need registration;
- (c) An absence of credentialing and privileging or any like method of assessment of doctors;

- (d) A failure to implement any adequate monitoring of performance or of investigation of complaints;
- (e) A culture of concealment by Government, Queensland Health administrators, and hospital administrators.(p538)

Martin Van Der Weyden wrote in 2005:

There is a dire need for Queensland Health to be dragged into the 21st century by a restructuring of its monolithic and disconnected organisation into more diverse and discrete health structures. These should be open, transparent and, most importantly, connected to local communities and to clinicians empowered to make decisions about health care delivery. Queensland could do no worse than to emulate the clinician-led ongoing reform of NSW hospitals.(124p285)

Stephen Duckett, who was appointed Executive Director, Reform and Development, Queensland Health, introduced a new system of clinical governance in Queensland to address the issues highlighted by the Davies Report. These were:

- Line management responsibility for patient safety and quality
- Clinician and patient involvement
- A just and open approach to managing adverse events
- Responsibilities articulated for all levels of Queensland Health
- Measurement of outcomes and performance
- Transparency and accountability
- Emphasis on the need for Queensland Health to improve its performance in patient safety, quality and effectiveness.(127p16)

The aim of the Queensland Health clinical governance framework was summarised thus: ‘ ... a culture which supports improvement in patient safety and quality, ... [with] the right person, doing the right job, with the right skills, working in high performance teams, supported by effective organisational systems’.(127pp16,17)  
Reforms initiated within this framework included the establishment of clinical networks supported by Queensland Health.

The current state-wide clinical networks in Queensland are:

- Anaesthesia and Perioperative Care
- Cardiac
- Child and Youth
- Dementia
- Diabetes
- General Medicine
- Intensive Care
- Maternity and Neonatal
- Mental Health
- Renal
- Respiratory
- Stroke
- Other (local) clinical networks.(128)

## **2.9 Summary of Literature Review of Clinical Networks**

MCNs originated in Scotland and have been implemented throughout the NHS in the UK. The clinical networks established in Australia have some but not all of the features of MCNs, are relatively recently established and have had few published evaluations. These clinical networks address the problem of unwarranted variation through the implementation of clinical governance. The analysis of networks abroad, most importantly the work of Goodwin, 6, Peck, Freeman and Posaner (6,9) and of Guthrie, Davies, Greig, Rushmer, Walter, Duguid et al (13) focuses on what has been achieved within them, or the emerging difficulties in established networks. Study of the barriers and facilitators to the establishment of clinical networks is less apparent. There has been very limited evaluation in Australia of clinical networks as a form of health care organisation. The research performed for this thesis aims to address this gap.

The following segment of the literature review will explore relevant issues in maternity service provision in rural areas and quality assurance activities.



## **2.10 Quality of Rural Obstetric Outcomes**

Corangamite Managed Clinical Network (CMCN), examined in this thesis, is a network of maternity services in a rural area of Victoria, Australia. A brief review of the literature on rural obstetrics will help to contextualise the Corangamite network. The international and Australian literature will be examined in turn.

There is a persistent anxiety in some quarters that the quality of rural obstetric services is poor. This notion is elusive. It is referred to in the media and in meetings, but is not reflected in academic literature; like gossip, everyone knows it is being said but no one has really established it.(129) Since the late 1970s there have been many reports published of clinical audits and surveys of perinatal mortality data, which show that the perinatal statistics for small rural facilities are at least as good as they are for large urban centres. These published articles generally show that for perinatal mortality, maternal mortality, caesarean section rates, forceps and ventouse deliveries rural statistics compare very favourably with urban statistics. Obstetric care in the small rural hospitals discussed in the literature is given by generalist doctors (termed General Practitioners in the UK and Australia, Family Physicians in North America) and midwives.

### **2.10.1 International**

In total nine international studies of rural obstetrics outcomes (130-138) reported outcomes that were as good as the national average or for urban centres. One Norwegian study showed that neonatal mortality was higher in smaller maternity units.(139) A problem of clinical audits of rural practice is that they usually have insufficient statistical power to generate statistically significant findings. They also have a selection bias in that rural units transfer high risk patients to larger units with specialist obstetricians.

In the UK, Young (131) carried out a retrospective survey for the period 1980–1984 of women admitted in labour to an isolated maternity unit run by GPs in Penrith. Young included in his study the outcomes for all women who were transferred during labour to a consultant unit and all women or neonates who were transferred immediately after birth. This means that the statistics for poor outcomes were not

transferred to urban units in this study. Some 1267 women gave birth and 91% of these did not require help from a consultant unit. Perinatal mortality was 4.7/1000. He concludes that: 'The low mortality, the low level of intervention and the preference of women all support the retention of isolated units'.(131p744)

In the same era, in the USA, a rural family practice at Forks Community Hospital, Washington State was examined by Kriebel and Pitts.(135) This study of obstetric outcomes for 1975–1983 found that 'data reported here supports the contention that family physicians can and should do obstetrics and family physicians can do relatively high-risk obstetrics under the right circumstances. Likewise, good obstetric care can be provided in remote sites'.(p381)

Another study, four years later, by Rosenthal, Holden and Woodward (137) reviewed the records of 297 pregnant women presenting to the offices of twelve family physicians in rural areas of Western New York State for 1987–1988. The study found that 'It may be concluded from the comparison [of this study data with data from other sources] that the rural family physicians in this study follow a process similar to that of other physicians doing obstetrics and obtain outcomes that are similar'.(p539)

A large, well-designed study Norwegian study by Moster, Lie and Markestad (139) found that 'Women living in areas where the most frequently used delivery unit had less than 2000 annual deliveries had 1.2 (95% CI 1.1–1.3) times the risk of experiencing neonatal death of their newborn babies compared with women living in areas where the most frequently used delivery unit had more than 2000 deliveries per year'.(p906) This small but significant increase in neonatal mortality rates for babies born in small units compared with large ones will be discussed in detail.

In New Zealand Rosenblatt, Reinken and Shoemack (138) determined the perinatal mortality rates for all public maternity hospitals in New Zealand for the years 1978–1981. In these years the small rural maternity hospitals staffed by GPs and midwives had a lower birth weight—specific perinatal mortality rate in all but the lowest birth-weight categories than occurred in the tertiary maternity services. This group were unable to detect a volume of births per year below which obstetric care became unsafe. Battisti, Bertrand, Langhendries, Bertollini, Di Lallo and Perucci et al (140) "Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context" Ruth Stewart, Doctoral Thesis, Flinders University 46



while emphasising that large hospitals had better outcomes for very low birth-weight babies, responded that the mortality rates may be on par but perhaps morbidity relating to birth asphyxia was worse. There were no data to support that suggestion.

Moster, Lie and Markestad (139) studied all deliveries in Norway between 1967 and 1996. Every birth was linked with information about the number and size of available maternity units in the woman's municipality. The proportion of women in that municipality who delivered in each size of maternity unit was also recorded. The data therefore link to the availability of large maternity units in a municipality rather than to the size of the unit in which the birth occurred. The authors state that this removes the bias found when care for complicated pregnancies and deliveries is transferred to large units from small units. Moster, Lie and Markestad (139) also report that population health studies in Norway show better health outcomes for rural women than for their urban sisters. A woman's poor health status may translate to poor health status for her baby. With the urban Norwegian women having poorer health outcomes but better birth outcomes, the point of difference cannot relate to the mother's wellbeing. Moster, Lie and Markestad thus builds the case that poorer birth outcomes relate to health care rather than health status.

Moster, Lie and Markestad (139) conclude that 'the risk of neonatal death decreased with increasing use of large maternity units' (p907) One oversight in a very good paper is that Moster, Lie and Markestad interpret the link between mortality rates in the different units as the *use* of the different units, where it may possibly relate to *access* to the different units. Whilst Moster, Lie and Markestad do not make the observation, their data also support the conclusion that in municipalities where large units are not available mortality rates are higher, and that mortality rates are lower in municipalities where large maternity units are the only option. The variation in neonatal mortality rate may reflect *access* to large maternity units and what these units can offer, rather than the *use* of them; it may actually reflect access to the facilities and scope of practice of large units.

In Moster, Lie and Markestad's study, small units includes 'small local hospitals and midwiferies (i.e. small maternity units run by midwives without hospital facilities or supervision by other than the local general practitioner)' (139p905) It is not clear "Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context" Ruth Stewart, Doctoral Thesis, Flinders University 47

whether these midwiferies have the services of local GPs with obstetric skills. To relate the findings of Moster, Lie and Markestad's study to the Australian rural setting we need to know whether the comparison is between large and small hospitals staffed by midwives and doctors competent in the appropriate intrapartum skills or whether the comparison is between large units with competent midwives and obstetrically skilled doctors and small units with competent midwives, some of which are not served by doctors with obstetric skills. Moster, Lie and Markestad (139) do not clarify this point.

### **2.10.2 Australia**

The terminology used in Australia to describe the qualification of doctors and their roles and context should be explained. A General Practitioner with a practice in obstetrics is known as a GP obstetrician. In Australia there are a very small number of GP obstetricians practising in urban areas therefore most, but not all, GP obstetricians are rural GPs. The term rural obstetrician in Australia relates to a specialist obstetrician practicing in a rural location and these doctors do not usually have dual qualification as general practitioners. Conversely Rural GPs do not necessarily have obstetric skills.

Cameron and Cameron (141) have published two consecutive ten year records of clinical audits of obstetric practice at Atherton Hospital in Far North Queensland. For them, 'This 10 year collection of data again demonstrates that good perinatal and obstetric outcomes occur at small rural hospitals where obstetric care is provided by the non-specialist rural doctor'.(s42)

Woollard and Hays (5) in a comparison of 5950 deliveries conducted by rural GPs in NSW in the period 1990–1991 with all 88,275 deliveries during the same period in NSW, found that,

Comparing data from rural obstetricians with aggregated State-wide data has its limitations, as the more serious maternal and neonatal complications are evacuated to major centres. As a result, poor results from rural obstetric care, with the exception of the poor results in small hospitals without obstetric facilities, tend to be included with metropolitan data. It therefore cannot be said that the outcome of rural obstetric care is better than elsewhere in NSW.

Despite this qualification, the overall picture for **rural** obstetric care is good. It would appear that rural obstetric care in accredited obstetric units is of an acceptable standard.(p241)

Similarly, Welch and Power (142) attest to the high standard of rural obstetric care. Analysing data from a questionnaire sent out to all rural and remote GPs in Western Australia they found that, ‘There is little to suggest that small rural hospitals with low delivery numbers are not as safe as tertiary centres’.(p243)

Roberts, Algert, Peat and Henderson-Smart (143) examined NSW midwives data collection statistics for women who gave birth to a live, singleton infant at term in the years 1990–1997 and reported on the differences and trends in obstetric interventions at term among urban and rural women. They concluded that ‘there are differences between rural and metropolitan hospitals, in how births are managed. Women delivering in metropolitan hospitals have more access to obstetric services but are also more likely to have obstetric interventions, particularly after initiation of labour’.(143p21) Roberts et al state that, ‘It is not clear however whether one pattern of management provides more appropriate care than another’.(p21) In other words Roberts et al did not find the quality of maternity service provided to rural women wanting.

Roberts et al (143) also assessed ‘regional variation in the utilisation of several practices that have demonstrated effectiveness in obstetric management’.(p15) They concluded among other things that,

Compared with urban non-indigenous women, rural and indigenous women had lower rates of obstetric interventions both before birth (induction of labour, planned caesarean section and epidural) and at the time of birth (Caesarean after labour, instrumental delivery and episiotomy). This was especially true for rural women giving birth in their local area. The differing pregnancy risk profile of rural women does not appear to explain the differences in intervention rates, as the patterns were the same when the analysis was limited to women at low risk of poor pregnancy outcomes. Lower intervention rates most likely reflect different access to care, in

particular to epidural anaesthesia, but may also reflect different cultural attitudes to childbirth in general or the medical model of birth care.(143p20)

While this study does not compare birth outcomes it is interesting to note that it did not find quantitative or qualitative evidence of a lower standard of care in the rural facilities.

### **2.10.3 Victoria**

The Department of Human Services Victoria has designated three levels of maternity service in Victorian public hospitals. Small rural hospitals are classified as primary (Level I) maternity services. Level I services are intended to care for women with uncomplicated pregnancy and birth who do not require specialist intervention. Service providers in this level are usually GPs whose scope of practice includes obstetrics, and midwives. Most but not all of these hospitals can provide a caesarean section service. Regional hospitals with specialist obstetricians and a special care nursery are designated Level II hospitals. Level II hospitals are found in Victorian provincial cities and in the state capital city, Melbourne. Hospitals with neonatal intensive care beds and specialist obstetricians are Level III maternity services, and all of these in Victoria are situated in Melbourne.(144)

The Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM), the body responsible for reporting on obstetric and paediatric deaths in Victoria, does not separate out place of birth in their published statistics. The only statistics linked to place of birth are those for very premature deliveries, 24–27 weeks of gestation, and these are not related to *site* of birth per se but to category of maternity service. These figures are reported here for background. In 2007 the adjusted neonatal mortality rate per thousand live births (neonatal mortality rate excluding infants with congenital abnormalities and terminations of pregnancy for congenital abnormalities) in Level I and II maternity services was 230.8. It was 108.0 for Level III services.(145) Where possible, premature births should not be performed in Level I maternity services. Victorian rural maternity services aim to provide care for women who are identified as low risk such that they can be cared for appropriately by skilled midwives and GP obstetricians.

We will now examine published reports on the quality of such maternity services.

“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University 50

Graham and Strasser (146) found in their review of obstetric practice at Cohuna in Victoria for 1970–1980 that, ‘Perinatal mortality was better than state and national averages’ and ‘obstetric care at Cohuna for both mother and baby is of a standard comparable with that of other centres’. (p890)

In 1988 Lumley (147) examined the perinatal morbidity data collected by the CCOPMM with respect to deliveries in small maternity services in Victoria. The data was linked to hospital of delivery. Lumley observed that birth-weight-specific mortality rates and neonatal transfer rates gave no support to the view that hospitals were reluctant to transfer high risk mothers and infants to Level III services, although this had previously been documented in New York City. (148) Lumley found that, ‘[t]he low perinatal mortality rate in small hospitals can be ascribed to two factors, selection for delivery of normal weight infants and very low birth weight-specific mortality rates for infants at and above 2500g birth weight’. (147p390) These findings support the ability of rural hospital clinicians to select appropriately for risk relative to their level of service and to provide adequate care for birthing within the cohort of low risk pregnancies. The flipside of this finding is that, as in Rosenblatt, Reinken and Shoemack’s (138) study of New Zealand small units, the data shows poorer outcomes for low birth-weight infants born in small rural hospitals. Lumley commented that ‘effective regionalization need not involve the closure of small maternity units on the grounds of safety’. (147p392)

#### **2.10.4 The ‘Urban Myth’ about the Quality of Rural Maternity Services**

What then is the genesis of the notion of unacceptable risk in rural maternity care? It is difficult to trace the development of the idea because it is largely absent from academic literature, although the literature review did throw up one source for this idea. In 1958 in Britain the perinatal experience of a nationwide cohort of births was surveyed. Butler and Bonham (149) published their review in 1963, reporting the singleton perinatal mortality rate to be 50.1 per 1000 births in consultant hospitals compared to 20.3 in GP units and 19.8 for home births. Small hospitals were less likely to have specialist obstetricians and therefore to be classified as GP units in these figures. The authors argued that the high mortality in consultant hospitals was to be explained by the preponderance of mothers at high risk and that, comparatively, “Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University

the perinatal mortality rate in the GP units was unacceptable. This statement was not substantiated by data correlating maternal age, health status and obstetric history, (shown by the survey to be strongly associated with variations in perinatal mortality) with place of birth.

In an intriguing study Tew (150) argues that the conclusions drawn by Butler and Bonham (149) about the risk of obstetric deliveries in GP units are not substantiated. If the consultant unit figures are increased by the higher number of women identified antenatally to be at higher risk, we would expect to find a significantly higher number of such patients in the consultant unit population. The 1958 survey quantified several antenatal risk characteristics but only related three of them to place of delivery; these were parity, social class and toxæmia. Only with regards to primigravid status did the consultant unit have a greater proportion of above average risk cases. When the perinatal mortality rate (perinatal deaths per 1000 births) in consultant and GP units for these three conditions were examined by Tew,(150) she found that the consultant units had a much higher mortality ratio in all cases. The methods used by Tew to arrive at this conclusion are suspect; firstly, she does not explain her method of attribution of fatal cases to a unit and, secondly, it is a retrospective study and the comparison of specialist and GP unit case management which she attempts really cannot be performed unless by randomised controlled trial.

When Tew (150) examined the 1958 figures for gestation and birth weight with respect to place of birth, a higher proportion of premature and low birth-weight infants are found in the consultant units, but again not to such a degree as could explain the much higher mortality rate for these conditions in the consultant units. Using an investigation into a 1970 cohort of births from the same source, Tew pursues a further analysis of the perinatal statistics in consultant and GP units to determine whether the data supports the hypothesis that compounding multiple risk factors produces a compounded or summative perinatal mortality rate and attests that while the perinatal rates are higher for those with risk factors in more than one category, they are not so very much higher than for those with a single risk factor. In addition, the proportion of those with multiple risk factors is small, so that the net effect on the total average perinatal mortality rate in the consultant units is very small.

If one relied upon Tew's (150) analysis of the 1958 and 1970 figures for perinatal mortality rates in consultant and GP units, it could be argued that the use of Butler and Bonham's (149) data to support an argument that GP units are not a safe environment in which to perform obstetric deliveries is suspect. Since the statistical methods employed by Tew are not transparent it is important, however, to consider them and then look for further discussion of the subject.

The debate about the safety of small rural obstetric facilities seems to have passed out of academic circles and into the political arena during the later 1960s and 1970s. According to Young,(131) in London in 1980 when the Royal College of Midwives was presenting to the committee that produced the Short Report and was asked if small GP units were dangerous, the college representative replied: 'Yes indeed they are'.(131p746) This attitude is encountered often in anecdote, but rarely in the academic literature. This urban myth persists despite the fact that evidence to support it is not apparent.

The discussion about the quality of outcomes of rural as opposed to urban maternity services is actually part of a much larger discussion; the discussion about how volume of practice relates to quality of outcome, often paraphrased as the 'volume vs outcome' debate. This debate sheds light on how and why clinical networking could support the quality of rural maternity services.

### **2.10.5 Volume vs Outcome**

Halm, Lee and Chassin (151) in their systematic review of the research literature on volume vs outcome state that:

There can be little doubt that for a wide variety of surgical procedures and medical conditions higher volume (whether assessed by hospital or by physician) is associated with better health outcomes. Although a publication bias against negative findings appearing in print cannot be excluded, the uniformity with which the published research documents or confirms the existence of the association is compelling.(p28)

The authors (151) noted that while there was a positive relationship between volume and outcome for eight conditions and procedures — coronary artery bypass graft  
"Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context" Ruth Stewart, Doctoral Thesis, Flinders University 53

surgery, paediatric cardiac surgery, carotid endarterectomy, abdominal aortic aneurysm repair, cancer surgery, percutaneous transluminal coronary angioplasty, acute myocardial infarction and acquired immunodeficiency syndrome — there was *not a direct linear relationship*. Stated differently, this means that there was variance in the volume to outcome statistics. Some high volume hospitals had poorer outcomes than some low volume hospitals; in other words, variables other than case volume carried by the hospital or physician must have exerted an effect on the outcome of these procedures. The authors suggested that this could reflect specific clinical processes of care allied with the procedure, rather than the frequency of undertaking the procedure *per se*. They suggest that ‘Advancing knowledge in this direction could also provide a blueprint for improvement by identifying precisely what poor performing providers (whether low-volume or not) need to do to improve’. (151p61) Conversely, such knowledge could provide a blueprint for low volume providers to achieve best performance for their activity level.

The observation that specific clinical processes of care could affect the volume vs outcome relationship has important implications for low volume providers. Clinical networks usually incorporate activities such as identification of optimal care, clinical education, establishment of protocol and related quality assurance activities; MCNs do so explicitly. It is thinking along these lines that has stimulated departments of health across Australia and the UK NHS to support the implementation of clinical networks. Perhaps using these quality assurance processes in implementing MCNs would increase the quality of outcomes in low volume contexts.

A maternity service that seeks to establish ‘specific processes of care’ to maximise outcomes would do well to employ the best clinical practice guidelines. As Buchan, Currie, Lourey and Duggan state (152): ‘Evidence-based clinical practice guidelines translate findings from health research into recommendations for clinical practice and, when implemented, can improve health outcomes’. (p490) It is hoped (but not proven) that the best clinical practice guidelines could, when successfully implemented, generate the best clinical outcomes. The process of iterative implementation of guidelines has been called the clinical effectiveness cycle.



### **2.10.6 Clinical Effectiveness**

Traditionally in discussions of quality of care there has been a focus on clinical outcomes. For example, in obstetric care, outcomes examined have included perinatal mortality, Apgar scores, caesarean section rates, instrumental delivery rates, epidural rates and episiotomy rates.(5,130,131,133,135,137,141,142,146,153-156) Implicit in the concept of quality of care, however, is an understanding of the importance for outcomes of the processes of care.

‘The information from which inferences can be drawn about the quality of care can be classified under three categories: “structure,” “process,” and “outcome”’,(157p1745) according to Donabedian.(158,159) In 2003 the Committee on Quality of Health Care in America of the US Institute of Medicine addressed this broader concept of quality of care in their publication *Crossing the Quality Chasm* (38) and formulated six aims for improvement for the twenty-first century health care system. The aims addressed ‘key dimensions in which today’s health care system functions at far lower levels than it can and should’. Thus health care should be:

- Safe—avoiding injuries to patients from the care that is intended to help them.
- Effective—providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit (avoiding underuse and overuse, respectively).
- Patient-centred—providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions.
- Timely—reducing waits and sometimes harmful delays for both those who receive and those who give care.
- Efficient—avoiding waste, including waste of equipment, supplies, ideas, and energy.
- Equitable—providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status.(38pp5,6)

The committee observed that a health care system that achieved major gains in these six dimensions would be far better at meeting patient needs.

Academic and clinical publications on quality of medical care can be sorted into two approaches to the issue: either implementation of evidence-based medicine or the management of preventable human and system failures. In fact it is useful to incorporate both of these approaches into a larger system for health care quality assurance. The terms and classifications used in the health care quality literature are many and varied, as the authors of *A Framework For Managing the Quality of Health Services in NSW* (97) comment: ‘The difficulties [of preparing the framework] have been compounded by the complex and sometimes unhelpful terminology surrounding the quality of health care’. (p8) Sewell, Leigh and Long (160) comment that during the formation of the Clinical Support Systems Program (CSSP), a program designed to embed the best available evidence routinely in clinical practice, (161) ‘many of the difficulties experienced could be traced to differences in decision-making processes between the clinical and the administrative paradigms. Knowledge brokers can assist in bridging the different languages and perspectives of the groups involved’. (s76)

Confusion arises with these different languages and perspectives used by the disciplines working on systems to ensure quality of care. Programs that have been successful in implementing quality improvements have used a multidisciplinary model. Each program describes an arduous process to bring together the various disciplines within the program. Examples of these are the Clinical Support Systems Program, (161) (a collaboration between the Royal Australian College of Physicians and the Australian Department of Health and Ageing and National Health Service) and MCNs (7) where ‘each network must be truly multi-disciplinary /multi-professional and should include representation from patients’ organisations in its management arrangements’. (p3)

The transfer of new knowledge in health care from research to clinical practice has been slow: ‘The lag between the discovery of more efficacious forms of treatment and their incorporation into routine patient care is unnecessarily long, in the range of about 15 to 20 years ... Even then adherence of clinical practice to the evidence is highly uneven’. (38p145) Happily, the speed of transfer of research findings into clinical practice has increased since the protective effects of citrus juice on sailors “Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University

were first noticed in the sixteenth century yet took over 150 years for appropriate changes to be made to Royal Navy regulations to prevent scurvy.(162)

The Committee on Quality Healthcare in America noted that ‘a far more effective infrastructure is needed to apply evidence to health care delivery’.(38p145) The Cochrane Collaboration, the Australian College of Physicians Journal Club and the Evidence-Based Practice Centres,

represent excellent models and building blocks for a more comprehensive effort. Yet synthesising the evidence is only the first step in making knowledge more usable by both clinicians and patients. Many efforts to develop clinical practice guidelines, defined as ‘systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances’ flourished during the 1980s and early 1990s ... the dissemination of guidelines alone has not been a very effective method of improving clinical practice. (38p145)

The concept of the clinical guideline is pivotal in this thesis. The term is often used without it being defined. This thesis will use the UK National Institute of Health and Clinical Excellence definition: clinical guidelines are ‘recommendations, based on available evidence, on the appropriate treatment and care of people with specific diseases and conditions’.(163webpage)

The National Health and Medical Research Council (NH&MRC) reports in its *A Guide to the Development, Implementation and Evaluation of Clinical Practice Guidelines* (164) that,

Research has shown that clinical practice guidelines can be an effective means of changing the process of health care and improving health outcomes ... A systematic review of many studies of guidelines’ effectiveness revealed strong evidence that they can change clinical practice. Moreover, of those studies that assessed changes in consumer health, a majority reported an improvement in health outcomes.(p10)

The Committee of Quality Health Care in America too recommended that a comprehensive program to make ‘[s]cientific evidence more useful and accessible to “Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University 57

clinicians and patients' (38p146) with a wide collaboration be developed by the Department of Health and Human Services.(38) In Australia, in 1998, the NH&MRC (164) concluded that 'a systems approach that builds guideline development, implementation and evaluation into the routine processes of care' was needed.(p53)

In Scotland the Scottish Intercollegiate Guidelines Network (SIGN)(165) has developed a model which does just that. It is described in Figure 2.1. The clinical effectiveness cycle is a conceptualisation of the linkages and inter-dependency between clinical guideline development, implementation and review. It follows the 'double loop learning' theory developed by Argyris and Schön.(166-168) When an evidence-based guideline is developed, there are a range of complementary activities to translate the research into practice, to set and monitor standards and to promote clinical excellence in line with the guidelines. These activities include the audit of clinical activity against the standards that have been set, research and development to investigate clinical questions raised by the audit, the use of health technology in this assessment; and, ultimately, what is discovered in this process is fed back into the clinical guidelines, and the cycle begins again. This educational cycle should be complemented by a cycle of development, dissemination, implementation, evaluation and review of guidelines. In this way, with time, guidelines are developed and adapted to local conditions and new evidence as they arise, in a manner that can engage local clinicians. This cycle, when performed by local clinicians, can change practice and improve clinical outcomes.(167)

Figure 2.1 is a diagrammatic representation of the clinical effectiveness cycle. It shows how guidelines intersect both the standard setting/research and development cycle and the development/evaluation cycle (the double loop).(168-171)

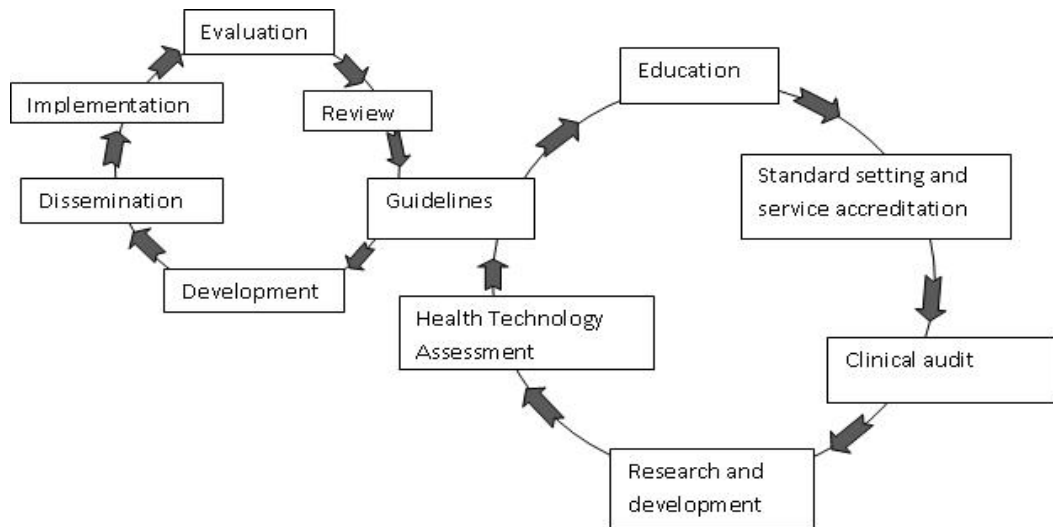
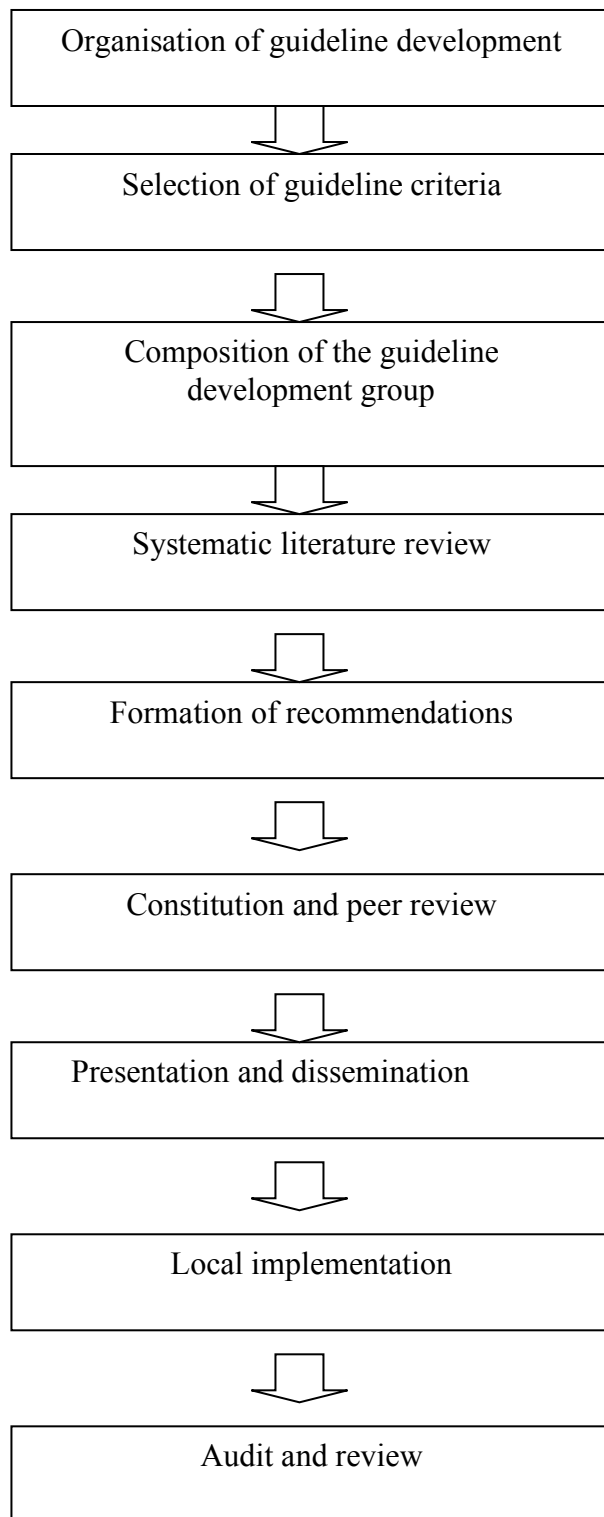


Figure 2.1 Clinical Effectiveness Cycle

Source: Scottish Intercollegiate Guidelines Network (SIGN). SIGN 50: A guideline developer’s handbook [Internet]. 2011. Available at: <http://www.sign.ac.uk/guidelines/fulltext/50/section1.html>

Figure 2.2 is the sequence of activities in the guideline development process.



**Figure 2.2: Overview of the SIGN guideline development process**

Source: Scottish Intercollegiate Guidelines Network (SIGN). SIGN 50: A guideline developer's handbook [Internet]. 2011. Available at: <http://www.sign.ac.uk/guidelines/fulltext/50/section1.html>

The SIGN clinical effectiveness cycle is embedded in the model of the MCN.(165)  
The Corangamite MCN needed to identify a set of high standard, evidence-based clinical guidelines for intrapartum care to commence the clinical effectiveness cycle. The validated guideline appraisal instrument, the AGREE tool (169) was used.

### **2.10.7 The AGREE Tool: A Validated Tool for Appraisal of Clinical Guidelines**

The AGREE tool was developed in response to the need to develop internationally recognised criteria for guideline quality. By the end of last century, government agencies and professional organisations around the world were increasingly recommending the use of clinical guidelines, but no criteria of quality existed. In 2001 a group of researchers from thirteen countries, the Appraisal of Guidelines, Research and Evaluation (AGREE) Collaboration was formed to develop and validate a generic instrument for use in appraising the quality of clinical guidelines. (169,170)The countries of origin of the collaborators were Canada, Denmark, England, Finland, France, Germany, Italy, The Netherlands, Scotland, Spain and Switzerland. Some members of SIGN took part in the AGREE collaboration.

The AGREE tool was 'designed to assess the process of guideline development ... It does not assess the clinical content of the guidelines nor the quality of evidence that underpins the recommendations'.(169p18) The instrument was developed through a multistage process of item generation, selection and scaling, field testing and refinement procedures and tested on one hundred guidelines from eleven countries by 194 appraisers. The instrument was then refined and tested again on three guidelines per country by a new set of seventy appraisers. The final version of the tool contains twenty-three items grouped in six quality domains (scope and purpose, stakeholder involvement, rigour of development, clarity and presentation, applicability, editorial independence).(169) Within each domain the guideline is scored on a Likert scale of one to four for consistency with the criteria. Guideline producers can use the instrument while planning their programs, and potential guideline users can use it to evaluate the quality of guidelines before adopting them.(170) The AGREE tool is the internationally accepted instrument in guideline appraisal. It has not been possible to validate the instrument yet.

### **2.10.8 Available Guidelines in Obstetrics**

A search was performed for gold standard intrapartum clinical guidelines for maternity care using the AGREE tool.(171)The AGREE collaboration recommend ‘that guideline producers use this instrument [the AGREE tool] to evaluate the quality of guidelines before adopting them’.(169p22)

Within the network antenatal care was provided by the GPs in their GP clinics; the common activity within CMCN was intrapartum care. The CMCN steering committee identified a need for evidence-based intrapartum guidelines to use in all birthing within the network. In 2004 the following websites were scoured for a comprehensive set of clinical obstetric guidelines. These national colleges and organisations had been working on some guidelines but had guidelines for only a very few conditions of pregnancy or obstetric procedures:

- the Canadian Medical Association website <[www.cma.ca](http://www.cma.ca)>, which had a joint position paper on rural maternity care;
- the Royal College of Obstetrics and Gynaecology <[www.rcog.org.uk](http://www.rcog.org.uk)>, which had a limited number of clinical guidelines for antenatal care of pregnant women;
- the Scottish obstetric guidelines and audit project <[www.sign.ac.uk/guidelines/sogap/index.html](http://www.sign.ac.uk/guidelines/sogap/index.html)>, which did not have many intrapartum guidelines; and
- the Royal Australian College of Obstetrics and Gynaecology <[www.ranzcog.edu.au/Open/front-page/pdfs/ClinicalGuidelines-IFS.pdf](http://www.ranzcog.edu.au/Open/front-page/pdfs/ClinicalGuidelines-IFS.pdf)>, which had clinical guidelines for intrapartum fetal surveillance.

Several hospitals in Australia were reported by clinicians to have developed guidelines, but when examined these were closer to protocols and did not have an evidence base. The Southern Health Women’s Quality Program developed guidelines in 2001, which did not have a referenced evidence base. These were scheduled for review in 2002 but had not been updated by June 2004. The antenatal care guidelines



produced by the 3Centres Collaboration<sup>2</sup> were published in October 2001 and were for antenatal care rather than for intrapartum care.

As part of the Healthy Start Plan, the SA Department of Health developed state-wide guidelines for perinatal and neonatal practice. A perinatal protocol working group produced agreed standard evidence-based (where possible) perinatal and neonatal protocols and guidelines for use across SA Health units. The CMCN quality guidelines and protocols working group used Adelaide Women's and Children's Hospital protocols as a framework but developed a new format suitable for electronic access; developed a process for up-dating and review of the clinical practice guidelines; and used a referenced evidence-based format, searching for the highest level of evidence available.

One of the problems of evidence-based medicine is the difficulty in performing randomised controlled trials in areas like public health, community medicine and obstetrics. It becomes difficult to support clinical guidelines in these areas with high grade, level one or level two evidence. In this situation it may be impossible to establish gold standard guidelines and it may be necessary to settle for 'next best' level evidence-based guidelines.

The Scottish Intercollegiate Guidelines Network (165) developed the concept of 'considered judgement' for guideline development. This concept recognises that evidence is very often incomplete or less than ideal. In considered judgement, guideline developers 'summarise their view of the total body of evidence covered by each evidence table'. (165 SIGN 50 7.2) This summary view is split into three parts. The first part judges the level of evidence. In this step, the group comments on the quantity, quality and consistency of evidence, as well as the external validity of the evidence and directness of application to the target population of the guideline. The second part judges the impact of the evidence. In this step the group must consider

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<sup>2</sup> 3Centres Collaboration refers to the collective decisions undertaken by a joint steering group of obstetric and midwifery directors from Victoria's three Level VI maternity hospitals or 'centres' — Mercy Hospital for Women, Monash Medical Centre (Southern Health), Royal Women's Hospital. The steering group also includes the Director of the Perinatal Emergency Referral Service (PERS) and the coordinator of the Maternity and Newborn Clinical Network (MNCN). A senior representative from the Victorian Department of Health participates in the group as a non-voting member.

other factors that may influence its eventual grading of a recommendation, such as potential harms; clinical impact on the target group and on particular groups within the target population; and how practical it may be to implement the guideline in the target population. The group must then summarise its view on all of the issues and make a graded recommendation. The final step in considered judgement is identifying key recommendations of the guideline.<sup>(165)</sup>The process of considered judgement enables the expert committee to make explicit the quality of the evidence on which a recommendation is made, and the impact they expect the guideline recommendations to have.

## **2.11. Summary and Conclusion**

There are many clinical audits and surveys of quality of care in rural and remote clinical contexts demonstrating a high quality of outcome. What is lacking in the literature are models to promote safety in a rural and remote context. MCNs offer an organisational structure that can address the processes of care within a maternity service and optimise clinical outcomes, but the literature clearly states that the establishment of a clinical network is an arduous process. In Australia many clinical networks have been established in the past ten years, some have flourished and others have fallen on stony ground. Evaluations of these networks have not been published. Given the great investment of time and public monies in the establishment of networks in Australia, both already and in the future with the implementation of Medicare Locals, analysis of what can be learnt from the development of a clinical network is overdue. This study will attempt to address this gap in our knowledge.

## **Chapter Three: The Rural Context of this Thesis**

This chapter will describe the geography and demography of Corangamite Shire, the maternity model of care operating in 2004 when this study commenced, and the maternity outcomes for the shire in comparison with other Victorian hospitals.

### **3.1 Geography of Corangamite Shire**

This study is set within Corangamite Managed Clinical Network (CMCN) in the Corangamite Shire (see Figure 3.1), which lies in the south-west of Victoria, midway between Melbourne and the Victorian–South Australian border. In 2006 there were 3536 residents in the town of Camperdown, 3274 in Terang and district, and 2191 in Timboon and district. There were 16,619 residents in the whole of the Corangamite Shire in the same year.(172)

Dairy farms and dairy product processing are the major industries in the region, with some beef cattle, sheep for fat lambs and wool, and crop markets. Camperdown, Terang and Timboon are service towns for the shire. Terang is 22 kilometres west of Camperdown and Timboon is 40 kilometres south of Camperdown, with the distance between Terang and Timboon being 50 kilometres. Figure 3.1 is a scaled map. It shows the spatial relationship of the towns and the connecting roads, and major geographical features.



**Figure 3.1: Map of the spatial relationship of Timboon, Terang and Camperdown. (Modified from Google maps®)**

The region has a Mediterranean climate with an average rainfall of 778.2 mm per year in Camperdown, 640.8 mm in Terang and 954.4 mm in Timboon. The wettest months are June to September.(173,174) Summers are mild in Australian terms, with the mean temperature range being 10.8°C to 25.0°C in January and 4.1°C to 12.3° C in July.

The Princes Highway, which links Camperdown and Terang, follows the historical line of demarcation where the eucalypt forests of the Otway ranges gave way to the flat open grassy plains of the Western District. These plains are dotted with quiescent volcanic cones and craters. The soil is rich and fertile. The district was the traditional lands of the Kirrae-Wurrong Aboriginal people. It was to the plains that the first European settlers came with their sheep in the 1840s.They established Camperdown and Terang as prosperous service towns for the grazing community. North of the Princes Highway the land becomes progressively drier. The roads are straight, the

farms are large. This drier land is used for grazing sheep for wool and fat lambs, beef cattle and some cropping.(175)

South of the Princes Highway rainfall increases as the altitude rises to the highest ridge of the western end of the Otway ranges close to Timboon. The country in the south was first the domain of timber cutters for the goldfields. It was not until the first half of the twentieth century that this land was used for agriculture, with dairy and beef cattle introduced as the forest was cleared for the Heytesbury settlement in the optimistic years following the Second World War. In the past fifteen years there has been development of agri-forestry in the area around Simpson, east of Timboon. In this southern half of the shire the terrain is hilly, the roads are winding and, with the high rainfall and heavy usage by milk tankers, the upkeep of road surfaces is more problematic, all of which make travelling time slower in the 20 kilometre radius about Timboon.

### **3.2 Demography of Corangamite Shire**

Corangamite Shire has a bimodal distribution of age groups, with concentrations in the childhood and middle age ranges. Children under seventeen make up twenty-eight per cent of the population. As children mature and look for employment or tertiary education they typically move out of the shire. Resident numbers increase again from ages 39 to 49, the age group of peak employment.

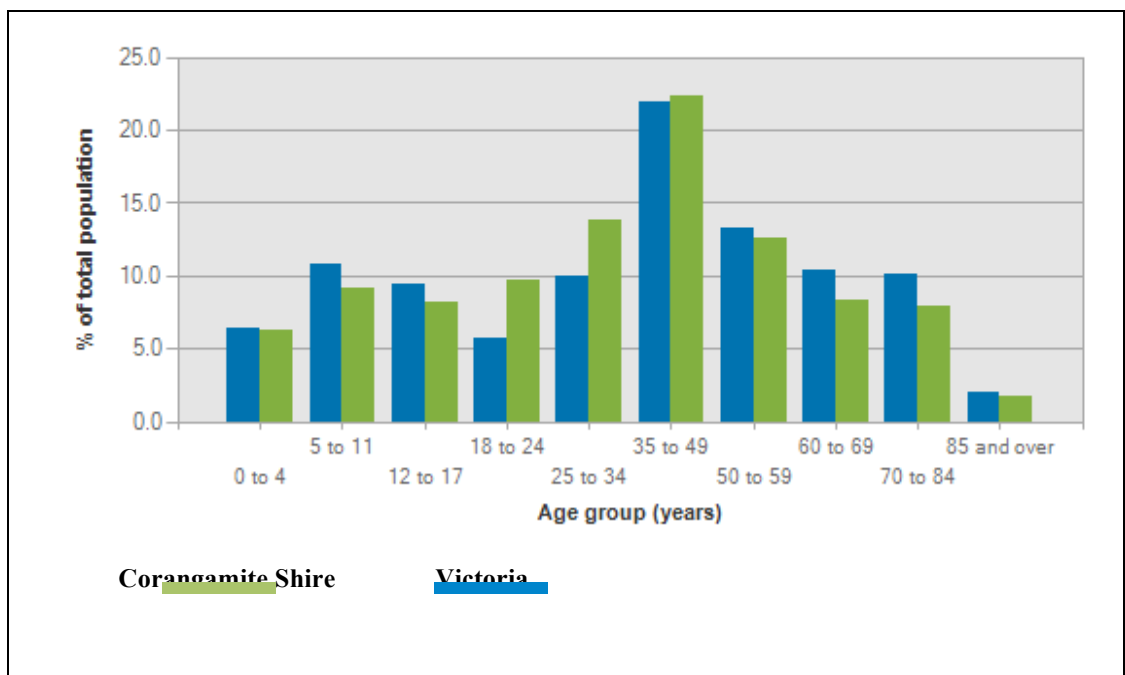
Between 1995 and 2000 there was an average of 170 births per year in Corangamite's three hospitals. The Australian Bureau of Statistics records 222 births in Corangamite Shire in 2004, which indicates that about fifty births per year occur outside the shire. Corangamite Shire has a higher fertility rate than the state average.(176) In 2004 it was 2.24 compared with the state average of 1.68.

Table 3.1 shows the age distribution within Camperdown, Terang and Timboon as compared with state averages. Towns in Corangamite Shire have a higher percentage of school-aged children, lower percentage of young adults and proportionally more elderly residents than the state average.

#### **Table 3.1: Demography of the research locale (172)**

Age (years)	Camperdown %	Terang %	Timboon %	Rural area %	Corangamite %
0–17	24.7	23.8	32.5	32.5	28
18–34	18.0	17.7	18.2	18.2	17.5
35–59	31.8	30.3	36.0	36.0	33.8
60 and over	25.6	28.3	13.3	13.3	20.5

Figure 3.2 shows the same information in a bar graph format.



**Figure 3.2 Age structure of Corangamite Shire and Victoria, 2006 (enumerated data) (172)**

### 3.3 Hospitals and Maternity Services in Corangamite Shire

Each of the towns of Camperdown, Terang and Timboon have a public hospital with a birthing room, functioning operating theatre and one or more beds with cardiac monitoring facilities. Terang and Timboon have blood collection facilities but no pathology laboratory. Camperdown has a small pathology laboratory for basic tests. None of the hospitals has a blood bank. In the period under study blood had to be

sent from Terang and Timboon to Warrnambool for cross matching. The nearest blood bank for Camperdown was in Colac, 35 kilometres to the south-east.

Camperdown hospital is the Camperdown campus of South West Healthcare. In 2004 this hospital had a twenty-seven bed capacity. Terang has the Terang and Mortlake District Health Service. In 2004 this hospital had a twenty-seven bed capacity. In Timboon, the Timboon and District Health Service, which is a Multi-Purpose Site, had fourteen beds.

Each of these hospitals had boards of management and administration that operate quite independently of each other but in two cases the board also governs other hospitals. The Terang and Mortlake health service board also runs the Mortlake hospital. Camperdown is part of South West Healthcare, the health service that also provides hospital services to Lismore, Macarthur, Port Fairy and Warrnambool. Timboon hospital board only has responsibility for the facility in Timboon.

Midwives in Camperdown, Terang and Timboon all work as both midwives and general nursing staff. This is a phenomenon common to most rural hospitals in Australia. The obstetric services in each of the towns were provided in 2004 by general practitioners (GPs) in private practice in the town who had visiting medical officer privileges in the hospitals. A specialist obstetrician and gynaecologist from Warrnambool also visited the three hospitals to consult and operate regularly. GP obstetricians are trained to Diploma of Royal Australian and New Zealand College of obstetricians and Gynaecologist Advanced level which certifies them to manage the antenatal care of low to moderate risk pregnancies and complicated labours when they arise, including performing caesarean sections and assisted deliveries or emergency laparotomies.(177) Specialist obstetricians have more extensive knowledge and skills related to the anatomy and pathology of the female pelvis and to the care of the high risk pregnant woman and fetus and special health conditions brought about by pregnancy.(178) The Warrnambool specialist obstetricians were available for telephone consultation and had indicated their willingness to travel to Corangamite to attend extreme emergencies, but such need has not arisen for many years. The professional relationship between the Corangamite general practitioners

and specialist obstetricians had been very cordial, cooperative and mutually supportive.

### **3.3.1 Camperdown Maternity Service**

In 2004 Camperdown had three full-time and one part-time permanent GP providing obstetric care. Four of the doctors in Camperdown were GP obstetricians and one of these could also perform obstetric anaesthetics. At times a GP anaesthetist from either Terang or Timboon was called in to provide an anaesthetic for a caesarean section. The hospital employed nine midwives, most in a part-time capacity.

### **3.3.2 Terang Maternity Service**

In 2004 Terang's obstetric services were provided by three non-specialist obstetricians, two of whom provided obstetric anaesthetic services. None were credentialled to perform caesarean sections. Twelve midwives were employed by Terang and Mortlake Health Service Terang campus. When a caesarean delivery was necessary in Terang a caesarean section-skilled doctor was called. Until 2003 a general surgeon was available to provide this service. Since 2003 one of the Camperdown GP obstetricians has been called.

### **3.3.3 Timboon Maternity Service**

In 2004 Timboon had three non-specialist obstetricians, two of these credentialled non-specialist obstetric anaesthetists. As in Terang, if a caesarean section was required a doctor with caesarean skills would be called in from Camperdown. Timboon Healthcare employed eight midwives. Table 3.2 shows the numbers of clinicians working in Camperdown, Terang and Timboon in 2004 six months before the beginning of Study One. GP skills were unevenly distributed. Camperdown had doctors with caesarean skills while Terang and Timboon had more anaesthetic-skilled doctors.



**Table 3.2: Numbers of midwives and doctors in Corangamite Shire hospitals, October, 2004**

Town	Number of doctors*			Midwives*	Deliveries July 03– June 04
	obstetric anaesthetic skills		caesarean skills		
	GA/spinal	epidural			
<b>Camperdown</b>	1	0	4	9	44
<b>Terang</b>	2	1	0	12	29
<b>Timboon</b>	2	1	0	8	68
<b>Total for CMCN</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>29</b>	<b>141</b>

\* Doctors and midwives may not work full time; these figures indicate the number of individuals on the roster not the full-time equivalence.

### **3.3.4 Referral Patterns and Referral Decision Making for Corangamite**

#### **Maternity Services**

The major referral centres for Corangamite Shire hospitals are the South West Healthcare Warrnambool campus, 75 kilometres to the south-west of Camperdown and 53 kilometres west of Terang and Barwon Health in Geelong 110 kilometres to the north-east of Camperdown. In 2004 Warrnambool had three specialist obstetricians, three specialist paediatricians, specialist anaesthetists, an intensive care unit and a neonatal high dependency unit. Warrnambool could care for unwell pregnant women and their infants born from thirty-two weeks of gestation and beyond. Under the Department of Human Services Rural Birthing Services Capability Framework,(179) Warrnambool was therefore a Level IV maternity service. Geelong hospital although a larger hospital with more specialist services, was also a Level IV maternity service. Within this framework Camperdown, Terang and Timboon are all Level III hospitals. Level III hospitals can perform normal and assisted vaginal deliveries and caesarean sections for babies of a gestational age greater than thirty-six weeks who are not expected to require specialist neonatal paediatric care, born to women who will not require intensive care. The Melbourne

hospitals with neonatal intensive care units are Level V hospitals in this categorisation.

Decisions about where a pregnant woman is best cared for are based upon the stage of her pregnancy and the level of care her foetus may require if delivered at that stage, and the level of care the woman herself requires.

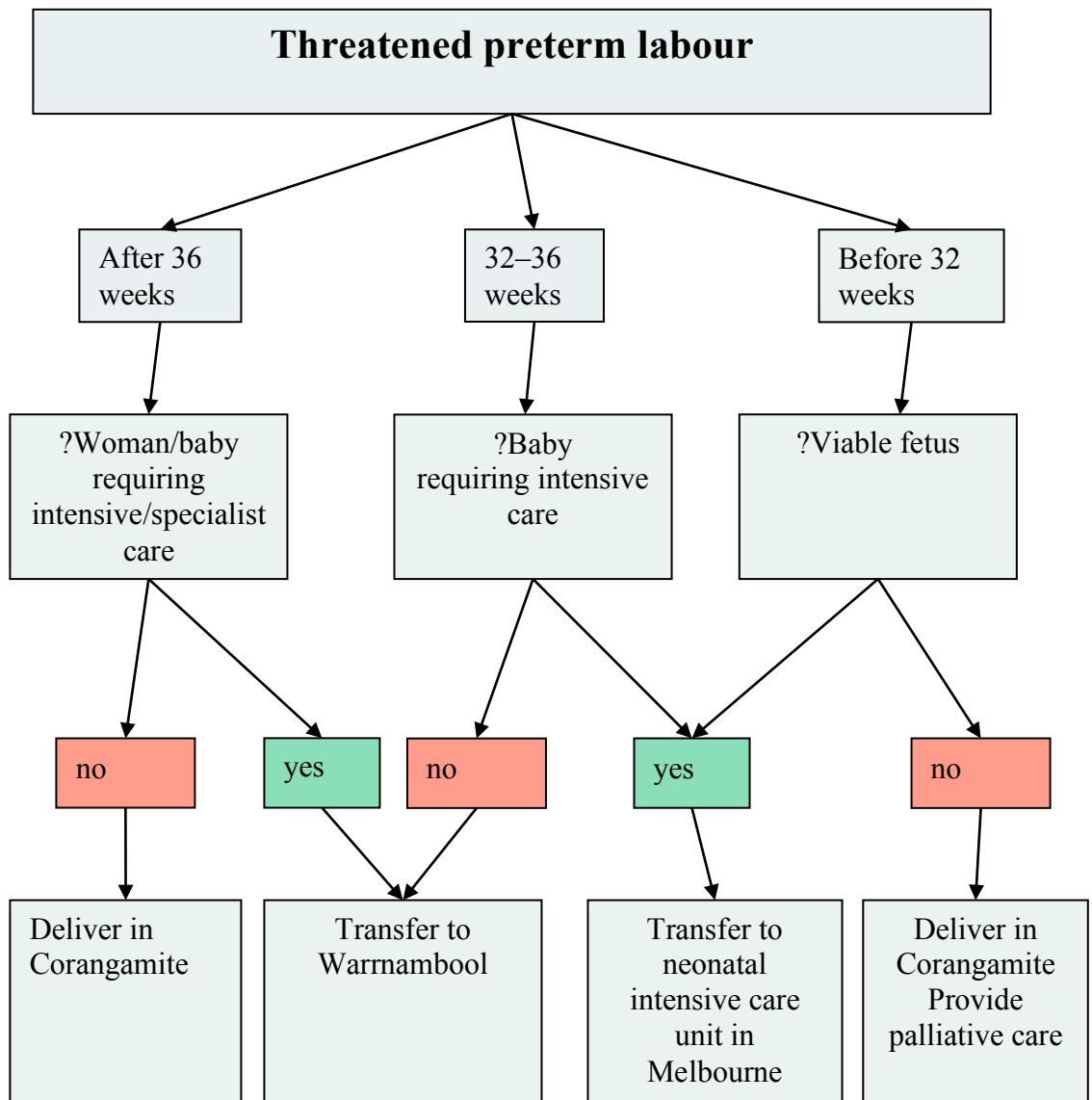
The neonatal mortality rate is the number of deaths of live-born infants within twenty-eight days of birth, whose birth weight is at least 400g or of at least twenty weeks gestation rate per thousand live births in that category. Babies born between thirty-seven and forty-one weeks of gestation have the lowest neonatal mortality rate for any gestational range. In 2007 the neonatal mortality rate for Victoria was 0.6 deaths per thousand live births.<sup>(145)</sup> It is therefore considered a reasonable risk to deliver babies of thirty-six weeks or older gestation in a Level III hospital such as in Camperdown, Terang and Timboon.

Neonates born between thirty-two and thirty-six weeks can usually be cared for in a Level IV hospital with a high-dependency neonatal unit such as in Warrnambool or Geelong. A neonate delivered before thirty-two weeks will require intensive care in a neonatal intensive care unit such as those at the Royal Women's Hospital, the Monash Medical Centre or the Mercy Hospital for Women in Melbourne.

Where labour is threatened before thirty-two weeks, but delivery is not imminent, the pregnant woman is given tocolytic drugs in an attempt to allay labour and steroid therapy in an attempt to mature the fetal lungs. She will be transferred to Level V maternity service in a Melbourne hospital in the hope that delivery can be delayed medically until the baby has a better chance of survival. Whenever possible the transfer for very low birth weight babies should occur in utero. If there is a reasonable risk that the birth may occur in transit it is wiser to deliver the baby in the rural hospital, as a small rural hospital is a safer delivery location than the back of an ambulance on the road or in the air. When a very low birth weight or premature or unwell baby is born unexpectedly in Camperdown, Terang or Timboon, the Neonatal Emergency Transfer Service (NETS) is called to collect and transfer the baby via air ambulance to an urban hospital with a neonatal intensive care unit.

In 2003 Victoria's neonatal mortality rate for a baby born at twenty to twenty-seven weeks was 449.6 per thousand live births.(8) For such a baby born in a hospital with maternal-fetal and neonatal specialists and a neonatal intensive care unit the neonatal mortality rate was 327.7 per thousand live births. In the same year babies born in smaller hospitals had a neonatal mortality rate of 612.9 per thousand live births. Premature babies have a better chance of surviving if born at a large hospital with a neonatal intensive care unit. The neonatal mortality rate for babies born at twenty-two to twenty-three weeks of gestation in Victoria in 2003 was 881.4 per thousand.(8) In 2003 only seven of the fifty-nine babies born at this gestation in Victoria survived to twenty-eight days.(8) In 2004 decisions to transfer such a neonate from any rural hospital in Victoria were made on a case-by-case basis in discussion with neonatal paediatricians, but the decision would usually have been to give the baby palliative care.

An unwell pregnant woman would be transferred to a hospital that could manage her degree of pathophysiology as well as care for her baby if delivery became necessary. See Figure 3.3.



**Figure 3.3: Algorithm for management of preterm labour in Corangamite Shire**

Making decisions about threatened or actual preterm labour requires prioritisation of the multiple risks for the mother and the babe and effective communication between all members of the maternity services.

### **3.3.5 Maternity Care Pathway in Corangamite Shire**

A central tenet of CMCN was that women should have the opportunity to birth safely in their local community, attended by competent clinicians of their choice whom they knew and trusted. The path through maternity care for any woman in each of the three towns was very similar. In Corangamite until 1 July 2005 all antenatal care was performed by doctors. After the introduction of the Department of Human Services Victoria (DHSV) Rural Maternity Initiative (RMI) in July 2005, some midwives were engaged in caseload midwifery. In a caseload model of midwifery a midwife cares for a small number of women, providing continuity of antenatal, intra-partum and post-partum care.

Between 2003 and 2008 approximately 80 per cent of the Corangamite women gave birth within the shire.(176)

Women who elected to deliver within CMCN entered maternity care either by attending the GP obstetrician of their choice or the midwives at their local hospital. Within CMCN women may have had GP or shared midwife and GP antenatal care. In both models women had the Victorian Maternity Record which is a patient held record. CMCN was a very early adopter of this record.

In GP-led antenatal care, the woman attended the general practice, saw the GP obstetrician of her choice for her antenatal care, and was referred by that doctor for booking into the hospital in the second trimester. At the booking appointment the woman would be interviewed by a midwife, discuss birth planning and, if she wished, be booked in to attend antenatal classes at the hospital. When the woman presented to the hospital either with a complication of pregnancy or in labour the midwife on duty on the ward and the GP obstetrician would attend her. In this model there was strong continuity of care by the GP, but the woman may not have seen the midwife who attended her in labour before admission.

Shared midwife and GP antenatal care was supported by Rural Midwifery Initiative (RMI) project funding from DHSV. In this model women either first attended their GP of choice and opted for shared midwife antenatal care or attended the hospital first and were referred to the RMI team and then selected a GP. Thereafter women

attended the GP and the midwives alternately throughout the pregnancy for antenatal care, and then when they presented to the hospital either in labour or with a complication of pregnancy the RMI team midwife on call attended and alerted the GP of the admission. The woman often rang her midwife before attending the hospital. In this model there is strong continuity of care both by midwives and GPs.

In CMCN hospitals, women had their choice of several forms of analgesia. Active labour was encouraged, with the use of positioning, showers and relaxation for pain relief. If further analgesia was desired, inhaled or intravenous or intramuscular analgesia was offered. In Terang the doctor provided epidural analgesia. The number of antenatal visits and the observations and tests performed at each visit were at the discretion of the woman and her doctor or midwife.

When a woman presented to hospital she was looked after by a midwife and her GP obstetrician of choice. If that doctor was unavailable, another would be deputised to attend. The treating doctor was the accoucheur unless they failed to arrive in time for the birth. Risk management within each hospital was decided on a case-by-case basis within broadly agreed parameters, in consultation between midwives and doctors. After the birth, care was provided by midwives and the attending doctor. Discharge occurred any time between three and six days postpartum, as agreed by the midwives, doctors and the woman. After the woman left hospital there would be one or more domiciliary midwifery visits and one visit or more as required from the maternal and child health nurse. The woman was instructed to attend the doctor's clinic between four and eight weeks postpartum for a 'six week visit' with the GP obstetrician.

CMCN offered a patient-centred service with strong continuity of care and patient choice as to where, how and with whom she birthed and active dialogue between the woman and clinicians on how the birth was to proceed.

### **3.3.6 Rural Maternity Initiative**

A project funded by the Rural Maternity Initiative of DHSV commenced in 2005. It allowed a small number of women in each town to receive antenatal care by midwives in a caseload model.

### **3.4 Quality of Outcomes of Maternity Services in Corangamite Shire Compared with other Victorian Hospitals**

For the purposes of this thesis, perinatal morbidity and mortality data for Corangamite Shire for comparison with other Victorian maternity services were requested from the Consultative Council on Obstetric and Paediatric Morbidity and Mortality (CCOPMM) for the years 1996–2004. Ethics committee approval for this data collection was sought from the Flinders Clinical Research Ethics Committee in November 2003. Approval for the project 5779 was granted on 7 December 2003. This data is presented here to build a picture of Corangamite’s maternity services. It is not the intention of the researcher to perform a detailed analysis of it.

CCOPMM uses a classification of hospitals whereby maternity services with a neonatal intensive care unit are Level III hospitals and smaller hospitals lacking a neonatal intensive care unit are Level I and II hospitals. For ease of discussion this classification will be used here. The data is organised according to hospital where the birth occurred and not according to the intended hospital of birth. This is an important distinction as women who begin their pregnancy or labour with the intent of birthing in a smaller unit and develop complications may be transferred to a Level III hospital. In this way poor obstetric outcomes may be passed from small hospitals to larger ones. The Corangamite data tell us the outcomes for births that did not transfer; for those births where either the woman was considered to be low risk or a complication arose with insufficient time for the birth to transfer to a larger institution.

There is much discussion in the literature about transfer of risk from one hospital to another.(5,131,139,180) To make a more useful assessment of the safety of obstetric care in Corangamite hospitals, comparison is made between Corangamite and other rural hospitals, urban non-Level III hospitals, and births in Level III hospitals for low risk, well women. These classifications are:

- Other rural: all other rural hospitals (excluding Camperdown, Timboon and Terang)

- Urban, excluding all Level III: all metropolitan hospitals, excluding Level III hospitals and those who have access to Level III special care nurseries or neonatal intensive care nurseries (those excluded are Royal Women's Hospital and Frances Perry House, Mercy Hospital for Women, Monash Medical Centre Clayton and Jessie McPherson Hospital)
- Level III term, singleton births without complications: includes births in the Level III hospitals (Royal Women's Hospital and Frances Perry House, Mercy Hospital for Women, Monash Medical Centre Clayton and Jessie McPherson Hospital). Criteria for these births were more than thirty-seven weeks gestation, singleton pregnancies without any maternal medical conditions or obstetric complications recorded on the check boxes on the perinatal form (see Appendix Three).

### **3.4.1 Methodology**

Statistics for all the years were added together and compared across the different types of hospitals using the Chi-squared test for significance.



**Table 3.3: Total births and confinements in Corangamite Shire compared with other Victorian rural areas, urban Level II and Level III hospitals, 1996–2004**

©Corangamite: Camperdown, Timboon and Terang Hospitals

	Corangamite <sup>©</sup>		Other rural-		Urban Level II		Level III term singleton births* without complications	
	Births	Confinements	Births	Confinements	Births	Confinements	Births	Confinements
<b>1996</b>	177	177	15455	15251	27824	27515	12435	12435
<b>1997</b>	195	195	15153	14946	28857	28518	12070	12070
<b>1998</b>	166	166	16346	16142	30414	30002	11650	11650
<b>1999</b>	177	177	16850	16595	31508	31053	10898	10898
<b>2000</b>	156	155	16382	16189	31985	31592	10917	10917
<b>2001</b>	181	180	16053	15844	32492	32063	10668	10668
<b>2002</b>	159	158	16507	16283	33210	32735	10251	10251
<b>2003</b>	146	145	16251	<b>16028</b>	33204	32701	10908	10908
<b>2004</b>	162	161	15991	15773	33170	32679	11207	11207
<b>Total</b>	<b>1519</b>	<b>1514</b>	<b>144988</b>	<b>143051</b>	<b>282664</b>	<b>278858</b>	<b>101004</b>	<b>101004</b>

- **Other Rural:** All other rural Victorian hospitals (excluding Camperdown, Timboon and Terang)

#**Urban excluding all Level V:** All metropolitan hospitals excluding Level III hospitals and those who have access to the Level III special care nurseries or neonatal intensive care nurseries (those excluded are Royal Women's Hospital and Frances Perry House, Mercy Hospital for Women, Monash Medical Centre Clayton and Jessie McPherson Hospital)

\***Level III term singleton births without complications:** Includes births in the Level III hospitals (Royal Women's Hospital and Frances Perry House, Mercy Hospital for Women, Monash Medical Centre Clayton and Jessie McPherson Hospital). Criteria for these births were  $\geq 37$  weeks gestation, singleton pregnancies without any maternal medical conditions or obstetric complications from the precoded check boxes on the perinatal form.



**Table 3.4: Birth weights in Corangamite Shire compared with other Victorian rural, urban excluding Level III, and Level III hospitals, 1996–2004**

	Corangamite		Other rural		Urban (exc. Level III)		Level III		Total
	n	%	n	%	n	%	n	%	n
<999 g	4	0.26	581	0.40	1380	0.49	1344	1.33	3309
1000-2499 g	25	1.65	6998	4.83	12330	4.36	4776	4.73	24129
>=2500 g	1489	98.09	137375	94.77	268873	95.15	94861	93.94	502598
<b>Total</b>	1518	100	144954	100	282583	100	100981	100	530036

$\chi^2$  results  $p < 0.0001$  (excluding Level III),  $p < 0.0001$  (including Level III)

Corangamite maternity services have fewer low and very low birth-weight babies than other rural hospitals and urban hospitals. This is a statistically significant result. It cannot be determined whether this result relates to a lower risk population, better antenatal care or better identification and timely transfer of high risk pregnancies.

**Table 3.5: Types of birth in the Corangamite Shire compared with other rural, urban excluding Level III, and Level III hospitals in Victoria, 1996–2004**

Delivery type	Corangamite		Other Rural		Urban (exc. Level III)		Level III		Total n
	n	%	n	%	n	%	n	%	
<b>Spontaneous Cephalic**</b>	1027	67.61	94265	65.01	173420	61.35	60892	60.29	329604
<b>Elective caesarean**</b>	204	13.43	17834	12.30	40402	14.29	12295	12.17	70735
<b>Emergency caesarean**</b>	125	8.23	15401	10.62	30382	10.75	12222	12.10	58130
<b>All caesarean</b>	329	21.66	33235	22.92	70784	25.04	24517	24.27	128865
<b>Breech*</b>	9	0.59	1108	0.76	1966	0.70	814	0.81	3897
<b>Forceps**</b>	51	3.36	8463	5.84	22400	7.92	9671	9.57	40585
<b>Vacuum**</b>	103	6.78	7915	5.46	14076	4.98	5106	5.06	27200
<b>Forceps &amp; vacuum</b>	154	10.14	16378	11.29	36476	12.90	14777	14.6	67785
<b>Unknown</b>	0	0.00	9	0.01	18	0.01	4	0.00	31
<b>Total</b>	<b>1519</b>		<b>144995</b>		<b>282664</b>		<b>101004</b>		<b>530036</b>

X<sup>2</sup> statistics: \* p<0.005 \*\* p<0.0001

Corangamite has a significantly greater spontaneous cephalic and vacuum birth and elective caesarean section rate compared with urban and other rural hospitals, and a significantly lower emergency caesarean and forceps birth rate as compared with urban and other rural hospitals. The total proportion of operative deliveries (forceps and vacuum) was lower in Corangamite than in the other rural or urban hospitals. Therefore in Corangamite women were more likely to have a birth without intervention than in other rural or urban maternity services in Victoria.

**Table 3.6: Apgar scores for births in Corangamite Shire, other rural, urban excluding Level III, and Level III hospitals in Victoria, 1996–2004**

Apgar score	Corangamite		Other rural		Urban		Level III		Total
	n	%	n	%	n	%	n	%	n
<7	26	1.72	2770	1.91	4766	1.69	2238	2.22	9800
7 to 10	1489	98.28	142005	98.09	277632	98.31	98621	97.78	519747
<b>Total</b>	<b>1515</b>	<b>100</b>	<b>144775</b>	<b>100</b>	<b>282398</b>	<b>100</b>	<b>100859</b>	<b>100</b>	<b>529547</b>

Corangamite's Apgar scores are not significantly different from those of other rural hospitals, urban hospitals or Level III hospitals.

### **3.4.2 Implications of Corangamite Shire Perinatal Statistics**

In conclusion, it appears that the perinatal statistics for Corangamite Shire maternity services are comparable to those for other hospitals with a similar level of service across the state. There is no evidence that maternity services outcomes in Corangamite Shire were poor in comparison to state-wide averages and there is no evidence that they are poor in comparison to the perinatal statistics for deliveries after thirty-six weeks in neonatal intensive care-equipped hospitals in Melbourne.

It is likely that prudent risk management on the part of the Corangamite maternity services influences these figures in that where possible high risk births are transferred to Melbourne hospitals. Osborne (180) argues that this transfer of high risk pregnancies antenatally misrepresents the relative safety of GP-run obstetric units. This data supports the safety of delivery in the Corangamite hospitals. Babies born in Corangamite between 1996 and 2004 were less likely to be of a low or very low birth weight and had equivalent Apgar scores as babies born in other rural or urban hospitals in Victoria in the same period.

The details of a small example do not allow generalisation to all examples. It is important to describe the particulars of the Corangamite maternity services so that this example is understood; but what is understood from study of Corangamite maternity services can only suggest what might be observed in other services, it cannot be used to definitively predict what will be seen elsewhere.

This chapter has described Corangamite Shire's geography and demography and outlined the model of care in Corangamite maternity services for 2004. Birth outcome statistics for Corangamite maternity services between 1996 and 2004 demonstrate that birth outcomes in these services are no worse than in other rural or urban hospitals. The four studies in this thesis examine the CMCN, which linked Corangamite clinicians and maternity services to provide quality assurance activities, education and workforce development across the several health facilities.

Chapter Four will describe the epistemology and ontology used by the researcher while Chapters Five to Eight report on three qualitative and one quantitative study of Corangamite Managed Clinical Network undertaken by the researcher.

## Chapter Four: Thesis Methodology

### 4.1 Introduction

This chapter examines the research paradigm of this thesis. An account is given of the ontology and epistemology underlying the choices made in the design of the research project, including a description of the relationship between the researcher and the object of study and the contingencies that influenced the study design. A narrative as to why this project was undertaken in this way is offered, and the mixed methodology used in this thesis is discussed. Brief reference is made to the methodology chosen for each study. Finally, an explanation is offered as to how this thesis complies with Australian regulations on ethical research. A detailed description of the experimental design of Studies One to Four is given in Chapters four to eight respectively.

In deciding that Corangamite Managed Clinical Network (CMCN) was worthy of study, the researcher faced a choice. What research methodology would most usefully examine the ‘where, what, how, and why’ of this phenomenon? The first choice to be made was whether to use qualitative or quantitative or mixed methodologies.

The research object is in the social world; it is a network formed of people, actions, activities, events and social organisations that existed irrespective of the research project. The relationship of the researcher to the phenomenon to be studied is not a detached, disconnected one but a deeply connected one. The researcher (as will be detailed later) was involved in the object of study and was able to make extremely detailed observations of it. The researcher was an integral part of the phenomenon under study; her abstraction from the field of action to a position of observation would have had a profound impact on the field of action. The researcher was unable

“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University 84

to perform experimental activities to test hypotheses about the network. She had neither the funding nor the political influence to structure a case-controlled experiment of parallel interventions in health service management. The classical experimental model which ‘excludes the stakeholders from dialogue and active participation in the research process’ (181) was therefore accessible to this researcher in this inquiry only in very limited ways.

We have entered the territory of qualitative research. This thesis seeks to make sense of a local situation. Denzin and Lincoln (181p3) refer to ‘the moment of blurred genres’ in an era, between 1970 and 1986, in the development of qualitative methodology, when qualitative researchers had a full complement of paradigms, methods and strategies to employ in their research before the voice of the researcher became a contested form of representation. They acknowledge that the several ‘moments’ of qualitative research that they describe overlap and also co-exist in the present. The moment of blurred genres is typified in the work of Clifford Geertz.(182,183) Geertz in sociology was followed by Harry Wolcott, Frederick Erickson, Egon Guba, Yvonna Lincoln, Robert Stake and Elliot Eisner in qualitative research in education. These researchers used naturalistic, post-positivistic and constructionist paradigms in their work to create ‘thick description’ of particular events, rituals and customs. Geertz (182p188) stated that ‘The central task of theory is to make sense out of a local situation’.

Miller and Crabtree (184) argue that space needs to be opened for qualitative methodologies such as those espoused by Geertz and others in clinical research ‘at the places where the questions of embodied and embedded lived experience meet clinical reality and current institutional structures and processes’.(p608) They cite Freyman (185) and McWhinney (186,187) as calling for a shift away from strictly positivist approaches towards a methodological pluralism, including qualitative research methods — a call for examination of the *emic* (the processes that occur in the mind) as well as the *etic* (the processes that can be seen in physical changes).(188) Miller and Crabtree (184) describe an emerging field of qualitative *clinical* research that is separating from the parent traditions of ethnography, phenomenology and grounded theory and is generating new hybrid forms of clinical research. This emerging research described by Miller and Crabtree addresses the clinical complexities of human behaviour in real environments.



The research question ‘What are the lessons learnt from the development of a Maternity Managed Clinical Network in a low volume rural context?’ seems ideally suited to such multimethod research, as proposed by Miller and Crabtree. The object of study is indeed an embodied and embedded lived experience that meets clinical reality and current institutional structures and processes. This thesis, following the path recommended by Miller and Crabtree (184), mixes qualitative with quantitative research to examine a natural world phenomenon, gaining more data about the studied phenomenon by using several lenses.

## **4.2 Validity in the Empiricist and Postmodernist Traditions**

One point of controversy between proponents of quantitative versus qualitative research methodologies is the means by which validity is established: are the results of a given study true? The conflicting ideas about how validity is established in the two methodologies will now be outlined. The intent of this discussion is to illustrate the differences that exist between quantitative and qualitative research ideologies as to how truth and reality can be judged, to justify the choices of methodology made by the researcher.

In quantitative research one examines whether an experiment is able to answer the question posed; one looks for confounding variables to decide if the experimental intervention in particular led to the variations in outcome described, or if those variations could have been caused by other variables. In qualitative research it is much more complicated.

Barbour (189) analyses attempts made to bridge the gap between the ‘validation’ of empirical science and the establishment of validity in qualitative research. He discusses what he calls the ‘technical fixes’ frequently used: purposive sampling, grounded theory, multiple coding, triangulation and respondent validation. He cautions that while these are useful, it is the rigour with which they are used rather than the methodology per se that validates or invalidates results. This opinion confounds methodology and tools for validation. Barbour’s technical fixes are actually methodologies, and it is not surprising that the truths of the findings are “Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University

dependent on the rigour of their application. Other writers (181,183,184,186) argue that it is not the tools of the researcher but the ontology and epistemology of the researcher that is at issue.

Questions of research validity relate to the epistemology (what is the relationship between inquirer and the known?) and the ontology of the research (what is the nature of reality?): how can we know what we know, and is what we know real? Qualitative research admits a wider definition of knowledge and reality than does quantitative.

In the empiricist quantitative tradition, scientific truth and knowledge about reality reside in rigorous testing of phenomena against a hypothesis. This testing is as devoid of human bias and misperception as possible.(190) This tradition can be traced from Francis Bacon and Descartes in the sixteenth and seventeenth centuries. It is termed positivist ontology, which is to say it presumes a stable, unchanging reality that can be known by empirical methods and in which ‘truth’ transcends opinion and personal bias.

In the twentieth century there were four major movements in qualitative research that turned away from the positivist paradigm. These movements were naturalism, social constructionism, feminist and critical theory, and postmodernism. These twentieth-century movements challenged and expanded the ways in which data is collected and analysed and how reality, and therefore research, is understood. The new movements grew from a belief that studying human behaviour changes that behaviour, and that our viewpoint alters what we can know about phenomena.

The movements in qualitative research paradigm will be described briefly to assist understanding of current arguments in qualitative research.

Naturalistic enquiry seeks to present the lives and perspectives of those being studied as faithfully as possible. It can be compared with field naturalism as practised by a naturalist. Social constructionist and interpretive approaches focus on interaction between humans and things and between humans, and propose that meaning is constructed and interpreted through interaction. The feminist and critical approaches challenged researchers to seek insight into the social world to help those studied

change oppressive conditions. Postmodernism holds that previous ways of knowing are no longer useful, that there is no one reality, but instead a number of different realities and ways of knowing, all of which are equally valid.(191)

One can summarise these movements and say that in qualitative research there has been a ‘postmodern turn’ towards a view of the social construction of reality, with fluid, as opposed to fixed identities of self and an acceptance of the partiality of all truths. This difference between the empirical and qualitative can baldly be described using the terms *etic* versus *emic*.

The rigid geometry of triangulation, a navigational concept often used in qualitative medical research to validate data finds no solid ground to stand upon in the postmodern landscape of multiple truths.

A simple way of describing the quest for validity in qualitative research is that for validation, qualitative research looks to the collection of rich, multilayered and reinforcing data. But nothing in qualitative research is simple. A postmodern ontology admits multiple co-existent truths. There are many ways to tell how the cat was skinned and what that meant. Guba and Lincoln (192) tackled this problem and propose criteria for judging the processes and outcomes of naturalistic and constructivist inquiries rooted in the axioms and assumptions of those same paradigms. Guba and Lincoln called these ‘authenticity criteria’.

Richardson and St Pierre (193) state that in contrast to positivist ontology, the core of postmodernism is the ‘doubt that any method or theory, any discourse or genre, or any tradition or novelty has a universal and general claim as the “right” or privileged form of authoritative knowledge’. (p961)

Guba and Lincoln’s *authenticity* criteria (they avoid the term validity which they say is ‘carried over from a positivist legacy’), are fairness, ontological and educative authenticity, and catalytic and tactical authenticity. They consider these to be hallmarks of authentic, trustworthy, rigorous and ‘valid’ constructivist or phenomenological inquiry.(192)

The authenticity criteria devised by Guba and Lincoln (1992) will be briefly explained. Fairness is a quality of balance: are all stakeholder views, perspectives, concerns and voices apparent in the text? Ontological and educative authenticity refers to a raised level of awareness in individuals within a study, and of individuals within a study about those who surround them or with whom they come in contact. Catalytic and tactical authenticities refer to the ability of an inquiry to prompt action, firstly on the part of the research participant, and secondly by the researcher training participants in specific forms of social and political action if participants desire such training.

Richardson and St Pierre argue that an appropriate image of the test of authenticity in qualitative research is the crystal rather than the triangle. 'Crystals are prisms that reflect externalities and refract within themselves, creating different colours, patterns, and arrays, casting off in different directions. What we see depends on our angle of repose- not triangulation but rather crystallization ... we have moved from plane geometry to light theory where light can be both waves and particles'. (1993p963) This thesis will, accordingly, in using multiple lenses to superimpose multiple views of the object of study, use crystallisation to establish the authenticity of the interpretations made from data collected. No one view of the object of study is more right than another, but with rigorous application of research methodology these views will be seen to be authentic representations of the phenomenon studied.

In qualitative research there is a strong argument that objectivity is a fiction. 'We are persuaded that objectivity is a chimera: a mythological creature that never existed, save in the imaginations of those who believe that knowing can be separated from the knower'. (1990p208) In qualitative research the imperative is that the researcher's paradigm, their ontological and epistemological framework, must be clearly understood by the reader. It is time to introduce the researcher in this project.

### **4.3 The Researcher's Stance**

This research project is deeply embedded in the real-life experience of the researcher. The researcher has been a rural General Practitioner (GP) obstetrician in the town of "Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context" Ruth Stewart, Doctoral Thesis, Flinders University

Camperdown since 1989. Not only has the researcher worked in the town, lived and socialised in the town, she has also been a pregnant woman within the Camperdown maternity service, and has birthed three times in Camperdown hospital. Furthermore, the researcher was born as a preterm infant in a small rural town and her survival beyond infancy can be attributed to the skilful care of mother and baby given by a rural GP obstetrician and midwives. From a very early age the researcher felt that timely, local care by doctor and midwife was important to the survival of mother and baby.

The researcher is therefore both observer of the other (doctors, midwives, women and babies) and the observer of self (doctor, woman and baby). She is observer of what is done by self, by others, and to self and others. The roles performed by the researcher during the research project were not restricted to observer. She was also a clinician, the medical adviser on the steering committee of the Corangamite Managed Clinical Network, the wife of one GP obstetrician, sister-in-law of another GP obstetrician, colleague and business partner to other GP obstetricians, and friend to several women birthing in the maternity services within CMCN. The activities within the Camperdown hospital maternity service have great significance to the researcher on a professional, personal and spiritual level.

#### **4.4 A Narrative of the Development of this Research Project**

As a rural GP obstetrician the researcher is regularly confronted by the limitations of what is known about rural maternity services in the academic literature and in centralised health administration. This researcher's original impulse to commence research was a naive belief that by performing a clinical audit of rural obstetric outcomes in her region she could demonstrate to the urban academic and policy making world — the 'world beyond' — that safe obstetric practice in a small low volume rural maternity service does exist.

In Australia there has been a concerted effort since the late 1990s to support rural health research and the education of doctors in rural areas. The university departments of rural health,(194) the rural clinical schools within medical schools,(195) and the regional training providers within Australian General Practice “Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University 90

Training (196) are examples of this movement. The Greater Green Triangle University Department of Rural Health at Warrnambool is 75 kilometres from Camperdown. The researcher sought assistance with the research proposal, and the director encouraged and supported her to start a Master of Science (research) at Flinders University. The research project was to be a clinical audit of the obstetric outcomes of the low volume rural maternity services of Camperdown, Terang and Timboon.

Between June and November of 2003 the researcher conducted a literature search of outcomes in rural maternity services. Thirty-two articles were found relating to rural obstetric outcomes. Of those only two described poorer outcomes for rural units compared with national or urban standards. Data to support the quality of rural outcomes was available. The clinical and political reality, however, was that GP-led rural maternity services were closing nationally and internationally at an alarming rate.(197-199) The socially relevant research question did not seem therefore to be about the quality of rural obstetrics. There were a lot of questions to be asked about how a rural maternity service could survive.

At this time the first steps were being taken towards the development of CMCN. The researcher decided in October 2004 to change her research project to ‘The implementation of a maternity service managed clinical network as an organisational structure to maintain high quality outcomes in a low volume rural context’.

The researcher made the decision because she believed that a publication of a pilot project, with an evaluation of clinical outcomes, could have more impact on rural health policy than another clinical audit which reiterated the safety of yet another rural maternity service.

Chapters five, six, seven and eight describe in detail what happened during the development of CMCN. The purpose of this commentary is to follow the metamorphosis of one research project into another. In September 2008 funding for the project coordinator ceased and there was no longer a person employed in that role. All network activities ceased and the maternity services returned to the manner of functioning in place before the development of the network. The clinical guidelines had only recently been adopted in Camperdown and there was no

coordinated clinical audit activity after the CMCN coordinator ceased work. These facts combined to make the planned study, which focused on CMCN's impact on clinical outcomes, unfeasible. The planned thesis could not be done. A revisioning of the research project occurred over the next eighteen months, acknowledging what data had been collected to date and what could be asked of that data. The current research question, 'What are the lessons learnt from the development of a maternity managed clinical network in a low volume rural context?' is a phoenix rising from the ashes of the previous study. At a time when the federal government is rolling out the new Health and Hospital Networks, a study of the lessons learnt from the development of a maternity managed clinical network (200) in a low volume rural context is most pertinent. All over Australia the question of how networks can be established — of what will work and what may not — are being pondered. It is intended that this thesis contribute to this discussion.

This study analyses data collected with the intent of answering earlier research question. This means that the practice of constant comparison (201) as practised by Strauss and Corbin is unavailable to the researcher as the data was cold.

It can be seen that the researcher is a pragmatist who works within a constructivist paradigm; recognising that there are multiple realities, she adopts a relativist ontology and a subjectivist epistemology, acknowledging that the knower and respondent together create understanding.(202) This paradigm has led the researcher to use naturalistic research methodologies — to study events in the natural world and to draw out data using multiple methods of investigation and analysis.

On the basis of this paradigm the researcher mixes methodologies: literature reviews to build an historical case; interviews and grounded theory in Study One and Study Four to assess what other actors believed about the maternity services and network; participant observation and narrative inquiry in Study Two to describe what happened and how; and, finally, a quantitative clinical audit in Study Three.

This mixed methodology follows Miller and Crabtree (184) who encourage the creation of research spaces where 'the questions of embodied and embedded, lived experience meet clinical reality and current institutional structures and processes'

(p608) to challenge the biomedical research paradigm that abstracts from the lived clinical realm where questions beg answers that 'have legs'.

## **4.5 Ethics**

This section will examine the application to this project of the legal requirements of Australian researchers who conduct research with human participants. It will discuss what the principles of those legal requirements are and how this research project abides by them.

### **4.5.1 Australian Regulation for Ethical Health Research**

The National Health and Medical Research Council (NHMRC) in accordance with the *National Health and Medical Research Council Act 1992* issues advice on ethics and related issues in the fields of health and human and animal research. The NHMRC takes advice on ethical issues relating to health from the Australian Health Ethics Committee (AHEC), the committee with responsibility for developing guidelines for the conduct of research involving humans.(203)

The NHMRC has established a review system whereby every Australian research project involving humans is reviewed by a Human Research and Ethics Committee to determine whether the proposed research adheres to general ethical principles and is consistent with AHEC guidelines. At Flinders University research involving human subjects must seek approval from the Social and Behavioural Research Ethics Committee of Flinders University and Southern Adelaide Health.

This research project involved two submissions to these bodies. In September 2005 approval was sought for the project in its first iteration. The project number of this first application was 3393. Final approval was granted in October 2005. In September 2010, approval was sought for a second round of interviews (project



4988) with key stakeholders in CMCN. Final ethics approval for this round of interviews was granted on 19 October 2010.

#### **4.5.2 NHMRC Principles of Ethical Research**

NHMRC AHEC guidelines state that the principles of respect for persons, research merit and integrity, justice and beneficence must be upheld in ethical research. These shall be examined in turn.

Respect is the central value; it must inform all interactions and relationships in any research undertaken. It involves recognising that each human being has value in their own right, acknowledging each individual's autonomy, and protecting and assisting any person with diminished autonomy.

Meritorious research is identified by its potential benefit for all participants and by its appropriate design for achieving its stated aims; it is designed with cognisance of the current literature in the field of research, and with respect for participants.

Research with integrity searches for knowledge and understanding following recognised principles of research conduct and disseminates research results without fear or favour, contributing to public knowledge and understanding.

A just research project takes into account the scope and objectives of the research when selection or exclusion of participants is made and those participants who are recruited are recruited without coercion or exploitation. In just research, participants have timely and clear access to the results when they are available.

Beneficence is a kind deed; an act that benefits someone else.(204) Research that benefits participants or the wider community while minimising the risk to them can be described as beneficent. In beneficent research, if the risks to participants are no longer justified by the potential benefits of the research, the research must be suspended and either discontinued or modified to protect participants.

The research project and its participants will now be examined with these principles in mind. Firstly, the quantitative study, Study Three, which is a clinical audit of

clinical outcomes within CMCN, will be considered and then the ethical dimensions of Study One, Two and Four, the qualitative studies, will be considered.

#### **4.5.3 The Ethics of Study Three**

The clinical audit of maternity service outcomes within CMCN de-identified clinicians and patients. It was acknowledged that individuals familiar with the services would know the names of practitioners working in a service, but it was not possible to tie individual names to individual incidents of care; privacy was maintained. All clinicians were invited to clinical audit meetings held as soon as possible after the data were collected. The clinical audit results reported in Study Three were discussed there. Many clinicians attended clinical audit meetings and participated in discussion. A code of conduct was agreed upon for clinical audit meetings and was distributed to all clinicians and at each meeting. (See Appendix Five.) Clinicians benefited from a detailed understanding of their service's performance and used these outcomes to identify professional development needs. The analysis of the clinical audit in this report abides by these ethical guidelines.

#### **4.5.4 The Ethics of Studies One, Two and Four**

In Studies One, Two and Four stakeholders and network participants were interviewed. In Study Two members of CMCN's steering and subcommittees were observed through participant observation.

All participants were respected. The opinions and contribution of all participants were valued equally; their actions were considered and interpreted acknowledging each individual's right to make their own decisions.

For Study One and Study Four, potential interviewees were sent letters of invitation asking them to participate. In these letters the purpose of the interview and research project, the intention to publish results from the project in academic journals and as a thesis, the identity of the primary researcher, and the identity of the interviewer were all stated clearly. Participants were then asked to respond by completing a consent form that gave them the option of consenting or refusing to participate. There was no pressure, coercion or reward for participation. Introduction letters were sent by third

parties and not by the researcher. The methodology used in analysis also afforded equal value to the contribution of each interviewee. The process of coding for grounded theory allows ideas expressed to contribute to theory development without consideration of the identity of the participant.

The privacy and confidentiality of each participant’s contribution to the research project was protected in several ways. All efforts have been made not to reveal the identities of interviewees or stakeholders in the thesis or associated publications. The primary researcher and all research assistants were aware of their duty to protect the confidentiality of all interviewees and participants within CMCN while handling the interview recordings and transcriptions. These have been stored under lock and key and in password protected computer storage.

**Table 4.1 Roles of researchers involved in studies one to four**

<b>Researcher</b>	<b>Research activities</b>
<b>Primary researcher</b>	<b>Performed literature review, analysis of CCOPMM data, coding and analysis of interviews in Studies One and Four, participant observation and analysis of participant observation data, analysis of clinical audit data</b>
<b>Interviewer 2</b>	<b>Conduct of interviews for Study Four</b>
<b>Research assistant 1</b>	<b>Statistic calculation of CCOPMM data, transcription of interviews in Study One, coding of interviews in Study One and Four</b>
<b>Research assistant 2</b>	<b>Transcription of interviews in Study Four, coding of interviews</b>

## **in Study One and Four**

In studying and reporting on CMCN, respect has been paid to participants, whose achievements have not been acknowledged elsewhere.

This thesis complies with the letter and the intention of the NHMRC guidelines on ethical conduct in human research.

### **4.6 Summary**

The mixed methodology employed in this study will build a multilayered, multidimensional and complex picture. A reader with a strictly positivist ontology will not find that the research results have been validated, but what is important is that the methodologies rigorously applied have built an authentic picture of the network. It is the researcher's belief that this picture illustrates the subject of study, the Corangamite Managed Clinical Network, to the benefit of those who would like to learn about what happened within it but did not take part in its development. Lessons could be learnt of the benefits offered by networking small health services and of the macrosystem support required for the success of a health microsystem,

## **Chapter Five: Study One — ‘Corangamite Maternity Services: What Was and What Could Be’**

### **5.1 Introduction**

Chapter Two examined the literature on clinical networks and quality of outcomes in rural maternity care. Chapter Three examined the context of the Corangamite Managed Clinical Network (CMCN) and Chapter Four the epistemology and ontology of the researcher. This chapter begins with a description of the methodology employed in Study One and then examines what clinicians in the Camperdown, Terang and Timboon maternity services perceived to be the strengths, weaknesses, opportunities and threats to their services before the establishment of CMCN. It also examines clinicians’ perceptions of how a maternity managed clinical network could address the shortcomings of existing maternity services at the time.

#### **5.1.1 Aim of Study One**

The aim of Study One is to explore the perceptions of key stakeholders of the strengths, weaknesses, opportunities and threats to Corangamite Shire maternity services as they existed before and during the early development of CMCN.

#### **5.1.2 Methodology of Study One**

Structured interviews were conducted with key informants within CMCN who had been influential or instrumental in the development of the network. Interview transcripts were then analysed using grounded theory. Approval for the study was sought and received from the Social and Behavioural Research Ethics Committee of Flinders University. Approval for project 3393 was granted on 17 October 2005.

#### **5.1.3 Participants in Study One**

Participants in Study One were purposively selected as leaders in the development of CMCN, either through their work on the steering committee or clinical leadership, or in their capacity as an adviser to the committee. The ten steering committee members had a thorough understanding of maternity services at that time and were familiar with the managed clinical network (MCN) concept. Seven participants in the

network were also invited to participate to broaden the scope of the opinions canvassed and to add another layer to the data collected.

All interviewees were over the age of thirty and under 65. Twelve (80%) of the interviewees were female and three (20%) male. Of the interviewees who were unable to be interviewed, one was male and one was female.

The interviewee group were representative of the gender, racial and first language incidence within the maternity services studied. All employed midwives and nursing unit managers in the maternity services involved were female. Two of the ten General Practitioner (GP) obstetricians were female and eight were male. Within the Otway Division of General Practice membership in the financial year 2005–2006, 75% of GP members were male and 25% female. One of the three executive officers was male and two female.

All of the interviewees spoke English as their first language. In Corangamite Shire in 2006, 1% of people were not proficient in English, 15% spoke English well or very well, and 82% spoke English only. None of the interviewees were of Aboriginal or Torres Strait Islander descent. In the Camperdown, Timboon and Terang communities 0.4% of the general population identified as Aboriginal or Torres Strait Islander in 2006.(205)

The interviewees were:

- one GP obstetrician
- one specialist obstetrician
- three nursing unit managers
- two hospital chief executive officers (CEOs)
- a CEO of the Division of General Practice
- a hospital director of medical services
- one academic medical practitioner with a research interest in rural medicine
- two employees of the Department of Human Services, Victoria (DHSV)
- a consumer representative on the steering committee
- the project coordinator for CMCN

#### **5.1.4 Instruments of Study One**

The interviewer asked participants questions which were developed to be broad prompts to the interviewees and were responsive to the issues in the literature on rural obstetrics. In retrospect it would have been ideal to respond to issues in the Managed Clinical Network literature as well, but in 2005 when the interview questions were drafted the focus of the study was on rural obstetrics outcomes rather than on managed clinical networks. The major review of networks by Guthrie et al (13) was not published until 2010 and could not be used to inform the questions asked in 2005.

The questions asked were:

**1.a** What do you think are the strengths of the maternity service provided at Camperdown/Terang/Timboon?

**1.b** What do you think are the weaknesses of the maternity service provided at Camperdown/Terang/Timboon?

**1.c** What do you think are the opportunities for the maternity service in Camperdown/Terang/Timboon?

**1.d** What do you think are the threats to the maternity service provided in Camperdown/Terang/Timboon?

**2.** Could you please explain to me what a managed clinical network is?

**3.** The ‘virtual obstetrics unit’ discussion paper written by Dr John Menzies in May 2003 described and proposed a model of maternity service coordination between the three hospitals in Camperdown, Terang and Timboon. The virtual obstetric unit model was subsequently adapted to the managed clinical network model. Do you feel that this emerging model offers solutions to each of the problems you have identified in this maternity service?

**4.** What do you see as the strengths of the managed clinical model for Corangamite maternity services?

5. What do you see as the weaknesses of the managed clinical network model for Corangamite maternity services?

6. What do you see as the opportunities of the Corangamite Managed Clinical Network?

7. What do you see as the threats to the Corangamite Managed Clinical Network?

If a response to any question was unclear to the interviewer, clarification was sought during the interview.

### **5.1.5 Study One Procedure**

All potential interviewees were sent a letter of introduction. Letters included a synopsis of the research project, indicated the purpose of the interview, and named the primary researcher as the interviewer. A 'consent to interview' form was included. Letters were forwarded by the relevant hospital administration or the Otway Division of General Practice. Letters of introduction also stated the confidential nature of the interview and what would be done with the data collected in the interview. Contact details were given for counselling services in case of distress as a result of the interview. It was stated that reasonable steps would be taken to de-identify individuals within the thesis or any papers to be published. Interviewees were asked to complete the consent to interview form and return it to the primary researcher in the stamped addressed envelope provided. All respondents replied within a month.

All seventeen potential interviewees consented to be interviewed, however only fifteen were actually interviewed. Two invited interviewees were unable to meet with the interviewer due to time constraints for one and leave occurring during the interview period for the other. One of the unavailable interviewees was the GP obstetrician member of the committee and the other a hospital executive officer. As there were already two other hospital CEOs being interviewed, the latter interviewee was not replaced. The GP obstetrician and the researcher shared an on call roster and this significantly reduced the time available for them to meet, and adding to the usual time constraints, the GP obstetrician took an extended overseas holiday during the



two months that the interviews were performed. It proved impossible to find a time to interview him. This has been a limitation of the interviews.

Interviews were held during the early development stage of the network, between 18 April and 2 May 2006, nine months after the first meeting of the CMCN steering committee, six months after the first education subcommittee and quality guidelines and protocols subcommittee meetings, and two months after the first meeting of the workforce subcommittee. Two educational events had occurred by that stage (see the CMCN Timeline). Interviews took approximately one hour. The interviewee elected the location of the interview, which was either their home or workplace.

Interviews were conducted by the primary researcher who was known professionally by all interviewees. The pre-existing relationship between interviewer and interviewee may have inhibited some revelations by some interviewees and facilitated others. On balance, considering resource constraints, it was felt to be reasonable to make this choice of interviewer for the first round of interviews. Discussion of the impact of a known interviewer is provided within the analysis. The interviews were recorded on a digital recorder and transcribed into Microsoft Word® documents.

For the purposes of confidentiality each of the interviewees has been assigned a pseudonym and will be identified by their pseudonym and broad role. These are as follows.

**Table 5. 1 Interviewees’ roles in CMCN and pseudonyms assigned to them**

<b>Role</b>	<b>Pseudonym</b>
Administrator	Patricia, Wilma, Geoff, Bronwyn, Kerry, Fiona, Susan
Midwife	Karen, Clare, Helen
Doctor	Margaret, Tom, Ingrid, Henry
Consumer	Elizabeth

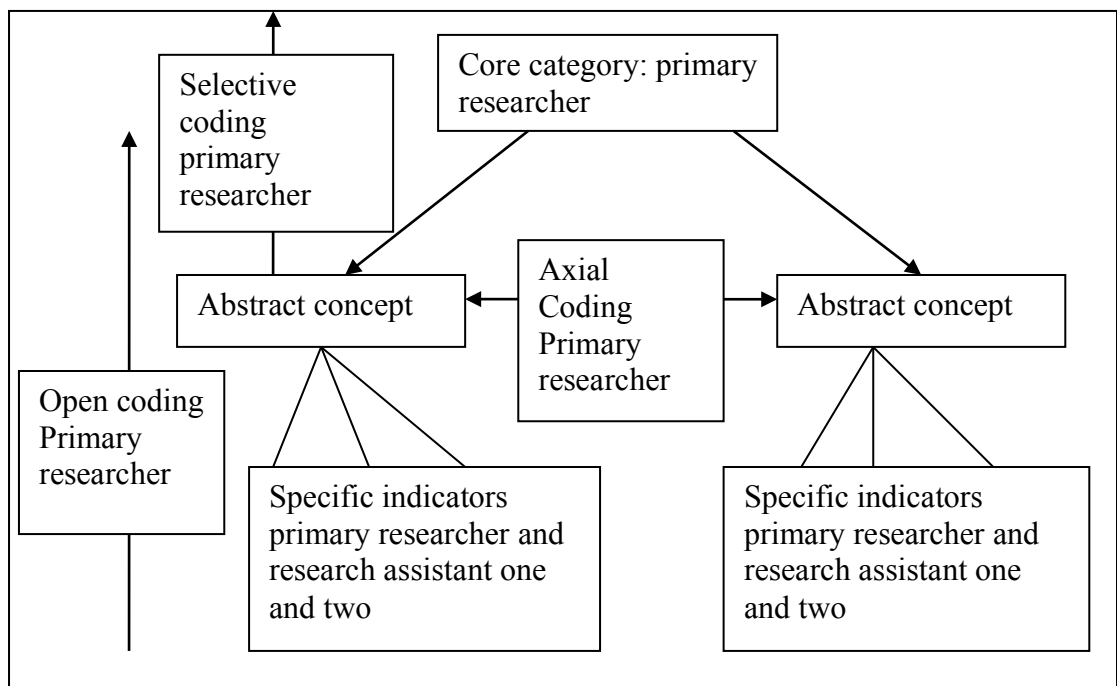
### **5.1.6 Study One Analysis**

The researcher used grounded theory to analyse the responses of interviewees. Two people independently coded the interviews. One coder used the computer coding software package NVivo®. The primary researcher and an assistant coder manually

coded the data following the grounded theory approach described by Glaser and Strauss,(206) adapted to computer use by substituting multiple open Microsoft Word® documents for handwritten cards.

Grounded theory as practised in this research was performed as follows (see Figure 5.1). The assistant first undertook exhaustive *open coding*, which is variously described as ‘fracturing’ or ‘breaking open’ the data to open up the theoretical possibilities within it. Analysing an interview in this way means identifying cogent phrases and assigning them a descriptor (*open coding*), then clustering these groups in larger thematic groups by finding links between the codes (*axial coding*). A computerised coding system and a manual system were used to broaden, as far as possible, the open coding. An assistant performed the time-consuming manual open and axial coding to allow maximum time for the primary researcher to perform selective coding and develop theories. This may have reduced the consistency of coding but it is accepted practice to have two to three people coding data.(201,206-208) With three coders, the integrative processes(206) of searching further for overlap, exclusivity or hidden meanings among categories are performed more broadly, allowing richer interpretations and increasing the reliability of findings.

The primary researcher then undertook *selective coding* by identifying the main themes emerging in interviews, which became the basis for a theory of what was discovered in the interviewing process.(207) In other words, using grounded theory the researcher determined theory thorough analysis of the data rather than testing data against a hypothesis formed before data collection, as in deductive research.(208) Figure 5.1 is a diagrammatic representation of the sequential process of open coding, moving from specific indicators to core categories.



**Figure 5.1: Representation of grounded theory analysis, from Punch(207)**

The data and theories developed in this first study were later analysed alongside data from the other studies to assess the consistency of participants’ perceptions with the official records. Theories developed in Study One about CMCN were compared and contrasted, weighed and judged against the theories developed in Studies Two to Four as a process of triangulation. This analysis is found in Chapter Nine.

In summary, the methodology of Study One was structured interviews with purposively selected members of the CMCN steering committee and participants within the network. The data from interviews were analysed using grounded theory. Theories about the existing maternity services and the impact of CMCN were then developed.

## **5.2 Data Analysis of Study One**

Results are presented for the open, axial and selective coding of the interviews about the strengths, weaknesses, opportunities and threats to maternity services in Camperdown, Terang and Timboon before and after the initiation of CMCN. Four major themes were identified, which can be broken down into subthemes as follows: “Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University

1. Networking
  - 1.1.1. Defining the network
  - 1.1.2. Inter-hospital relationship within the network
  - 1.1.3. Sharing workforce
  - 1.1.4. Continuity of service
  - 1.1.5. Relationship with ‘the Boss’ — Government, Department of Human Services Victoria and CMCN
  - 1.1.6. Model of care
    - 1.1.6.1. Consumer focus
    - 1.1.6.2. Longitudinal care of childbearing women
    - 1.1.6.3. Local versus regional care
    - 1.1.6.4. Visions for future models of care
2. Workforce
  - 2.1.1. Workforce shortage
  - 2.1.2. Workforce ageing and lack of succession
  - 2.1.3. Scope of practice and skills
3. Relationships
  - 3.1.1. Teamwork
  - 3.1.2. Pressure to centralise
  - 3.1.3. Clinical leadership
  - 3.1.4. Relationship of CMCN with the regional hospital
  - 3.1.5. Service adapted to the community
  - 3.1.6. Relationship of CMCN with the community
4. Other:
  - 4.1. Funding
  - 4.2. Safety, risk and quality assurance
  - 4.3. Education
  - 4.4. Change management

The interviewee quotations that follow confirm the themes developed by the researcher and illustrate the breadth of responses. Pseudonyms are used in all cases.

## 5.3 Theme One: Networking

### 5.3.1 Defining the Network

Interviewees were familiar with the Scottish National Health Service (NHS) definition of an MCN and had reinterpreted it in their own ways. These reinterpretations illuminate how each participant worked within the network and what they and their team valued.

*I should have done a little homework. Um, I'm just going to read you the original definition ... they are little groups of health professionals and organisations from primary secondary and tertiary care working in a coordinated manner unconstrained by distance, professional and in the case [of] Scotland's health board boundaries, that would be health service boundaries [in Australia], to ensure the equitable provision of high quality clinically effective services throughout Scotland. [Tom]*

Ingrid and Henry focus on the standard setting and quality assurance activities of the network:

*Well it's, ah, basically where a, a group of clinicians and, ah, the management associated with those clinicians, in, in different sites, um, ah, work together to develop consistent protocols and procedures with consistent credentialling, training and the ability to, um, work across the various campuses, organisations, so, um, that's really coordinating the workforce and the various policies and procedures. [Henry]*

For some interviewees the consumer focus was important:

*It is, is a collaboration of, of, health services where the main, the main aim is to share expertise and share resources, um, and obviously it's, it has to be, it has a consumer focus and ... basically it's built around relationships rather than structure, so it's, it's a collaboration but not, um, based on, um, the actual individual structures but ... [is] patient focused and looking for, obviously [it's] there to help outcomes. [Bronwyn]*

*The coming together of three hospitals in a triangle and utilising the services and sharing services, and maintaining services, and probably, um, enhancing services so that we can become a strong force in the community where we're*

*recognised and we're not a threat, I suppose, of losing any of our services ... and, um, I think you know, having that rapport where we can phone each other up and debrief or, you know, get together as a group is a really good idea. [Clare]*

Bronwyn's emphasis on relationships and Clare's comment about rapport is interesting. Relationships are not talked about in the NHS definition.

For some interviewees the three themes of education, quality assurance and model of care/workforce were interwoven:

*[It's] a network of health professionals working across a geographic location, um, with common processes and protocols, ah, and with access to ongoing education and skills maintenance, which is supported by the network rather than by individual, an individual agency or agencies. [Geoff]*

Patricia talked about cohesion and clear role definition in a network:

*For me the managed clinical network means that it is not ad hoc any more, it's going to be different ... it is going to have [a] pathway planned acknowledgement and referral system and that means that everyone knows where everything's going at the same time. Um, all along that continuum ... the network is bringing everyone together, the network is having three hospitals who are working together for those same reasons ... A doctor or a midwife walks into a hospital and they know this is what's going to happen, the path is set. [Patricia]*

Only two of the interviewees, Karen and Margaret, noted the role of management alongside the clinical role in the managed clinical network.

*It's set up to manage, um, the clinical services to our region and, um, seeing what each area has to offer and just bringing them all together as one big network and working in with each other and, um, working our services to help each other ... it is run fairly and evenly, it should look at everybody ... then, um, bring it all together as one big unit, one big network. [Karen]*

In summary, interviewees had an understanding of the network as it was originally defined by the NHS Scottish Executive.<sup>(7)</sup> All of the interviewees understood that a  
“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University

network links consumers and clinicians across services. Not all interviewees described all three themes of network linkage — education, quality assurance and workforce activities — but they all included at least two of these themes in their description of a network. There was concordance in their understanding of what a network is but the interviewees gave differing emphasis to the themes in MCN definitions. Some described the network as being built around relationships rather than structures.

### **5.3.2 Inter-hospital Relationships within the Network**

Clinical communication between the three hospitals in Corangamite Shire was uncommon before the network was established.

*Generally you live in Camperdown, you work in Camperdown, you live in Timboon, you work in Timboon and you don't come across each other quite as much I guess. [Helen]*

The network was seen by interviewees as a way of building relationships between the three hospitals. Even in the early stages of network development the relationships being built were seen by interviewees as a strength of the network. Relationships had been built between doctors and midwives and between clinicians at different hospitals:

*Initially ... it was hard to get people to come and, that's always difficult to get people to spare the time but I think it's a credit to the network that people have perceived the value, that they've actually come, ah, and come, come to lots of different events. Yes, and the, the building relationships between the midwives and the clinicians, the collegial impact that has had, um, across the three campuses, yep. [Bronwyn]*

*I think it's started people talking more. I think it's started them networking more. Like ...um, regardless of whether it's a managed clinical network or not, people have started networking Um, of course, we've got midwives now that all ring each other now and have the chat instead of just never making contact; with, you know, like Terang never ringing Timboon, um, or Timboon never ringing, um, Camperdown because they seem so South West ... I think that that collegial relationship is really important. [Patricia]*

Elizabeth and Helen also commented on sharing within the network. Susan, who works with the DHSV, saw an opportunity:

*The opportunity would be for them to be, to have I guess, um, have some working association with a large health service, creating some means of, um, referral patterns, communication a, education, whatever. [Susan]*

None of the other interviewees saw this as an opportunity; the regional hospital was seen to threaten their volume of practice, continuity of care and continuity of service. This will be discussed below under the theme ‘Relationship with the Regional Hospital’.

In summary, clinicians were drawn into stronger relationships as a result of the activities of CMCN’s activities.

### **5.3.3 Sharing Workforce**

Interviewees recognised that within CMCN there was potential to share workforce. This was seen as a positive aspect of the network:

*I think that, ah, the midwifery workforce issues can be addressed by working in a network approach. So, like across the network there’s something like twenty-one midwives, and by looking at different ways of organising the workforce it may be that, um, some of those ... midwifery workforce issues can be solved, ah, particularly when one considers that direct entry midwives are going to be the way of the future, so those midwives aren’t going to be able to come to work in any of these hospitals with the workforce organised the way it is today. [Helen]*

*So now they’ll have backup and the backup will be known to the team and people will be able to ... Um, and I think that’s going to be a really positive part of, of um, the network being managed. [Patricia]*

Sharing workforce does not, however, reduce vulnerability caused by reliance on key individuals:

*I think that it still relies on a few individuals who are procedurally trained and prepared to put themselves out to work at other hospitals. [Ingrid]*



Margaret suggested that CMCN was formalising pre-existing linkages:

*It's a formalisation of a process that had already been in evolution.*

[Margaret]

Sharing the medical workforce had occurred before the development of CMCN and the concept could be expanded to include sharing of the midwifery workforce within the network

#### **5.3.4 Continuity of Service**

Maternity services within Corangamite Shire continued when many other small maternity services around the state and nation had closed.

Helen pointed out that Corangamite's maternity services were all survivors of a decade and a half of rural maternity service closures:

*... they've all survived, that they all are able to provide local maternity services, ah, to women in the community. Um, the fact that they're all quite close together and that they have survived is a testament to, um, the commitment that the clinicians, both midwives and the GPs, have who work there given the number of rural maternity services that have closed, um, nation-wide in the last ten or twenty years.* [Helen]

Interviewees were aware that Corangamite shire maternity services could be forced to close, but saw CMCN as offering hope for services continuing.

*If the community is becoming smaller, um, and there's not as many people around, then you've also got that provision of service issue of people not having ... they're not using the service enough, you know once you're getting less and less and less service and, um, less and less and less emergencies, people will withdraw quickly no matter how fabulous the network is that you have set up around them ... if they're not using it they're losing it.* [Patricia]

*I think what's happening by having this managed network, it's actually prevent ... it's actually setting up a barrier to the threats really, because the things that people would be worried about, quality assurance, training of workforce, consistent standards — really the threat is probably if those things aren't done.* [Henry]

For interviewees CMCN offered hope that the shire's maternity services could survive into the future.

### **5.3.5 Relationship with 'the Boss' — Government, Department of Human Services Victoria and CMCN**

There was a high level of awareness among interviewees of the impact that political policy support or lack of it could have on rural maternity services. While Clare related this to government, most interviewees were concerned about the DHSV response to their maternity services.

*It's just continuing to maintain them and, you know, um, while we've got a Labor government in I think we're right, but if the powers change again it will be an interesting time. [Clare]*

*I think you know in this political time, at the moment you know the government don't want to close down obstetric services, they are letting obstetric services close themselves down, you know. [Clare]*

Some informants reported tensions between DHSV and members of the steering committee. These issues were considered inflammatory by interviewees, who only commented on them after the tape recorder was turned off. Patricia told the interviewer that some members of CMCN had been abrupt in their dealings with DHSV and that she herself had 'had to do some damage control' within the department. This comment has been reported after consideration of the consent given by the interviewee to be interviewed and to be a subject of participant observation. (209pp170,174) Bronwyn was concerned that DHSV representatives on the steering committee were too closely involved in the process; that as representatives of the funding body they could wield undue power over the committee. She observed that it was unusual to have a funding body involved at steering committee level. On tape Bronwyn said:

*... the questioning of our financial reports which I'm quite happy to provide and we do it on a regular basis ... but, um, to have to produce them monthly just seems to be over, er, be slightly over zealous in their, in their approach, um, and it, it gives you an uncomfortable feeling that you know, they're,*

*they're watching every, every penny, um, and I think it's unnecessary. There should be, I think, a more trusting ... ah, relationship. [Bronwyn]*

*Just that, um, influence of the funding body and, and, the, um, possibility it can have an influence on the agenda ... but I can ... I can't help wondering if that might have some impact on, you know, your results at the end of the day. [Bronwyn]*

No other interviewee expressed this concern. This may reflect Bronwyn's greater experience in governance in not-for-profit organisations as opposed to state government-funded projects. Wilma, who had more experience with DHSV-funded projects, was more concerned that DHSV did not seem to understand just how interrelated services were in rural hospitals:

*It's hard getting the message across to the department, I think, that so many things are interrelated, that if you stopped doing caesars then you close your theatre, then you, or if you stop doing surgery then you've only got your theatre for caesars and then they don't always see that interrelationship of having those skills and then you need the doctors who, like, to do anaesthetics, they might even look elsewhere in the longer term. [Wilma]*

Geoff felt that DHSV was waiting to see how successful CMCN would be:

*I have some concern that whilst DHSV are supportive of the development of the network, ah, I think they're hedging their bets or having an each-way bet; that they're prepared to put the money in to see it developed but if it doesn't work, ah, that also provides them with an outcome. [Geoff]*

But ultimately DHSV was seen by many interviewees as supportive of the network:

*I mean the DHSV potentially could have been a threat, that was proposed, but interestingly they seem to have picked some of this up as a solution to some of their problems, um, not only for maternity but, um, for, um, you know, the need to feed the things the managed clinical network can achieve. I would imagine that they've a whole bunch of them around, rural health services, that they think might fold but could work like Corangamite. So DHSV looks like it's in favour of it, it looks like they've put the money in. It looks like they want it to succeed. [Tom]*

*I'm delighted to hear that in Ballarat ... Chris Brookes himself [Chief Medical Officer for Victoria] mentioned the managed clinical network.*  
[Tom]

Interviewees from the DHSV were enthusiastic about the work of the network and believed that the department's support was very important for it:

*It's supported by the department which is a huge strength and I think that it's being, um, evaluated which is another strength because what will happen at the end of the day we'll have the evidence to prove that this is a model worth pursuing or that this is a model that's not going to work.* [Susan]

*There's one little hospital sitting out there not wanting to play ball for a while, and, um, I do have to say that I put a bit of work into going down and having some quiet visits without people knowing and those quiet visits will continue until I know that that particular agency is better on board, and you know those quiet visits are to let people ... share their thoughts and feelings, because that's really important.* [Patricia]

In summary, DHSV supported CMCN and had two employees on the steering committee. There were some anxieties about whether the support was, at times, interference in the activities of the steering committee. The DHSV representatives commended CMCN and awaited evaluation of the project.

### **5.3.6: Model of Care**

A 'model of care' is a multifaceted concept that broadly defines the way health services are delivered. It can therefore be applied to health services delivered in a unit, division or whole district.(210) Within CMCN a lot of attention was focused on how maternity care was delivered, by which clinicians, in each hospital and across the network. Three themes emerged in interviewees' comments about the models of care practised in Corangamite's maternity services. These were consumer focus, antenatal care and postnatal care. They will now be examined, followed by interviewees' vision for future models of care.

## **Consumer focus**

Six of the interviewees commented on the positive effect of the strong relationships that were being built between clinicians and consumers in Corangamite's maternity services.

The clinicians:

*'Cause we really care and, um, it's, it's more personalised, I think you'd probably say, and that where the mothers feel that they're not just a person in the bed or a, um, a statistic, they are somebody very important. [Karen]*

*The doctors really want to be at the birth so in one sense they're very happy to be on call because you know; they've been looking after this woman all through their pregnancy so of course they want to be there. [Helen]*

The consumer:

*Because you can see the same doctor the whole pregnancy and you can, you are dealing with a smaller number of midwives so they could become a very strong team and you could have a very positive, um, experiences. [Elizabeth]*

All of these interviewees see this as one of the great strengths of the Corangamite maternity service.

Margaret saw this relationship evidenced in the low caesarean section rate and high breast feeding statistics at her hospital. Helen believed that the quality assurance programs under development in the network could allow clinicians to respond to consumers and the community with confidence about the quality of the service provided.

Interviewees also referred to the patient centeredness of the model of care:

*We encourage all patients, all clients, to have a birth plan; not necessarily a documented one, but to, um, be able to feel free to discuss with both the, ah,*

*attending doctor and the midwives at booking in what their requirements and fears are with regards to the birthing process, and we attempt to address these through the actual labour and then, on, ah, if the birth plan goes perhaps awry, we encourage, ah, participation by both partner and client in the decision making that's involved. [Margaret]*

*The opportunities are probably from being able to provide a service that is low key as much as possible for women to experience in childbirth, knowing that she's got backup support from, um, medical services. [Fiona]*

Wilma comments on the level of patient satisfaction with the care provided:

*The first strength, I think, is how the patients and staff, the care that our nursing staff and medical staff give — that it's a very friendly service — that the patients feel comfortable, that, oh, the appreciation we get, oh, constantly you see every patient writes and thanks the staff. [Wilma]*

Interviewees also commented on consumer satisfaction with the scope of services offered, and there were positive comments about the facilities in Terang and Timboon.

The third aspect of the consumer focus of the Corangamite maternity services was the power that consumers had to choose or reject the service. In a small community, if the majority of consumers were to opt not to use the maternity service, the economic viability of the service would be threatened.

*Probably smaller hospitals are more prone to the sort of consumer sentiment possibly than big hospitals, you know even, even with a disaster at a big hospital you're not going to, it doesn't threaten the service where it can at small hospitals. [Henry]*

*Quite clearly if you're going to defend yourself you will only defend yourself on, because of patient's support and of course it's a service and that you can actually demonstrate it. [Tom]*

So in summary, the interviewees felt that the model of care in Corangamite Shire maternity services was patient focused; that clinicians were able to build strong

relationships around the woman, and by keeping women in their local community, enabled them to maintain their links to the community during pregnancy, birth and the postpartum period. The ability of consumers to choose to attend or not attend the local maternity service and the resulting dependency of services on the goodwill of consumers was also acknowledged.

### **Longitudinal care of childbearing women**

In Corangamite maternity services women could expect throughout their pregnancy, birth and postpartum care to see the same small team of clinicians who worked together closely.

*In terms of the continuum, in that like ... the community service manager but she's still kept in a maternity role in terms of education beforehand and then afterwards, following on from the maternity, um, ... we offer immunisation, we offer child safety [training], we are able to health promote those type of things to continue the role of people coming to the organisation and having the child maternal health nurse now located on site to work closely with her. We get involved with the new parents groups and from that we're recruiting people ... to go, maybe into the reading group we are now offering. [Wilma]*

*We have a, um, very good team, um, of midwives who are very well educated and, um, we can have a, we have very good follow-up. [Karen]*

The development of CMCN was seen as a chance to increase the participation of midwives in antenatal care.

*There would be the opportunity for, ah, GPs and midwives perhaps to work more closely together and for midwives to become more involved with, um, antenatal care and ... and also for midwives to perhaps become more involved in terms of assisting people during labour care. [Helen]*

Elizabeth, who commented on how personalised service was in the Corangamite maternity service hospital compared with the regional hospital, is not entirely happy with the antenatal advice she was given or with the breastfeeding support she received in a Corangamite hospital.

*There was just stuff that I wanted to discuss with the midwives. I felt they weren't necessarily aware of some of the books or things that I'd been ... that*

*I was, that was at the cutting edge of midwifery. I was reading lots of books that midwives had recommended to me and then I found I was saying 'what about this?' or 'what about that?' they, they, weren't necessarily aware of what I was talking about. [Elizabeth]*

In summary, care within Corangamite maternity services was seen as personalised and as offering continuity of care, although midwifery advice was not always current.

### **Local versus regional care**

Interviewees talked at some length about why consumers choose to come to Corangamite hospitals rather than hospitals outside Corangamite. Of the interviewees, the consumer, a GP and a specialist obstetrician commented specifically about how important it was for women to have a local maternity service in their community close to their home.

*The opportunities would be to strengthen the maternity services, and to get the experienced staff working with ... yeah, the, the, the knowledge base, um, working together, and working well so more and more of us can have our babies and remain in the local hospitals. There's a strength in that opportunity I guess for people to stay, stay where they wanna be and have positive labours and positive early parenting experiences with their children. [Elizabeth]*

*The strengths are that they allow women to be looked after close to home and they allow women to be looked after in a caring environment that's safer for their needs in those situations. [Ingrid]*

*Clearly the importance is trying to maintain a local service which, ah, fulfils consumer pressure, for when, at a time where there are, I suppose, specialist and managerial pressures to centralise things. So it's, it's, it's, resolving the difference between providing local services versus allegedly better centralised services. [Tom]*



Elizabeth, the consumer, commented on the contrast between the local small maternity service and the distant and larger regional maternity service where she felt she received less individualised care and was at a distance from loved ones:

*[In Camperdown] I had that maternity area to myself so the midwives only had one patient to focus on whereas I knew in Warrnambool there was many, many babies and you know the hospital was just busier. [Elizabeth]*

*It's just a bigger more foreign hospital where you don't feel like you know the doctors and all the nurses and it's, um, unnerving, or, um, increases anxiety, I guess, and that was the, one of the problems with going to a much bigger, busier hospital. [Elizabeth]*

Interviewees also felt that it was important to provide a maternity service close to the woman's home where they are known personally and the family could visit:

*They know the place well and they're passionate about it. Um, and I think the care that they get, they get a lot of one-on-one care, which you wouldn't get in a larger hospital. [Clare]*

*I suppose because it's local, um, and, um, not only access for the women, access for the family to visit, especially if you're milking morning and night, and it's easy to be able to pop in during the day to see your partner and the children off to school and probably allows for the extended family to not only visit but to probably look after kids, and whatever. [Susan]*

To have familiar faces among the team of clinicians is important to the consumer:

*Even though I was looked after by different doctors, because different doctors were on call over the weekend, I still knew those doctors through other appointments, so that was probably the, that was nice to know who, who the doctor [was] and be able to speak. Rather than having the teaching doctors [medical students, registrars and junior doctors] in the room with me as well. [Elizabeth]*

In summary, interviewees valued highly care for women that was close to their home, provided by familiar clinicians and recognised the whole life of the women concerned.

### **Visions for future models of care**

The establishment of CMCN was seen by interviewees as an opportunity to introduce more efficient ways of employing the skills of the existing clinical workforce, of utilising the new midwives who were not first trained as nurses, and of involving midwives in antenatal care to strengthen continuity of care for consumers.

*There is also a possibility that should doctors become overwhelmed by the on-call commitments, that there could be a rotation of, ah, labouring women so that although they are booked into Timboon they are actually booked into the Corangamite Managed Clinical Network and therefore delivery where the doctor on duty is. [Margaret]*

Midwives were most interested in the concept of caseload midwifery where a team of midwives takes on a group of women and commits to care for them through the course of their pregnancy, birth and postpartum, providing midwifery continuity of care. This model of care allows midwives to work in the hospitals solely as midwives rather than as both nurse and midwife.

*Yeah the caseload midwifery with the team, with the team approach, will be excellent for, um, the women, also the midwives involved in that model to get that follow through and that continuity. I think that will be great and I think it will also bring much better outcomes in terms of natural births and lower caesar rates and stuff like that. [Kerry]*

*Maybe set up the, um, team midwifery, which we were talking about the other day. I think there is, um, an opportunity for that. [Clare]*

The doctors struggled with other ideas, such as CMCN enabling the upskilling of midwives, involving midwives in antenatal care according to specific gestational markers, which they felt would be a more attractive model of care for new midwives:

*... to, ah, pool resources and, um upskill the incumbent midwives and encourage perhaps a younger clientele of ... midwives to the district, ah, having said that midwives have to be multiskilled at, ah, small facilities, so those dead set on midwifery will not be appropriate candidates because they need to be able to deal with the general ward as well. And also the ... perhaps more involvement of the midwife with the antenatal care has certainly been a model, ah, bandied about, about, ah, involving them in the antenatal care on, ah, specific gestational markers and therefore involving them more in the actual client's, um, needs. Which in turn would increase their involvement on a personal basis when they actually come into the hospital for labour and postpartum care so that's something that's in the process. [Margaret]*

*One of the possibilities is that, um, one can be more attractive as an employment opportunity, for example, those midwives who are keen to do midwifery only would be more encouraged by it because by the mere fact that there's a, there's three hospitals involved, that increase the numbers so therefore you should do a pooling of, um, midwife-only trained nurses. [Margaret]*

Several of the managers commented on the expectations of centralised organisations that were extremely difficult to incorporate into any rural model of care:

*The ANF [Australian Nurses Foundation] has made a comment to one of the hospitals that they believe that there should be two midwives in each shift. Again given that we've only got one birth a week, to expect two midwives to be rostered on, on every, each shift, err, doesn't hold a lot of logic. [Geoffrey]*

All interviewees were keen to see maternity services in Corangamite continue.

*Everyone in the model is committed for it to work because everybody has got their own, um, agenda in wanting to retain maternity services within their local area. [Susan]*

In summary, future visions of care were different between doctors and midwives but there was agreement that sharing of clinicians between services within CMCN offered greater possibilities of responding to changes in workforce skill sets.

## 5.4 Theme Two: Workforce

### 5.4.1: Workforce Shortage

*I feel like the workforce thing keeps attacking me with your questions [laughs]. No, do you know what I mean? It feels like it keeps coming out.*  
[Patricia]

The ‘workforce thing’ that Patricia refers to is workforce shortage. This was the strongest theme to come out of Study One. All but two of the interviewees discussed it, many referring to it several times. Midwives and GP obstetricians were low in numbers and in general it is difficult to attract them to small town hospitals.

*There’s not a lot of new doctors coming into the town that are doing obstetrics.* [Susan]

GP obstetricians were scarce, and specialist obstetricians were not going to replace them:

*The obstetricians do come fortnightly, but, um, you know, you don’t, they won’t, unless it’s a real, true emergency, they won’t come up and do a semi-emergency caesarean for us so we really are relying upon GP obstetricians.*  
[Clare]

While midwives are scarce, there was concern that the newly trained midwives may not have been appropriately trained for the roles that exist in Camperdown, Terang and Timboon hospitals.

*With the new midwifery model of training, um, midwives are now going off just becoming midwives and not registered nurses, or without the general training so they’ll be limited in what they can do.* [Henry]

The issue here is that direct entry midwifery courses do not require candidates to have a nursing qualification. Camperdown, Terang and Timboon hospitals rostered midwives on for dual nursing and midwifery duties. A midwife who was not also a nurse could not perform nursing duties. While the hospital required midwives for the

maternity service they also needed nurses. The existing model of care and roster structure required midwives to have both skills.

Both consumers and midwives saw that the existing dual certification of midwives could create problems for the maternity service. This impacted on care, as Elizabeth describes about her own experience, where her postpartum care was considered a lower priority when four victims of a single motor vehicle accident were brought into the hospital:

*... and on the Saturday morning those four people were transferred to the ... hospital — after the head on collision before they went to other hospitals and the nursing staff were very, very busy and it was the Saturday night I was transferred to, um, ... transferred to Warrnambool, so the fact that the hospital had to deal with such a multiple trauma and everybody in the hospital had to deal with that, like even the midwives. I think that morning I was becoming sick and perhaps they didn't realise what was going on.*

[Elizabeth]

A midwife also described the hierarchy of response for multiskilled midwives:

*I've actually been to ... hospital on one day when I was meant to have a meeting to see ... the nurse unit manager but she was also in charge of emergency that day and she was a midwife and there was a birth and an ambulance and our meeting got plunked off because it was not the most important thing to happen at that period in time .... she couldn't just pull herself into playing the different part and there was a midwife on call and she had been called in but she was an hour away and so it's a very integral problem that they have to face every day.* [Clare]

As a consequence of the shortage of midwives, two of the hospitals had some shifts where midwives were not rostered on for every shift. Midwives were aware of the stress this caused.

*... the number of midwives available to work and also the stress that the midwives are under, um ,to work more often, to work more shifts, to work more nightshifts as well. Because, um, I know they feel quite stretched when they come into a service and want two shifts a week and end up with four, especially if they have young families. So the difficulties are that even if we*

*can attract them we need to create an environment that actually keeps them here that they enjoy. [Elizabeth]*

*I'm aware ... the workforce is under considerable pressure really to keep these services going and [there are] not a lot signs that things are going to get better. [Tom]*

This pressure on both midwives and GP obstetricians was seen by many interviewees as a risk factor for burnout in clinicians, with dire consequences for the hospitals, not just for the maternity service.

*There's the threat of burnout for, um, midwives and GPs alike, which may thus be a contributing factor to the potential, ah, for closure of hospitals. [Helen]*

Clinicians were committed to the maternity services and this was seen as a great strength of the services by several interviewees. The regional obstetrician, many of the midwives and managers commented:

*you've got really good GP obstetricians and GP anaesthetists at all of those places. [Ingrid]*

*I'll stress there are very keen clinicians who are so well trained — the local community are very supportive — provide a good local service so people don't have to travel unnecessarily. Um, so I, I've got [a] keen workforce, skilled workforce, community involved, support by the, ah, hospitals for the ongoing services. [Henry]*

Interviewees' comments about education and professional development will be discussed in detail later, but several interviewees noted the impact that workforce shortage had on access to professional development for rural midwives. If it was difficult to find a midwife to staff a roster, it was even more difficult to find another midwife to 'backfill' that shift while her colleague attended an educational event or took sick leave.

*Who's actually able to backfill you to go somewhere and who's going to be there when you're sick? And if you've only got seven people and you need an*

*extra midwife and two are on holidays, well you're missing your numbers straight away. And I think that is a big issue for them. [Patricia]*

The personal financial cost of midwifery training can be a barrier to existing nurses pursuing midwifery training:

*The educational model of midwifery training differs] from what it used to be ... in the hospital and they, it was a paid course, so to speak, now they've got a, um, if they're not sponsored by a hospital it, it gives a big cost. [Karen]*

This must also have been an issue for GPs but none of the interviewees commented on it. It is possible that federal funding for procedurally skilled rural GPs to attend relevant emergency, obstetric and anaesthetic professional development,(211) which enables doctors to pay locums, made it easier for them to cover their absences. Another possibility was that the shortage of clinicians was more marked among midwives and that funding for a casual pool of midwives was less attractive to midwives than it was for locum doctors.

In summary, the Corangamite maternity services clinicians were seen by interviewees to be highly skilled but few in numbers. There was concern that the new generation of specialist midwives would not be able to work in the existing Corangamite maternity services model of care. Interviewees felt that this had the potential to exacerbate workforce shortages.

#### **5.4.2 Workforce Ageing and Lack of Succession**

Interviewees agreed that the workforce was not large enough, that it was ageing, that inefficiencies in the system made poor use of the workforce there was and that CMCN offered some hope for improving workforce status.

*... the ageing midwife population. We only run on a fairly, ah, skeleton staff so that it's, I would say, stretched to its maximum at the moment and if there's one midwife [who] left that would, ah, you know, at least one that could possibly make the facility unviable. And as mentioned, that they are tending to be, the majority of them would be fifty or over, so that means that they're ageing as well. [Margaret]*

Susan also commented on this:

“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University 124

*... um, because of the ageing workforce and the, um, inability to attract and recruit young midwives, um, the, ... exactly the same applies to, um, GPs ... the lack of opportunities for GPs to become proceduralists. [Susan]*

However, Henry felt that it wasn't so much lack of opportunity to train GP obstetricians as unwillingness on the part of many GPs to use the skills they had been certified for:

*I think there's still a lot of GPs trained in obstetrics but perhaps a lot not using their training. [Henry]*

Tom also pointed out that the workforce shortage was compounded by limited pathways for doctors to re-enter obstetric practice if they left it.

*The outcome for specialist and GP obstetricians or for the workforce is pretty limited. It's very hard to see, ah, how it would get anything other than worse unless we create certain pathways that track back into obstetric practice if you've already chosen to give it up. [Tom]*

The training of midwives was expensive.

*There really needs to be an influx in the training of midwives, currently things are only going to get worse, rather than better in the short term, I think, because of the small numbers being trained rurally to pursue specialisation in midwifery and other specialist nursing; because of the cost. [Geoff]*

If nurses could afford to train in midwifery, they might find it difficult to re-adjust to the model of care in their small hospital of origin:

*We send the girls to do mid and we find that, that's a great thing, but, um, our retention of those staff is then difficult because they get to bigger places they do mid exclusively and they get right into it and it's hard to get them back [laughter], unfortunately. Um, and the, I would hope that any model of care would help with that in that they would know they could come here and work, um, fairly substantial hours and only practise midwifery if that was what they wanted to do. [Kerry]*



Other interviewees echoed Kerry's hope that the models of care that had been talked about in the network seemed to offer hope for attracting midwives back to the Corangamite services. However, Patricia, an administrator, doubted whether this would happen:

*[It] probably isn't that big a catch for people to uproot their whole home and go to you know somewhere that's like Timboon, Terang, Camperdown, where there's other infrastructure issues in people finding jobs in general in some of those areas ... there's not a lot to suddenly draw you there. Ah, I could be wrong. I could be very wrong, and that would be great to see in five years' time, to see that people are being drawn there but I don't think it will [be] just this doing it. [Patricia]*

Interviewees also noted inefficient use and distribution of staff.

*We are the hospital with the least number of births but we've got the most midwives. [Clare]*

*[It's] that disjointed, for lack of people, you know, keeping their skills up, keeping their knowledge up and saying well actually I'm a lactation consultant and I could be doing that, but because I am point this and point that I'm not using that. [Patricia]*

There are other inefficiencies that increase the risk in small services. When a hospital relies on the small resident population of clinicians,

*The on-call commitments can become rather onerous in small country towns. Um, the other opportunity is to perhaps formalise the, um, the caesarean section roster so that we actually have ... know that there's someone available in the after hour period. [Margaret]*

Margaret was referring to the fact that her hospital did not have a formal roster for caesarean sections. She saw an opportunity through the network to make some formal arrangements to secure twenty-four hour cover.

Sometimes there was insufficient medical support to provide a maternity service:

*Shortly after [a visiting general surgeon who had been available for emergency caesareans] retired ... we would go on by-pass because we didn't*

*have a surgeon available when our mids came in, in labour. So, um, if we haven't got a surgeon, um, on call they need to, um, they'd go to Warrnambool.* [Clare]

Helen, Tom, Ingrid and Margaret all commented that they thought CMCN improved the attractiveness of the area for new trainees.

*... and it can also, by doing those sorts of things and creating joint education. they can provide the preconditions for midwives and GPs being able to move seamlessly between the three hospitals, which I think, um, could provide a solution to the problems around recruitment and retention of staff.* [Helen]

In summary, interviewees note that the workforce is ageing and that it is difficult to attract new GP obstetricians and midwives who are skilled and able to work in small rural maternal services. The existing clinical workforce could have been better utilised if there had been more formalised sharing of clinicians across the network. It was felt by interviewees that CMCN could be a more attractive model of care for newly trained maternity clinicians.

#### **5.4.3 Scope of Practice and Skills**

Geoff, Susan and Clare believed that low numbers of births was reducing the skill level of midwives, who worked fewer shifts:

*I suppose a weakness is our ability to provide educational opportunities and skills maintenance as much as we have forty births per year so it's quite possible that our nursing staff could go a full year and not have carried out a birth.* [Geoff]

Margaret, who is a doctor, had concerns about doctors who did few deliveries. She saw that CMCN offered the opportunity for doctors and midwives to train to expand their scope of practice. Clare echoed this idea:

*Um, I think to maybe set up the, um, team midwifery ... definitely enhancing obstetric services such as I know at the moment, for example, we're not or have never really done, um, trial of scars in Terang. Um, and I think it's something that the boys are probably looking at, you know, trying to control scars, because part of this network you know is increasing that.* [Clare]

This was a significant observation. There are few models in the literature for increasing the skill base in rural maternity services.

While interviewees were concerned about the skills of some individual midwives, among administrators and clinicians there was a sense of satisfaction with the skills of clinicians generally:

*I think that there is a really good skill mix within each of the hospitals.*

[Helen]

*Well the first strength I think is, how the patients and staff, the care that our nursing staff and medical staff give [Wilma]*

While Ingrid, Wilma, Margaret and Helen reported satisfaction with the level of service offered, Elizabeth, the consumer, had some concerns about the available assistance for breastfeeding and postnatal care and variation in services offered between the hospitals:

*I had trouble with breastfeeding and I don't think there was a lot of lactation consultants or, um, consistent breastfeeding support or help. [Elizabeth]*

*... I was researching and I found out there was some problem where I couldn't have an epidural at Camperdown hospital whereas I could have one in Warrnambool and I know that, I didn't really know what that meant at the time, but I remember thinking, 'Well what's all that about? Why can I get one in Warrnambool. Why can't I get that here?' Um, I think I also remember researching why, what the caesarean rate was at the Camperdown hospital compared to a much bigger hospital. [Elizabeth]*

It seems that the clinicians in Corangamite were performing well in relation to the targets they had set for themselves, but were not necessarily aware of all the issues of current debate for consumers. Kerry argued that the Corangamite clinicians were constantly improving their practice and that by using a broad scope of skills in their practice, offered a higher standard of care.

*Our midwives are very committed, um, as are our doctors, very committed to providing that service and keeping it going, very passionate about it, um, and very, very tuned to constantly improving themselves in their practice, um,*

*yeah, I think the best thing is probably just the holistic approach that we take to it ... that, yeah, there's a big broad picture and I think that people see that ... They can see if there are problems outside that we can often deal with those, um, perhaps things that would be missed in bigger places, and I think that's very important. [Kerry]*

This difference of opinion follows the lines of debate about the role of generalists versus specialists. A generalist sees the broader picture, caring for 'the whole, not just the holes' (212p4); the specialist, who concentrates on one system or problem, has the opportunity to keep abreast of all of the current debate and research in that area but may know little about other systems or diseases that may affect the individual. Each model of care had its proponents, even within CMCN.

In the Corangamite hospitals the specialist/generalist debate was irrelevant. The maternity services needs the services of doctors to be able to support the work of the midwives,

The network was also seen as enabling more efficient use of the skill set that was unevenly distributed across the network. CMCN was said to offer the '*opportunity to, um, share the expertise, pool the workforce*'. [Bronwyn]

One midwife commented on the potential for delivery of cheaper antenatal care for women in her community. The antenatal care provided by the GP required a co-payment by the consumer on top of the Medicare rebate. Antenatal care provided by hospital midwives would be free to the consumer.

*We're about to start the shared care, where there ...is, um, three visits, three visits with the GP, and I think that's going to be a big asset. Particularly for women that, um, going to the clinic is not all that cheap. They don't see it as all that cheap. So therefore if they can have three visits charge-free, I think that's, that's ... Um, particularly for our younger mums, some of them actually do go to Warrnambool because they bulk bill them down there. [Clare]*

In summary, most interviewees felt that there was a good mix and high quality of skills within CMCN and that CMCN offered opportunities for clinicians to expand their scope of practice. But there was some concern that there were clinicians who had a lower caseload and did not practise their skills as much as they needed to, and also that some midwives were not abreast of current issues.

## **5.5 Theme Three: Relationships**

### **5.5.1 Teamwork**

Teamwork was considered by the interviewees to be one of the strengths of their maternity services. The activities of CMCN were seen as strengthening the teamwork both between midwives and doctors and between clinicians in different towns. This said, there were guarded comments about the traditional dominance of doctors in the maternity service and network and the possibility that medical leadership of CMCN could equate to dominance in CMCN.

*The strengths are a, um, are the, the committed and mo ... motivated workforce that was, um, what we felt was generally across the board, um, who worked well together in teams and the GPs and midwives, um, seemed to respect each other, ah, and there's no great feeling of conflict. That, that, that was our general view. [Bronwyn]*

Patricia talked about the role the network could play in strengthening team bonds.

*They're all starting off with the same language, the same ballpark, they've had the same education, they were given the same, um, reasoning. They talk, they talked about the same antenatal screening, the same issues and discussions where the, you know, were free. Um., and I think that's healthy because you're not an island any more, you've got people working together, people who can then rely on each other and say well, when we talked about that, or when we did that, or remember we said we were going to do an extra antenatal session. [Patricia]*

As the discussion of the education theme shows, the role of shared education in strengthening team bonds was felt to be important.

There was some concern that initially CMCN was dominated by doctors and that this inhibited the multidisciplinary focus of the network and team building potential. It is possible that this was a stronger sentiment than emerged during interviews as some midwives may have been inhibited in expressing such concerns to a doctor.

Tom refers to a traditional scenario of doctor and midwife antagonism and pointed out that CMCN was consciously trying to overcome that legacy:

*Well midwives and doctors, particularly GP obstetricians, at times feel at war, you ... there's a lot of turf that's been fought over the years and in many ways this may actually evolve over the years simply because we're trying. I mean the protocol [clinical guidelines] after all is a negotiated agreement and simply the process of negotiating an agreement about how we are going to look after a patient in itself improves the team working and respect. [Tom]*

Patricia also commented that knowing there was backup for individual clinicians across the network was one of the network's great strengths.

CMCN was seen to be reducing the isolation of midwives and doctors in the Corangamite hospitals by improving communication.

*...less isolation, also good for doctors and nurses to feel that when some, a difficulty they had in one hospital, they hear that their peers may have the same sort of problems, and provide a network of people to talk about, you know, talk about issues, get a bit of peer support. [Henry]*

*And all that's part of it, that you're not working in isolation, and because our numbers are not great, even between the three of us, that gives the numbers you know to be ... [the doctors in the town] they've also got themselves and [another town] to talk issues over with. [Wilma]*

Clare saw that reducing isolation was dependent on the continuing activity of the network, which was dependent on the ongoing employment of a project manager. In summary, interviewees felt that CMCN was strengthening the existing close teamwork within Corangamite maternity services but they had some concerns that doctors had dominated the initiation of the network. It is possible that some felt that

“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University 131

doctors were continuing to dominate the network but this was not actually expressed. Interviewees did believe that the educational and quality assurance activities of the network had potential to build team bonds. These strong team bonds, it was felt, could possibly counterbalance traditional patterns of medical dominance within teams.

### **5.5.2 Pressure to Centralise**

Tom perceived a pressure from management and specialist obstetricians to centralise maternity services to the regional hospital. He believed the Corangamite maternity services were vulnerable to closure.

*So the centralising tendency both from managers and specialists are operating against us. Um, any sort of, ah, excuse might [be] used to bring that about in, ah, Corangamite and you've got three boards of management involved. It only takes one of them. The fact is, the fact is, you've got a house of cards, only one card comes out and the others fall under, I guess. [Tom]*

### **5.5.3 Clinical Leadership**

Interviewees considered clinical leadership within CMCN to be very important.

*The general strength in Corangamite is that it's led by the clinicians and that it brings together in the, in this case medicine, nursing including midwifery, together for common clinical practice. So in, in health services that are generally driven by finance and managerial broom, it's a way of providing a counterbalance where that, that stuff doesn't really interest them and it probably bores the hell out of them and they probably don't see the point, a purpose, a good exercise. Um, so this brings people together, um, to serve a common purpose driven partly out of the need that, you know, it's about survival of service stuff, but also people who do get fired up, the idea of improving the service. So it's a huge movement for the multidisciplinary teamwork I think. [Tom]*

Some, such as Susan, thought that medical leadership had been a strength of the work in CMCN:

*There's a commitment there, there's no ... you know, the medical group aren't being dragged along, or being, you know, coerced into it, they actually are driving it and are committed to it. [Susan]*

But others were looking for leadership by midwives or combined leadership of doctors and midwives. There were also different understandings of what clinical leadership was.

No individual was given the title of clinical leader of CMCN, but there were several individuals who could have been considered clinical leaders of the network. These people were:

- the chair of the steering committee — one of the GP obstetricians
- the project coordinator — a midwife and in many ways the public face of the network (she carried out the directives of the steering committee, organising educational events, audit meetings and meetings to discuss workforce models of care)
- the interviewer–researcher — medical adviser to the steering committee.

The presence of the medical adviser as interviewer is likely to have meant limited expression of negative sentiment about the medical leadership, and possibly about any of the network leadership team in general because of her association with other members of the leadership team.

Patricia, a DHSV employee, considered the project coordinator to be the clinical leader and was concerned that there would be loss of direction in CMCN if funding for the project coordinator position was withdrawn.

*It's been playing on my mind for a little while now that you need a key person selected, and a key midwife selected in each agency, and a leader for the GP division, to have a person who is also part of their profile. You have someone that ... it's their role to keep an eye on what's going on, 'when are those protocols meant to be reviewed?', um, 'when are we, you know looking at further education?', um, so when that project coordinator position is no longer there, it's not only up to the [Director of Nursing], you've got people that are either unit managers or midwives and GPs that are working within the network, um, that have maybe, um, a meeting maybe four times a year, you know, once it's sustainable it should be ongoing ... So keeping people within those agencies that are important and integral to those, um, those agencies and having them with a bit of a profile, that they should be looking*



*at this ... you know, being the keeper so to speak ... As soon as the project officer leaves they can fall over so quickly, because there's no one bringing it back home. [Patricia]*

Patricia paid tribute to what she saw as the innovation and vision of the leading clinicians at the beginning of the project:

*I look back at that first meeting ... I came back and went and said, 'This is amazing' ... and talked about, about it and you know, how fabulous that, um, that the doctors and midwives and hospitals down there were so innovative, you know, they were all called. I don't know what part you played back then, um, but you know, you were running forward, running forward, and acknowledging this is a deficit. That's a big thing to do. [Patricia]*

Susan, who was also a DHSV employee, believed that enthusiastic clinical leadership was vital to the network:

*So that's a threat, um, the threats are, um, doctors leaving or becoming ill or whatever, not being able to continue in the model, not being able to recruit somebody with the same commitment, energy, if I can use the concept. Um, I think the biggest threat is one or even more parties deciding they don't want to be part of it ... to complete it, um, I guess ... The threat would be whether we've got it to a stage when the [funding for the] coordinator's position runs out, that it can continue to run on its own. [Susan]*

Both Susan and Patricia were looking forward to a time when the project coordinators position would not be funded. This was not a future that other interviewees considered. Wilma was concerned about personality clashes within the network causing network dysfunction:

*So with the right personalities and the right will, that gives it a strength but it also has that threat that if one or two people are prima donnas or don't see the need to cooperate that, that could be its weakness. [Wilma]*

Patricia also had concerns about personality clashes adversely affecting the activities of the network:

*There's still that thing in the back, with people feeling a bit of fear and just people, um, you know, like this one agency, who's particularly feeling a bit threatened, and um, and that personality-driven stuff.* [Patricia]

In summary, interviewees thought that clinical leadership was important, but there were varying opinions about who the clinical leaders were in CMCN and therefore what the relevant issues were. It is possible that the interviewees' limited negative comments about the medical leadership of the network was the result of the interviewer also being medical adviser to the network.

#### **5.5.4 Relationship of CMCN with the Regional Hospital**

Interviewees reported tensions between the regional hospital and the hospitals within the network.

The regional specialist obstetrician, Ingrid, referred very hesitantly to tensions between hospitals about transfer of patients. It is possible that she was conscious that the interviewer was a GP obstetrician within CMCN and did not wish to offend by making unfavourable remarks about GP obstetricians.

*Ingrid: [sighs] Um, an issue that I, I haven't actually seen it come up, but ah I, I, it's a potential issue that you see in all sorts of services, is just, um, ah, hospitals that want to hang onto their own services, and, ah, look after their own patients, it's a potential problem. I haven't really seen that it's been a problem yet.*

*Interviewer: Ok, so not follow reasonable risk assessment processes and transfer.*

*Ingrid: No, no I wasn't really thinking of that. I was just thinking of, um, of what's the word? [pause] Ah, [pause] um, can we just turn it off?*

*Interviewer: Um, that's alright. I think there's a pause on [the recorder is paused and then restarted] ... I'm sorry. Are you thinking of retention, you know, for each hospital wanting to keep their patients and not allow them to go to another hospital or not see another doctor just in case they transfer?*

*Ingrid: That would be part of it but I'm just thinking of hospitals can be very, you know, territorial or ... or, or, ah, the wanting to serve their own interests rather, um, than be cooperative. ... But I'd really, am not putting this*

*particularly onto, you know, those two hospitals, but I just think it's a problem generally that people want to maintain their own territory.*

Ingrid speaks most respectfully of the skills of the Corangamite clinicians. Kerry and Tom, however, do not feel that the scope of practice or skill level of CMCN clinicians is completely understood or respected by the regional hospital clinicians.

*I think that it's realistic to say that, um, while we're amalgamated with South West Healthcare, Warrnambool do pose a threat. I don't think, to a certain extent, um, they have any comprehension of what we do here, or what we can do here, or of the skill level of our GPs. I don't think they've really got any idea. [Kerry]*

*Then the final threat would be that the hierarchical mentality of South West Healthcare gets in the way and they consistently disrupt it [CMCN]. [Tom]*

There was no more detail in interviews about these tensions. Fiona hinted that they had experienced criticism of their service from the regional hospital. The stimulus for Kerry and Tom's belief that the regional hospital's clinicians did not respect CMCN clinicians' scope of practice and skill level, cannot be not elucidated further on the basis of these interviews.

Margaret believed, in contrast to Tom, Fiona and Kerry, that the regional hospital needed the smaller maternity services to continue intrapartum care.

*They could only see it as, as a, um, as a positive because it would help reduce their workloads too. I'm thinking of the bigger centres that ... I mean if, if we fail here they're going to have to pick everything up and of course then it doubles their workload. So it's to their advantage, um, to make sure that it doesn't fail. [Margaret]*

Interviewees talked at some length about factors they believed would make Corangamite consumers choose to go to hospitals in Corangamite rather than hospitals outside Corangamite. They were reporting some of the reasoning that they used to justify their resistance to pressures to centralise maternity services to the regional hospital. 'Whole woman' care was seen as important:

*We can just concentrate on the, um, midwifery part of the experience of the family unit. ... So doing the role of the mother, and the role of women in the household and ... yeah. [Fiona]*

Interviewees also felt that it was important to provide a maternity service close to women's homes, where they are known personally, and so the family could visit.

Tom spoke of clinicians' commitment to answer pressure from consumers and continue to provide local service and Clare commented on maternity care for women from Cobden and Mortlake, towns in Corangamite Shire where there are doctors but no acute in-patient hospital beds and no maternity service. Doctors in these two towns commonly refer pregnant women to the regional hospital for maternity care.

*We do have a bit of a ... Well we are the Terang–Mortlake health service ... but we really can't get our foot in there because ... the Jameson Street [clinic] refers them all to Warrnambool ... It's about fifteen to twenty mids a year, we're losing. [Clare]*

*Cobden's a grey area for all of us. You know quite a few of those go to Warrnambool. [Clare]*

Clare was concerned about Mortlake and Cobden women's opportunity to birth nearer to home, but she was also concerned that her hospital had a low number of births and she wished to increase the hospital's caseload by keeping as many of the low risk births in the area as possible.

There were tensions between CMCN maternity services and the regional hospital that were not entirely explained in these interviews. Interviewees felt strongly that the provision of local maternity services was important to consumers, for a variety of reasons, and the consumer interviewee supported this in her comments.

### **5.5.5 Service Adapted to the Community**

The interviewees considered provision of general services to their local community a high priority.

*So it's a whole concept that you're there to service your community, that you provide every service for your community. [Wilma]*

The hospitals were dependent on the doctors for the delivery of acute medical care. To maintain their own acute services, each hospital in the network relied on the other hospitals in the network to continue to deliver acute care.

Karen saw an opportunity for CMCN to value add to the existing level of service:

*To have, to have set up a fantastic service to the community ... um, something that offers them what they've got now plus , plus more ... more opportunities, more ... Um, well services and, um, alleviate concerns of the public that the they're going to lose their services. [Karen]*

But Helen saw a risk:

*I guess there's the, ah, possibility that someone like the DHS[V] might say well we don't need buildings; we can't have a maternity service; there are only 150 births a year; perhaps we can locate them at one or two hospitals. That would be another threat. [Helen]*

The provision of general services to the community was valued highly by interviewees and maternity services were a part of that service. A maternity service could only be provided where a general acute service existed.

### **5.5.6 Relationship of CMCN with the Community**

Interviewees had a strong feeling about the Corangamite maternity services and CMCN being deeply imbedded in the community.

*For midwives, for doctors, you would have people in the community, in the community ... you know, that longitudinal knowledge of the family ... people that know the family for a long time ... um, if I can, do I name names or? ... Someone like [GP obstetrician], he could tell you about most families in that district, area. Um, because he has had something to do with them for a long time and he knows the history and so patients feel very secure with that because they know that their local doctor has a real good understanding that although this person has, um, come in as a maternity patient their father has cancer or their, um, that their mother runs the local newsagency or whatever. They know the family. Um, and then you watch the children grow and they*

*become your patients later. The midwives have that second round of, um, generation as well and I think that's a beautiful part of that, of that sort of township for those small ... There are lots of implications of privacy and stuff that also come into it but I think most people handle that in a professional way. [Patricia]*

*... being small and being rural, living in a community and seeing the progress of the women and the babies after the birth and knowing them before and also seeing them come back and have their second or their third, and just watching the development of a family unit. [Kerry]*

Interviewees recognised that clinicians in small communities know many individuals in a community; that they know the ties that bind those individuals to one another and to themselves. Interviewees had a sense that with this knowledge there also came a connectedness and responsiveness to the community.

*It's more intimate, people know the GP, know the midwives, they know the nurses, um, peoples' roles are clearly defined, um, and most of the time you would be meeting people in the street. You would have midwives saying um, they have met a patient in the street who thanked them again for the delivery of their baby, or you know that more intimate relationship. Um, I think that's a massive strength. [Patricia]*

There was a sense that mutual knowledge among clinicians drew out a deeper level of responsibility for the care of individuals in the community.

## **5.6 Theme Four: Other**

### **5.6.1 Funding**

Interviewees did not expect funding to come easily or in large amounts.

*Oh, Um, I suppose money is always a weakness. Not enough of it. [Clare]*

Funding for CMCN could disappear:

*It's been taking a long time to get it all implemented so I guess there's a possibility that funding runs out or interest runs out. [Ingrid]*

Bronwyn expressed concern that the DHSV as funding body had a conflict of interest being on the steering committee:

*The involvement of, um, the funding body, um, could be perceived as a, as a threat, um, if it, you, it's influenced to just basically, um, if, if it comes over as a fixating of the agenda or, or using purse strings. [Bronwyn]*

No other interviewee expressed this concern.

Interviewees expressed a hope that the establishment of CMCN would increase the ability of the Corangamite maternity services to attract funding.

*You know, it's a success breeds success ... If you can create the success you will pull in the resources. You'll have done more, you'll attract midwives, attract the young GPs, all the, you'll go against the tide in other words. Inevitably if the funding's under pressure with workforce and GP obstetrics and maternity midwives, the people who planned this are obviously going to do the best — only way you can win.[Tom]*

*... perhaps more likely to fund and support by having a model that's, rather than just handing out training money or equipment money, um, handing it out with the proviso that there's a nice model, a network model that can be used, it's more likely that they'll support, fund it. [Henry]*

Henry suggested that funding was required to attract suitably trained clinicians:

*Ah you may want to put some funding into attracting GPs to rural areas, you may want to put more funding into training because you can be comfortable because there's a good model. [Henry]*

DHSV employees Patricia and Susan both expected the time would come when ongoing funding for the network would be withdrawn. Clare and Ingrid believed that loss of funding would cause the network to cease to exist; other interviewees hoped that CMCN would build on its initial success and attract funding into the future.

### **5.6.2 Safety, Risk and Quality Assurance**

Interviewees expressed concern that there was inadequate understanding by external bodies of the activity of the Corangamite maternity services. They were aware that there was inadequate data about the safety of Corangamite maternity services.

Generally they did not feel the services to be unsafe; however, without data, the power of anecdote was not enough, and one disaster could force a hospital to close.

*They don't actually have any concept of what we actually do. I think that's probably vastly obvious every time I come here [laughter] and I, I think that is real, that yeah, they certain ... they don't have any idea and I think that their very narrow attitude about us being unsafe and stuff like that, it's just unfounded. I mean we don't want to be cowboys. I mean we certainly don't want anything going wrong with any of our women. [Kerry]*

*... so it [CMCN], really addresses some of those, um, perceived and actual weaknesses of obstetrics in country areas. It will help with, ah, morale in workforce, help quality activities and demonstrate safety, um, um, demonstrate to, not just the clinicians, the management, that, ah, obstetrics can be done more than safely in the country areas. [Henry]*

*There is a feeling that small country hospitals should not be providing, um, complicated obstetric care and the feeling is that if we ever had a case in which there was some apparent mismanagement that that could lead to. ....lead to. Um, great criticism of the service provided, despite the fact that we have had a pretty good run ... so far. In other words, if, um, we had a Nhill experience<sup>1</sup> with the inadvertent administration of the wrong drugs, that would certainly close the service. [Margaret]*

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<sup>1</sup> On 18 August 2002 a baby was stillborn at Nhill Hospital in rural Victoria after a midwife gave a woman an injection of the wrong drug during labour. See: <http://www.theage.com.au/articles/2004/08/30/1093717912611.html?from=storylhs>.



Interviewees identified various risks in the Corangamite maternity services. These included the vulnerability of relying on the practitioners in another town for caesarean section services and unclear lines of referral, lack of blood bank facilities and some limitations to ambulance services.

Margaret: *We don't have an ambulance service either, which is a bit of a drama. It hasn't been a problem with the obstetrics but one day it could be.*

Interviewer: *So it's a voluntary ambulance service?*

Margaret: *Yeah ... so then they're volunteer ambulance drivers so they're not paramedics or anything like that.*

Tom was concerned that there was too much vulnerability in Corangamite's maternity services:

But Ingrid, the specialist obstetrician, supported the safety of the Corangamite services:

*They allow women to be looked after close to home and they allow women to be looked after in a caring environment that's safe for their needs in those situations.* [Ingrid]

*Care is continuing to be provided locally in a safe way for the women.*

[Ingrid]

Interviewees agreed that before CMCN was created quality assurance activities within Corangamite maternity services were inadequate. CMCN created the opportunity for regular quality assurance activities and this was appreciated.

*I think about, um, having, being able to, um, get a real handle on the actual quality of the service delivered. I don't know about hearsay but there's, there's no real evidence ... or documentation to show us that, you know, it's a quality service.* [Susan]

Henry, who was an administrator, supported this view but was very hesitant in expressing it to the interviewer. He may have felt that this assertion implied lack of belief in the interviewer's clinical acumen and that it would be received in a hostile way.

*Probably, other, other weaknesses, um, may be, ah, ah, you know, the sort of, the formal evaluation part of the obstetrics hasn't been [there in the past] has been developed in smaller hospitals as perhaps some of the bigger hospitals.*  
[Henry]

Others had no such concern:

*Um, the other thing that's been really good for the staff is we've got better policies and procedures, which I'll say were basically non-existent and, um, they've just been great to, you know, have something formalised.* [Clare]

*The other weakness, perhaps, with the current system is the lack of evidence of, of quality, um, in the, in the delivery of services, and it's very ad hoc so, ah, again, that goes across probably the three of the campuses. I couldn't identify one particular campus [that] has been having more of a problem than another.* [Bronwyn]

Henry and Susan were both aware of the vulnerability of a service that could not substantiate the safety of the service provided:

*That doesn't mean the quality's not there. It's really, it's really, ah, when many people are asked to prove the quality and perhaps you know the documentation's not readily at hand or the quality activity's not readily at hand, can't be found.* [Henry]

*Closing a service would be a last resort, but if there is no guarantee that it was a safe one, the service that was being provided, the department would need to take that action.* [Susan]

CMCN offered the opportunity of redressing this fault in the Corangamite medical services.

*We think that the, that the quality aspect, be ... being able to improve the, and, and develop the quality assurance program would be the, one of the biggest opportunities that would come out of this project and to bringing consistency across all three, um, rather than having individual standards and levels of service.* [Bronwyn]

*... and I sense that, um, um, there's also the benefits associated with, um, really, really creating very concrete quality assurance programs instead of the three hospitals slaving away or carrying out ... their separate clinical practice guidelines. Three, three, um, can share that. [Helen]*

*They can provide the evidence that it's safe practice ... and that they, they're risk averse. [Susan]*

Tom saw that the clinical audit activity could lead through education to improved clinical practice if clinicians were prepared to adhere to evidence-based clinical guidelines and learn from audit outcomes.

*... enable clinical governance and audit, in other words, safety and quality demonstrating the standard of safety and quality and you learn as you go and that from each audit the clinical practice improves and variance between clinicians narrows as well. [Tom]*

*So, on a clinical side it's a willingness to stick to evidence of the performance and learn from it. The idea of, um, quality and safety, um, and auditing critical incidents as well and learning from them that's all new as well. [Tom]*

Both Wilma and Tom saw the advantage of linked auditing of practice and education to address the identified inadequacies.

*... and it's one aspect of the model I understand and I fully see the advantages of the education and standardisation. [Wilma]*

Patricia expressed surprise that some of the hospitals did not have clinical pre-existing practice guidelines or protocols.

*We've identified the hospitals which didn't even have policies and protocols about some things that really should have probably had some policies and protocols about them. They will all have really stringent policies and protocols [now]. [Patricia]*

Clinicians applauded the introduction of the evidence-based clinical guidelines and were satisfied that these were of high quality:

*I think the formalisation of a cohesive protocol is a good oppor ... thing that's been commenced and is a good idea. [Margaret]*

*... to have really good protocols and pathways so that you have the best GP that any ... that you can have. And so the best auditing that you can have so you can also show that your results are as good as anybody's. [Ingrid]*

Susan and Henry thought that the managed clinical network model offered hope for health service delivery in rural areas.

*I think that this is seen as, um, something that's going to, hopefully, um, be the answer to, um, service delivery in rural areas. [Susan]*

*So probably the main opportunity with a local opportunity of keeping the doctors happy, the, the, you know the community happy, boards happy about, you know, quality assurance. I mean it's, ah, you know, con, continuing obstetrics etc., it's all those sort of local, local benefits stuff, probably it's equally important in the bigger picture to, to use it as a model for introduction elsewhere, possibly other states and with [the state Chief Medical Officer] recognising and talking about that. [Henry]*

Clare sounded a note of warning about the need for a person with responsibility to support quality assurance activities within CMCN.

*A concern of mine is, um, after the project finishes and [the project coordinator] goes onto her next little project, who's going to maintain everything as far as policies and procedures? Um, making sure education continues? [Clare]*

In conclusion, the interviewees acknowledged that quality assurance had been inadequate in Corangamite maternity services. They saw that the instigation of quality assurance activities that audited performance against clinical practice guidelines and then used the outcomes of the clinical audit to direct educational activity was a substantial achievement. This was a model that offered hope for rural health service delivery.

### **5.6.3 Education**

Access to education had been difficult for midwives in Corangamite’s maternity services. The provision of team-based education that was responsive to gaps identified during the clinical audit was seen as an advance in education for the maternity services.

*The provision of on-site education is certainly, ah, imperative, because one gets a bit tired of travelling hither and thither to get, um, upskilling.*

[Margaret]

*It’s not easy to get education and so, you know, it’s disruptive to their family and to their environment, and the numbers of, um, midwives on board at these local services, um, are small so it doesn’t allow release of these midwives to cover, you know, if they were released for education, to cover a roster. [Susan]*

*Who’s able to backfill you to go somewhere and [upskill]? [Patricia]*

*I suppose a weakness is our ability to provide educational opportunities and skills maintenance. [Geoff]*

The provision of education was one of the earliest activities of the network and the team-based approach across the whole network was appreciated. Karen felt that it was initially focused on the doctors, but others remarked on the success of the team building through the educational events developed by CMCN. Patricia’s comments about shared education in CMCN strengthening teamwork were discussed under theme three ‘Relationships — Teamwork’. Bronwyn and Wilma echoed this.

*I can see why the emphasis initially has been put on a lot of education in terms of bringing it to provide that, so I see the managed clinical network offering the ability ... that will help with the workforce issues that you are working as a team, that three organisations are working as one. [Wilma]*

There was a suggestion that the sharing of educational activities across the network could facilitate the recruitment, retention and sharing of staff within CMCN. Helen's comment on this was associated with the linkages between auditing and education and has already been quoted above. Helen, Geoff, Karen and Clare also saw links between education, and recruitment and retention.

*I think improved access to education and skills maintenance is certainly an opportunity, that is, ah, coming through in the works of the network to date, and ah, will be of great assistance, ah to hopefully retention of staff. [Geoff]*

Clare commented on the way shared education reinforced the hospital's perception of being part of a network.

*That's really been [a] benefit in, um, setting up education programs for staff and they have been well utilised so far. Um, getting training equipment that we can all share. Even at the moment we are looking at getting a CTG machine, and [the CEO] mentioned, we make sure that we don't get one that's totally different from Camperdown and Timboon, that we remain you know ... yeah, familiar, so that all staff are familiar with it. So I thought that was, you know, everyone's thinking of the big picture now. [Clare]*

Patricia reported an unanticipated negative reaction from some midwives to the education provided by CMCN.

*There are midwives that at the very beginning were saying, 'Oh, I'm just going to retire now', 'Oh, I'm just going to quit now', or 'Um, I don't want to do this', and, um, it's real impression that, you know, it's pretty confronting having someone say they're going to re-educate you in antenatal care and, um, obstetric life support, um, when you're saying, 'Well I've been doing this for years'. [Patricia]*

*Um, they felt they were being targeted because they weren't good practitioners and I, I think that the midwives, well, I've had midwives saying to me, that they felt, you know, 'Oh gosh, am I, ... we've got to do this?' [Patricia]*

CMCN's educational events threatened the professional confidence of some of the midwives; they felt that being offered education in midwifery belittled their skills and expertise.

In summary, before the advent of CMCN it was difficult for Corangamite maternity clinicians to access educational events; what events they did attend they attended as individuals. There was no cohesive, service-wide approach to education. CMCN introduced local team-based education that was responsive to gaps identified during the audit process. The education was positively received. Many interviewees expressed hope that shared education might help recruitment and retention of midwives and facilitate workforce sharing across the network. A group of midwives were reported as being anxious about the prospect of education. They felt that the offer of education denigrated their professional competence.

The concept of change management within CMCN will now be developed.

#### **5.6.4 Change Management**

At the initiation of the network there was some hesitancy and resistance among clinicians, who felt that too much may be asked of them: too many meetings, too much educational activity and too great a change in clinical practice.

*I think the reaction to change if the midwives are to work across the three different hospitals and some of them don't accept that or like it or want it, or whatever, that could probably threaten how it could work and I think people wanting to be flexible, how flexible and interested and focused they are on that, that's why we're a threat ... and probably again the experience, the amount of experienced midwife ... midwifery staff and ... and doctors would threaten the um, ... the delivery of the whole service. [Elizabeth]*

*Yeah, I think, well a big weakness is the fear factor of what's going to happen ... people being scared. [Patricia]*

*It's very time consuming. [Clare]*

*Um, certainly the increased amount of email has been a bit irritating and sometimes [a doctor] is finding it painful. Don't document that one! [laughing] Yeah, so basically I guess there's increased meetings and increased, um, increased ah, commitment to ah, and that involves more time so people, perhaps people are perhaps feeling a bit stressed on the time side of things. Um [pause] I said it's just important that, um, everybody has an equal voice. [Margaret]*

This last point is an important one, as the implication is that perhaps people did not have equal voices. This was a veiled reference to the interviewer being one of those who was most active in CMCN. Perhaps those doctors who did not attend meetings, did so because they felt they did not have a voice within the network.

And change seemed so slow:

*It's actually taking a long time to get things happening if, if John Menzies wrote that paper in 2003, that's almost three years ago [laughter] and I don't think anything's happening much. [Ingrid]*

Once people gathered in the meetings, change could begin, if the clinicians were prepared to change:

*Stimulate innovation: it's inevitable I guess when you get everybody together people will get new ideas about how to do things better. [Tom]*

*The risks are internal: the behaviour change amongst clinicians. [Tom]*

But change did occur. Changes in development of educational, quality assurance activities and new models of care have been discussed in other sections. Interviewees could see the possibility of changes beyond CMCN, expanding the concept of a maternity managed clinical network beyond Corangamite Shire and into other fields of medicine.

*Um, I think an opportunity of this is that there are probably other clusters of hospitals that could look at something similar. [Ingrid]*

*Well, HUGE opportunities, huge opportunities. Um, I think it's, um, exciting. It's a wonderful model; it's a wonderful concept, and I can see that if we*



*could get this grounded and through the, um, research, um, refine it, if it needs refining, and then apply other, um, services to it, like maybe palliative care or, um, paediatrics or emergency medicine. [Susan]*

*So it could be, you know, just an accepted model for rural Victoria, rural Australia. [Susan]*

In summary, change was slow, not all clinicians felt engaged in the process, many felt that the network created extra work for them when they already had enough, but those who did engage with the network felt a sense of excitement and hope about what it could achieve for maternity services in Corangamite, and even, potentially, for other services beyond the region.

## **5.7 Results and Discussion of Study One**

CMCN was clinician-led and built relationships between clinicians and management across three maternity services in Corangamite Shire. The development of this network offered hope for the continuation of local maternity services which were responsive to the needs of individual women and their communities and provided women with the assurance of safe, quality care throughout their childbearing years. The network offered the clinicians that worked within it local, team-based education that responded to needs identified by clinical audits. The network also sought ways to best utilise the clinical workforce across all three services. The quality assurance activities of the network had begun the collection of data that could have been used to establish the veracity of the clinicians' and administrator's belief that their maternity service was a safe. Those interviewed for this study believed that CMCN would deliver clinical practice guidelines to standardise clinical practice within Corangamite Shire and that it would provide more attractive employment opportunities for a new generation of clinicians. Clinicians and administrators within CMCN looked forward with hope to working in a more robust and defensible service, supported by the DHSV into the future.

The following chapters will examine what happened in the network after this promising beginning. Chapter Six uses participant observation to report on the "Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context" Ruth Stewart, Doctoral Thesis, Flinders University 150

development of the network. Chapter Seven presents the clinical audit data that was collected during the lifetime of the network and Chapter Eight presents analysis of interviews with key stakeholders in the network asking what was achieved within the network and why the network did not continue. Chapter Nine provides a synthesis of the outcomes of these four studies and then a comparison of the findings from the CMMN studies with the published literature and known activities of other networks.

# Chapter Six: Study Two — Development and Collapse of Corangamite Managed Clinical Network

## 6.1 Introduction

This chapter presents the findings of Study Two, providing a narrative of the development and collapse of the Corangamite Managed Clinical Network (CMCN) informed by participant observation. Previous chapters outlined key issues from the literature on clinical networks and rural maternity outcomes, the rural context of this thesis, and the epistemology and ontology of the researcher. Against this background, the first study, an assessment of what happened in CMCN, has been examined. Subsequent chapters will examine what happened in the network via analysis of clinical audit data from the network and analysis of semi-structured interviews with key stakeholders.

### 6.1.1 Aim of Study Two

The aim of this study is to describe what happened in the development and collapse of the CMNC.

### 6.1.2 Methodology of Study Two

In this study, the researcher used participant observation methodology and narrative inquiry. She recorded observations during her participation in the development of CMCN in a participant observation diary and read official records created within the network (see CMCN Timeline). The participant observation diary and records of CMCN, which are the data collected for this study, were subjected to narrative inquiry. In this method data is searched for deeper meaning and finer detail to build a narrative of the development of the object under consideration. The diary and records were read and re-read, personal impressions were compared with official documents and some lacunae in what was known were identified. The result of this activity is presented here as a narrative which, as Chase (213) comments ‘is a way of understanding one’s own and others’ actions, of organising events and objects into a meaningful whole, and of connecting and seeing the consequences of actions and events over time’.(p656)

The development of a complex organisation is like a textile task; many threads are woven together to make a length of fabric and then a garment. To describe this garment a detailed description is needed of the threads, but the broader patterns that the threads form and the shape into which the fabric is cut and sewn must be described as well or a casual observer without magnification would not recognise the cloth or garment into which it has been fashioned; another seamstress would not know how to recreate the garment. In this way this study describes details of what was done by whom, when and where and how these activities impacted on other events. In this way a narrative is built. For instance, where the actions or personalities of individuals, or organisational ideologies had an impact, these are described. As Thomas and Znaniecki say:

A social institution can be fully understood only if we do not limit ourselves to the abstract study of its formal organisation, but analyse the way in which it appears in the personal experience of various members of the group and follow the influence which it has upon their lives.(214p1833)

The voices of multiple participants are acknowledged and presented by the researcher with full acknowledgement of her individual point of view and of her presence as an actor in the narrative.

Laura Ellingson (215) notes the benefits to ethnographic research of the researcher having personal experience in the field of study—the value of subjective, as well as objective experience. Writing of her study of communication in an oncology clinic, she discusses how being both a cancer survivor and a qualitative researcher has influenced her research in positive ways.

First I entered the clinical setting with a degree of technical understanding of oncology that is higher than that possessed by most people. I understood much (though certainly not all) of the jargon used by the staff and had a first-hand knowledge of many of the common procedures, drugs, and tests. I still had many questions, but I had a knowledge base on which to draw. This knowledge allowed me to focus more on the patients and the interactions

within the clinic rather than being caught up in understanding the basics of oncology.(215p495)

To maximise this advantage in her writing, Ellingson integrates first person narrative and essay, ‘embodying the dynamism of perspective’ (p511) in the structure of her article. ‘By reclaiming “contamination” as an organic process of knowledge production grounded in (not abstracted from) human experience, auto/ethnographers resist those who seek to clean up or confine the mess rather than revelling in it’.(215p511) Ellingson uses the first person to report all observations, separating her personal experience of illness from her more objective research observation by breaks in the format of her article signified by asterisks.

First person observation and the observation of other sources are interleaved in this study. No asterisks will be used to signify any shift. The change is denoted by the use of first person for data that is purely personal observation. Data from other sources is described using the more distant voice of the third person.

### **6.1.3 Participants in Study Two**

The primary researcher attended, participated in and observed meetings and activities within CMCN. She participated in these as a General Practitioner (GP) obstetrician, as the medical adviser to the network and as the observing researcher for Study Two. CMCN committee members and Corangamite maternity service staff were therefore participants of this study. From the outset of the CMCN the researcher intended to observe and record the praxis of network establishment. Permission was sought from and granted by all committee members for the researcher to observe and record her observation of meetings.

The researcher attended meetings of the CMCN steering committee and the quality guidelines and protocol committee.

#### **Steering committee**

The steering committee had responsibility for overseeing the activity and strategic direction of CMCN. The committee members were:

- one GP obstetrician,
- one specialist obstetrician,
- three hospital executive officers,

- a chief executive officer (CEO) for the Division of General Practice
- a hospital director of medical services
- a representative from the Department of Human Services Victoria (DHSV)
- a consumer representative
- the project officer for CMCN
- the primary researcher as project adviser.

Twelve people were nominated to the CMCN steering committee to fill the fifteen places allowed for in the terms of reference. Of the twelve nominated, nine were female and three male; all were white Caucasians speaking English as their first language. The maternity service consumer representatives were female, English-speaking Caucasians. The appointed members of the committee were the project coordinator, the researcher and the DHSV representative. The steering committee group were representative of the gender, racial and first language incidence within the maternity services studied. All employed midwives and nursing unit managers in the maternity services under study were female. Two of the ten GP obstetricians were female and eight were male. Within the Otway Division of General Practice, membership in the financial year 2005–2006, 75 % of GP members were male and 25% were female. One of the three executive officers was male and two were female.

### **Quality guidelines and protocols subcommittee**

The other CMCN committee attended by the researcher was the quality guidelines and protocols subcommittee. The members were:

- three midwives, one from each hospital in the network
- three GPs one from each hospital in the network
- a quality assurance coordinator from one of the hospitals in the network
- the CMCN coordinator
- the researcher in the dual roles of GP obstetrician and observer.

One of the eight committee members was male and seven were female; all were white Caucasians speaking English as their first language. Once again, this was a representative sample of the Corangamite health services population.

### **Workforce subcommittee**

The members of the CMCN workforce subcommittee were drawn from the hospitals in the network and supporting organisations. There were:

- three midwives from separate hospitals
- two GPs from separate hospitals
- the recruitment manager from the Division of General Practice
- a consumer representative from the local branch of Breastfeeding Australia
- the CMCN Project Coordinator.

Six of the eight members of the committee were male, the two GPs were female and all were English-speaking Caucasians; a proportionally representative committee.

### **Education subcommittee**

The education subcommittee drew its members from the hospitals in the network. There were three midwives from separate hospitals, two GPs from separate hospitals, and the CMCN project coordinator. The two GPs were male; the midwives and the CMCN project coordinator were female. All committee members were English-speaking Caucasians and thus were representative of the community of clinicians within Corangamite shire.

The researcher did not attend the meetings of the education subcommittee or the workforce subcommittee. Minutes of meetings from all the committees of CMCN have been used to corroborate and reinforce, and where necessary in place of first person observations of the meetings. Therefore either directly or indirectly the members of all CMCN subcommittees are participants in Study Two.

### **6.1.4 Instruments and Procedure for Study Two**

From November 2005 until February 2008 the researcher carried with her to all meetings a small A5-size ring binder in which observations were hand written with a ball point pen in note form. The ring folder was also carried to any other meetings with members of the CMCN steering committee.

The documents created within the network and used in this study include:

- the original CMCN funding submission
- correspondence relating to CMCN produced by CMCN committees, the CMCN project officer or the Otway Division of General Practice staff
- terms of reference for all CMCN committees and subcommittees
- guidelines for maternity audit forums
- minutes of all of the steering committee and subcommittee meetings
- Corangamite clinical practice guidelines
- flyers for educational events, forums and meetings

The narrator in this chapter is the researcher.

### **6.1.5 Study Two Analysis**

The participant observation diary was read chronologically and compared with CMCN documents such as minutes and flyers, clinical practice guidelines and emails to create a narrative of the development of CMCN. When the participant diary is the only source, the narrative is written in first person. When multiple sources inform the narrative it is written in the third person.

## **6.2 Results for Study Two**

### **6.2.1 Preparation for Cooperation between Maternity Services in Corangamite Shire**

The development of CMCN began in November 2003 with a series of clinician-led meetings with a variety of stakeholders. The meetings were held to discuss concerns around the recruitment and retention of clinicians in Corangamite shire health services.

At an initial meeting of GP obstetricians from Terang, Timboon and Camperdown in May 2003, an assessment of the strengths, weaknesses, opportunities and threats (SWOT analysis) of or to Corangamite maternity services was carried out. This led to a resolution that a ‘virtual obstetric unit’ be developed across the three campuses, based on the principles of pooling resources and experience, placing particular emphasis on developing an embedded quality assurance program that could provide



evidence to support the assertion that effective high-quality maternity services were being delivered in the region. The intention was to prevent Corangamite maternity services being closed. At this time many other maternity services in Victoria had been closed.

Discussion during further meetings included the description of the managed clinical network model by Professor James Dunbar from Greater Green Triangle University Department of Rural Health. It was agreed that this model was a close comparator to the original concept of a 'virtual obstetric unit' across the three facilities and had the advantage of already having been trialled. The doctors agreed to develop a managed clinical network (MCN) for maternity services in Corangamite Shire and a working party was formed to guide the project.

Using monies from the Otway Division of General Practice, the Rural Workforce Agency Victoria and the three hospitals, a consultant from the Monash University Centre for Ambulance and Paramedic Studies was hired to write a submission for funding. The consultant found the patient journey in the three hospitals and the relationships between the three hospitals, the Warrnambool obstetricians and hospital administrators and the DVSU complex and hard to understand. The document he produced in June 2004 did not satisfy the working group's requirements. The researcher was part of the working group, and after this failed venture took responsibility for writing the funding submission. The researcher started with the work already done by the consultant, and with the assistance of Dr John Menzies, a GP obstetrician in Camperdown, prepared a paper for the working party to submit to DHSV requesting funding for the project.

Entitled 'Corangamite Managed Clinical Network Funding submission: Camperdown, Timboon and Terang Managed Clinical Network', it was submitted to Barwon South West Region of DHSV in November 2004 (see Appendix Four). The submission requested funding to 'support a model to ensure the provision of best practice maternity services with inbuilt quality assurance in the Corangamite region', including funding for a project coordinator.(216)

The submission to DHSV identified the following aims(216):

- To provide maternity services in the Corangamite region using a patient-centred service model sharing expertise and resources between the hospitals in Camperdown, Terang and Timboon
- To deliver a quality assurance program for these maternity services by
  - delivering local protocols from clinical guidelines
  - auditing compliance with local protocols
  - developing local clinical outcome measures
  - auditing clinical outcome measures
  - developing a risk management plan
  - developing an information technology based clinical information system
- To act as a facilitator for professional development for members of the multidisciplinary team within the Corangamite Managed Clinical Network
- To research and implement succession planning for clinicians in maternity services. (Within CMCN the term clinician is used in reference to midwives and doctors.)
- To demonstrate a model of maternity service that has the potential to enhance the delivery of maternity and other services (e.g. emergency medicine, anaesthetics or palliative care) in this and other parts of Victoria.
- To develop a management structure for the Corangamite Managed Clinical Network.(p1)

This submission was successful, and a project coordinator, Ms Jill Donnelly, was employed in July 2005 for a period of two years to oversee the development and implementation of CMCN. The two year duration of the project was set by the DHSV and was not open to negotiation. The Otway Division of General Practice was appointed fund holder.

### **6.2.2 Development of Corangamite Managed Clinical Network**

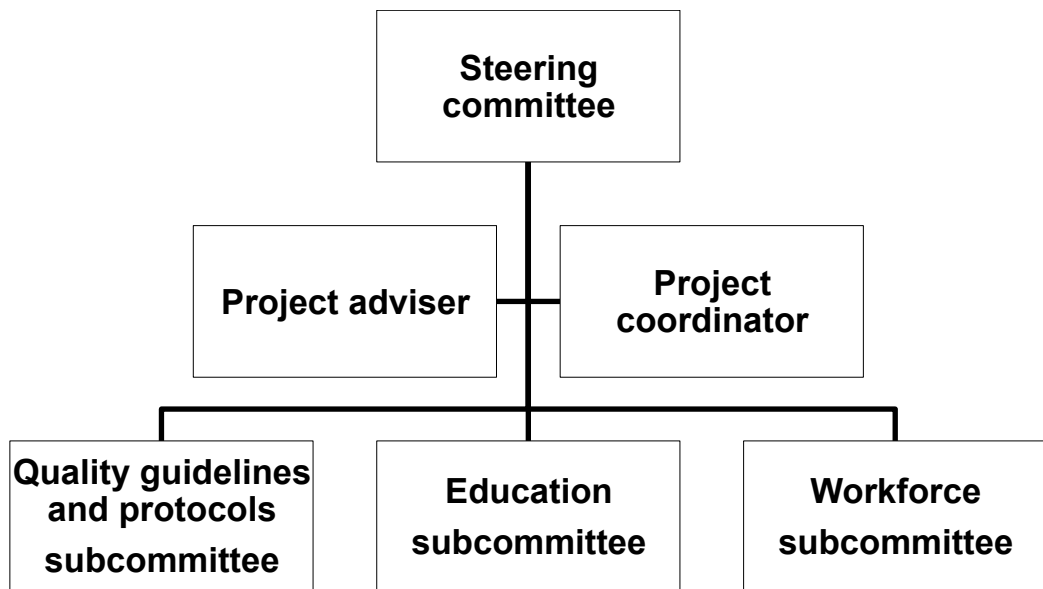
In 2005, the CMCN working party facilitated the development of a steering committee for the CMCN project. Midwives, GPs, obstetricians, hospital managers, and consumers were invited to join the committee, which included DHSV representation.

The steering committee was composed of:

- two representatives from the DHSV — Barwon South Western Region
- the CEO or delegate of each of the participating health services
- the Executive Officer of Otway Division of General Practice
- a GP nominated by the Otway Division
- a specialist obstetrician from Warrnambool
- a midwife representative
- up to three consumer representatives
- GP program adviser
- the program coordinator employed by Otway Division of General Practice

Terms of reference were developed for the steering committee (see Appendix Seven). A memorandum of understanding was developed and agreed to by the three health services, the Otway Division of General Practice and DHSV (see Appendix Eight). A project brief was developed.

Camperdown GP obstetrician Dr John Menzies was elected as Chair. The researcher was appointed medical adviser to the steering committee. Both of these positions were voluntary. John Menzies was the project coordinator's point of referral for day-to-day management decisions. The project coordinator and the medical adviser also met on a regular basis. The project coordinator reported to the steering committee regularly and steering committee members were tasked to feed information back to the members they represented (see Figure 6.1). The steering committee met every month. Figure 6.1 is a diagram of the committee structure and lines of reporting within CMCN.



**Figure 6.1: Committee structure of CMCN**

Three key project strands were identified by the steering committee — education, workforce and quality. Subcommittees based on these strands were established and TOR developed for each committee. Each subcommittee met regularly and reported to the steering committee during the course of the project. These groups also reported to the steering committee via the project coordinator.

The activity of each CMCN committee will now be discussed, commencing with the steering committee

### **6.2.3 Activity of the CMCN Steering Committee**

The composition and responsibilities of the steering committee resulted in some conflict. The committee met its responsibilities as outlined in the terms of reference but there were some problems related to its structure. The DHSV was the funding body for the project and was also represented on the steering committee. The DHSV representative used this position to advise the steering committee of the expectations of the department and to report back to the department on the activities of the steering committee. At the November 2005 steering committee meeting the DHSV representative asked to be included in all communications from the project coordinator to clinicians in CMCN. She stated that it would assist her reporting to her superiors in DHSV. Other members of the steering committee resisted and it was

agreed that the project coordinator would respond to inquiries from the DHSV representative as needed.

By February 2007 hospital administrators on the steering committee were expressing frustration at the ‘burden of monthly reporting of finances’. They were annoyed that the financial statements were examined in detail by the DHSV representatives on the steering committee who had insisted that a financial update be tabled at every meeting as well as being sent to the Barwon South West office of DHSV on a quarterly basis. The CEO of the Otway Division of General Practice felt that this level of financial oversight was unnecessary, that it was the fund holder’s responsibility to balance the accounts, and that standard quarterly or bi-annual reporting to DHSV should have been adequate.

Steering committee members at different times found that the presence of the departmental representative inhibited free and frank discussion at steering committee level. This was particularly the case when steering committee members wanted to discuss how to lobby the DHSV for ongoing funding.

Steering committee members feared possible direct repercussions to funding for CMCN or their own hospitals if by frank expression they offended DHSV representatives. The DHSV representatives did not appreciate this conflict; they thought that they were being supportive and were facilitating the development of the network and told the researcher how they enjoyed the way they could ‘help’ the steering committee. The DHSV representative continued to both advise and participate in steering committee decision making until the last steering committee meeting.

These conflicting needs, the need to facilitate open communication between DHSV and CMCN and the need to separate the funding and oversight roles of the department from the governance and operational roles of the CMCN steering committee were not resolved.

One of the steering committee’s responsibilities was to ensure that clinicians in the hospitals understood what was happening in CMCN. During discussions with staff of different hospitals it became obvious that in Timboon and Camperdown information

about the activities of CMCN was not being passed on effectively to all clinicians. The doctors communicated with each other informally on a regular basis, and so most doctors had an understanding of CMCN activity, but there was patchy understanding of CMCN activity among midwives.

The Timboon nursing unit manager was the Timboon hospital representative on the steering committee as well as the quality and workforce subcommittees. She was also the only full-time midwife in Timboon. On visits to Timboon the researcher found that midwives there had a very low level of understanding of CMCN activities. It seemed that CMCN issues were not being effectively communicated to other midwives. A CMCN newsletter was published intermittently, but this did not adequately inform all clinicians.

The integration of CMCN with the governance structure of South West Healthcare was problematic. Camperdown hospital is a campus of South West Healthcare and as such is governed by administrators in Warrnambool. Camperdown clinicians could communicate with the administrators in Warrnambool via the Camperdown campus manager. Doctors had the opportunity to feedback to the Director of Medical Services South West Healthcare in the meetings of visiting medical officers in Camperdown, which occurred once or twice a year or by direct written or telephone communication. This chain of communication was long and indirect.

The design of CMCN sought to overcome the disconnection in communication between Camperdown clinicians and Warrnambool administration. Two positions were created on the CMCN steering committee for Warrnambool representatives, one for a specialist obstetrician and one for the CEO or his delegate. South West Healthcare was usually represented by the deputy director of nursing from Warrnambool and the campus manager from Camperdown. The deputy director of nursing from Warrnambool attended ten of the fifteen meetings and the Camperdown campus manager attended twelve of the fifteen meetings. The draft minutes of every meeting were circulated between meetings and approved at the next meeting. Each meeting of the steering committee received a report from the project coordinator about subcommittee activities, and the Camperdown campus manager received an

annual report at the end of each financial year. A Warrnambool obstetrician was a member of the steering committee and signed off every clinical practice guideline. Attempts to engage greater South West Healthcare administrators and clinicians in the goals of CMCN were ultimately unsuccessful.

#### **6.2.4 Quality Assurance Activities within CMCN**

##### **Terms of reference and goals of the quality guidelines and protocols committee**

The quality guidelines and protocols committee was formed in November 2005.

Terms of reference were developed by the steering committee and include the responsibilities of the group, process and accountability (see Appendix Nine). Group members were to communicate with the clinicians in their hospital about issues discussed in committee meetings.

Common clinical practice guidelines (CPGs) were developed to ensure that the service provided to women within CMCN followed a sound evidence base (see Appendix Ten). It was anticipated that the use of common CPGs across the network would facilitate the movement of clinicians between facilities.

The quality guidelines and protocol committee was composed of:

- a midwife and a GP from each campus
- a quality manager
- the project coordinator.

### Quality assurance activities

The majority of the key tasks of the committee were completed. Table 6.1 lists these tasks

**Table 6.1 Tasks completed by the Quality Guidelines and Protocols Committee**

Key tasks of the quality guidelines and protocols committee	Complete
A set of high quality evidenced-based CPGs was identified and a set of local protocols was developed from them (see Appendix Nine).	✓
Auditing compliance with protocols was commenced.	✓
Bi-monthly clinical audit meetings were established. Birthing outcomes were reported at that meeting following an agreed format of reporting measuring agreed clinical outcomes.	✓
An IT-based clinical information system (the Birthing outcome Statistics or BOS system) was implemented.	✓
A CMCN quality framework was developed that included a risk management plan.	✓
A professional development policy was developed.	✓
CMCN meeting etiquette was agreed upon (see Appendix Five).	✓

The committee participated in training in guideline development with an expert from the Melbourne Three Centres guideline working group before commencing CMCN guideline development.

The committee also developed a process for the identification and adaptation of evidence-based guidelines that used internationally recognised tools for evaluation, achieving consensus from all clinical stakeholders. This process is outlined in Table 6.2.



**Table 6.2 Process for identification and adaptation of evidence based guidelines.**

<b>Step number</b>	<b>Process for identification and adaptation of evidence based guidelines</b>
<b>Step 1</b>	Education session on how to evaluate a high quality CPG
<b>Step 2</b>	Application of AGREE tool to a number of CPGs from different hospitals throughout Australia
<b>Step 3</b>	Selected obstetric guidelines: <ul style="list-style-type: none"> <li>• South Australian perinatal practice guidelines</li> <li>• Selected neonatal guidelines</li> <li>• King Edward Memorial Hospital clinical practice guidelines</li> </ul>
<b>Step 4</b>	Priority list of guidelines developed
<b>Step 5</b>	Each guideline discussed and worked through at monthly meetings and changes suggested for local implementation
<b>Step 6</b>	Original guideline plus suggested changes sent to Warrnambool obstetricians and gynaecologist for comment and feedback
<b>Step 7</b>	Comments from obstetricians and gynaecologist worked through. With agreement from obstetricians and gynaecologist, final guideline drawn up and sent back to them for endorsement
<b>Step 8</b>	If members not in agreement further dialogue until resolved
<b>Step 9</b>	Guideline circulated to steering committee for endorsement
<b>Step 10</b>	Each health service presents to their quality committee and board of management for approval
<b>Step 11</b>	Staff updated and clinical guideline implemented at ward level.

The quality guidelines and protocols committee completed clinical practice guidelines for seventeen guidelines and had not completed the process for a further eleven. Table 6.3 lists the guidelines that were completed and Table 6.4 lists the guidelines that had been developed but not approved.

**Table 6.3 Guidelines developed and approved within the CMCN**

antepartum haemorrhage
postpartum haemorrhage
breech
shoulder dystocia
cord prolapse
care for normal labour and birth
pre-labour pre-term rupture of membranes (ROM), not in labour (NIL)
pre-term labour
term ROM, NIL
induction of labour
post-term pregnancy
restricted fetal growth
accelerated fetal growth
sepsis
anaemia in pregnancy
hyperemesis in pregnancy
Hydralazine regime
antepartum haemorrhage

**Table 6.4 Guidelines developed within the CMCN for which approval had not been completed**

diabetes
hypertensive disorders of pregnancy
magnesium sulphate regime
women with a high body mass index
caesarean section: antenatal preparation
birth options after caesarean section
postnatal care
neonatal jaundice and phototherapy
neonatal sepsis
newborn check
immediate care of the newborn.

A process was designed for updating the clinical practice guidelines. The process is described in Table 6.5.

**Table 6.5 CMCN process for updating clinical practice guidelines**

<b>Step number</b>	<b>Process of step</b>
Step 1	Camperdown quality manager checks South Australian perinatal protocol and King Edward Memorial Hospital sites regularly for updates
Step 2	Changes made to CMCN guidelines and distributed to quality guidelines and protocols committee members for comment
Step 3	Original CMCN clinical practice guidelines and guidelines with alterations sent to Warrnambool obstetricians and gynaecologist for comment
Step 4	Comments from obstetricians and gynaecologist worked through. With agreement from obstetricians and gynaecologist, final guideline drawn up and sent back to them for endorsement
Step 5	If members not in agreement further dialogue until resolved
Step 6	Guideline circulated to steering committee for endorsement
Step 7	Each health service presents to their quality committee and board of management for approval
Step 8	Staff updated and clinical guideline implemented at ward level.
Step 9	Archive two copies in archive folder held by each quality manager in the three health services

### **Impact of CMCN clinical practice guidelines**

The implementation of the clinical practice guidelines had immediate effects on practice within CMCN. For example, the Amnicator® test to detect leaking amniotic fluid was replaced by the Amnisure® test, and the Fetal fibronectin test was introduced to test the likelihood of pre-term labour in a given woman. Some of the drugs used in the labour ward were changed for others that evidence showed were more effective. Clearly labelled kits containing medications and the set-ups to deliver

them were prepared for the management of pre-eclampsia and acute hypertonic uterine contractions.

### **Implementation and distribution of clinical practice guidelines**

Guidelines were printed and laminated and placed in the labour wards of each CMCN hospital. A copy was also held by the quality manager in each hospital. A website for CMCN was under construction and was nearing completion when the network coordinator role was discontinued and all related CMCN activity stopped. CMCN clinical practice guidelines were to be posted on the website along with a feedback link, a register for each guideline, in which every clinician was required to enter their name, indicating that they had read the guideline.

When the CMCN guidelines were placed into the labour wards of South West Healthcare Camperdown, the South West Healthcare director of nursing ordered their withdrawal because they had not been approved by the committee in Warrnambool. Nobody on the CMCN quality guidelines and protocols committee or on the steering committee had understood that the Warrnambool committee had responsibility for approving guidelines to be used in Camperdown. Camperdown midwives were ordered to remove the guidelines from the labour ward and not to use them until they had been approved by the Warrnambool South West Healthcare guidelines and protocols committee.

Review of the CMCN guidelines by this committee was a slow process. The first of the CMCN guidelines were approved several months after they were first released by the network. Several of the CMCN clinical guidelines were never approved by the Warrnambool South West Healthcare as Warrnambool clinicians disagreed with them. There was no comment from the Warrnambool committee in response to the evidence base of CMCN's guidelines.

The members of CMCN quality guidelines and protocols committee found these events frustrating and distressing. The Camperdown doctors and midwives became very confused over which clinical guidelines they should be following: South West Healthcare guidelines or CMCN guidelines. Doctors chose which guidelines to use according to personal preference. Midwives were being advised by the Warrnambool hierarchy not to use the CMCN guidelines. The introduction of CMCN guidelines to

the Camperdown labour ward caused an increase of variation of clinical practice rather than a decrease.

### **6.2.5 Educational activities of CMCN**

#### **Education subcommittee terms of reference and goals**

The education subcommittee was formed in November 2005. Terms of reference were developed by the steering committee and included the responsibilities of the group, process and accountability. Group members communicated with the clinicians at their health service about the committee’s activities (see Appendix Eleven).

Representation on the committee included:

- a midwife from each campus
- two GPs from separate campuses
- the project coordinator.

#### **Outcomes from the education subcommittee**

The steering committee identified five key tasks for the education subcommittee. These are described in Table 6.6. All were achieved.

**Table 6.6 Key tasks of the CMCN education committee**

<b>Key task of the CMCN education committee</b>	<b>achieved</b>
establish the educational needs of CMCN clinicians, including needs highlighted in clinical audits and by analysis of critical incidents, and to develop a variety of ways to deliver education	✓
develop network-based core competencies	✓
identify potential funding sources for continuing professional development (CPD)	✓
ensure all educational activities were in accordance with the philosophy of CMCN: that they were local, accessible, network-based and focused on GPs and midwives training together	✓
develop protocols for CPD to be ratified by CMCN steering committee.	✓

#### **Educational needs analysis**

An educational needs analysis was conducted to guide the committee in facilitating educational events. A survey was sent to all clinicians in the network to identify topics for educational events, the barriers to and facilitators of accessing educational

activities and the favoured style of educational activity (see Table 6.7). Topics of educational need were also identified during clinical audit meetings. This information was used in planning educational events within CMCN.

Table 6.7 details the results of the educational needs analysis survey within CMCN.

**Table 6.7: Summary of results from educational needs analysis survey within CMCN**

<p><b>Perceived barriers</b></p> <p>Cost</p> <p>Time</p> <p>Distance</p> <p>Covering roster</p> <p>Covering practice and on-call</p>	<p><b>Strategies to overcome barriers</b></p> <p>Local</p> <p>Funded</p> <p>Repeat workshops</p> <p>Full-day workshops</p> <p>Plenty of notice</p>
<p><b>Suggested topics</b></p> <p>Obstetric emergencies</p> <p>Fetal surveillance</p> <p>Promoting normal birth</p> <p>Easing labour pain</p> <p>Neonatal jaundice</p> <p>Breastfeeding updates</p> <p>Newborn examination</p>	<p><b>Preferred educational delivery style</b></p> <p>Scenarios/drills</p> <p>Rotation to larger hospitals</p> <p>Online learning</p> <p>Workshops</p>
<p><b>Midwife confidence</b></p> <p>Adversely affected by number of births</p> <p>On average midwives cared for 4 women from July 03–July 05, with a range of 0–40 births per year.</p>	<p><b>Compulsory core competencies</b></p> <p>Almost all clinicians wanted compulsory core competencies</p> <p>Suggestions:</p> <ul style="list-style-type: none"> <li>Fetal surveillance</li> <li>Obstetric emergencies</li> <li>Neonatal resuscitation</li> </ul>

### **Funding educational events within CMCN**

The education subcommittee and the steering discussed options for funding educational events. It was noted that all of the GPs had access to funding for procedural training grants from the Department of Health and Ageing to attend approved obstetric educational events and that there was a nurse's professional development fund allocated on a subregional basis and held by Southwest Healthcare at Warrnambool. The consensus agreement was to charge attending GPs \$400 a day to attend CMCN-facilitated workshops, to offer the educational events to CMCN midwives free of charge and to charge non-CMCN midwives \$100 a day for attendance. At that time this fee structure was considered to be sustainable in the long term.

### **Recommended core competencies**

A list of skills that CMCN clinicians agreed were essential for safe practice within the network was developed by consensus from suggestions made in response to the educational needs analysis survey and from consultation within the educational subcommittee and the steering committee. Table 6.8 describes the essential skills, and the expected measures of compliance defined for each. These were termed the core competencies of the CMCN.

**Table 6.8 Core Competencies for clinicians in the CMCN**

<b>Core competencies for all clinicians in the CMCN</b>
Fetal surveillance: attendance at a workshop once every two years, plus demonstrated use of an online self-directed learning package available to all clinicians
Obstetric emergency: attendance at in-service training once a year, covering:
cord prolapse
postpartum haemorrhage
shoulder dystocia
breech presentation
hypertensive crisis
assisted delivery
(Plus completion of online competency quiz)
Continuing professional development: attendance (eight hours in total) every two years with a focus on supporting the normal birth process
Neonatal resuscitation: annual
Basic life support: annual.
<b>Competencies only required of midwives:</b>
Breastfeeding CPD: 8 hrs — annual
Epidural competency: — annual.

### **Educational events**

A number of highly successful educational events were conducted in CMCN. In keeping with CMCN philosophy, they were local, accessible, network-based, and involved the whole maternity team. Workshops were attended by midwives and GPs from all of the CMCN hospitals. Between fifteen and thirty clinicians attended each event. Formal evaluations were conducted following each workshop. The evaluations showed a very positive response to each of the educational events. Most of the events were registered for professional development/continuing medical education points with the Australian College of Rural and Remote Medicine and the Royal Australian College of General Practice, and for the Department of Health and Ageing



procedural grant. The educational event on sterile water injections for pain relief was not eligible for these.

Participants in CMCN educational events taught each other and learnt a lot more than the skills nominated in the learning objectives for the event. I learnt about the way midwives reason and what they value in such sessions. At times in these educational sessions I talked about my clinical reasoning. Midwives I had worked with for many years told me that they learnt a lot about the way I made clinical decisions from these sessions. This exchange of ideas and bridge building between the professions was a repeated theme in educational event evaluation.

The topics, venues, facilitator, and dates for the CMCN educational events are described in Table 6.9.

**Table 6.9 CMCN educational events**

<b>date</b>	<b>venue</b>	<b>facilitator</b>	<b>content</b>
February 2006	South West Healthcare, Camperdown campus	David Morris, Director Obstetric Training, Adelaide Women's and Children's Hospital. CMCN	A one day Fetal surveillance workshop. The CMCN took a corporate subscription for Dr Morris's online electronic fetal monitoring educational modules.
April 2006	South West Healthcare, Camperdown campus	Andrea Robertson childbirth educator.	Active birth workshop held over two days.
May 2006	South West Healthcare, Camperdown campus	Janice De Campo midwife Colac Area Health Service.	A three-hour workshop on the use of sterile water intra-dermal injections for back pain in labour
July 2006	Terang and Mortlake Health Service	Janice De Campo Midwife Colac Area Health Service	A three-hour workshop on the use of sterile water intra-dermal injections for back pain in labour
August 2006	Terang and Mortlake Health Service	Dr David Simon, obstetrician, and Ms Sue Crosby, midwife. Warragul Hospital, Victoria	Vaginal Birth after Caesarean Section Forum a one-day workshop
October 2006	South West Healthcare, Camperdown campus	Dr David Morris Director Obstetric Training, Adelaide Women's and	Train the Trainer in Obstetric Emergencies: a one-day course

		Children's Hospital. CMCN	
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The workforce subcommittee identified a need for the upskilling of midwives across CMCN. A group of midwives were interested in learning the skills needed by the accoucheur. Educational events were arranged to meet this need. They are listed in Table 6.10.

**Table 6.10 CMCN Educational experiences for midwives to learn acoucheur skills :**

date	venue	facilitator	content
November 2006	Timboon and District Healthcare Service.	Margaret McCormack and Beth Collis, midwife educators	A 'newborn check' workshop included a comprehensive workbook Midwives were required to attend to perform ten supervised baby checks to gain accreditation
December 2006	Western Health, Sunshine campus in Melbourne	Margaret McCormack and Sue Davis midwifery educators	perineal repair To be accredited in perineal repair midwives needed to perform six supervised perineal repairs
Throughout 2006 & 2007	Ballarat and Southern Health hospitals antenatal clinics and delivery suite.		Clinical placements A memorandum of understanding was signed with Southern Health to formalise clinical attachments. Ballarat Hospital and Barwon Health agreed to offer clinical placements to CMCN midwives but no memoranda were signed with those institutions.

### **Obstetric emergencies training program**

The educational subcommittee identified the need for obstetric emergency training to be provided within CMCN. A model was developed for local clinicians to be trained

as trainers in obstetric emergency teaching. This model was consistent with CMCN educational philosophy and was a financially sustainable model of obstetric emergency for CMCN clinicians. DHSV provided a grant to purchase simulation equipment for a mobile obstetric simulation unit to be used in CMCN obstetric emergency skills training. The equipment enabled clinicians to practise a variety of obstetric skills such as vaginal examination, instrumental delivery and management of shoulder dystocia. This mobile obstetric simulation unit could be easily carried from one hospital to another.

The first Train the Trainer in Obstetric Emergencies Workshop was held in October 2006, facilitated by David Morris, Director Obstetric Training, Adelaide Women's and Children's Hospital. Two clinicians from each health service attended this intensive course. These clinicians were responsible for training and assessing colleagues in their hospitals. Topics covered were:

- postpartum haemorrhage
- shoulder dystocia
- breech presentation
- cord prolapse
- hypertensive crisis
- vacuum delivery.

A set of online self-directed learning modules for managing obstetric emergencies was commissioned from Dr Morris to complement the simulation training. The modules included key points related to each obstetric emergency, management, resources, links to CMCN CPGs and formative and summative assessment. A report of successful completion of training could be generated and used for credentialling purposes. It was planned that clinicians would be required to complete the modules annually and that clinician activity and satisfactory completion of assessment would be monitored by the director of nursing within each health service. The first module was completed in March 2007. Later modules had not been completed when CMCN collapsed. However, in July 2008 a beta version was made available to all CMCN clinicians. It included material to prepare clinicians for face-to-face assessment by in-house trainers using the mobile simulation unit.

Emergency drill scenarios were developed in a forum for clinicians in the Train the Trainer program on 24 April 2007 and 27 and 28 October 2008.

### **6.2.6 Workforce Development Activities within CMCN**

#### **Workforce: terms of reference and goals**

The workforce subcommittee was formed in November 2005. Terms of reference were developed by the steering committee and included the responsibilities of the group, process and accountability. Group members communicated with the clinicians at their health service about the activities of the workforce subcommittee (see Appendix Twelve).

Representation on the committee:

- director of nursing from each health service
- two GPs from separate health services
- a consumer representative
- Otway Division of General Practice recruitment consultant
- the project coordinator

The key tasks of the workforce subcommittee were to:

- identify barriers to clinician recruitment and retention
- identify enabling factors for recruitment and retention
- facilitate the ability for all clinicians to work across all campuses.

#### **Workforce survey**

A workforce survey was sent to all CMCM clinicians in April 2006 to identify barriers to and enablers of workforce recruitment and retention in CMCN. The results of this survey are presented in Appendix Thirteen. There was a 66% return rate for this survey. The surveys indicated that there were different issues for midwives and doctors.

#### **Midwifery workforce survey responses**

The Midwives' responses to the workforce survey are summarised in Table 6.11.

Most respondents believed that there was a problem recruiting and retaining midwives in their local hospital.

**Table 6.11 Midwives responses to the workforce survey**

Recruitment and retention	<p>Suggestions for improving recruitment of midwives included:</p> <ul style="list-style-type: none"> <li>• attraction of more women to the services to increase the number of births available for midwives to attend</li> <li>• creation of a new model of care in which midwives were more involved across the childbearing continuum</li> </ul> <p>high profile advertisement campaign to attract midwives to CMCN</p>
General Nursing by midwives	<p>Opposing comments were made about midwives needing to work in general nursing duties</p> <ul style="list-style-type: none"> <li>• Camperdown midwives identified this requirement as a problem</li> <li>• Two midwives clearly stated that the only reason that they were doing midwifery was so that they could also nurse, and that they found midwifery stressful and not enjoyable</li> <li>• Several midwives noted that for them, part of the attraction of the job was being able to do both midwifery and nursing</li> </ul>
Job satisfaction & stress	<p>High level of job satisfaction coupled with anxiety or stress</p>
Working across several facilities	<p>There was a willingness from a significant number of respondents to look at working in all of the hospitals within CMCN</p>

**GP workforce survey February 2006**

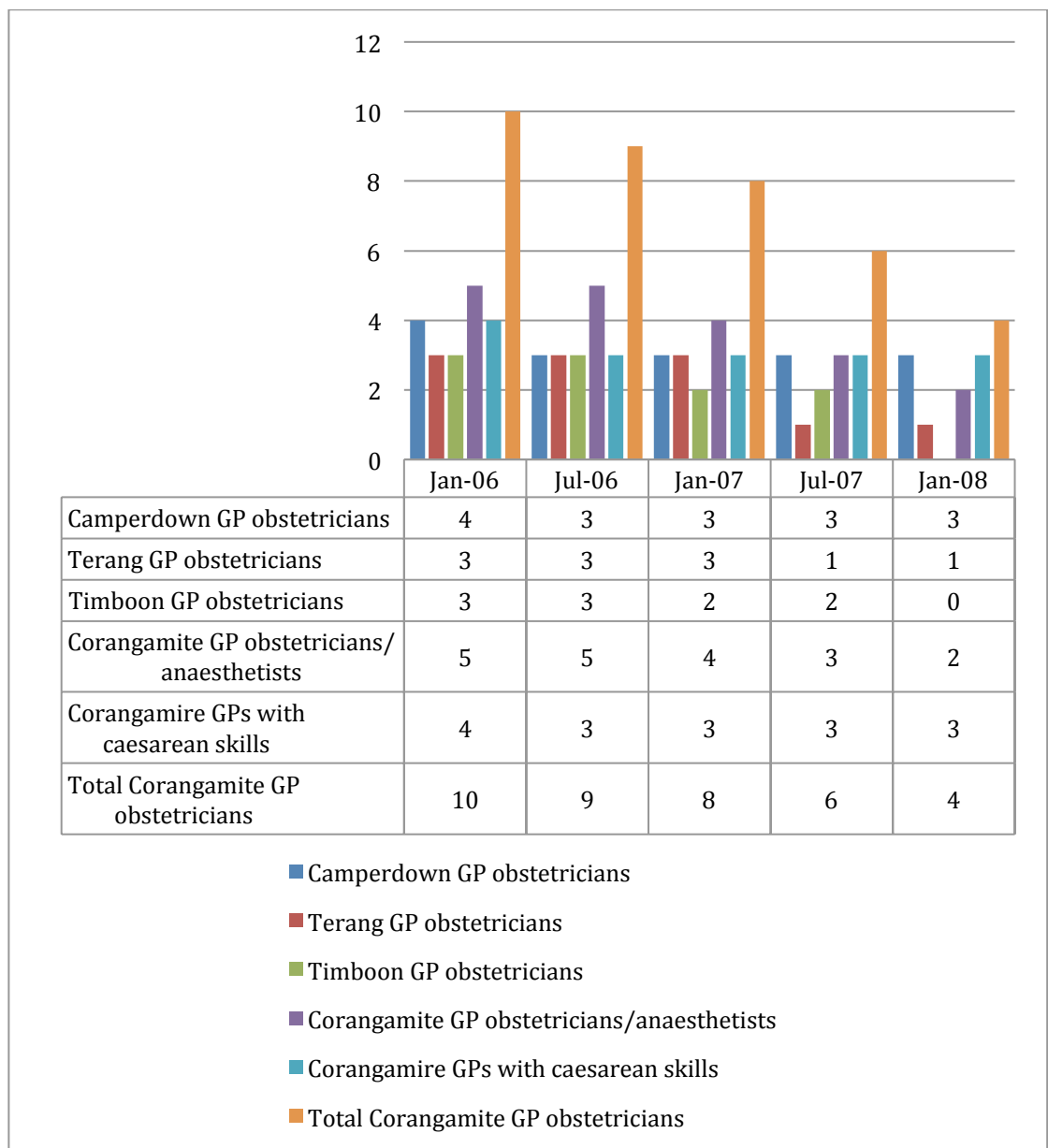
In February 2006 GPs were surveyed to ascertain how much time they spent on and off call for obstetrics, what system they had in place and how satisfied they were with these arrangements. GPs described an informal system whereby each practitioner was aware of how many pregnant women they had in their care and how

close to term those women were. If a GP expected to be unavailable to attend an obstetric call-out for an interval, that GP would ‘hand over’ the obstetric case to the second GP obstetrician in their town for the interval of the first GP’s absence. The doctors indicated that they felt comfortable with this arrangement, believing it worked reasonably well. Some commented that obstetrics was one of the most satisfying parts of their practice and this reduced the perceived burden of being constantly available to their obstetric patients, although a reduction in obstetric on-call responsibilities would be welcomed.

### **Workforce shortage within CMCN**

The three years 2005–2008 saw six GP obstetricians leave the obstetric roster in Corangamite shire. These departures occurred as follows. In June 2006 a GP in Camperdown retired from obstetrics and emergency work but continued to work in the town. In January 2007 a dual credentialled GP obstetrician anaesthetist left Timboon and in July of that year a dual credentialled GP obstetrician anaesthetist left Terang. Another GP obstetrician retired from the obstetric roster in Terang in July 2007 but continued to work in the town. In January 2008 the two GP obstetricians in Timboon left.

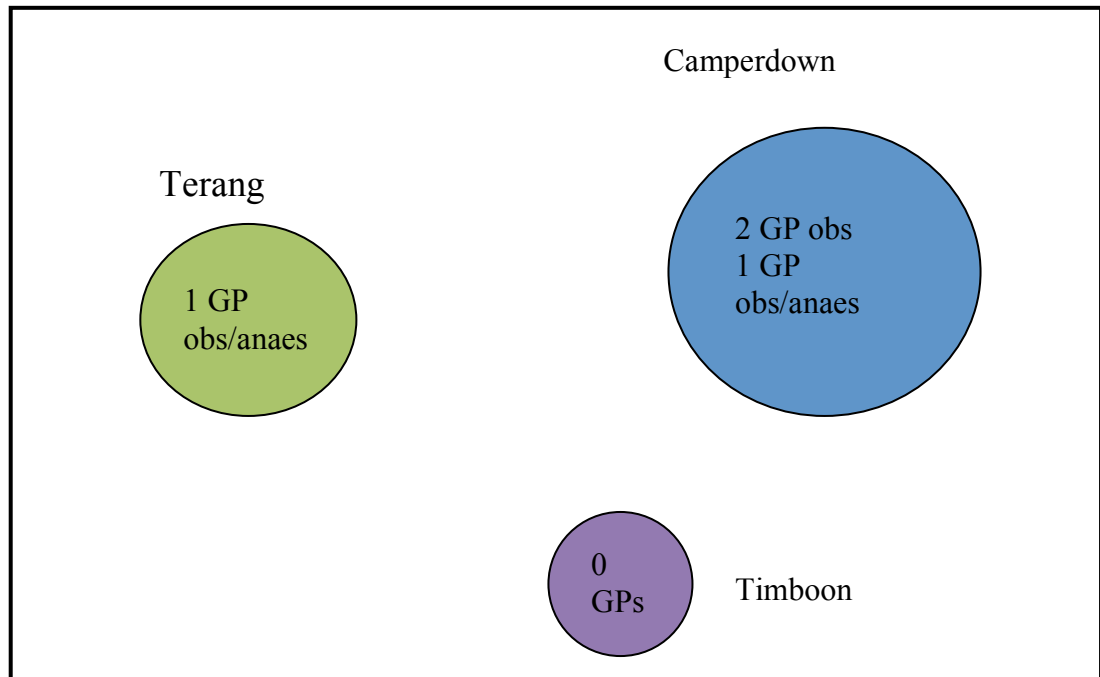
These departures from obstetric practice left four GP obstetricians in the network, two of whom had obstetric anaesthetic skills, and three of whom had caesarean section skills. Figure 6.2 shows the number of GPs with obstetric and/or anaesthetic skills in Corangamite shire between January 2006 and January 2008. It shows that the reduction in total numbers occurred gradually throughout this time but that usually doctors left towns in a group.



**Figure 6.2 GPs in Corangamite with obstetric, obstetric anaesthetic and caesarean skills, January 2006–January 2008**

The departures resulted in heavier obstetric workloads per remaining GP and heavier general after hours care responsibilities per doctor. After those departures there was an increase in the average age of the remaining doctors to 50.5 years. At the end of 2006 the specialist obstetrician who had served on the CMCN steering committee left Warrnambool, while three Australian-trained obstetricians commenced work there but did not engage with CMCN. Figure 6.3 illustrates the distribution of GPs across the towns of Camperdown, Terang and Timboon in August 2008 after the major medical workforce losses described.





**Figure 6.3: Distribution of GPs across CMCN, August 2008**

Positions were advertised for clinicians within CMCN during the period under evaluation. A new midwife was engaged but no new vocationally registered GPs with obstetric qualifications were employed. Two GP registrars were credentialled to undertake supervised practice within CMCN during the period of study. Before the implementation of the CMCN, no GP registrars had been credentialled for obstetrics within CMCN for eighteen years. Both junior doctors stated that the activity and support given to clinicians within CMCN attracted them to apply to work within CMCN. The numbers of midwives was relatively stable. The average age of midwives within CMCN was forty-eight years.

#### **On-call arrangements in Corangamite Shire 2006–2008**

In July 2005 when CMCN commenced, each hospital had separate workforce arrangements for their emergency departments and maternity services. Between July 2007 and July 2008 when there were two GPs in Timboon and two in Terang, a shared weekend on-call roster between Timboon and Terang health services was created whereby weekend on-call for all medical and obstetric services alternated between the two towns. People wanting medical attention in either town would attend the hospital where a doctor was on call. In practice people from the town without after hours cover would usually attend either Camperdown or Warrnambool, whichever was closer for them, as usually this was a shorter distance than the trip to

“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University 182

the other town. Maternity services were included in this rostering and so, on occasion, women would birth in a town that was not their own. The departure of the last two GPs resident in the town drew an end to this arrangement.

This scenario of a halving of the number and a maldistribution of GPs involved in obstetrics in the network could have had disastrous effects on the viability of CMCN maternity services. In Timboon, without GP support, no maternity service could be provided using the pre-existing doctor-centred model.

The response of each service to the departure of doctors from the area was different and will now be described for each case.

In Timboon low-risk birthing was occurring with a specialist obstetrician attending weekly from Warrnambool and consulting with the midwives to determine which women could safely deliver in a midwife-led birthing model. Women who were not considered low risk were sent to Warrnambool to birth. This meant only a few deliveries occurred in Timboon. The Timboon midwives chose not to continue with CMCN GP obstetrician cover, citing the delayed development of the CMCN website (which was intended to indicate what doctors were available for backup) as the reason for this change in model. CMCN provided the protocols, education and targeted upskilling to enable midwives to increase their scope of practice and provide a new model of birthing service in Timboon.

In Terang the GP obstetrician and midwives worked closely with the Camperdown clinicians to provide an ongoing service. When the Terang GP was not available to attend a delivery, the Camperdown GPs were notified and were on call to offer obstetric support to the midwives in Terang. This occurred at least once or twice a month. There were times when there were inadequate numbers of GP obstetricians and GP anaesthetists available in the region to provide obstetric support for the maternity service. When this happened CMCN went on bypass for birthing.

In Camperdown the changes related to the level of responsibility taken by each discipline. With upskilling, midwives were increasingly the main accoucheurs, with doctors attending a birth in a supportive role. Before CMCN commenced operation,

births were only performed by midwives if the doctor did not arrive in time. The scope of practice of midwives increased and the burden of care for doctors decreased during the period of study.

In each town the Rural Midwife Initiative of the DHSV funded projects to increase continuity of midwifery care for women. These projects were independent of CMCN but were closely aligned with its vision and were received enthusiastically by pregnant women and some midwives and doctors. Not all midwives were keen to be involved in antenatal care in a caseload midwifery model. For many of the midwives, the on-call requirements conflicted with family commitments, were simply a greater work commitment than they were looking for, or gave more responsibility to the midwife than they wished to have. There was agitation over the perceived devaluing and exclusion of the midwives not in the Rural Maternity Initiative model of care. In Camperdown regular meetings were arranged between midwives involved in the Rural Maternity Initiative and the midwives not in the project. Increased communication alleviated but did not entirely resolve the tension between the two groups.

### **Movement of clinicians**

In 2005 the GP obstetricians/GP obstetric anaesthetists sought accreditation for obstetrics, caesarean section surgery or anaesthetics according to their skill set, in all of the hospitals within the network. Until 2005 the GPs had only been accredited for their local hospital. In the year 1 January to 31 December 2007 Camperdown doctors went to Timboon on nine occasions to perform caesarean sections and on three other occasions arrived to find that a vaginal delivery had occurred between the call-out and their arrival. Camperdown doctors went to Terang on three occasions in that period and went to Terang on four occasions between 1 January and 30 June 2008. The GPs estimated they were consulted about a birth twice as often as they were called to give assistance. Table 6.12 summarises travel by doctors within CMCN.

**Table 6.12: Travel by doctors within CMCN**

No. of trips for obstetric purposes of doctors within CMCN 1 January to 31 December 2007		
Travelling to Terang from Camperdown	Travelling to Timboon from Camperdown	Travelling to Camperdown from Terang
3 (for caesarean section)	9 (for caesarean section) 3 (arrived after normal delivery)	8 for anaesthetic service 1 normal delivery

No movement of midwives occurred within CMCN. The possibility of movement of midwives between hospitals was explored in the proposed Enhanced Midwifery Skills in Collaboration (EMSiC) model of service, which will now be discussed. This model was never funded and never implemented. It is included here to illustrate what was envisaged. The EMSiC model was developed in an atmosphere of uncertainty about funding. There was strong support from some of the enthusiastic midwives in Camperdown and Terang. Other midwives were concerned about assisting in birthing being concentrated on a small number of midwives. In the steering committee the administrators expressed concern about how such a model could be funded within existing models of DHSV funding. They were concerned that EMSiC would be a more expensive model of care.

### **Enhanced Midwifery Skills in Collaboration model of maternity care**

The CMCN steering committee asked the workforce subcommittee to develop a new model of care to be trialled within CMCN and to consider the following:

- CMCN had more midwives than doctors.
- The proportion of midwives able to work in both midwifery and general nursing duties would diminish as direct-entry trained midwives entered the workforce and the current cohort of midwives began to retire.
- Doctors' skills in obstetric intervention are not needed in all births.
- The GP obstetricians wished to support the maternity service but preferred a reduction in the number of call-outs for births.
- Some midwives were keen to take more responsibility for low-risk normal births and desired a wider scope of practice than was offered in the pre-existing model of care.

- It was probable, given the difficulty in attracting procedural GPs to rural towns, that the existing GP vacancies in Camperdown, Terang and Timboon would not be filled in the medium to long term.

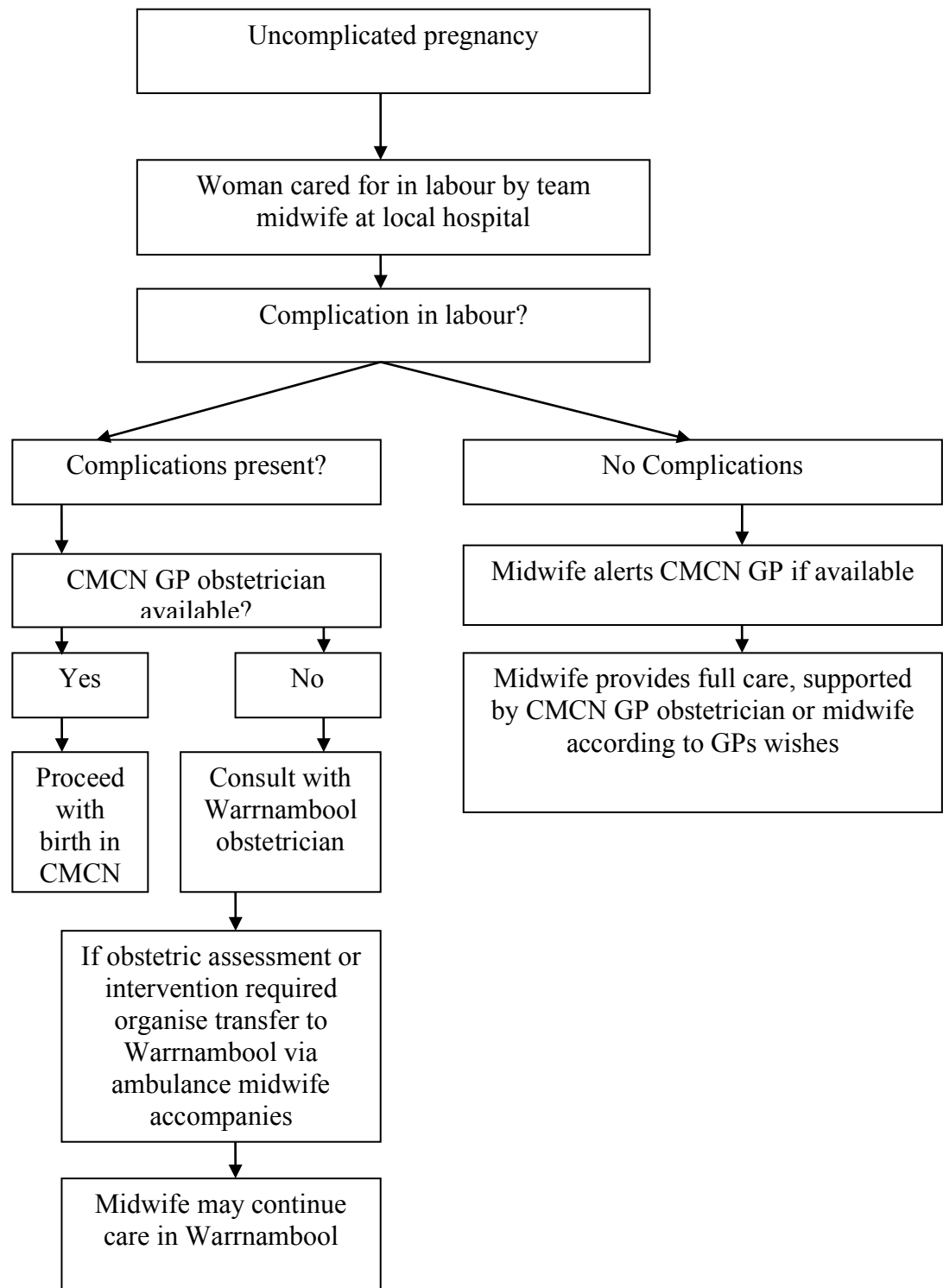
The workforce subcommittee developed the Enhanced Midwifery Skills in Collaboration (EMSiC) model of care in response to this request. The model was to have had a staged introduction as described in Table 6.13.

**Table 6.13 Attributes of the Proposed Enhanced Midwifery Skills in Collaboration (EMSiC) for CMCN**

<b>Attributes of EMSiC Stage 1A, a transition period of three to six months:</b>
three to four midwives from each hospital work as a team to provide care for all of the women birthing at the hospital
all participating midwives take part in a formalised enhanced midwifery skills program
midwives in the team participate in an on call roster
team midwives undertake a portion of the antenatal checks (as negotiated with the GP and the pregnant woman) and one of the team provides intrapartum care to that woman, including early labour support in the home and postnatal care for four to six weeks
a memorandum of understanding to be established across the three hospitals, allowing midwives to move seamlessly from one hospital to another
three midwives on-call across the network, one from each hospital, with team midwives able to call on an on-call midwife from another CMCN hospital for backup if required (e.g. two women in labour)
doctors to be called for all births and to work with midwives to enhance their clinical decision-making skills and practical labour care skills
CMCN-based education to continue and added to this a monthly meeting of team midwives from all hospitals and doctors to discuss intake, birthing outcomes and reflect on practice
Development of a quality framework including: <ul style="list-style-type: none"> <li>○ referral and consultation guidelines</li> <li>○ peer review process</li> <li>○ enhanced skills framework for midwives (including scope of practice)</li> <li>○ transfer policy</li> </ul>

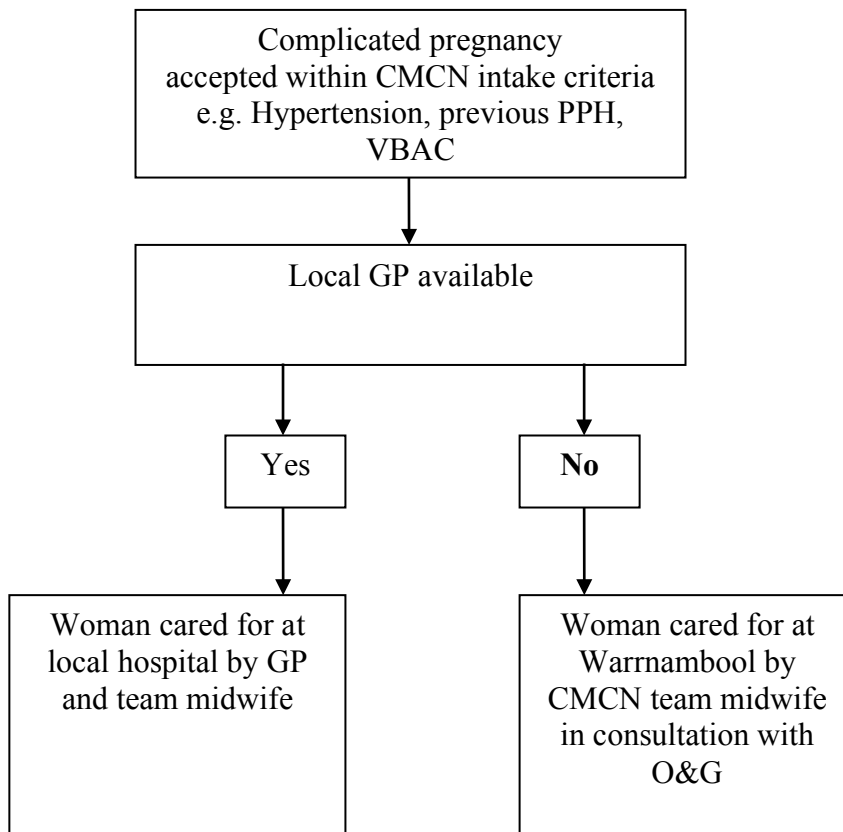
<ul style="list-style-type: none"> <li>○ <i>risk management framework, including analysis of critical incidents and sentinel events.</i></li> </ul>
<b><i>Attributes of EMSiC Stage 1B: subsequent three to six months:</i></b>
all midwives to have skills to work in an enhanced role
doctors able, but not required, to attend births; ‘second pair of hands’ could be another midwife (primary care only, see Figure. 6.4)
doctors to share after hours on-call for obstetrics across the network
women needing obstetric care to transfer to Warrnambool if there are not enough doctors to provide the service within the CMCN
If no doctor is available to support the midwife in a given labour, women requiring secondary care to be admitted to Warrnambool Hospital and cared for by the team midwife in conjunction with Warrnambool obstetrician

Figure 6.4 illustrates the pathway for a woman with an uncomplicated pregnancy, labour and birth in the EMSiC model.



**Figure 6.4: Algorithm of progression of a woman with an uncomplicated pregnancy in the EMSiC model**

Figure 6.5 illustrates the pathway for a woman accepted into the EMSiC model with a complication during pregnancy.



**Figure 6.5: Algorithm of the progress of a woman with a complicated pregnancy in the EMSiC model.**

A great deal of work was done to develop the EMSiC model, which offered solutions to both midwife and doctor workforce issues. During the development phase it became obvious that the funding model for EMSiC was different to that of the existing maternity workforce. The model was not implemented as neither the hospitals nor DHSV were able to allocate funding from the existing budget. The work to develop the EMSiC model, however, has not been lost. If administrative will to implement the model were to be found, it could be implemented.

### **Demonstration of the managed clinical network model**

There was a lot of interest in the development, implementation and outcomes of CMCN across rural and regional Australia. The project adviser and coordinator were asked to present at conferences and meetings during the life of the project and answered many phone enquiries. The more significant CMCN presentations are listed in Table 6.14.



**Table 6.14 Where and when presentations were made about the CMCN**

Date and Place	Meeting/conference	Title of presentation
10 March 2005 Alice Springs	National Rural Health Alliance Conference	'The Corangamite Managed Clinical Network'
19 May 2005 Beechworth	Department of Human Services Victoria Rural Health Forum on Rural Maternity Services	'Corangamite Managed Clinical Network'
9–10 Feb 2007 Newcastle	Midwifery Models of Care — One Year On, John Hunter Hospital Midwifery and Maternity Care conference	'Collaborative Approaches to Maternity Care in Rural Health: The Corangamite Managed Clinical Network'
December 2006 Sydney	Australian College of Midwives national annual conference	'The Corangamite Managed Clinical Network'
January 2007 Horsham	Wimmera Health Service: Rural Maternity Services Forum,	'A Collaborative Approach to Sustainable Maternity Care'
Canberra September 2007	Australian College of Midwives national annual conference	'Putting the Midwife Back into Maternity Care'
Geelong, October 2007	Australian College of Midwives Victorian branch annual conference,;	'Creating a Sustainable Model of Care in the Corangamite Region'

### **6.2.7 Funding of the Corangamite Managed Clinical Network**

CMCN was established with a one-off grant from the Department of Human Services Barwon South West Region. The grant was for a two-year period. Successful submissions were made to extend the funding period for six months from July to December 2007 to allow for the development of the EMSiC model. DHSV funding ceased in December 2007. The CMCN steering committee requested Timboon and District Healthcare Service, Terang and Mortlake Health Service, South West Healthcare and the Otway Division of General Practice, who were the parties to the original agreement, to contribute \$15,000 each annually for the ongoing funding of CMCN. This was to fund ongoing activities such as maintenance of the website, upkeep of training equipment and the part-time salary of the project coordinator. Timboon and District Healthcare Service, Terang and Mortlake Health Service, and the Otway Division of General Practice agreed to provide this money on an ongoing basis; South West Healthcare did not.

A message was sent from South West Healthcare that they did not think CMCN was a necessary service. As the medical adviser to CMCN, I wrote to the board appealing for a review of the decision. I received an angry phone call from the CEO of South West Healthcare telling me I had no right to approach the board on such matters and that in future I should send any communication through him. The decision was not reversed. I do not have any information as to why the decision was made not to provide ongoing funding to CMCN or at what level that decision was made. It seems likely that the decision was made without requiring approval of the board as the commitment was a small figure in terms of the hospital's expenditure for the 2007–2008 financial year of sixty-nine million dollars.(217)

### **6.2.8 Collapse of a Network**

This is the way the world ends,  
This is the way the world ends,  
This is the way the world ends,  
Not with a bang, but a whimper

T.S. Elliot, 'The Hollow Men', 1925

By the end of 2007, despite the many achievements described in this chapter, CMCN was facing problems on several fronts. The GP obstetrician workforce in Corangamite shire had been halved. The sense of hope and belief that by planning and forethought the tide of maternity service closures could be turned was evaporating. Timboon hospital was about to lose their GPs and it was apparent that the Timboon service was choosing to align the planned midwifery service with Warrnambool specialist obstetricians rather than Corangamite GPs. Petitions for support from South West Healthcare had not been successful. The battle with the South West Healthcare protocol committee for the CMCN clinical practice guidelines to be recognised continued.

In October 2007 the Otway Division of General Practice convened a meeting with an independent facilitator to explore how maternity services in the region could respond to the loss of GPs. The meeting was attended by GPs and administrators from Camperdown, Terang, and Timboon and by a specialist obstetrician from Warrnambool. At this meeting the director of nursing for Timboon stated that Timboon planned to establish a midwife-led birthing model with support of the obstetricians from Warrnambool. In the new Timboon model the Warrnambool obstetricians would visit monthly and review cases with the midwives and determine whether a woman was suitable for a midwife-only clinic. Once a woman was accepted into the Timboon model of care, her antenatal and birthing would be attended by midwives in Timboon. If she needed obstetric intervention in labour, she would be transferred to Warrnambool via ambulance. The campus manager of South West Healthcare Camperdown and a representative from the Terang and Mortlake Health Service both expressed a belief that birthing services in the region would be concentrated in one hospital. It was obvious that participants in CMCN had lost the vision.

After this meeting, one of the Camperdown GPs who had travelled to Timboon twelve times in the past year to perform caesarean sections wrote a letter to the board of Timboon and District Health Services re-iterating his commitment to the Timboon maternity service and his willingness to participate in the provision of intrapartum care. He received no response. CMCN was unable to resist these forces of

disintegration. The project officer left her office without a farewell and the clinical leaders struggled to dispel a sense of despair and to suppress their outrage.

## **6.3 Study Two Discussion**

CMCN achieved the aims identified in its original submission to DHSV for funding, and in many ways produced outcomes beyond those envisioned at its inception.

During the period of study, between July 2005 and July 2007, maternity services in Camperdown, Terang and Timboon delivered local team-based education, designed workforce models to best use available clinicians, and operated within a comprehensive quality assurance framework.

### **6.3.1 Discussion of CMCN Education**

Between November 2005 and February 2008, locally delivered team-based educational events provided professional development and upskilling to CMCN clinicians in a time, place and economic model that facilitated their attendance. CMCN's obstetric emergency training program was a low-cost, local team-based training model. The barriers to CMCN clinicians accessing educational events had been time away from family or practices, expense of registration, and cost of travel and accommodation in large urban centres. CMCN's educational program overcame these barriers. In CMCN, clinicians had ready access to high quality training and could upskill, refresh or maintain skills without leaving the area. This was a major breakthrough in the provision of safe local maternity care in a rural area.

These educational events forged strong bonds between the clinicians of CMCN. Before the network was established doctors met through activities of the Otway Division of General Practice but there were no forums where midwives and doctors from different campuses could meet or hold discussions. In the educational and quality assurance activities of CMCN midwives and doctors from all three campuses came together and communicated on clinical and strategic issues of importance in the region. Barriers were broken down and mutual respect between doctors and midwives and across hospitals built by working and learning together in these workshops.

CMCN education activities were very successful. They were well attended. They demonstrated how pooling of expertise and resources can enable the delivery of local, context appropriate educational events. The CMCN education subcommittee set the precedent of identifying best practice educational events and inviting the facilitators of these events to come to Corangamite to deliver their workshops or discussions adapted to local requirements. This was in contrast to the usual model whereby rural clinicians left the region individually or in small groups to attend distant educational events. Local education delivery enables clinicians with family, farming and other commitments to attend events they would not be able to attend if they needed to travel away from home to access them. Local delivery of an educational event ensures that members of the clinical team access the same education.

With the pooled resources of the network, presenters were paid the standard rate for delivery of education, and were provided with attractive accommodation and meals and reimbursed for their travel. All of the educators invited to teach within CMCN responded enthusiastically and gave very positive feedback about their experience, despite the travelling distance involved and the isolation of the location. Within CMCN clinicians had access to best practice education events where they lived and worked, and the uptake of professional development education increased dramatically.

### **6.3.2 Discussion of Quality Assurance and Clinical Practice Guideline Activity**

Guideline development is a skilled and specialised task requiring a clear understanding of the principles of evidence-based medicine and the role of clinical guidelines. CMCN developed a group of clinicians who were experienced in the identification and adaptation of evidence-based clinical practice guidelines. These individuals could apply these skills to the identification and adaptation of guidelines for other disciplines locally or for maternity service CPGs in other areas or at a state or national level. As a result of the researcher's involvement in CMCN guideline development she participated in the review of the 3 Centres guidelines and then the National Evidence Based Antenatal Care Guidelines. This is one example of the way that CMCN built expertise in the region.

There were some significant problems in the processes for development of CMCN guidelines. These problems related to a lack of understanding of the governance relationship between Camperdown and South West Healthcare.

The Warrnambool specialist obstetrician who was a member of the CMCN quality guidelines and protocols subcommittee was chosen for the role because she visited Camperdown and Timboon to consult and operate. She was not a member of the South West Healthcare guidelines and protocols committee in Warrnambool. By the time the CMCN CPGs were released for implementation she had moved to work interstate. Had a specialist obstetrician who was a member of the South West Healthcare guidelines and protocols committee been chosen for CMCN committee guideline approval would have been a smoother process. CMCN guidelines may also have been approved more quickly in Warrnambool had the participating obstetrician been present to advocate for them.

In October 2006 during the dispute over the implementation of CMCN CPGs and even twelve months later when I was writing an evaluation report on CMCN for DHSV, I thought that this was a story of intentional obstruction by Warrnambool. My colleagues shared this view. It was only when I reviewed the CMCN quality guidelines and protocols committee process for the identification and adaptation of evidence-based guidelines in analysing this study that I understood that the Warrnambool committee should have been involved in the CMCN process as it was the authorised committee for signing off on South West Healthcare guidelines. This blindness to due process was shared by my fellow members of CMCN quality guideline and protocol subcommittee and CMCN steering committee and was related to an inadequate understanding of the implications of Camperdown Hospital's position as part of South West Healthcare.

In 1999, Camperdown Hospital, which with Lismore Hospital formed the Corangamite Regional Hospital Service, amalgamated with South West Healthcare Warrnambool. The decision was taken in consultation with clinicians and the community. The hospital board was motivated by a concern that the hospitals were vulnerable to closure if they continued as stand-alone small rural hospitals. The relationship between Warrnambool and Camperdown is an uneasy one. In 2005

Camperdown Hospital had been part of South West Healthcare for over five years. No work was done with South West Healthcare clinicians to develop an understanding of the clinical implications of such a merger. Despite the duration of amalgamation clinicians in Camperdown did not yet understand that before a guideline could be implemented in Camperdown it would have to be approved under due process for guideline accreditation at South West Healthcare.

Simple solutions to the clinical practice guideline stand-off between CMCN and South West Healthcare were available. If the CMCN steering committee or its clinical guideline and protocol committee had recognised earlier that the South West Healthcare guidelines and protocols committee in Warrnambool was the appropriate body to approve guidelines these could have been put into action. CMCN could have requested representation from the Warrnambool committee on its guideline and protocols committee. This would have expedited approval by Warrnambool. Alternatively, the Warrnambool group could have reviewed CMCN's quality guidelines and protocols processes, identified any problems, and when agreement between the two committees was achieved, authorised the CMCN committee to sign off on its guidelines and protocols. Unfortunately this opportunity was lost and CMCN guidelines were significantly delayed in their implementation in Camperdown.

Some of the delay in giving recognition to specific CMCN guidelines was because the Warrnambool committee did not agree with the evidenced-based practice recommendations of the CMCN guidelines. It remains unclear if a recognised clinical guideline assessment tool was applied to the CMCN CPGs by the Warrnambool South West Healthcare guidelines and protocols committee. Since South West Healthcare's protocols did not state that they were produced according to this methodology, it may be assumed that no recognised clinical guideline assessment tool was applied to them. With the Warrnambool committee having right of veto over the CMCN guidelines and practising a less rigorous guideline development methodology, high quality evidence based-practice guidelines were sidelined by guidelines of a less rigorous type; a step that defeated the purpose of developing evidence-based guidelines.

The dispute over implementation of the CMCN guidelines unfolded as the funding of CMCN was coming to an end. The dispute ran parallel to the efforts made by clinical leaders to persuade the Warrnambool South West Healthcare administration to contribute an ongoing share to the cost of running CMCN. It seemed to us in the network that the two conflicts were part of the same battle; a battle to get South West Healthcare to recognise a legitimate future for CMCN and to support it. How the administration in South West Healthcare viewed this dispute I cannot tell.

In summary, the process of implementation of the guidelines across the three hospitals was hampered by delays imposed by failure to meet the requirement of South West Healthcare that a guideline within any campus of South West Healthcare be approved by the South West Healthcare guidelines and protocols committee. The CMCN guidelines were implemented in Terang and Timboon and continue to be used in these hospitals to this day.

### **6.3.3 Discussion of Workforce Committee Activity**

The development of the network enabled maternity services in the Shire of Corangamite to be maintained despite a critical loss of GP obstetricians between 2005 and 2008. During the period of study two GP registrars with an interest in obstetrics were attracted to Corangamite shire. This was an encouraging sign. How much of a role CMCN structures played in attracting them to work in the region cannot be determined by this study. CMCN facilitated resilience in Corangamite shire maternity services by upskilling midwives so that they could expand their scope of practice and by supporting the movement of GP obstetricians between the three hospitals. Surveys of clinicians identified the changes they wanted to make to their practice, and education was tailored to meet those requirements. In this way the response to workforce changes in the region was driven from the grassroots rather than imposed by management.

Midwifery upskilling and increased doctor mobility were welcomed by the clinicians as a group. This contrasts with the divided response to the proposed Enhanced Midwifery Skills in Collaboration (EMSiC) maternity service model. The CMCN workforce subcommittee developed this sustainable model, which was designed to use the available maternity workforce in CMCN. It offered a broader solution to the challenges brought by the diminishing number of GP obstetricians and the changing midwifery workforce.



The EMSiC model was not universally supported and was not implemented. There was division among midwives about the model of care. Midwives were concerned that only some of their number could participate in the new model. Many midwives were not prepared to travel to other hospitals for their work. Those midwives who were interested in working within the EMSiC model would have effectively excluded their peers from participating in birthing. Concerns were expressed by hospital administrators about how the model could be funded. The model did not have enough support. The funding for CMCN was being lost, so too was the will to drive far-reaching change such as that proposed in the EMSiC proposal.

The MCN model attracted interest from across the nation. The model was demonstrated. If CMCN had continued, confidence in MCNs as an organisational structure to support low volume rural maternity services could have developed. The CMCN is a model of care that other rural maternity services could emulate; the difficulty as demonstrated in CMCN is to garner adequate and appropriate support for such a network.

#### **6.3.4 Discussion of Development of CMCN Team Resilience and Fragility**

The CMCN coordinator worked as a ‘boundary spanner’, within Goodwin, Peck, 6 and Posaner’s definition of the term: ‘One fruitful way to think about leadership ... is to look at the structural position in organisational networks through the lens of the interaction between their personal networks and the inter-organisational structure. This suggests that we should look at leaders ... as boundary spanners’.(6pp21,22)

The project coordinator drew together midwives, doctors, and administrators within and across health service boundaries and built from this group a strong team. In the words of *Networks Briefing*,(9p3) she ‘helped the network to engage with the peripheral agencies’. The high attendance at educational events, clinical audits and the return rate of the workforce survey demonstrated this. Busy clinicians put a priority on engagement with CMCN.

### **6.4 Conclusion of Study Two**

The successes of CMCN were determined by the vision, enthusiasm and commitment of a dedicated group of clinicians and administrators who were prepared to join committees and attend meetings and educational events, and to put

in all the extra work required for those processes and events to be successful. Without the work of these unsung heroes there would have been no Corangamite Managed Clinical Network.

Lack of connection between the South West Healthcare administration and CMCN was central to the collapse of CMCN. Examples of this disconnect were seen in the activities of each of the CMCN subcommittees. The lack of South West Healthcare Warrnambool engagement with CMCN resulted in the refusal of South West Healthcare to contribute to the ongoing costs of supporting the network, delayed the implementation of guidelines in Camperdown, and allowed Warrnambool obstetricians to engage with Timboon midwives to establish a model of care that would exist outside CMCN. CMCN survived other stresses (for example, workforce loss, lack of funding of the EMSiC model) but it could not survive this triple hit from South West Healthcare. CMCN increased the resilience of the Corangamite maternity services, but the network itself collapsed with South West Healthcare's withdrawal of support.

In this chapter a narrative about the events in the CMCN was created using participant observation methodology. Chapter seven presents and analyses the data collected in the clinical audits of activity within the CMCN.

## **Chapter Seven: Clinical Audit in the Corangamite Managed Clinical Network**

### **7.1 Introduction**

The two preceding chapters provide, firstly, an account of participants' perceptions of the maternity services under consideration and what a managed clinical network (MCN) might offer such services and, secondly, a participant observer's account of what happened in the network. This chapter will describe the clinical audit processes of, and present the clinical audit data collected within, Corangamite Managed Clinical Network (CMCN) between July 2005 and July 2007. In Chapter Eight participants' views of what happened within CMCN will be presented using grounded theory to analyse interviews with key stakeholders about the development and collapse of the network.

#### **7.1.1 Aim of Study Three**

The aim of this study was to describe changes in clinical practice outcomes and the processes of clinical audit within CMCN during the period of study.

#### **7.1.2 Methodology of Study Three**

This is a quantitative study of the clinical birth outcomes recorded at Camperdown, Terang and Timboon hospitals in the period 1 July 2005 to 30 June 2007 in which trends in outcomes and the temporal relation between these trends and CMCN activities are examined. The numbers are small and statistically insignificant, but the trends are noteworthy.

### **7.1.3 Participants in Study Three**

Participants in this study are the women who gave birth in Camperdown, Terang and Timboon hospitals from 1 July 2005 to 30 June 2007 and their babies.

### **7.1.4 Study Three Procedure**

Statistics from the hospitals within CMCN are available from before and after the commencement of the network (see CMCN Timeline). When CMCN began in 2005 the quality assurance subcommittee discussed what statistics would be useful to direct practice and auditing within the network. As a result of this discussion extra fields were added to the Birthing Outcome System (BOS) system when it was implemented in each hospital. There is, therefore, a variation in the type of data collected before and after 2005.

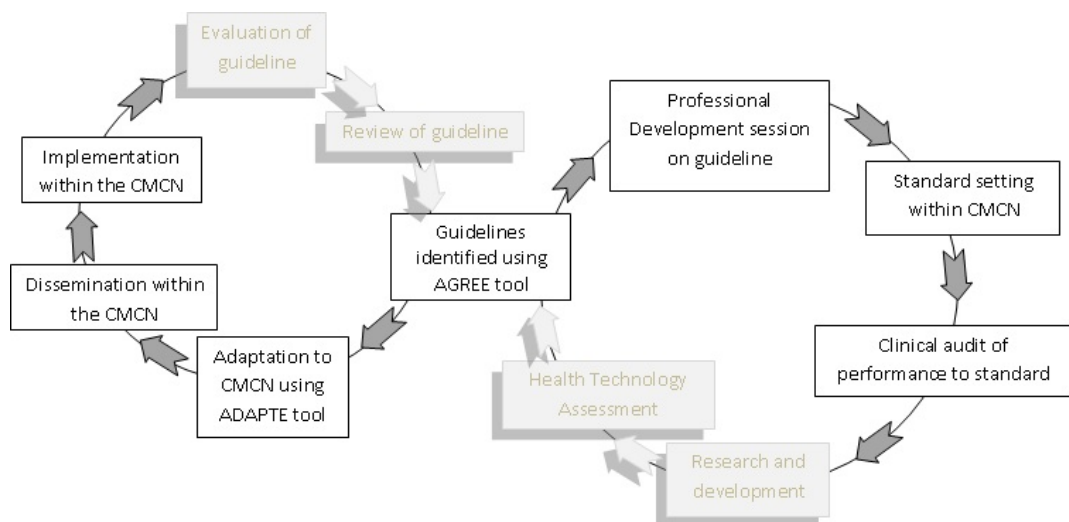
From 2006, with the implementation of the electronic collection of birthing outcome statistics across CMCN, greater detail in reporting birthing outcomes data was possible: the actual number of each type of incident or event was reported, and from these percentages can be calculated. The pre-2005 data was reported by the Consultative Committee on Obstetric and Paediatric Morbidity and Mortality (CCOPMM) to the hospitals in percentages only. Translation errors can occur if percentages are converted to number of incidents.

Maternity audit meetings commenced in CMCN in November 2005. They were called the CMCN Maternity Audit forums (see Appendix Thirteen). The meetings were held on a bi-monthly basis and the venue rotated around the three health services. Every six months birthing outcome statistics were presented for each health service and for CMCN as a whole.

Clinicians had the opportunity in this forum to examine the birthing outcomes for their own service and to compare these results with those of the other services in CMCN. These meetings were a forum for discussion of clinical management as well as a source of peer support and an educational opportunity, forming part of the clinical effectiveness cycle. Issues relating to the implementation of and compliance with clinical practice guidelines (CPGs) were identified, questions were asked and matters referred back to the quality guidelines and protocol committee (QGAP committee). In clinical audit meetings CMCN outcome data was compared with data

from CCOPPM for all of the hospitals in Victoria with less than one hundred births. Clinical audit meetings were well attended and played a large part in developing the strength of inter-hospital and interdisciplinary connection within the network.

In CMCN’s clinical audit meetings performance was reviewed against guidelines as they were developed. The CPG developers took part in the clinical audits as they were participating network clinicians. This meant that CMCN’s clinical effectiveness cycle was tight and close.



**Figure 7.1: ‘Double Loop Learning’ within the CMCN: after SIGN (165) and Argyris and Schön (166); segments of the cycle which have not been enacted are shaded grey**

The way in which the clinical effectiveness cycle was enacted within CMCN is illustrated in Figure 7.1. Parts of the cycle which were not enacted by the time of closure of the CMCN are in grey and are shadowed. An example of this double loop learning within the CMCN is the response to the issue of vaginal birth after caesarean section (VBAC). In the clinical audit it was identified that there was a very low rate of VBAC within the network. An educational forum was held in August 2006 for all CMCN clinicians. The program included a discussion of the rationale for VBAC, a literature review on VBAC, a review of the data from a regional hospital that placed an emphasis on offering VBAC and a description of how to support

VBAC. Case discussions of vaginal births after caesarean section were also presented. The QGAP committee identified a need for a CPG on VBAC, and one was developed following the standard CMCN CPG identification and adaptation process. Following the educational event on VBAC the statistics showed a marked increase in attempted and successful VBACs within the network. Had CMCN continued, the clinical effectiveness cycle would have been completed with a review of CMCN's VBAC outcomes within the clinical audit and evaluation and review of CPGs, performed by the QGAP committee.

Four of the CMCN maternity audit forums in the year were not focused on statistics. In these forums a midwife and a GP obstetrician presented a case of interest and led discussion on the case. Topics presented and discussed in these forums included managing second stage labour, detecting and managing intrauterine growth restriction (IUGR) in the antenatal period, managing VBACs, analysing critical incidents and managing the posterior position in labour. None of the hospitals in the network had held meetings of this kind before CMCN came into existence, and none have held them since CMCN collapsed.

CMCN guidelines for maternity audit forums required that any neonatal or maternal transfers and any adverse or sentinel events occurring in the hospitals in the previous three months, be discussed in a meeting.

The forums were well attended by both midwives and GPs. Before these audits commenced a code of conduct for audit meetings was developed and circulated (see Appendix Five). The CMCN QGAP committee aimed to encourage a supportive atmosphere with constructive discussion and debate following presentations.

The clinical audit meetings provided a forum for discussion of clinical issues across and within each hospital. Discussion occurred in the hospital as case studies were prepared for presentation and between clinicians from all hospitals during the meeting. All clinicians had the opportunity in this forum to gain an understanding of the clinical decision making used within and across the disciplines and the evidence or lack of evidence underpinning accepted management options. Comments made by doctors and midwives indicated that this discussion enabled a greater understanding

of the skills and experience of peers and colleagues within CMCN and increased the confidence of clinicians to act and to ask for assistance from colleagues.

### **7.1.5 Implementation of Information Technology-based Information Tool**

The QGAP committee discussed the need to collect birthing outcome data in a manner that reduced the burden of work for midwives and encouraged accuracy in the data collected. The committee identified BOS, a computer-based program used in a number of large urban hospitals in Victoria, as an appropriate and useful software tool for CMCN to use to record and share birthing outcome statistics. The QGAP committee examined the data collected by BOS and identified some extra information that CMCN clinicians wanted to collect in relation to birthing within the network, and negotiated with BOS software designers to include these fields in BOS for CMCN. CMCN was able to undertake this negotiation as a collective group.

BOS was implemented across CMCN in June 2006, following recommendation of the system to the steering committee. The first set of statistics drawn from BOS was presented at the March 2007 clinical audit forum. The clinicians who retrieved the data from it reported back positively.

### **7.1.6 Implementation of the Victorian Maternity Record**

The Victorian Maternity Record (VMR) is a comprehensive hand-held maternity record that was developed by the Department of Human Services Victoria (DHSV) for use by clinicians and health services delivering maternity care in Victoria. The QGAP committee recommended to the steering committee that the VMR be implemented across CMCN. This recommendation was endorsed and the VMR was introduced in March 2007. Implementation of the VMR in CMCN preceded the blanket, state-wide introduction of the VMR.

### **7.1.7 Analysis**

The data were analysed using descriptive statistics using Microsoft Office Excel 2007® spreadsheets: frequencies, means and graphs (bar graphs and line graphs) were developed.

## **7.2 Results of Study Three**

### **7.2.1 Numbers of Births in Corangamite Shire Hospitals**

The numbers of births across the network are small and therefore variation between subcategories of type of birth or obstetric/midwifery management are too small to observe statistically significant trends. With such small numbers, significant data are even more difficult to obtain for variations in unusual occurrences. However, the raw data does allow statements about the presence or absence of a service even if statistical significance cannot be assigned. Within CMCN the major value of audit meetings was the discussion they fostered. It was hoped when CMCN was established that as data collection continued, the accumulated data would allow more detailed analysis and identification of significant trends. This did not occur as CMCN collapsed at about the time that the guidelines were finally being implemented in the three hospitals.

The number of births in the Corangamite Shire from 2000 to 2007 is presented for each hospital within the network in Table 7.1 and Figure 7.2 (see Appendix Fifteen). The highest number of births was recorded in 2006 when there were 164 births and the lowest number was 134 births in 2007.

Terang hospital consistently had the lowest number of births of any hospital recording an average 31 births per year. The number of Terang births peaked in 2003 with 38 and was lowest in 2005 with 24 births. Camperdown averaged 59 births and Timboon averaged 70 births per year. The greatest number of births in Timboon occurred in 2006 with 81 births in that hospital. Camperdown's maximal birth number of 70 occurred in 2001. The maximum and minimum number of births did not form a pattern across the Corangamite Shire during the time of study.



### **7.2.2 Spontaneous Labour**

A spontaneous labour is a labour that commences without obstetric intervention. Conversely a non-spontaneous labour is either an induction of labour or a caesarean section. In CMCN there was a general consistency of percentage of spontaneous labours from one year to the next and between hospitals. Table 7.2 (see Appendix Fifteen) depicts the percentage of births that were the result of spontaneous onset of labour in Camperdown, Terang and Timboon hospitals in the years 2000 to 2007. Terang and Timboon averaged 65% of births from spontaneous labours and Camperdown averaged 69%. After 2005, data on the private insurance status of women in Corangamite shire was not collected.

### **7.2.3 Inductions within CMCN**

At CMCN's inception there was discussion about the validity of BOS data regarding reasons for induction. One of the reasons for this was the difference in definition of social induction between each of the towns. In some sites an induction due to the doctor or doctors being absent for an interval of time was considered a social induction whereas in others it was not. After the commencement of CMCN a set of categories for the reason for induction was agreed upon for the whole CMCN, to facilitate analysis within the network. These categories were put into the BOS system. After the introduction of BOS, midwives had the BOS-listed options only to choose between for induction of labour. Before the introduction of BOS system there were no limitations on what midwives could write as the reason for induction; doctors could define the reason in their clinical notes as they wished, and midwives could record the reason in the perinatal record as they believed was appropriate. Reason for induction was reported in percentages before the commencement of CMCN in 2005 and in real numbers from January 2006 on.

The data for reason for induction within CMCN for 2005 are shown in Figure 7.3 (see Appendix Fourteen) and Figure 7.4 (see Appendix Fifteen) shows the reasons for induction in CMCN during 2006. There are marked variations in reason for induction within CMCN and in reasons for induction in CMCN as compared to state-wide data. The CMCN average trends towards the state average. Reasons for this variation cannot be identified within the data collected.

### **7.2.4 Caesarean Sections within CMCN**

Table 7.3 (see Appendix Fifteen) shows the percentage of total births in each town that occurred by caesarean section in CMCN from 2000 to 2005. Figure 7.6 (see Appendix Fifteen) shows the same data in a line graph format.

The peak percentage of caesarean sections which was 27.1 occurred in 2003 and the lowest percentage of 22.5 occurred in the following year. The percentage of deliveries by caesarean section remained fairly constant. Over these six years, on average, Timboon recorded the lowest rate of caesarean sections, at 18.06%; Terang performed 21.73 % of its births by caesarean section; and Camperdown had the highest rate of caesarean sections, with a rate of 31.43%. It can be seen that in

Timboon and Camperdown in 2006, and in all hospitals by 2007, the rate of caesarean sections had dropped to a little below the CMCN average percentage for caesarean section births from 2000 to 2005. This change in caesarean section rate is more noticeable in elective caesarean section rate than in the emergency caesarean section rate.

The rate of emergency caesarean sections in Camperdown drops from a high of 22% in 2002 to a low of 6% in 2007 (see Figure 7.7 in Appendix Fifteen).

The parity of women who birthed in CMCN in 2007 varies across Corangamite. The proportion of primipara to multipara is highest in Terang and lowest in Timboon (see Table 7.4 in Appendix Fifteen). In every hospital in the Corangamite shire there was an increase in the number of vaginal births after caesarean section from 2006 to 2007 (see Table 7.5 in Appendix Fifteen).

### **7.2.5 Epidural/spinal anaesthesia during labour and delivery in Camperdown, Terang and Timboon**

There were marked variations across the three CMCN hospitals with respect to provision of anaesthesia for women in labour. The rates of epidural and spinal anaesthetic for multiparous birthing women in these towns were unusually low overall but were higher amongst women who were admitted to hospital as private patients. The highest rate of epidural anaesthetic for multiparous births expressed as a percentage of all multiparous births was 42.9% in Terang in 2007 (see Table 7.6 in Appendix Fifteen). Terang consistently performed a higher percentage of epidural anaesthetics for multiparas than the two other hospitals. In Timboon and Camperdown the rate for epidural anaesthetic for multiparas was below 8% in all years from 2000-2005. The mean incidence of epidural anaesthesia for all women during labour fell across the three hospitals between 2005 and 2007 (see Tables 7.7 and 7.8 in Appendix Fifteen).

### **7.2.6 Forceps Deliveries within CMCN**

Throughout the period of study Terang had a higher percentage of forceps births than either Timboon or Camperdown. Timboon had very few births by forceps delivery (see Figure 7.8 in Appendix Fifteen).

### **7.2.7 Postpartum Haemorrhage (PPH)**

There is little variation in the occurrence of postpartum haemorrhage in Camperdown, Terang and Timboon in the years 2000 to 2007. The mean percentage of births during which there was a postpartum haemorrhage was 8.7 %. The highest percentage was recorded in Terang in 2001 with 22.6% and in 2003 Timboon recorded no postpartum haemorrhages (see Table 7.9 and Figure 7.9 in Appendix Fifteen).

### **7.3 Study Three Discussion**

In the period 2005 to 2007, when CMCN was fully functioning, clinicians involved in Corangamite Shire maternity services participated in the clinical effectiveness cycle and as a consequence clinical practices were changed. Clinicians participated in the clinical effectiveness cycle by interacting in clinical audit and educational meetings, and by developing and using CPGs. In clinical audit meetings open discussion that sought to discern clinical reasoning was encouraged and a supportive atmosphere was established, with constructive discussion and debate following presentations. Clinical audit meetings maintained this atmosphere, but attendance decreased later in the life of CMCN. Perhaps the clinicians thought that they had attended too many meetings or perhaps there was dissatisfaction with the audit process. The reasons for falling attendance were not assessed during CMCN's lifetime.

Trends and examples of changes in clinical practice that occurred as a result of the enactment of the clinical effectiveness cycle within CMCN will now be discussed in detail.

#### **7.3 1 Discussion of Numbers of Births in Corangamite Shire Hospitals**

Across the seven years examined here there was a small decline in the total number of births within CMCN. Terang had the lowest average number of deliveries annually, with thirty-one births, and Timboon had the highest number of deliveries annually, with an average of seventy. Timboon's number of births increased from fifty-eight in 2000 to seventy-two in 2005, showing an increasing trend, but dropped again by 2007 to fifty-two. It can be seen that in 2001, the year with the highest number of births within the network, Camperdown had more births than in any other year and Timboon had near peak births. The year 2007 had the lowest number of births within CMCN for the recording interval. It is notable that the average number of births across CMCN remained reasonably steady. It is possible that this reflected a change in women's preferred hospitals within Corangamite Shire rather than any movement of population. The first six months of the year 2008 were very busy for Camperdown and Terang hospitals, but the numbers of births in Timboon decreased sharply. The departure of two GP obstetricians from Timboon is the most likely cause of the decreased numbers of births in Timboon, and perhaps also for the

increased numbers of deliveries in Camperdown and Terang, as women chose to give birth in those towns in preference to Timboon. A lot of women followed the GP obstetricians from Timboon to their new practice in Colac. The Corangamite figures do not include birthing numbers in Colac or Warrnambool, so this study cannot determine how many women from Timboon chose to birth outside the network after the GP obstetricians left.

### **7.3.2 Spontaneous Labour**

The figures for rate of spontaneous labour are similar in all three Corangamite hospitals. This suggests a consistency of policy and practice across CMCN.

The percentage of spontaneous births from 2000 to 2007 was higher for public patients than for private patients. This may have related to a greater tendency to induce private patients before their doctors took leave or were absent. In 2006 Terang had more spontaneous labours and Timboon and Camperdown had fewer than usual. One possible explanation for this was the decreasing number of doctors in each town. Lower doctor numbers could increase the inclination of a doctor to induce labour. If a doctor was planning to leave the town for a period they might induce labour to allow the woman to birth in her own town.

The reduction in GP obstetrician numbers occurred earliest in Camperdown, with one doctor ceasing obstetrics in June 2006, leaving three doctors still practising in the town. In Terang, one doctor ceased practising obstetrics in July 2007, leaving one GP obstetrician in Terang. In Timboon one GP obstetrician left in January 2007, with the remaining two leaving the town a year later. If the number of inductions was inversely proportional to the number of doctors per pregnant woman the induction rate in each town could be expected to rise as the number of doctors in the town decreased; the number of inductions would thus increase first in Camperdown and then in Terang and Timboon. This was not in fact what happened. The influences on induction rate are more complex and the current data does not enable an explanation of the variation in rates of spontaneous labour within CMCN.

### **7.3.3 Indications for Induction of Labour**

Bearing in mind the low statistical significance in this data set and the variation in definitions across CMCN, we can note that in Camperdown and Terang there were

more inductions for prolonged pregnancy than the state average and that in Timboon the incidence of induction for prolonged pregnancy was lower than the state average.

Camperdown had few social inductions and Terang had none. It is difficult to analyse these differences as the data is of questionable reliability. Timboon had the highest percentage of 'other' indications for labour. This may have been because Timboon, which recorded low values for several reasons for induction in which there was concurrence of percentage between Terang and Camperdown, used different nomenclature from Terang and Camperdown. The difference in incidence of reasons for induction across CMCN may have indicated a difference in practice but the data cannot confirm this and it is more likely that the difference is one of definition.

Terang did not record any inductions for diabetes, IUGR or fetal distress.

Camperdown and Timboon both recorded an incidence of induction for IUGR and fetal distress that was higher than state average. The possible reasons for this are that Camperdown and Timboon had a higher than state average of incidence of these conditions, that they had a higher false positive definition of IUGR and fetal distress, or the incidence is equal to the state average and the incidence in the time period under investigation is a random variation from the norm. The possibility for Terang is the opposite of all of the above.

The incidence of induction for diabetes within CMCN is lower than the state average. Only Camperdown cited diabetes as a reason for induction. It is likely that this was a risk management policy. Camperdown was the only hospital with GPs with caesarean section skills on site; because of this Camperdown tolerated a higher risk profile and would admit women with diabetes to their maternity service while Terang and Timboon hospitals would not.

Similar themes related to small numbers of cases and lack of statistical significance apply to the data for reasons for induction of labour within the network in 2006 and 2007, but the data is available as actual numbers of cases, which gives a clearer indication of the situation. It can be seen that the most common reason for induction of labour was prolonged pregnancy. Timboon had five inductions in 2006 for reasons of maternal preference, which may have been called a social induction by other clinicians. The range of reasons for induction was more consistent across

CMCN in 2007 than in 2006. This may reflect the influence of CMCN. However, it was too early to determine whether this change would have been sustained or what are the causes were.

#### **7.3.4 Increased Rate of Vaginal Birth after Caesarean Section**

A seminar on VBAC was held by the CMCN education subcommittee on 25 August 2006. The presenters were an obstetrician and midwife from Warragul hospital, which is a regional Victorian hospital that achieves a high rate of VBAC. The program included a discussion of the rationale for VBAC, a literature review, a review of the Warragul hospital data, a description of how to support VBAC and case discussions. This meeting was widely attended by midwives and doctors from CMCN.

It is interesting to note that there was an increase in VBAC within CMCN following this seminar and a concurrent decrease in caesarean sections. It is likely that the educational event was a driver of this change in practice. Whether this was sustained after the collapse of CMCN cannot be determined.

#### **7.3.5 Anaesthesia**

In Terang and Timboon from 2000 to 2005 there were GP anaesthetists who provided an epidural service for birthing women. There was no anaesthetist with epidural skills in Camperdown, nor were midwives in Camperdown skilled in the care of women with an epidural anaesthetic during labour after 2002. Consequently from 2002 onwards no epidural anaesthetics were given in Camperdown. GP anaesthetists in Camperdown were able to perform spinal anaesthetics for caesarean sections throughout the study period. In CMCN the provision of an epidural service was limited by the availability of clinicians skilled in epidural/spinal anaesthesia.

In all three hospitals available forms of analgesia were discussed with women in the antenatal period and in the labour ward. Women who had a strong preference for epidural anaesthesia in labour self-selected not to attend Camperdown or were advised of the unavailability of this option in Camperdown, instructed in the alternatives and given the opportunity to book elsewhere if they wished to have access to epidural anaesthesia during labour.



It can be seen from the 2000–2005 data that primiparous labouring women were more likely to have epidural anaesthesia than were multiparous women in labour. Several factors are likely to have been involved. The most likely is the longer average duration of a woman's first labour. The other possible influence on the lower incidence of epidural analgesia in subsequent labours is that women experience lower levels of anxiety when they have laboured previously. Lower levels of anxiety may lessen the experience of pain and decrease the requirement for analgesia.

It can also be seen that women with private health insurance were more likely to have epidural analgesia. This could reflect a greater desire for control of the experience of labour among women of higher socio-economic status. It does not reflect a greater access to epidural anaesthesia, as access to epidural anaesthesia within CMCN was not limited by whether a woman had private health insurance. The nature of the data collected within CMCN does not allow more detailed assessment of the cause of the higher use of epidural anaesthesia among women who were private patients during the study period.

The relationship between the use of epidural analgesia and the availability of skilled clinicians to provide it has already been discussed. It is also of interest that in April 2006 CMCN ran an educational event on active birth over two days educating doctors and midwives on non-pharmacological methods of facilitating labour and birth and reducing women's perception of pain. It is possible that there was a causal link between that educational event and the decline in use of a form of analgesia that decreases women's mobility and sensation.

### **7.3.6 Forceps Deliveries**

Few trends in the incidence of forceps deliveries as a percentage of the total number of vaginal births can be identified in time correlation with the commencement of CMCN.

### **7.3.7 Postpartum Haemorrhage**

There was little variation in the rate of PPH over the period 2000 to 2007. However, interpretation of the reported rate of PPH in Camperdown, Terang and Timboon in the years 2000 to 2007 needs to be viewed in light of the change of definition of PPH used by the three hospitals once CMCN guidelines were introduced.

The CMCN guidelines, which were based on the South Australian Healthy Start Clinical guidelines, define a PPH as a bleed of more than 600 mls postpartum. In contrast, the Victorian state-wide birthing outcomes statistics system definition, which was used for reporting PPH before 2006, defines a PPH as a bleed of more than 500 mls. In 2006, then, when CMCN guidelines were adopted, a larger bleed had to occur before it was reported as a PPH. Although one might have expected a decrease in incidence of PPH as reported within CMCN in 2006, this is not apparent. Conversely, if there had been an increase in postpartum bleeding of 500–600 mls from 2005 to 2007 this would not be detectable because of the change in definitions used. Another possible influence on the reported rate of PPH would be an increase or decrease in the accuracy of diagnosis of PPH by clinicians. CMCN clinical audit meetings included one that examined PPH diagnosis and management. In Camperdown and possibly also in Terang and Timboon after the PPH clinical audit, midwives began to accurately measure the volume of blood loss by weighing labour ward linen and perineal pads and swabs to calculate the volume of blood they contained. Previously they had used visual estimation of blood loss. Visual estimation of blood loss has been shown to be inaccurate.(218) It is likely that accurately measuring rather than visually estimating the blood loss after birth led to improved accuracy of diagnosis of PPH and possibly a decrease in reported PPH.(218) This is another example of clinical audit and education leading to changed practice in CMCN.

There were multiple variables impacting on the rate of PPH in 2006 and 2007. There were no significant changes in the rate of PPH in the network in these two years. It is likely that the conflicting influence of different variables on the rate of postpartum haemorrhage cancelled each other out. The most dramatic change was the increase in reported PPHs in Terang in the years 2005 to 2006, a period that covers the commencement of CMCN, but predates changes introduced by the network. A larger reduction in the rate of PPH occurred in Terang between 2000 and 2001. No information is available on the possible influences on the PPH rate in Terang between 2000 and 2001.

### **7.3.8 Concluding Comments**

In Terang and Timboon, where the clinical practice guidelines continue to be used, some part of these changes may still persist. A tight loop of the clinical effectiveness cycle would have been possible in CMCN had it continued. Clinical activity could have been guided by evidenced-based guidelines, and performance audited against these guidelines. Guidelines could have been revised in the light of new evidence and the clinical experience of implementing the guidelines. Research could have been initiated to answer clinical questions. However the network collapsed and the clinical effectiveness cycle was unable to be maintained in Corangamite Shire maternity services. The MCN structure enabled the implementation of the clinical effectiveness cycle in this low volume rural context; without an MCN structure it ceased to function.

It was hoped that after the inception of the network, data would be more readily comparable across the three health facilities; that compliance with protocols would decrease ‘unwarranted variation’ in practice; and that analysis of cause of variation would become possible. This may have happened if the network’s activities had continued, but that possibility was not tested due to the early collapse of the network. This is an area that warrants further study to assess whether the influence of changes introduced by CMCN has persisted beyond the life of the network. If changes have persisted, there is value in trialling short pilot projects that do not continue. If such changes do not persist then the effort and expenditure related to such short-term projects are wasted and funding bodies should concentrate on the provision of long-term interventions. In summary, the birthing outcomes in the three Corangamite Shire hospitals were maintained and did not deteriorate during the period of study despite the development of CMCN and coincidental significant changes in medical workforce.

In the next chapter Study Four will be presented. Study Four is the final study in this thesis; it explores key stakeholders’ perceptions of what caused the collapse of the network.

## **Chapter Eight: Study Four — 'Corangamite Managed Clinical Network: What Happened?'**

### **8.1 Introduction**

Chapter Five examined key stakeholders' perceptions of the strengths, weaknesses, opportunities and threats to Corangamite maternity services as stand-alone units and within Corangamite Managed Clinical network (CMCN). Chapter Six provided a participant observer narrative of the development of CMCN, and the clinical audit outcomes for Corangamite maternity services were examined in Chapter Seven. In this chapter, using grounded theory methodology, theories about what was achieved in CMCN and what caused it to collapse are developed from semi-structured interviews.

#### **8.1.1 Aim of Study Four**

The aim of Study Four was to identify what was achieved within CMCN and why the network collapsed.

#### **8.1.2 Methodology of Study Four**

In Study Four structured interviews were conducted with key informants within CMCN. The interviews were digitally recorded and then transcribed. The transcripts were then analysed using grounded theory methodology, as described in Chapter Five. Approval for the study was sought and received from the Social and Behavioural Research Ethics Committee of Flinders University. Approval was given for the project, number 4988 on 15 October 2010.

#### **8.1.3 Study Four Participants**

The interviewees were people who had participated in the steering committee or as clinicians within CMCN.

Of the fourteen people who were invited to be interviewed, ten were interviewed. Four on the interview invitation list could not be contacted. They were two GP

obstetricians who had moved away from the Corangamite town, where they had been living and working, and a nursing unit manager and an administrator who had both retired. Of these invited but unavailable interviewees the GP obstetrician and the administrator had been interviewed in Study One.

Of the fifteen interviewees from the first round of interviews:

- Five participants from Study One (two administrators, one doctor and two midwives) were invited to re-interview for Study Four. Of these:
  - three were re-interviewed (one administrator, and two midwives)
  - a doctor who had left the area did not respond to the invitation
  - one administrator had retired and left the region and the invitation was returned to sender.
- Ten participants from Study One were not invited for re-interview in Study Four for the following reasons:
  - A Director of Midwifery had retired two months after the first round of interviews.
  - Two Department of Human Services Victoria (DHSV) employees were no longer working for the department and could not be contacted.
  - The CEO of the Otway Division was not invited as she had not been involved in the operation of the network.
  - The Warrnambool specialist obstetrician had resigned and left the state.
  - One Nursing Unit Manager had changed jobs immediately after the first round of interviews and therefore had not participated any further in CMCN activities.
  - The project coordinator had left her position and there was no forwarding address.
  - An academic GP who had been involved in the initial negotiations had not played a clinical or committee role.
  - The consumer representative had been replaced by another representative who did not attend and therefore neither consumer representative was invited.

- The Director of Medical Services of South West Healthcare was not invited as he had not played a clinical role and had attended few steering committee meetings.

Table 8.1 shows the interviewees’ roles within CMCN and the pseudonyms assigned to them. Pseudonyms were assigned to the numbered transcripts before transcripts were read. The midwives’ names are all female, the GP obstetrician’s names are all male and the administrator’s names are half male and half female. The gendered names reflect the gender balance in the groups but may not reflect the gender of any particular individual.

**Table 8.1: Interviewees’ roles in CMCN and pseudonyms assigned to them**

Role	Pseudonym
GP obstetricians	Norman, Barry, Paul
Midwives	Julie, Naomi, Elle, Alice, Angela
Administrators	Keith, Maria

All of the interviewees spoke English as their first language. In the Corangamite shire in 2006, 1% of people were not proficient in English 15% spoke English well or very well, and 82% spoke only English. None of the interviewees were of Aboriginal or Torres Strait Islander descent. In the Camperdown, Timboon and Terang communities, 0.4% of the population identified as Aboriginal or Torres Strait Islander in 2006.(205,219)

Four of the interviewees were male and six were female. Their ages ranged from thirty-three to sixty-five.

#### **8.1.4 Study Four Instruments**

Structured interviews were conducted in which each of the interviewees was asked a standard set of questions. When a response given by an interviewee was unclear the interviewer asked for clarification. In this way interviewees were encouraged to discuss what happened in CMCN and to structure their responses to address the major activities of the network. The questions were:

1. What was achieved by the Corangamite Managed Clinical Network?

2. What changes did the Corangamite Managed Clinical Network bring to your maternity service?
3. What difficulties did the Corangamite Managed Clinical Network cause within your service?
4. What benefits did the Corangamite Managed Clinical Network bring to your service?
5. Did the Corangamite Managed Clinical Network influence the way you worked?
6. Were you aware of the Corangamite Managed Clinical Network clinical guidelines?
7. Did the Corangamite Managed Clinical Network guidelines influence the way you worked?
8. Were you aware of the Corangamite Managed Clinical Network educational events?
9. Did the Corangamite Managed Clinical Network educational events influence the way you worked?
10. Were you aware of the Corangamite Managed Clinical Network workforce development?
11. Did the Corangamite Managed Clinical Network workforce development influence the way you worked?
12. Were you aware of the Corangamite Managed Clinical Network clinical audit?
13. Did the Corangamite Managed Clinical Network clinical audit influence the way you worked?
14. In your opinion what factors caused the Corangamite Managed Clinical Network to fail?
15. Are there any other observations that you would like to make about the Corangamite Managed Clinical Network?

If an answer was unclear interviewees were asked to clarify their response.

### **8.1.5 Study Four Procedure**

The selection of participants began with letters requesting permission to approach staff being sent to the CEOs of Timboon and District Health Service and Terang and Mortlake Health Service and to the Campus Manager of the Camperdown Campus of

South West Healthcare. In all cases permission was granted. Next, phone calls were attempted by the primary researcher to the fourteen people who had been active in CMCN committees and were still in the region. In this phone call the primary researcher informed potential participants of the aims of the study and told them that an independent interviewer would soon make contact to request permission to interview.

The interviewer subsequently telephoned potential participants and requested permission to interview them for the study and, if permission was granted, arranged a convenient time and place for the interview. At that meeting, the interviewer explained the steps that would be taken to conceal the identity of the interviewee and advised that the intent was to include analysis of the interviews in a doctoral thesis and research papers for publication in academic journals. If the participants were happy with this they were asked for consent to interview and given a consent form to sign.

The interviews were held between October 2010 and February 2011, two years after CMCN had ceased to function. Each interview lasted between twenty and forty minutes. Interviews were recorded on a digital recorder and were then transcribed into Microsoft Word ® documents by research assistants. The primary researcher was given de-identified data. The names of the interviewees were removed from the transcripts before they were passed to the research assistant who performed the coding.

In summary, the methodology of Study Four was structured interviews with purposively selected members of CMCN committee members, some of whom were also clinicians. The data from the interviews were analysed using grounded theory methodology. From the analysis, theories about the existing maternity services and the impact of the network were developed.

#### **8.1.6 Study Four Analysis**

Analysis for Study Four was performed using grounded theory in the same manner as described for Study One.



## 8.2 Results of Study Four

The results of the open, axial and selective coding of the interviews about CMCN's achievements and the causes of its failure are now presented. Five major themes were identified. These can be broken down into subthemes as follows:

1. Being a network
  - 1.1.1. Participant's perception of the network's achievements and impact
  - 1.1.2. Problems experienced in the network
2. Maternity service delivery
  - 2.1.1. Sharing workforce
  - 2.1.2. Development of models of care
  - 2.1.3. Network influence on ways of working
  - 2.1.4. After hours work
3. Internal network relationships
  - 3.1.1. Teamwork and conflict
  - 3.1.2. Relationships across hospital boundaries
  - 3.1.3. Role of the project coordinator
  - 3.1.4. Timboon withdrawal
4. Relationships external to the network
  - 4.1.1. Relationship with Warrnambool obstetricians and administration
  - 4.1.2. Relationship with DHSV
  - 4.1.3. Regional network education
5. Quality assurance
  - 5.1.1. Education, quality assurance and audit
  - 5.1.2. Clinical guidelines
  - 5.1.3. Risk management

Quotations are given as evidence of these themes and to illustrate the breadth of responses. Pseudonyms are used in place of interviewee's names.

### **8.2.1 Theme One: Being a Network**

Interviewees experienced being part of CMCN in different ways and saw the achievements of the network, its impact and its problems from different perspectives.

#### **Participants' perceptions of the network's achievements and impact**

The level of conceptualisation of the network varied among interviewees.

Understanding of the network reflected participants' experience within the network.

Interviewees who had been steering committee members had a broader understanding of the network than those who had participated as clinicians on subcommittees, but all interviewees spoke of the outcomes of networking rather than of the network itself. While the network was a nebulous concept to them, its outcomes were easily described. Concepts were linked differently by different interviewees and it is possible, by drawing all of this together, to see how the three strands of network activity — education, quality assurance and workforce development — were integrated in people's experiences within the network. Barry, who had been a steering committee member, described how the process of identifying and adapting clinical practice guidelines to local conditions improved inter-professional teamwork, strengthened confidence in and quality of the service delivered. He also commented on the way the CMCN extended the inter-professional teamwork across facility boundaries

Barry commented that the network engineered cooperation between the agencies, the division of general practice and the university. Elle and Norman also stressed the collaboration fostered by the network.

Maria and Barry both spoke of the ways in which the influence of the network persisted beyond the life of the project and beyond the focus of the network:

*... but it still has enabled ourselves and other local organisations, I believe, to have midwives who have extended their area of practice and that particularly has benefited this organisation to be able to continue to provide midwifery to this district, or to provide birthing services, I should say.*

[Maria]

The network provided solutions to local problems by strengthening risk management, communication, team work and collaboration across the facilities.

*[I]t did open up communications with other hospitals close by that had similar sort of patients, history, treatment and other range that were doing those sorts of things. [Alice]*

Affirmation of what the network achieved in strengthened risk management, and stronger relationships and communication and education was laced with regret that the network had collapsed before the midwifery workforce reforms occurred. Interviewees described a sense of loss.

*It was somewhere we could go as a midwife and say, you know, you know 'we'd like to learn this' or ... that was my understanding of it, anyway ... was that the CMCN were a body there that we could, um, go to if we needed to do something and now it's not there I don't know who we actually go to. [Julie]*

And finally Norman describes his belief in the potential of the network model.

*I think in all it was achieving and could have, if it continued, to achieve what it was set up for. It could have been a model of care for small units all over Australia and maybe, all over the world. [Norman]*

The interviewees were encouraged by the activity in quality assurance, education and workforce development that they had seen and participated in as part of CMCN.

### **Problems experienced in the network**

Interviewees recognised problems with the network, ranging from the relatively minor one of inconvenience of finding time for the meetings:

*It's just the trouble of getting to the wretched meetings which were really good but you know, come out every few months and trying to find the time to get to them. [Paul]*

to the more serious one of disharmony between those who were included in the changes and those who felt excluded by them:

There was disappointment that the vision was not fulfilled:

*It didn't result in the outcomes we'd hoped for or the outcomes that were identified in the, ah, document itself, being a shared midwifery workforce [Keith]*

The most serious problems seemed to be in the relationships with external agencies. These will be described later.

Angela, who worked in Camperdown, the hospital managed by Warrnambool, the regional hospital, gave an example of this friction.

*And then we were in quite a state when CMCN was closed down, what we were allowed to use and what we weren't allowed to use, and so that made it quite, ah, quite nasty at one stage, because I made a phone call to someone and they said well if you use the CMCN protocol and something goes wrong, you won't be covered. [Angela]*

Angela and Maria pointed to funding difficulties being the cause of the collapse of the network.

*I thought it was really, really interesting work, but somewhere along the way it got lost, which is, which is really sad. Um, I think it was a funding problem. [Angela]*

In summary, the network increased communication between the facilities, it introduced education and quality assurance activities and developed new workforce models and these developments were all interlinked. The problems that the interviewees described were the difficulty of getting to meetings, inclusion and exclusion causing dissent in the ranks, regional conflict over local autonomy, and difficulty securing ongoing funding.

### **8.2.2 Theme Two: Maternity Service Delivery**

Interviewees focused a lot of their responses on the way CMCN affected the delivery of maternity services in Corangamite shire.

#### **Sharing workforce**

Interviewees acknowledged that clinician shortage was a problem in the area:

Naomi: *But I mean there's a disaster waiting to happen in this area, but, you know, up there save Warrnambool we'll just have to pick it all up.*

Interviewer: *Because there isn't enough coverage?*

Naomi: *Yep. Yep. I mean you've got one GP obstetrician here, you've got three in Camperdown — which periodically aren't there. There's none there at the moment. [Naomi]*

The opportunity in CMCN to plan sharing of workforce was appreciated by the interviewees, but they were aware of the difference between theory and reality.

Naomi: *Because there was a reduction in GP obstetricians and a reduction in midwives happening, um, throughout Australia. Um, they actually could share resources, or thought they could share resources across three services.*

Interviewer: *Right and did that?*

Naomi: *No*

Interviewer: *Right*

Naomi: *Not really, it's ad hoc. It's very ad hoc and we've got less GP obstetricians than we had when that project started.*

Only the medical workforce was shared across the network, however. The sharing of midwives was planned but did not eventuate.

*Well I thought it was a terrific initiative to try and get the three local hospitals together to try and work out things like whether we could share our resources with, um, workforce and things, but it just didn't get off the ground.*

[Elle]

Naomi is the only interviewee who suggested a reason for the lack of progress on sharing midwifery workforce across the network.

*We could share services, yep. It never happened, because the midwives weren't prepared to work elsewhere. [Naomi]*

Norman described how driving from Camperdown to Timboon to perform caesarean sections broadened his outlook and sphere of influence. He developed a passion for the provision of service and the quality of obstetric care beyond his own hospital, he became involved in education for all maternity clinicians in the shire.

Norman elsewhere summarises how he believed that the workforce sharing linked all of the other network activities:

*Well it embedded it in a regional sense so that we had shared workforce, shared experience, shared education and that relationship building and, ah, I believe increased quality of care. [Norman]*

In summary, there were hopes that workforce could be shared across the network, but only doctors moved between facilities, as midwives resisted this change. One of the doctors suggested that the movement of doctors between hospitals built stronger inter-hospital relationships

### **Model of care development**

The work done by CMCN on workforce and model of care development was not universally recognised.

Interviewer: *Um, were you aware of the Corangamite Managed Clinical Network workforce development?*

Paul: *Um, not really, no.*

Interviewer: *Did the workforce development influence the way that you worked?*

Paul: *Oh no, sorry, it didn't, no, that was the one I was unaware of.*

Julie was similarly unfamiliar with the term 'workforce development', but did, after some prompting by the interviewer, begin to discuss skills development to foster a broader scope of practice for midwives. Barry, who was a steering committee member, had partial awareness of the workforce development activities. Norman, who was a workforce subcommittee member, had a clear concept of the workforce development activity.

*Well part of the brief with the managed clinical network was to provide a sustainable obstetrics workforce and that, we could see that meant sharing*

*resources between three different sites, that meant theatre resources as well, um, and therefore that was one of the reasons why it was set up was to have sustainable workforce and hopefully recruit. I'm not sure that we did [have] any success in recruiting. [Norman]*

As did Alice:

*"It was really trying to introduce a roster cover and look at issues, training and future workforce but also the current workforce to fill out the dips and offer cover. [Alice]*

Even though not all interviewees recognised the phrase 'workforce development', they all talked about workforce development activities. There were several strands to the workforce development interviewees reported on. Firstly, there was the skills development for both midwives and doctors and the development of supporting processes to allow midwives to lead maternity care.

*It also had an educational side which I, I thought, was of high quality and I valued the education that I gained from that and it was built into the quality, um, cycle so that we had to have a certain amount of education and therefore it improved our midwifery skills. [Norman]*

Barry and Julie spoke of the educational activity supporting a change of guard from midwives who supported a doctor's role as the *acoucheur* to midwives who were skilled to perform the intrapartum monitoring and birth. The expanded scope of practice for midwives lasted beyond the life of the network.

Secondly, the CMCN workforce subcommittee did consultations and developed a caseload midwifery model of care for implementation across the whole network. In caseload midwifery a midwife takes personal responsibility for the care of a number of pregnant women, giving continuity of care across the antenatal period through the labour and birth to the postpartum period.

*I know [the project officer] used to come down and see us periodically and speak to the midwives. She'd have mid[wifery] meetings so they would talk*

*about different, um, things particularly around the, um, models of midwifery care. [Elle]*

But this model met with resistance from some midwives.

*I was, I was very keen to get a model up and running that did set up. I realise there was a lot of conflict within the ranks at Camperdown. So at one stage I was, I was sort of, um, you know, toying with the idea that, you know, [project officer] and the CMCN were on track with their idea of trying to pull three services together, ah, but then it just got mighty and it seemed to get out of hand [laughs] as, as all these things do. [Angela]*

And even those midwives who were interested were not sure that they wanted to forgo their general nursing work entirely.

*I did come round to the idea though that it really wasn't going to work for me that the actual workforce development they were trying to do, um, only because they were talking about, you know, a couple of midwives in each area doing the whole lot of midwifery and that started to scare me of all the others that wouldn't be on the team and also I enjoy my full workload. You know, I enjoy my ED. I enjoy my ward work. So I then decided that really the workforce development really wasn't going to be up my alley. [Angela]*

The full caseload model of care was not implemented, although some aspects of it were incorporated into the Rural Maternity Initiative.

*The involvement of midwives in antenatal care with, with um, the introduction of the RMI [Rural Maternity Initiative] that came about from the CMCN ... and, um, being able to, midwives meeting the mums at, at the doctor's rooms, [coughs] the shared care, that was probably the main thing I noticed. [Julie]*

Norman strongly approved of the caseload midwifery model and suggested that concerns about its cost may have prevented its implementation.

*It could have been a model of care for small units all over Australia and maybe all over the world. It's probably hard to know whether it's a more expensive model. I'm not, I wasn't involved in the budgets, I'm, I don't think*



*the obstetrics side of it, as in the doctor's side of it, um, was going to cost more but the midwifery might have, but maybe it cost more but it's better and the health outcomes are improved then maybe it saves in the end. Those sorts of intangibles that we'll never know because we didn't have any [coughs], glimpse, the managed network didn't last long enough for us to get that information. [Norman]*

Resistance to changes to the model of midwifery care that existed in the Corangamite hospitals was strong and midwives who were initially supportive of change would not drive adoption of caseload midwifery.

The third workforce development activity within CMCN was clinical placement of groups of Corangamite midwives at the Western Health Sunshine campus for clinical training. Keith and Maria, the administrators, were aware of this activity.

*Ah, my understanding of the workforce development would be the experience of our midwives going to Sunshine, for instance. [Keith]*

In summary, interviewees reported that workforce development within the network had been useful. The full breadth of change envisioned by some midwives in the network met strong resistance from others and the caseload midwifery model of care that was developed was not implemented. However, the expanded scope of practice enabled by CMCN activities persisted beyond the life of the network.

### **Network influence on ways of working**

Most of the interviewees agreed that CMCN activities changed the way they worked or their attitude to work and risk management.

*I can't say categorically it changed the way the midwives work, ah, I think it changed to some degree their attitudes towards work. [Keith]*

Naomi and Alice believed that CMCN had not changed their way of working. They did, however, think that it may have changed others' ways of working. Keith also observed changes in the way others worked:

*Ah, there are now processes that no matter who the midwife is on duty they know that this is the set, ah, procedure to take place when we know a lady's*

*coming in to give birth, no matter what time of day or night it might be.*

*[Keith]*

Keith also commented that he thought the placements changed midwives' attitudes to work. Keith did not expand on what he meant by this but one can speculate that he was talking about preparedness to take on new processes and to follow standard procedures. Alice referred to this:

*[I]t really encouraged the midwives to consider their skills, and it's really good education program in some skills that were handed over to the medical profession and things like baby examinations, suturing the perineums, some antenatal care and also did very much the clinical and outside, other hospitals and experiences, things too. It started introducing the idea of having standardised policies and procedures for our region too. [Alice]*

### **After hours work**

There were two comments about the impact of CMCN on after hours and on-call work. Julie, a midwife, described how the clinical practice guidelines (CPGs) gave her confidence when working after hours. Barry commented on the increased communication within the network enabling coordination of out-of-hours medical services.

In summary, interviewees agreed that CMCN changed the way maternity care was delivered in Corangamite. Some interviewees would have like to see more radical change than that which occurred, noting that the changes did not go as far as had been planned. The major change noted was the relaxing of control by doctors and increased responsibility awarded to midwives in the birth room. The hoped-for sharing of midwifery workforce and implementation of models of care that used the midwifery workforce more effectively did not occur. This would have been a negotiated change, a significant one to implement in the space of two years.

### **8.2.3 Theme Three: Internal Network Relationships**

#### **Teamwork and conflict**

Barry, Paul, Alice and Angela all discussed the teamwork engendered by CMCN. Alice and Angela talked about the strength of the team mentality among midwives which was strengthened by increased communication. Barry spoke of the way the CMCN formed an inter-professional team spirit.

*It had benefits, ah, for doctors working with nurses both in their own locale to develop a, a team, a coordinated team thing and we're all singing from the same hymn sheet, in that we were able to develop, um, both clinical protocols that ... put it into a local setting with people with whom we have a day-to-day, um, in, you know working relationship within the labour wards. [Barry]*

The flipside of teamwork is disharmony and conflict. The team may be strengthened by the exclusion of others. Barry and Keith described this inclusion–exclusion dynamic, but Keith felt that during the life of the network these tensions were partially resolved.

*There may have been difficulties in the early stages, ah, obtaining support, ah, between the staff at the various organisations. Ah, I think to some degree that was overcome through the process. If there's been any other difficulty I suppose it's been the lack of a follow through. A lot of people, staff involved in the process, have identified that they've put a lot of time and effort into it and they were disappointed with the outcomes at the end, that it didn't actually, ah, lead to what had been anticipated might occur. [Keith]*

In this comment Keith introduced a more serious problem. People who were involved in the activities of the network were disappointed with what was left after the network collapsed. Naomi also expressed this sense of futility:

*Well there's no Corangamite Managed Clinical Network any more so there's no one to coordinate it any more or so. There's this project called SWAMI, that's like DRH [DHS] go around in circles with funding. [Naomi]*

Naomi went on to explain in response to the interviewer's request for clarification that SWAMI [South West Area Maternity Initiative] was a very large network operating from Portland to Colac. Naomi did not identify any engagement with this network. Barry also referred to SWAMI. He felt that SWAMI had copied the model of CMCN but spread it over a larger area without engagement with grassroots clinicians. He saw the development of SWAMI as a negative impact of the CMCN.

Later in the interview Barry referred to SWAMI again, saying that he, like Naomi, had no engagement with that large network.

*I actually regret that the, um, funding to, ah, allow the, ah, organ, the educational hence the competency test and the auditing, ah, has gone and has been replaced by a, you know, a larger, um, whatever it is, you know, based in Warrnambool, that has no impact on the way I, I work at the moment so I really regret that it's not in place any more. [Barry]*

None of the interviewees reported engagement with SWAMI, nor did they see SWAMI as a positive outcome of CMCN. The wide-area network lacked the grassroots involvement demonstrated in CMCN. Norman talked about the local versus the regional dynamic.

*Well it did show the dysfunction between local, um, local action to improve a service and the, the wider organisations in the area, how that impacts on them and how the large organisations impact on the local. So, I don't think that the large organisations have any understanding of the vision, they didn't understand the passion. Um, to them it was all a monetary thing, ah, that had to, ah, deal with budgets and they really didn't, um, put the, put the amount of money required in behind it. I'm talking about self-care to fully make it sustainable. Ah, I think, and that, that beautifully highlighted that interface, that friction that happens between what grassroots organisations, um, want and what the larger bureaucracies want. Also I think local empowerment is a threat to, to larger organisations and I've seen that time and time again in all sorts of institutions and in health care which I deal with most and larger institutions don't like small, local efficient passionate organisations.*

[Norman]

Norman attested that local organisations can harness passion and commitment that larger organisations fail to engage and that the empowerment of individuals that can occur in small organisations is often a threat to larger organisations. Barry discussed the same tensions, naming the specific instance of the campus manager of South West Healthcare in Camperdown having a 'large-organisation' philosophy that was not in tune with the 'self-sufficiency' philosophy of the staff who worked under her. Norman also commented on CMCN's local focus, describing the local, grassroots nature of CMCN as one of its best attributes.

The tension between the Camperdown hospital staff and their Warrnambool management was also apparent in the discussion of clinical guideline implementation which follows.

In CMCN, strong teams were supported, both teams of midwives and teams of midwives and doctors, in hospitals and across hospitals. As has been discussed, there were tensions between those who felt included and those who felt excluded by these teams. This tension was one of the factors that stymied the implementation of a network-wide caseload midwifery model. There were also broader conflicts between CMCN and the management of the regional hospital in Warrnambool, which was not seen to be supportive of CMCN's activities and philosophies. This conflict had most impact in Camperdown, which as part of South West Healthcare fell under the umbrella of Warrnambool administration. The South West Area Maternity Initiative (SWAMI), a larger network that was subsequently created across the wider south-west region, has not achieved engagement with Corangamite maternity services

### **Relationships across hospital boundaries**

Interviewees reported the development of relationships that crossed hospital boundaries.

*Ah, I think the achievements were building better relationships between the health service involved, ah, the cons[ultants] ... the specialist obstetricians from Warrnambool. [Keith]*

*Oh it was a great opportunity for midwives and doctors in the area to come together and discuss common experiences, ah, and learn from each other and engender a sense of teamwork and unity, people in common positions ... enhanced teamwork and cooperation between the centres, um, yeah they were the main things I think. [Paul]*

Relationships were built between the Greater Green Triangle University Department of Rural Health in Warrnambool, the Otway Division of General Practice and the midwives and doctors working in the three hospitals.

*I thought that the cooperation between the agencies and the division [of General Practice] and general practice and the university department I thought was excellent. [Barry]*

Within CMCN, relationships were built across organisational boundaries: between hospitals and with other non-hospital organisations.

### **Role of the project coordinator**

The interviewees, doctors, midwives and administrators, all valued the work done by the project coordinator. Her passion for and commitment to the job, as well as her ready availability were highly commended. Julie, at times in her interview, used the project officer's name interchangeably with the title of CMCN. Interviewees recognised her pivotal role in the arrangement of the successful local education program. She was central to the functioning of the network and in her role she drew the work of the subcommittees together.

The role was in fact so essential that when South West Healthcare did not agree to contribute to funding the project officer's wages, and the role ceased, the network collapsed.

*It was very much, ... had, run very well, when it had a team coordinator and things, it certainly when that time without, the, the, um, coordination team folded down because they ended the contract, um, the places very much went their own way and Timboon definitely went one way [laughs] compared to the others. [Alice]*

In summary, interviewees indicated that the project coordinator had a very strong leadership role that crossed boundaries in the network, and when that role was no longer funded the network collapsed.

### **Timboon withdrawal**

In January 2008 six months after the cessation of funding for the project officer's role the two GP obstetricians in Timboon left the town. After their departure Timboon hospital ceased to interact with the other hospitals in CMCN. While this was outside the period of study, both Alice and Norman referred to these events in their interviews. Alice is referring to Timboon's withdrawal when she says: '*the places very much went their own way and Timboon definitely went one way [laughs] way compared to the others*'.

Alice was not laughing because she had made a joke. Her laughter probably denotes discomfort. In these interview transcripts the passion and commitment of the

clinicians and network participants are referred to quite often. Alice has just finished listing the achievements of CMCN, and throughout the interview she acknowledged the high quality of CMCN activities and how the educational, workforce development and quality assurance activities of the network enabled the Timboon midwives to increase their scope of practice. Alice was aware that clinicians in the other hospitals did not want Timboon to disengage from the network. Her laughter probably denotes her discomfort in acknowledging, in this context, the withdrawal of her hospital from the network. Norman discussed the withdrawal of Timboon in the following manner:

*The other sadness was that, ah, when the two obstetricians, GP obstetricians, left Timboon there was the possibility under the network to continue, ah, doctor involvement in the deliveries in Timboon but, for a number of reasons, ah, Timboon withdrew itself from the managed clinical network, well the, network and the workforce issues, and so Timboon withdrew and, um, decided to develop a stand-alone midwifery delivery process with the specialist backup from Warrnambool and I, I do believe that ah, that, that was a loss for Timboon, and it was also a loss for the, um, philosophy and the passion that went on with, within the development and, ah, running of the managed clinical network[clears throat]. So the, that's about it I think.*

[Norman]

CMCN had collapsed with failure to secure full funding for the project officer's position. Timboon hospital's withdrawal from network interaction ensured that the network was finished.

#### **8.2.4 Theme Four: Relationships External to the Network**

##### **Relationship with Warrnambool obstetricians and administration**

Camperdown hospital is a campus of South West Healthcare and as such is under the management of Warrnambool administrators. This meant that the administration of South West Healthcare was a party to CMCN even though Warrnambool clinicians were not. The Warrnambool managers did not engage with the development of the CMCN. Several interviewees commented on the tensions brought about by the governance structure of Camperdown hospital being part of South West Healthcare and the other hospitals being independent entities.

Barry commented that the administration of South West Healthcare in Warrnambool had not supported the network and that the lack of support manifested in three ways. Firstly, the campus manager in Camperdown was not in tune with the philosophy of Camperdown staff and was aligned to the Warrnambool way of thinking. Barry's anxiety about naming this conflict is evident in the transcript. He describes that the Camperdown campus manager was more closely aligned with the ideas and philosophies of the Warrnambool management team than with those of the team of clinicians in Camperdown for whom she was line manager.

Secondly, there was no ongoing support of network activity by Warrnambool specialist obstetricians and, thirdly, South West Healthcare would not provide a quarter share of the project officer's salary. He reflected that perhaps the recent influx of specialist obstetricians to Warrnambool had decreased the interest from that centre in the CMCN. Barry also held the Barwon South West division of DHSV accountable for failure to ensure the continuation of the network.

*Barwon South West, ah, which, ah, embraced it so enthusiastically at the beginning, couldn't see a way to um, um, continue it one form or another.*

[Barry]

The idea that the Warrnambool obstetricians did not support CMCN is indirectly corroborated by Timboon midwife Maria's comments about the achievements of the network.

*Okay, well following the loss of GP obstetricians it laid the path for the development of a midwifery-led model and due to the collaboration over time involving obstetricians from South West Health, or from Warrnambool, they provided support to our midwives to get the model up and running.* [Maria]

It seems that while CMCN was working with Timboon to develop, according to Norman, 'the possibility under the network to continue, ah, doctor involvement in the deliveries in Timboon', Warrnambool specialist obstetricians were working with the midwives in Timboon to develop a model of care that did not involve CMCN GP obstetricians, midwives or activities.



## **Relationship with Department of Human Services Victoria**

The Barwon South West Division had initially supported the network and then failed to offer ongoing funding for it, instead establishing a region-wide maternity network. Barry pondered with some discomfort whether the steering committee should have been more assertive in negotiations for ongoing funding with DHSV.

*I feel that I've been partly to blame for not being assertive enough in dialogue with external agencies but probably at all these, what you might say are decision points along the way, personalities have played a factor, ah, and sometimes, ah, it's, it's hard to take a step back and try to look at what are systems that could work here and not, not get sucked in to whether you think someone's for you or against you. [Barry]*

Barry is reflecting on a situation he felt he handled badly. Introducing this comment he laughs several times. His laughter denotes embarrassment rather than mirth. Whether DHSV could or could not have been persuaded to provide ongoing funding by more assertive arguments from the clinicians involved cannot be determined.

Barry believed that DHSV took what they had learnt from involvement with CMCN and adapted the model for wider implementation in SWAMI. He introduced this idea as a negative achievement of CMCN. For him it is a negative achievement because, as he states elsewhere, the new regional network does not engage with the local clinicians as CMCN did.

*Um, I think there's some other achievements which were probably negative. I wonder about the impact which the network had on organisers of health outside the immediate area, um, initially, ah, we, ah, the network got support from Barwon South West, ah, DHS, um, ah, but in the, and that fed up the chain. [Barry]*

Barry therefore saw that the regional office of DHSV had supported CMCN as a pilot, which it approved of, but wished to support at a wider scale. Norman's comments about local versus regional organisations reported in the theme on teamwork and conflict echo the latter sentiment. Both expressed disillusionment with a system that failed to support the needs of their community and distress that an organisation created by a lot of hard work by a many people collapsed.

## **Regional network**

Norman and Barry are not alone in seeing that the regional network is modelled on CMCN. Naomi shared their view.

Naomi: , *another project comes along like SWAMI and then that's due to rub out next June and you think, you know ... yeah.*

Interviewer: *Yeah, so does SWAMI come from Barwon as well or?*

Naomi: *Um, no, it's mainly this region. Um, funding and, um, same sort of thing, you know. It's exactly the same really. I mean they've got, I suppose they've got bigger problems because they've got a bigger area to cover, so Portland's been their major focus.*

In Naomi's judgement CMCN's achievements have been lost because there was no ongoing support. She was non-committal in her assessment of SWAMI and dismissive of DHSV's policy implementation.

CMCN had two dominant external relationships; with South West Healthcare and DHSV. Interviewees considered both of these relationships to be problematic. Midwives and doctors both felt that South West Healthcare did not support the network philosophy and one of the doctors argued that DHSV considered CMCN to be a useful pilot project, superseding it with a version that does not meet Corangamite's needs. Terang and Camperdown interviewees expressed sadness and disillusionment with the collapse of CMCN. The Timboon interviewees acknowledged that CMCN enabled the establishment of their midwifery-led model of care in collaboration with Warrnambool specialist obstetricians and are now engaged with that model.

### **8.2.5 Theme Five: Education, Quality Assurance and Risk Management**

#### **Education**

Interviewees felt the education activities provided within the network made a significant difference to clinical practice. CMCN provided education locally in response to identified needs of midwives and doctors.

*I think, um, [project officer] she was umm great in bringing education to a local area where we access it, umm the three hospitals rather than us having*

*to go out of town for it, and there was someone organising it rather than us having to individually organise it. [Naomi]*

Not all interviewees could recall the content of the education.

*Um ... not that ... doesn't spring to mind particularly, although we did have, when we were setting up the network initially, there were different education sessions that I do recall. Going back a few years now [laughs] it's a bit of a stretch on the old memory! [Elle]*

But some of the clinicians had very detailed recall of the educational content.

Alice and Barry saw the education program as a professional development.

*... changing to the expectations of the newer midwives it's made it easier by having what I refer to as the continuing education and team building and access to protocols so we're more and more standard in our, in our practice. [Barry]*

*[I]t probably touched base as a team of midwives, the ones that were keen to upskill, it gave them the opportunities, but it also provided a, um, professional opp ... development for the ones that just wanted to maintain the skill that they had. [Alice]*

Keith and Norman commented on one of the strategies used in the CMCN education program — experts being brought to these small hospitals to deliver educational events to whole teams in sessions adapted to the clinical setting.

*Norman: They [the educational events] were good, they were, we had input into, in their content and delivery and we had some very, um, esteemed, ah, educators come and teach us and we built up a relationship with the educators, ah, well and, ah, it was good.*

*Interviewer: And did the educational events influence the way you worked?*

*Norman: They did, mmm.*

But there was also an increase in clinicians teaching each other.

*I'd started teaching midwives in Camperdown, ran a number of teaching sessions and so that was good, um, I had interaction with midwifery and obstetric staff in, um, Terang and that continues today. [Norman]*

Every interviewer agreed that the educational events had influenced the way clinicians in the network worked. Julie explained how CMCN education increased her awareness of risk and preparedness for emergencies and several of the interviewees commented on the strong links between the clinical audit activity, clinical guideline development and the education program. Ideas about what influenced what differ according to who is answering the question. This is probably a very good indication that the clinical effectiveness cycle was working within CMCN; guidelines influenced work practices, variation in work practices were identified in clinical audit, education was delivered on deficiencies identified by audit, guidelines were revised in response to the audit, guidelines influenced practice and so on.

*A lot of education was provided and that was very beneficial and then out of that came, um, best practice protocols. [Maria]*

*It was [project officer] that did the final, um, you know, the final copy [of the clinical guidelines]. And I know that was hanging around the mid department and I know a lot of people were reading that, so I think it was actually getting people up to scratch that, that hadn't been in the past. [Angela]*

Angela actually referred to the clinical audit meetings as educational events:

*... but we used to get a lot out of the education and we'd often present, ah, a case of some sort. [Angela]*

Interviewees valued the educational events held by CMCN. They valued the local delivery and the local responsiveness of educational events, and they very clearly saw them as part of the clinical effectiveness cycle.

### **Quality assurance and clinical audit**

Alice, Norman, Keith and Paul, Maria, Paul and Barry all commented positively on the clinical audit meetings. Maria and Keith, both administrators, approved of the clinical audit activity although they had not been directly involved in it. Maria also commented that the audit activity was supported by the introduction of the

computerised data collection process Birthing Outcomes System (BOS), which was introduced during the period of study.

*During the process [of clinical audit] it brought benefits in terms of quality in that staff were trained or participated more in undertaking audits, there was collaboration between the other two organisations in developing obstetric audits, during that time the BOS [Birthing Outcomes Statistics] system was developed, so they were supported in developing and reporting, using the new technology and the other benefits as I said were more the long-term ones, the initial ones, the additional training and then the long-term benefits of developing those protocols that are still in use in this organisation. [Maria]*

Paul and Alice made general comments in support of the clinical audits. However, Julie who worked at night, was not aware of the clinical audit activity and was not even familiar with the term.

*Um, no, there was a clinical audit? What is a clinical audit? [Julie]*

Midwife Elle who had a role as quality officer had similar problems with the term 'clinical audit'. This was her response to the question about whether the CMCN clinical audit influenced the way she worked.

*Well that, I couldn't answer. No, not relevant to my position I guess. [Elle]*

Elle's response either indicates that the CMCN project officer did not engage her in the clinical audit in her role as quality coordinator or that she attended them but they had no impact on her. It is likely to be the former, given that Elle also commented that she could only vaguely remember CMCN's educational events, which seemed to her to be a long time ago. Elle's role in quality coordination was directed by the Warrnambool hierarchy. This dynamic may have affected her engagement with the CMCN clinical audit. Elle stated that she left her midwifery position in Corangamite two years after the network collapsed and had worked in another town for twelve months at the time of the interview. This may mean that her memory of CMCN had not been refreshed for some time.

Alice, Barry and Norman both considered the audits a good way to examine their clinical practice.

*Also there was an audit so that we had feedback on our, on our performance and it was, ah, ah, self-critiqued so it was done in a safe and secure manner so that we felt that we could truly learn from either the successes or failures that had happened and, ah, could move forward. [Norman]*

Paul clearly recalled the audit topics and his description of the aim of an audit was candid.

*Um, now, I think I was, I think that was to do with, um, postpartum haemorrhages and um, induction figures and stuff like that. So yeah, I was sort of involved with that, I think ... Yeah I suppose it makes you think about your induction rate and stuff like that, trying to get your figures looking a bit better. [Paul]*

Midwives Naomi and Angela did not see the clinical relevance of the audit activity. For Angela, using the audit tool was simply another tedious piece of paperwork in a busy day.

Angela confused the education events and clinical audit meetings. In her response to the questions about education Angela actually discussed the clinical audit meetings where clinicians would present cases and was very enthusiastic about them.

*We used to get a lot out of the education and we'd often present, ah, a case of some sort. So I would say it absolutely influenced the way we worked because then we put it out to Terang people, Timboon people, um, we all sort of took it in turns of presenting a, a case that was, you know, a little bit off the normal. And, ah, got, got lots of ideas back, learnt lots about their cases that they presented. So I, I found it, I found them wonderful. And, and 'cause they were in the local area, so we only ever had to go as far as Timboon or Terang or Camperdown. So, very accessible education. [Angela]*

And Alice, while valuing the audit activity, did not see that it had a great influence on the way she worked. Barry commented that the clinical audit activity of CMCN was also tied in with a program of competency testing that was introduced in the

network and then spread to other disciplines in the health care provided by the hospitals.

*Um, it, ah, I think it improved everyone's, ah, ah, clinical skills, in particular the, ah, the, for example, the fetal monitoring workshop and the, ah, um, the assessment of skills, there's another word for that, competency testing ... Yeah, so it sort of ushered in, it was a way in which competencies, competency testing, ah, was made palatable or acceptable, ah, and, ah, able to be extended, you know, into other, ah, subcategories of nursing and doctoring, um, so that was good. [Barry]*

The clinical audit activity of CMCN was received well by the doctors and some of the midwives. However, while they found it very helpful, the understanding of the clinical audit process and the benefits of reflective practice were not evident for some midwives.

### **Clinical guidelines**

The clinical guidelines produced by CMCN were identified by all of the interviewees. They had a lot to say about them.

*Up-to-date, evidence-based, best-practice guidelines on what to do in an emergency situation and also just in general care of the midwifery patient. [Elle]*

*They were there, they were easy to read, they were well researched and they gave a lot of the midwives clear guidance in what to do for an emergency and I also had that as feedback from the midwives themselves. They really like the policies. In fact they were very clear and well written. [Elle]*

*The protocols were well developed. [Norman]*

Midwives Angela and Julie commented that they liked the way that the protocols were available in hard copy on the ward. Julie described quite graphically how this ability to lay your hands on clearly articulated guidelines was helpful in her work as a midwife when other skilled midwives were not in the building.

*Julie: Yeah and it made it really good for me with like, I say, working with a div[ision] two [nurse] and the div[ision] twos would come around and give*

*me a hand and I'd say: 'Look, just get out that, that policy' and I'd point to where it was 'cause it was on the bench, this is in our old labour ward. 'Just grab that, open it up and just see that I've got, everything that I'm gunna need is here'. They'd be really good ... you'd be able to read it and it was in not too foreign language, you know not too ... it was to the point. [Julie]*

Whereas for GP obstetrician Barry, access to the guidelines via computer was innovative.

*The protocols or the guidelines development were good and the access to it was on, computer stations, you know, around the hospital. [Barry]*

These clinicians were talking about how the clinical guidelines affected their work. It is apparent that Timboon and Terang were still using them at the time of interview, while Camperdown was not. Maria stated that the clinical guidelines definitely influenced the way she worked. She also highlighted the way that the guidelines enabled the new model of care in Timboon.

*... and then out of that came, um, best practice protocols, a lot of research was done by the project officer and these have benefited our organisation in furthering a midwifery-led model. [Maria]*

*It started introducing the idea of having standardised policies and procedures for our region too. [Alice]*

In Terang, the guidelines were viewed differently by the interviewed midwife and doctor. The GP obstetrician reported a change in practice to comply with the protocols whereas the midwife denied any change.

*Um, yes, I think we tightened up a bit with our guidelines and, um, protocols our use of, you know, certain, emergency, common emergency situation, you know, prem labour or whatever and how we, so, um, yeah, it sort of formalised a few of the things we were doing a bit ad hoc. [Paul]*

Naomi: *We use them.*

Interviewer: *You use them now?*

Naomi: *Yep, yep.*



Interviewer: *OK, so they are still there, and did the Corangamite Managed Clinical Network guidelines influence the way you worked?*

Naomi: *No.*

Interviewer: *No?*

Naomi: *No, it just formalised what we were already doing. What we practised as midwives.*

It is interesting, to note that whilst Naomi here discounted the value of the guidelines; she nominated the uniform policies across the network as the one of its major achievements. It may be that she found clinical guidelines a challenge to her sense of mastery of midwifery; as a master of the craft, she would not need direction by guidelines. She could see their role for others, perhaps; just as she recognised that the GP obstetricians learnt from the educational events.

Midwives and doctors in Camperdown acknowledged that the clinical guidelines influenced the way they worked. The close connection between the development and implementation of the guidelines, clinical audit and risk management was acknowledged by Norman and Keith.

*Part of the audit cycle was setting up protocols which we developed from, um, what we consider was best practice and, ah, therefore we knew that we were acting under, under the safest, um, model, if we stuck to the protocols, because sometimes we can be left on a limb 'cause there, there is some distance to a specialist obstetrician from where we work and therefore we felt we were practising safer and more secure obstetrics. [Norman]*

*So having guidelines in place, ah, set out the boundaries for the practice of the midwives and the GPs, ah, here at the health service. [Keith]*

Norman and Paul, like Julie, referred to their participation in the development of the guidelines. Keith, who is not a clinician, referred to the clinicians' participation in guideline development. The ownership they felt for these guidelines is evident.

*Yes, I helped, ah, docu[ment], ah, formulate them, yeah. [Norman]*

*Ah, yes, I was, we helped develop them and put them in a folder so, yep, they were sitting there to look at and refer to. [Paul]*

Keith: *Our staff were involved in the development of those guidelines, so I think that gave them the ownership to actually implement the guidelines, ah, when they were approved by the boards of management ... They were involved in the development yeah.*

Interviewer: *Um, and did those guidelines, did these guidelines influence the way you worked?*

Keith: *Yes they do, did and have ... and continue to, they're still, ah, part of our practice policies and procedures.*

While Terang and Timboon were still using the guidelines, the intended revision process had not occurred since the collapse of the network.

*[Project officer] was going to be, um, employed a bit, 'I'm going to assist with the upkeep of the guidelines', but that never sort of eventuated and ... so you know things sort of just fall over really and then you, as I said another project comes along like SWAMI and then that's due to rub out next June.*

[Naomi]

Elle, who had been quality coordinator, could also have kept the guidelines up to date, but she had since moved on.

*It added to my role of being responsible for making sure the policies were checked and kept up to date so, um, while I didn't have, ah, particular time allocated to do that job I just fitted it into my quality role and I was prepared to do it. I was happy to do it.* [Elle]

Naomi referred to the lack of revision of the guidelines because there was no guideline coordinator.

*Well there's no Corangamite Managed Clinical Network any more so there's no one to coordinate it anymore so ...* [Naomi]

Angela was saddened by this abandonment.

*I think it's probably a really big shame. I think so much work, I know for those policies and protocols, so much work went into those and so many professionals involved for them to just not have been used.* [Angela]

There was a lot of feeling behind these comments. Angela, Elle and Julie commented on the interactions with Warrnambool South West Healthcare about CMCN clinical guidelines. Angela referred to the effort required to get CMCN guidelines accepted by Warrnambool. Following this difficulty some of the clinicians in Camperdown decided not to use the CMCN guidelines. Elle talked about the Warrnambool committee's slow processing of the CMCN guidelines. She was surprised that the committee took so long to authorise them when they had been produced initially by a highly reputable committee and then adapted to local conditions by internationally recognised best practice in guideline development. Angela stated that she was given advice from Warrnambool not to use them.

*Um, big, the biggest difficulty was, we were running two protocols. So being under South West Healthcare umbrella, we had the South West Healthcare one, then we had the CMCN one. We were quite unsure professionally and legally which ones we were supposed to use. [A GP obstetrician] really pushed hers [the CMCN guidelines]. Um, so then, I know it was quite, um, you know, it was quite a big effort to get them accepted by South West Healthcare Warrnambool and then some dropped them and didn't use them anyway. So at one stage depending on the doctor whether we worked CMCN or South West Healthcare and that got quite confusing for people. [Angela]*

*We were in quite a state when CMCN was closed down, what we were allowed to use and what we weren't allowed to use, and so that, that made it quite, ah, nasty at one stage, because I made a phone call to someone and they said well if you use the CMCN protocol and something goes wrong you won't be covered. [Angela]*

From these comments it is clear that there was resistance in Warrnambool to the implementation of the CMCN clinical guidelines in Camperdown. None of the interviewees made any statement as to why that was the case. They seem quite perplexed as to the reason for this resistance. None of them reported any explanation from Warrnambool about why CMCN's clinical guidelines met such hostility. The only comments are about the placement on the labour ward of South West Healthcare guidelines as opposed to CMCN guidelines. In the absence of other evidence this could be assumed to be the reason for rejection by Warrnambool of the CMCN guidelines; a refusal to allow guidelines produced in the small hospitals to

displace authorised South West Healthcare guidelines. It does not appear that arguments were mounted about the unsuitability or poor quality of the CMCN guidelines. This resistance occurred even though CMCN was developing guidelines that there were not covered by any South West Healthcare guidelines.

*From my perspective it was developing the policies and guidelines so that the midwives actually had, um, up-to- date, evidence-based, best-practice guidelines to follow in the midwifery models of care. Um, a lot of the policies that we had developed, um, weren't in place throughout the South West Healthcare. Ah, just off the top of my head for example, ah, breech management, um, cord prolapsed and things like that, they didn't actually have written protocols for staff to deal with in an emergency situation in a small hospital. [Elle]*

The clinical practice guidelines were well received by CMCN clinicians; they influenced practice and were tied into the quality assurance cycle. There was a plan for revision of the guidelines but when the project coordinator's employment ended this did not take place. The implementation of CMCN guidelines in Camperdown was opposed by management in Warrnambool. The interviewees did not know of any reason for this opposition.

### **Risk management**

Underlying many discussions about rural maternity services is a concern about how a service would respond to an emergency. Naomi expressed this and then became anxious that she had spoken about things she should not have. She was speaking about the situation at the time of the interview, October 2010.

*Naomi: But I mean there is a disaster waiting to happen in this area, but you know up there save Warrnambool we'll just have to pick it all up.*

*Interviewer: Because there isn't enough coverage or?*

*Naomi: Yep, I mean you've got one GP obstetrician here; you've got three in Camperdown, which periodically aren't there. There's none there at the moment ... .and lack of communication, because we, you know, our GP obstetrician ... is this still on tape?*

Planning to avoid emergencies or disasters wherever possible is called risk management. Julie described how the educational activity within CMCN increased her awareness of risk and preparedness for emergency.

*Julie: Because of the education we did have through the CMCN probably made you a little bit more aware, you know that, that things do go wrong, because I mean you can get a little bit cruisey, 'cause things are running smoothly all the time.*

*Interviewer: And you hope they do.*

*Julie: Yeah exactly but, you know, I, well, that is what I got out of it anyway, you know, just with the extra education that we had, um, just made you a little bit more alert and a bit more onto it.*

*[Y]ou're kind of switched on the whole time, when you've got somebody in labour you're kind of troubleshooting the whole time. Well I am anyway ...*

*[Julie]*

Norman had a more systematic approach to the impact CMCN had on risk management in the Corangamite maternity services.

*... therefore we knew that we were acting under, under the safest, um, model, if we stuck to the protocols, 'cause sometimes we can be left on a limb 'cause there, there is some distance to a specialist obstetrician from where we work and therefore we felt we were practising safer and more secure obstetrics, um. [Norman]*

Keith, who is a hospital administrator and not a clinician, had an even broader view of CMCN risk management.

*[The clinicians] were aware there were risks but how they then address those risks and the processes that were developed to address the risks would have been a benefit — organisationally giving people some understanding of risk management, that they may not have had previously. [Keith]*

Keith pointed out that the board of management also appreciated the risk management initiated by the CMCN.

### **8.3 Study Four Limitations and Discussion**

The number of interviewees in this study was small. Only people who had been involved in CMCN committees were interviewed. The small number of participants and the narrow selection of interviewees are major limitations.

A more complete picture of how others outside the network viewed its activities may have been developed had the range of interviewees been wider; the picture may also have been more confused. Among the expert group interviewed there was some unfamiliarity with some of the terms used in the interview. Had the group been larger and less expert it is probable that inexperienced interviewees would have conflated more concepts, leading to greater confusion in the responses and less clarity in the results. For example, in the interviews performed, some interviewees confused the clinical audit meetings with the educational activities. It is only because the researcher knew from personal experience that cases had been presented at clinical audit meetings and not at educational events that comments were able to be correctly attributed to clinical audit meetings and not to the educational events with which the interviewee had associated them.

The researcher was known to all interviewees. The interviews were performed by an independent interviewer to establish a degree of separation between the researcher and the questions being asked. Each interviewee knew that the researcher had been very involved in the establishment of CMCN and efforts to secure ongoing funding for it. Interviewees talking to an independent researcher are more able to express their own opinions and are less likely to tailor them to fit what they think a researcher wants to hear. An independent interviewer is not aware of layers of value perceived by the stakeholder or the involved researcher; she is therefore able to ask questions in a value neutral manner.

There are negative impacts from using an independent interviewer, however. The language of maternity care and quality assurance activities is esoteric. A person not

versed in the vocabulary could miss an interviewee conflating terms or giving an answer that indicated they had misinterpreted a question; they might also not see where further clarification of an answer was necessary. So, an independent interviewer might gather a broader range of opinions, but some of the opinions gathered could lack clarity. An independent interviewer might not discern when an interview had strayed into controversy and might not look for confirmation or corroboration of statements that, to a learned ear, were unsupported.

This study design attempted to balance the advantages of knowing and not knowing by using an independent interviewer *and* a deeply involved researcher. No combination is perfect and it is probable that fewer negative views of the network were gained in this study than might have otherwise been the case if the researcher had been known to disapprove of the network's activity. It is possible that fine nuances of meaning may have been lost in using an independent interviewer and that despite strenuous efforts to the contrary the researcher was deaf and blind to opinions critical of CMCN activities. It is also probable that the independent interviewer elicited opinions that the researcher would never have elicited had she performed the interviews herself; and that the researcher found illuminating concepts that would have passed by researchers not intimately engaged with the subject, and that interviewees were comfortable expressing opinions critical of powerful stakeholders because they knew that their statements would be read and interpreted by someone who knew the subtext.

Another major limitation of this study is that the interviewees were all from within the network. Interviews were only conducted with people from the network hospitals who had been involved in the network's committees. The opportunity to interview members of the steering committee who were based in Warrnambool was missed. This is a regrettable omission. If protagonists from Warrnambool had been included among the interviewees a more rounded understanding could have been built of the dynamics of the tensions between South West Healthcare Warrnambool and Camperdown campuses. The history of the tensions between Camperdown and Warrnambool and of the researcher's role as a medical adviser in the network meant that when the researcher drew up a list of possible interviewees using the criteria that they should be 'key stakeholders' she looked to interview people who had been

participants and supporters of the network. This list did not include people in Warrnambool.

In retrospect the researcher was blinkered in her choice by a history of poor communication between Warrnambool and Camperdown. It became obvious during analysis of the interviews that the views of those who had been making decisions in Warrnambool would have been a valuable addition to the data collected. The perspective from Warrnambool would have given balance to the CMCN-centred view presented in the interviews for this study. By the time the researcher understood that the views of Warrnambool stakeholders would be illuminating, time had run out to perform further interviews and ethics approval for the study had expired. A further study of the understanding and attitudes of South West Healthcare decision makers with respect to CMCN would increase understanding of the dynamics of network development and management. Interviews could be performed to investigate the understanding of CMCN activities as held by Warrnambool-based clinicians and administrators. This would contribute in a significant way to an understanding of what occurred. Views from protagonists within DHSV would also have been very useful.

These interviews were performed two years after the last of the events they were exploring. The lapse of time between event and reporting must have reduced the quality of participants' recall. As Elle says, *'Going back a few years now (laughs) it's a bit of a stretch on the old memory!'*

Some of the interviewees did not understand some of the terminology used in interview questions. The terminology was chosen so as to be consistent with terminology used in CMCN documentation, but perhaps the elapsed time since CMCN was active made that terminology unfamiliar to some of the interviewees, or perhaps they were always unfamiliar with it. Ideally interviews should have been piloted with stakeholders to test the questions and terminology used. However, time was short and the number of potential interviewees small. The process of testing questions on some of the potential interviewees may have reduced the field of participants even further.



Data collection for this study could have been performed by focus group, interview or survey. In focus groups ideas may be expressed in discussion between participants that may not be expressed otherwise, either because of facilitation of expression or because of disagreement between participants. On the other hand, group dynamics could mean that some information would be withheld — considered too private or too at variance with accepted ideas to share in a group. Focus groups were considered, but the idea was discarded. The busy lives of key stakeholders meant that it was hard to find a time to interview them on an individual basis let alone finding a time to bring together a group. This would have been impossible.

Surveys were also considered as an instrument of data collection, but rejected. It was felt that people would be more likely to speak in detail about the difficult issues relating to the network than they would be if asked to put it in writing. In a written survey response one can craft the reply to clearly say what one intends, but one can also more ably conceal issues one would prefer to keep hidden. A survey response can be given quickly, with little thought. The problem is that rapid responses are unlikely to satisfy the researcher's need for rich detail. Conversely, in a survey, one may write something and then on review decide to remove that comment. If an interviewee expresses something and then wishes to modify the comment the researcher is still able to collect the first thought as data. In an interview the researcher is more likely to have the respondent's full attention and is more able to ensure that all questions are addressed to the researcher's satisfaction.

In this study ten people were interviewed and gave candid and thoughtful responses to the questions that were asked. From their answers theories have been constructed about what happened in CMCN. Despite the limitations of this study, the interviews collected some very interesting data that was consistent with the results of other studies in this research project and added detail to the picture of history of CMCN.

## **8.4 Study Four Conclusions**

CMCN engaged clinicians and managers in local interdisciplinary high-quality educational events; quality assurance activities, including the development and implementation of clinical guidelines and clinical auditing; and workforce development. Participants were enthusiastic in their comments about CMCN's well-attended educational events. Clinicians felt strong ownership of the clinical

guidelines, which they found were helpful and influential on their practice. They participated actively in the clinical audits, which were well integrated with the educational and competency testing activities.

The workforce development activity of CMCN was less well recognised by participants. A caseload model of midwifery care was developed that included only a small team of midwives in birthing. The model was not implemented. Concerns over funding for the model, midwives being unwilling to move between facilities and the disharmony anticipated in the inclusion of selected midwives, are the likely reasons the model of care did not progress. The failure to provide a new model of care was a disappointment for some participants.

Amid the hope and excitement about the work of CMCN, the Warrnambool management of South West Healthcare emerges as an obstruction to the continuation of the network. This is evident in three ways as reported by the interviewees. Firstly, Warrnambool management resisted and delayed the implementation of CMCN clinical guidelines in Camperdown. Secondly, Warrnambool management did not agree to provide a share of the CMCN project officer's wage to ensure ongoing support of the network's activities. Thirdly, after the collapse of CMCN, Warrnambool obstetricians further undermined the structure of CMCN by negotiating with the midwives in Timboon for Timboon midwives to refer to them rather than CMCN GP obstetricians.

The interviewees who expressed such hope and excitement about what was achieved within CMCN expressed sadness, disappointment and disillusionment about the ultimate outcome. Midwife Naomi summed up the mood:

*It was great while it lasted, but then the funding was cut, so that's the end of another little project wasn't it.*

Only Timboon was left with hope as they contemplate a future under the protection of Warrnambool obstetricians.

This chapter has presented the fourth and final study of CMCN and analysed data collected in interviews. The first study looked at 'What was, and what could be' as reported by the key stakeholders. The second study gave a participant observer report

of the development of CMCN. The third study reported on CMCN's clinical audit activity, and this study has explored participants' understanding of what occurred. Chapter Nine will draw the results of these four studies into a coherent story and compare the results of the studies with what is known in the literature.

# **Chapter Nine: Conclusion — Lessons Learnt from the Development of the Corangamite Managed Clinical Network**

## **9.1 Introduction**

The preceding chapters introduced the concepts of the managed clinical network (MCN), rural obstetrics and clinical effectiveness. The findings of four studies of Corangamite Managed Clinical Network (CMCN) were presented. In this chapter these findings will be compared with what has been written about clinical networks elsewhere and findings from related organisational studies.

CMCN was established in 2005 with the following aims:

- to provide maternity services in the Corangamite region using a patient-centred service model, sharing expertise and resources between hospitals in Camperdown, Terang and Timboon
- to deliver a quality assurance program for these maternity services by
  - delivering local protocols from clinical guidelines
  - auditing compliance with local protocols
  - developing local clinical outcome measures
  - auditing clinical outcome measures
  - developing a risk management plan
  - developing an information technology-based clinical information system
- to act as a facilitator for professional development for members of the multidisciplinary team within CMCN
- to research and implement succession planning for clinicians in maternity services
- to demonstrate a model of maternity service with the potential to enhance the delivery of maternity and other services (for example, emergency medicine, anaesthetics, palliative care) in this and other parts of Victoria
- to develop a management structure for CMCN.

The four studies in this thesis demonstrate that CMCN met the aims for which it was established. The findings of these studies will now be compared with the literature on clinical networks.

## **9.2 Comparison of the Findings of Corangamite Managed Clinical Network with the Literature**

CMCN was formed from three maternity services in a low volume rural setting. The network was smaller than any of those reported in the literature and did not involve a secondary care hospital, which is unusual. In the literature, MCNs are usually linked with a regional hospital. CMCN had consumer involvement on the steering committee. In Corangamite Shire the impetus for networking came from the grassroots clinicians, who had a strong sense of ownership of the clinical practice guidelines and participated enthusiastically in educational events and in clinical audit meetings.

In 2004, the NHS Service Delivery and Organisation R&D Programme summarised the implications for managing networks in *Networks Briefing: key lessons for network management in health care* (9, see also Appendix Two), based on research findings by Goodwin et al (6). Guthrie et al in their report for the National Institute for Health Research Service Delivery and Organisation Program, (13) built on the English research of Goodwin et al (6,9) by exploring and learning from MCNs in Scotland. These two major studies will be used for comparison with the findings of the four CMCN studies.

## **9.3 How Management of CMCN Compares with the Literature on Network Management**

*Networks Briefing* (9) summarises the implications for managing networks under the following headings: network structure, network management and network governance (see Appendix Two). This is a useful framework for comparing CMCN management findings.

### **9.3.1 Network Structure**

Network *Briefings* (9) explains the importance of network structure thus:

An effectively crafted network can provide the basis on which to achieve successful partnership working between organisations. Such crafting requires significant network management skill in articulating strategies and ties between organisations that are robust enough to endure, legitimate enough to become accepted, yet flexible enough to tackle the inherent weakness to which all inter-organisational arrangements are subject. The best chance of pursuing these goals effectively is to seek to cultivate hybrid forms that allow some element of all three types of network.(p13)

CMCN was a combination of enclave and hierarchical network structures. It was enclave-like in that all clinicians had equal status within the network. The steering committee had representation of all clinicians and all hospitals. All clinicians who were interested could participate in CMCN's committees. In *Networks Briefing*, regarding enclave networks it is said, 'Shared commitment, trust and egalitarianism are key, with little inclination to accept central or mandated authority but with a strong sense of group membership'.(9p4) Participation was encouraged in the CMCN by a sense of solidarity and shared purpose, and CMCN committees had multidisciplinary and multi-facility representation, which is consistent with an enclave structure. *Networks Briefing* notes the strengths 'legitimacy and ownership' provided in enclave network membership.(9p12) In Study Four, the second round of interviews, the interviewees quite clearly report that CMCN provided legitimacy and ownership for them. A doctor with the pseudonym Norman said,

*I suppose, yeah, the greatest thing was that it came from, it'd come up from a local, um, desire to p, provide quality obstetrics in a low throughput environment and so it came from grassroots and therefore had a lot of passion and, ah, a lot of energy in it. [Norman]*

CMCN also had features of hierarchical structure, having a clearly defined governance structure. The steering committee had representation from all facilities and from all professions. All activity within CMCN reported to the steering committee, which is consistent with a hierarchical structure. Authority was achieved

in network committees by memoranda of understanding between the network and the hospitals, and confirmed over time through the commitment of participants. Thus CMCN straddled two styles of network structure. This meant that participating clinicians and administrators in the network complied with network policies because of a commitment to the values of the network, but the steering committee had no power over the management of the participating hospitals unless the management ceded that power to the network.

Terang and Timboon ceded power to CMCN but South West Healthcare did not in several important instances. It was this conflict of governance paradigm that led to the collapse of CMCN. The management of South West Healthcare did not accept the authority of the network to set policy and protocol. This is what Goodwin et al refer to as an accountability issue:

Voluntarily developed enclaves and individualistic networks tend to be self-governed leading to accountability issues, yet mandated networks appear to work badly because network members may not have provided the authority for them to be governed.(6p390)

The CMCN steering committee could only request the cooperation of South West Healthcare; it could not compel South West Healthcare to adopt CMCN policy; in the hierarchical governance structure of South West Healthcare power was distributed from above and could not be exerted from below.

Within CMCN participating clinicians agreed to follow clinical practice guidelines developed by CMCN and to participate in CMCN activities. There was no requirement for the hospitals to support the activities of the network; cooperation was achieved by the alignment of hospitals' and network goals, as described in memoranda of understanding. When hospitals' and network goals were not aligned, cooperation was not achieved. In Camperdown clinicians were keen to participate in CMCN activities but the South West Healthcare management team which oversaw Camperdown hospital did not have goals aligned with the goals of the network. CMCN had no authority to command South West Healthcare to provide funding, to authorise use of CMCN clinical practice guidelines in Camperdown, or to control the anti-network activity of consultant obstetricians. If there had been a stronger hierarchical structure within CMCN, with contractual agreements rather than the

simpler memoranda of understanding between CMCN and the hospitals, South West Healthcare management could have been held accountable to support CMCN activities. It was as a consequence of South West Healthcare management not supporting CMCN implementation of clinical practice guidelines or provision of funding, or the broad model of care practised within CMCN that the network collapsed.

### **9.3.2 Network Management**

The CMCN was created following the NHS Scotland model of MCNs, which aligns well with Goodwin et al's (6,9) guiding principles for network management. In CMCN the steering committee did indeed hold a central position within the network. The network governance structure ensured that all network activity was conducted under the direction of CMCN subcommittees and each subcommittee reported to the steering committee.

Consistent with the lessons outlined in *Networks Briefing*, (9,Appendix Two) CMCN's aims were clearly articulated in the original funding submission to the Department of Human Services Victoria (DHSV) and were repeated in the terms of reference for the steering committee and subcommittees. Terms of engagement between the three hospitals and the steering committee were outlined in memoranda of understanding between each hospital and CMCN.

The idea of developing the CMCN originated in a meeting of doctors from the region. Administrators and midwives became involved as the project developed but initially there was a feeling among some midwives that CMCN was dominated by doctors.

*Um, possibly one of the weaknesses that I think may have been there at the beginning will surface quite ... that it, that it involved a lot of medical personnel and I think that the midwifery arm of it really wasn't engaged and I think that there possibly was, um, there, there may not have been, um, an appreciating of how critical the midwifery workforce is. [midwife, Helen]*

However, as the educational and clinical audit activities developed, midwives doctors and administrators talked about the strength of the teamwork engendered by these activities. CMCN developed a strong sense of teamwork that extended across



facility boundaries and involved doctors, midwives and administrators throughout the network. The network participants demonstrated a strong sense of ownership of the network. This sense of ownership was embodied in the distress exhibited by network members in response to the collapse of the network.

CMCN was a small network. It had both fewer participating clinicians and managers, and a smaller population than the networks described by Goodwin et al or Guthrie et al or in any of the single case studies of MCNs in the literature.(6,13,64,68,85,88,220-223) It therefore avoided the high administrative costs of large networks identified by Networks *Briefing*.(9)

Networks *Briefing* (9) recommends that networks develop strategies for network cohesion. They recommend three principles for network cohesion:

- joint finance, jointly agreed care protocols and common targets
- use of a ‘boundary spanner’
- use of information technology to bring the network together.

CMCN exhibited evidence of all of these principles.

Within CMCN there was evidence of the use of financial and clinical governance activities used to draw the network closer together. Clinical practice guidelines were developed for use across the network by a committee with representation from all of the facilities and all of the professions within the network. Common protocols strengthened the corporate identity of CMCN. The budget for education in each facility within CMCN was pooled and doctors contributed from their federal education grant monies to support educational events; these educational events drew CMCN clinicians together, forging a team.

Networks *Briefing* (9) recommends the appointment of a person in the role of ‘boundary spanner’. For them, a ‘boundary spanner acting as an intermediary between organisations and agencies allows individualistic networks to function effectively and helps hierarchical networks engage with peripheral agencies’(see Appendix Two).(9p3) Both CMCN’s project coordinator and medical adviser acted as boundary spanners. The project coordinator was a midwife who moved to the area to work with the project and therefore had no affiliation to any individual hospital.

She was a member of each of the subcommittees and the steering committee. Key stakeholders reported in the interviews undertaken for this thesis that the project coordinator played a vital role in network cohesion. A respected clinician within the region who became the medical adviser also worked to draw all stakeholders into the network. Together the project coordinator and the medical adviser developed the operational strategic plan for the network, under direction of the steering committee. It is difficult for the researcher to fully evaluate her boundary spanning role as medical adviser; any observation by the researcher is entirely subjective. There was no discussion of her role in the interviews. It can be noted, however, that together the project adviser and medical adviser formed a distributed core management team, as recommended in the literature, as a way to offset risks to succession

Information technology was used by CMCN to increase cohesion across the network. An online birthing outcome statistics (BOS) tool was implemented across all three facilities to improve and standardise perinatal outcome data collection across the network. The BOS was well received by network participants and used at every delivery; it underpinned the clinical audit activity. A CMCN website was under development but had not been implemented when CMCN collapsed. There was no defined budget for website development. If funding had been set aside for employment of an expert in website development, a CMCN website may have been developed and been operating during the time of study. The website plan included links to the clinical guidelines, minutes of committee meetings, GP obstetricians' on-call rosters and educational and clinical audit programs. Such a website had the potential to be a strong factor for network cohesion. Staff from the Timboon hospital referred to the failure to publish online a Corangamite GP obstetrician roster as one of the reasons for their decision to align their hospital with the services of the Warrnambool obstetricians. It should be noted that the Warrnambool hospital obstetrician on-call roster is not available online either, and so we should be circumspect in adopting this as Timboon's reason for choosing the Warrnambool specialist service. The failure to establish a website could possibly have been a factor in the disintegration and collapse of the network.

Networks *Briefing* (9) notes that ownership of a network can be facilitated by formalised contracts and agreements, but that over-regulation of networks can lead to disharmony and de-motivation. Within CMCN, memoranda of understanding, rather

*“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University* 263

than contractual agreements, were created between the participating organisations and the network steering committee. CMCN stakeholders commented on the sense of cohesion and common purpose that developed between the three facilities. CMCN was a grassroots, clinician-led network rather than a managerially mandated ‘top-down’ network. The problems leading to the collapse of the network related to failure to engage with larger organisations — not failure to engage with network members. There would seem to be a tension here. Networks require enough regulation to structure good relationships, but not so much regulation that those relationships are strangled.

CMCN was formed following the inspiration of several GP obstetricians in Corangamite Shire. Some of these clinicians took leadership roles in the network. It was developed on the pre-existing framework of connections between GP obstetricians in each of the towns and those doctors’ relationships with midwives and administrators in those towns. The leaders of the network continued to engage with their peers and as the network developed they expanded the circle of engagement to include midwives and administrators from each of the hospitals in the network. There is a warning in *Networks Briefing* (9p3) that networks should avoid capture by a dominant profession (see Appendix Two). This was a risk for CMCN — that it would be dominated by those GP obstetricians who took initial leadership roles. The appointment of a midwife skilled in negotiation and engagement to the position of project coordinator averted this early risk. Once engaged in the network by consultation about education and workforce needs, midwives participated enthusiastically in CMCN activities.

CMCN educational events addressed educational needs discovered by surveys of CMCN doctors and midwives and by clinical audit. Workforce subcommittee activity also responded to needs determined by survey of CMCN stakeholders. Quality assurance activity was directed by the clinical audit and in consultation with the clinicians. This responsiveness to clinician and administrator need was one of the great strengths of the network. CMCN stakeholders felt that CMCN addressed their needs, and they were enthusiastic in their support of it. This does not mean that all CMCN clinicians were aware of or participated in every activity. Some were completely unaware of some CMCN activities while they were active participants in others.

Network *Briefing's* (9p3) final lesson for network management is that professionals in networks must provide a mandate to allow managers to manage and govern their activity (see Appendix Two). The mandate to govern clinical activity was initially given by CMCN clinicians to CMCN steering committee and the project coordinator. This mandate was demonstrated in the clinicians' acceptance of the clinical practice guidelines and their participation in the clinical audit and educational activities. The network began to disintegrate, however, when that mandate was withdrawn by the Timboon midwives, and by South West Healthcare Warrnambool management, who refuted CMCN's authority to set clinical standards yet offered no other option for clinical improvement.

In summary, CMCN's structure and activity were consistent with many of Network *Briefing's* (9) lessons on network management but significantly, Timboon midwives withdrew the mandate to allow CMCN to govern their activities and South West Healthcare management contested that mandate in Camperdown.

### **9.3.3 Network Governance**

CMCN faced significant challenges from the obstetricians and management of South West Healthcare in Warrnambool. Networks *Briefing* (9p3) notes that regulators outside a network face a common problem associated with authority to enforce their power (see Appendix Two). The Warrnambool management of South West Healthcare chose to exert influence outside the network rather than through the network governance structure; they did so by declining to contribute to funding the project coordinator's position. The Camperdown clinicians who were operating within the network governance structure were outmanoeuvred and had no redress. This was not an issue of whether members accepted the authority of CMCN. It was an instance of conflict between the CMCN governance structure and the hierarchical governance structure of South West Healthcare, which was never bound by CMCN governance.

The lesson to be learnt from CMCN governance is that mandate needs to be given by both network members and by the management of participating institutions for the network to govern clinical activity. In the CMCN, the authority of the network was overridden by the management of one of the participating institutions and the

network collapsed. This finding is consistent with commentary by Guthrie et al,(13) in their paper examining Scottish networks they report:

Collaborative and network approaches need a supportive organisational environment if they are to flourish ... The SDO key lessons for network management's final lessons for network management refer to 'environment management as a key network management activity, involving work to secure legitimacy, acceptance and resources from external stakeholders'. Other studies have found that major tensions can emerge around accountability and governance between networks and the organisations with which they intersect. One way that this emerges is in the importance and difficulties — of aligning network priorities with those of individual network members, and those of local, regional and national organisations and agencies.(p54)

Guthrie et al (13) state that from their studies of Scottish MCNs,

being able to influence their local Health Board was seen as critical for network success, and could be achieved both informally (e.g. personal relationships; ensuring that the network was representative and could legitimately claim to speak for all relevant stakeholders) and formally (e.g. network representation on Board committees, and Board members being part of network committees; business planning).(p58)

The CMCN experience was evidence of the importance of this principle: CMCN engaged clinicians within the network and its tragic flaw was that it did not engage the management structure of South West Healthcare Warrnambool, the local equivalent of the NHS Scotland Health Board. Unlike the Scottish example, however, where there is a central support body to which a network can appeal if thwarted in bringing about clinical improvement, no such support existed in Victoria.

#### **9.3.4 Power over Policy and Strategy in CMCN**

Addicott and Ferlie (87) in their study of power relationships in the five MCNs for cancer in London theorised a model of 'bounded pluralism' to understand power relations within London MCNs. The authors found that in these five cases, power over policy and strategic direction was exerted in a top-down manner by the government and its associated national bodies and that resources and power were predominantly shared among a bounded group of elite medical professionals from

large teaching hospitals within each network. The medical professionals who did not form part of the dominant coalition exerted power through resisting the enactment of policy. The London MCN network management teams ‘in many instances did not have resources or the interpersonal skills to generate any meaningful changes or control the delivery of services’.(87p399)

While the four studies described in this thesis were not explicitly designed to describe or determine the power relationships within CMCN, the studies do describe aspects of how power was exercised. It nevertheless differed from how power was exercised in the London MCNs. In CMCN power was shared across the professions. A doctor chaired the CMCN steering committee, but all committees were multidisciplinary, composed of midwives, doctors and administrators, and the project coordinator, who was a midwife, held a position of power and influence within the network and worked in a collaborative manner with the medical adviser, together forming an effective network management team who were both boundary spanners and able to generate meaningful change.

The important power differential was in the relationship between Camperdown and Warrnambool campuses of South West Healthcare. The larger South West Healthcare Warrnambool dominated the smaller Camperdown hospital, exercising power in a hierarchical manner, overriding local decisions and issuing directives that were not negotiable for the smaller facility. CMCN had nowhere to appeal its case for clinical improvement. This is consistent with Addicott and Ferlie’s (87) description of power over the development of policy and strategic direction being exerted in a top-down manner. In the London MCNs the demonstration of hierarchical power was made by government (the Department of Health) and its associated national bodies. In south-west Victoria, government (the DHSV) was supportive of CMCN but an intervening layer in the hierarchy was not. In Study One representatives of DHSV talked about their efforts to shepherd and support the network in its early development. Later, the Department withdrew that support and did not intervene to prevent Warrnambool campus’s disruption of CMCN activities. Thus it can be seen that in the Corangamite Shire an MCN of small, low volume rural health services exercising a collaborative approach to management of health care services was outmanoeuvred in the direction of policy and strategy by the hierarchical exertion of power by a regional hospital. This could also be described as

*“Lessons From The Development Of A Maternity Managed Clinical Network In A Low Volume Rural Context” Ruth Stewart, Doctoral Thesis, Flinders University*

bounded pluralism, but unlike the London example, where the bounded elite group exercising power were high profile medical specialists, in this south-west Victorian example, the bounded elite group were middle managers.

## **9.4 Diffusion of Innovations and the Culture of Health Care Organisations**

We can use the concept of health care culture and its influence on innovation to throw further light on the life of CMCN. ‘Systems thinking’, ‘the process of understanding how a system’s components influence each other and influence the overall system’, as described by Dunbar,(3p219)is useful here. Dunbar draws on the work of Nelson, Batalden and Godfrey (224) to describe the interaction of ‘clinical microsystems’, (the small, functional frontline units that provide most health care to most people) and ‘macrosystems’ (larger organisations):

Leaders at all levels of a health system need to know how to create conditions of excellence in clinical microsystems because these are the places where quality and safety are built ... Ultimately , the outcomes of a macrosystem can be no better than the outcomes of its microsystems.(3p219)

According to Nelson, Batalden and Godfrey,(224) high-performing health services are characterised by:

- Leadership of the clinical microsystem
- Macrosystem support for the clinical Microsystems
- Focus on patients
- Focus on staff
- Interdependence of care teams
- Adequate information and information technology
- Widespread process improvement
- Focus on performance results.(p20)

CMCN was a clinical microsystem working within the macrosystem of the Barwon South West Region of DHSV. Power and funding was distributed from Barwon South West Region to the hospitals that formed CMCN; to Timboon and Terang directly, and to Camperdown via South West Healthcare Warrnambool. The micro–

macro system relationship was a complex one. The responsibility of the macrosystem to support the microsystem is not explicit in Australian health care but it is a major determinant of performance.(3)

Measuring this micro–macrosystem against Nelson, Batalden, and Godfrey’s (224) characteristics of a successful health service, it can be seen that CMCN had leadership, a focus on patients, interdependence of care teams, adequate information and information technology, widespread process improvement and a focus on performance results. The one way that the CMCN did not meet Nelson, Batalden and Godfrey’s requirements for a successful health service was that it did not have support from South West Healthcare Warrnambool (the macrosystem). The efforts of the clinical microsystem (CMCN) to improve microsystem outcomes were derailed by macrosystem failure to support those changes.

Theories of organisational culture have been developed to explain organisational behaviour and its links with organisational outcomes. We will visit some of these theories and reflect on what light they might shed on events in CMCN.

#### **9.4.1 CMCN as a Learning Organisation**

Education was one of the three main themes in CMCN. Education facilitated innovation within the network. Clinicians were taught new skills, were encouraged to think about how their work could be performed to make the most efficient use of the available workforce and hence to prepare for role restructuring, and were initiated into the processes of the clinical effectiveness cycle. In 2000 Davies and Nutley (225) outlined the need for the new British National Health Service (NHS) to become a learning organisation if it was to meet its goal to link improved organisational learning to performance improvement. ‘Organisations that position learning as a core characteristic have been termed “learning organisations” and this concept is an important one in the context of organisational development’.(225p998) Table 9.1 describes how the CMCN met the key requirements of a learning organisation as described by Davies and Nutley. CMCN satisfied the key features they defined.



**Table 9.1: Corangamite Managed Clinical Network and the key features identified by Mannion, Davies and Marshall (226) of a learning organisation**

<b>Key features of a learning organisation</b>	<b>CMCN attribute consistent with this feature</b>
<p><b>Open systems thinking:</b> teaching people to reintegrate activities, to see the inter-connectedness of their activity and what others are doing across internal department boundaries and boundaries of the organisation to encompass other services and patients</p>	<p>CMCN drew together midwives and GP obstetricians from different hospitals and linked these with hospitals further afield (Sunshine, Ballarat, Adelaide Women’s and Children’s Hospital). CMCN invited clinicians from external hospitals to take part in educational events.</p>
<p><b>Improving individual capabilities:</b> individuals within the organisation are constantly improving their own personal proficiencies</p>	<p>CMCN provided educational activities for all clinicians and encouraged all to improve their own personal proficiencies by mandating annual competencies.</p>
<p><b>Team learning:</b> whole team development</p>	<p>CMCN placed emphasis on local delivery of educational events to enable the whole team to participate together in training.</p>
<p><b>Updating Mental Models:</b> the deeply held assumptions and generalisations formed by individuals (internally and often implicitly) can influence how people make sense of the world. Changing and updating these models is essential to finding new ways of doing things.</p>	<p>Within CMCN the assumption that a doctor must attend all deliveries and must provide all antenatal care was challenged and updated. The concept some midwives held that the doctor’s clinical decision making was based on personal preference and responsive to anecdote rather than an interpretation of evidence was challenged in clinical audit meetings.</p>
<p><b>A cohering vision:</b> empowering and enabling individuals within an organisation must be counterbalanced by providing clear strategic direction and</p>	<p>CMCN began with a set of aims that were frequently referred to in educational, clinical audit forums and workforce planning.</p>

articulating a coherent set of values to guide individual actions. Encouraging a shared understanding of this vision and a commitment to it is crucial in a learning organisation.	
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Source: Mannion, Davies and Marshall (226p27)

Argyris and Schön's seminal work (167) in 1978 on organisational learning describes three different levels of learning. 'Single loop learning', the most basic level of organisational learning, leaves the objectives of the organisation largely unchanged. An example of single loop learning is clinical audit in which practice is compared with an acknowledged standard. When fundamental assumptions about the organisation are challenged in the process of learning, Argyris and Schön use the term 'double loop learning'. CMCN engaged in double loop learning when it designed the EMSiC model of care. The most sophisticated level of learning within an organisation is 'meta-learning', when the organisation 'learns about learning'. It can be argued that when the CMCN engaged in 'train the trainer' sessions and reflected on that experience, they were engaged in meta-learning. CMCN was therefore congruent with the key features of a learning organisation and displayed all three of Argyris and Schön's levels of learning. Davies and Nutley (225) argue that organisations seek enhanced learning either to maintain flexibility and competence in the face of rapid change or to improve their capacity to innovate and hence compete. CMCN developed as a learning organisation in response to the need to survive the rapid change of workforce loss.

Mannion, Davies and Marshall explored the association between organisational culture and health service performance in their 2005 research.(226)They found significant quantitative associations between existing organisational cultures and various aspects of measured performance. Using the competing values framework (227,228) Mannion, Davies and Marshall assessed organisational culture in all English acute and primary healthcare NHS trusts. The application of the competing values framework allows classification into four culture types which are produced by a model based on two intersecting axes. The first axis relates to processes within an organisation. At one extreme are the 'organic processes' characterised by flexibility, individuality and spontaneity. At the other end are the 'mechanistic processes' characterised by control, order and stability. The second axis relates to positioning of

the organisation in relation to the outside world. At one end of this axis is ‘external positioning’ characterised by competition and attempts at differentiation. At the other end is ‘internal maintenance’, characterised by smoothing activities and integration. This competing values framework is illustrated in Figure 9.1

As can be seen in Figure 9.1, in the competing values framework, internally focused organisations using organic processes are classified as having *clan* cultures, while internally focused organisations using mechanistic processes are termed *hierarchical* cultures. Organisations with an external focus and organic processes are called *developmental* and those externally focused organisations exhibiting mechanistic processes are called *rational*.

<b>Internal maintenance:</b> smoothing integration	<b>Organic processes:</b> Flexibility, individuality, spontaneity		<b>External positioning:</b> competition, differentiation
	<i>Clan</i>	<i>Developmental</i>	
	<i>Hierarchy</i>	<i>Rational</i>	
	<b>Mechanistic processes:</b> Control, order, stability		

**Figure 9.1: Competing values model of culture types for organisation**

Table 9.2 describes the key cultural attributes, leadership style, the bonding values and strategic emphasis of each of the organisational culture types, as defined by Mannion, Davies and Marshall in their competing values framework.(226)

**Table 9.2: Characteristics of culture types in the competing values framework**

<p><b>Clan</b></p> <p>Cohesive, participative leader as mentor</p> <p>Bonded by loyalty, tradition</p> <p>emphasis on morale</p>	<p><b>Developmental</b></p> <p>Creative, adaptive</p> <p>Leader as risk taker, innovator</p> <p>Bonded by entrepreneurship</p> <p>Emphasis on innovation</p>
<p><b>Hierarchical</b></p> <p>Order, rules, uniformity</p> <p>Leader as administrator</p> <p>Bonded by rules, policies</p> <p>Emphasis on predictability</p>	<p><b>Rational</b></p> <p>Competitiveness</p> <p>Leader as goal oriented</p> <p>Bonded by competition</p> <p>Emphasis on winning</p>

Mannion, Davies, and Marshall (226) administered a competing values framework questionnaire to each NHS trust. The questionnaire scored the trusts against the characteristics of hospital leadership, emphasis, cohesion and rewards to assess the culture of each organisation. This data assigning a value against each cultural type to each hospital was then compared with a performance measure, the star rating awarded to the hospital by the NHS Commission for Health Improvement. Thus observations were made about the relationship between organisational culture and star ratings of health services. Among other findings they found that developmental cultures were less likely to be awarded poor star status, while clan and hierarchical cultures were less able to achieve high star status. They concluded that there was a strong relationship between organisational culture and performance.

It would be interesting to know how each of the organisations related to CMCN might have been classified using the competing values framework. This rigorous and validated assessment tool was not applied to CMCN or South West Healthcare clinicians and administrators in any study in this thesis. One can, however, compare the findings of the four studies of CMCN with the characteristics of each culture type and make an estimation of CMCN and South West Healthcare’s culture types.

CMCN, with its emphasis on innovation, adaptation to new workforce conditions, introduction of externally sourced clinical practice guidelines, and application of the clinical effectiveness cycle aligns closely with *developmental* culture and, secondarily, to the *rational*. South West Healthcare, on the evidence of its interaction with CMCN whereby innovation was blocked because of conflict over process, change was resisted, loyalty rewarded and authority imposed, aligns primarily with the hierarchical and secondarily with the clan.

Moving from an estimated cultural type to predictions about the performance of either CMCN or South West Healthcare is too great a leap to make, but clearly there was a clash of cultures between CMCN and South West Healthcare. What can be said is that the CMCN exhibited characteristics of culture that elsewhere have been shown to be associated with higher rating performance and that South West Healthcare exhibited characteristics during the period of study that have been shown to be less likely to be associated with higher performance rating. Even though CMCN was a small, low volume network and did not have a tertiary hospital, the activity within CMCN had transformed the culture of maternity services in Corangamite Shire from that associated with lower rating performance to one associated with higher rating performance.

#### **9.4.2 Innovation and Organisational Receptivity**

It is useful to draw on the highly respected work of Greenhalgh, Robert, Bate, MacFarlane and Kyriakidou when considering transformation.(229)These authors performed an extensive systematic review of over a thousand papers on the diffusion, spread and sustainability of innovation in health service organisations. They ‘identified thirteen major research traditions that had, largely independently of one another, addressed (or provided evidence relevant to) the issue of diffusion, dissemination or sustainability of innovations in health service delivery and organisation’. (p3) One of these was evidence-based medicine (EBM). In this tradition innovation is seen as the responsibility of individuals. It is increasingly recognised that the organisation and the delivery of service need to change to support individual innovation. The literature increasingly acknowledges the complexity of the interactions of clinicians with evidence.

It is also increasingly recognised by some protagonists of EBM that the evidence base for particular technologies and practices is often ambiguous or

contested — and must be interpreted and reframed in the light of local context and priorities. Hence, the EBM research tradition now contains an inherent tension between the traditional , highly rationalist and linear perspective in which evidence-based recommendations are seen as context-independent and depicted as flowing ‘like water through a pipe’ from their research source to the practitioner in the clinic, to a much more constructivist perspective in which the acquisition of evidence is seen as a contact sport in which the meaning and value of evidence is negotiated at its point of use.(229p4)

The Australian literature also refers to this tension between the rationalist and the constructivist approaches to implementation of innovation.(230)

Greenhalgh et al (229) examine this tension using empirical studies into organisational ‘climate’ and receptive context for innovation. They draw on the work of Pettigrew, Ferlie and McKee (90) and Bate, Robert and McLeod (231) to identify components of a receptive context. These are:

- the role of intense environmental pressure in triggering periods of radical change
- availability of visionary key people in critical posts leading change.
- good managerial and clinical relations
- a supportive organisational culture (which is closely related to the three preceding factors)
- a quality and coherence of ‘policy’ generated at a local level (and the ‘necessary’ prerequisite of having data and being able to perform testing to substantiate a case)
- development and management of a cooperative inter-organisational network
- simplicity and clarity of goals and priorities
- the change agenda and its locale (e.g. whether there is a teaching hospital presence and the nature of the local NHS workforce).(229p151)

When compared with these criteria it can be seen that CMCN was a receptive context for innovation. It had an intense environmental pressure triggering change (workforce loss) and visionary key people (the clinical leaders). CMCN collected

data and set coherent policy of high quality at a local level, with clear goals and priorities. The managerial and clinical relations within CMCN were good, the relationship with regional clinicians was mostly good, but the relationships with regional management were poor. These factors meant that the supportive organisational culture within CMCN did not extend beyond the Corangamite Shire. This approach offers another lens to explain why CMCN clinical practice guidelines were not implemented within the context of the macrosystem of South West Healthcare: the receptive context was limited to the Corangamite Shire. Once shire boundaries were crossed there was a loss of clarity of goals and priorities (it was unclear whether implementation of evidence-based medicine was a priority for South West Healthcare); those leading change in Warrnambool were not visionary and clinical and managerial relations were strained. In short, receptivity to innovation in South West Healthcare was limited.

It should be noted that Corangamite Shire is a rural district and that CMCN did not include a regional hospital. This is a feature of the innovation of CMCN. Greenhalgh et al (229) have included the locale as a criterion for a receptive context, implying that rurality and receptiveness are mutually exclusive. The CMCN is the exception to this rule: it was a rural MCN and yet it aligned with seven of the eight criteria for identifying a receptive organisation, as set by Greenhalgh et al.(229)

## **9.5 Areas for Further Study**

Learning is the constant pursuit of knowledge. The studies in this thesis lead to further questions and topics for academic consideration. It would be very interesting to revisit the Warrnambool key stakeholders in CMCN to determine what the drivers for their response to CMCN were. Such an inquiry would illuminate understanding of resistance to change and innovation. Each of the hospitals that were part of CMCN, together with South West Healthcare and comparable health care regions could be subjected to the competing values framework to assess the organisational cultures in which they operate to determine what influences health care culture in rural Australia. The findings of such a study could then be compared and contrasted with those made by Mannion, Davies and Marshall (226) of the English NHS. This study examined the application of the MCN organisational structure to maternity

services in south-west Victoria; comparative studies could be made of MCNs in other parts of rural Australia where health services have different structures, and internationally, not to mention in other health care disciplines such as emergency health care, oncology services and disability support services. This thesis began with the intention of being a study of the impact of managed clinical network implementation on health care outcomes. Such an inquiry is both useful and potentially important for health care policy formation. In Australia over the next few years the impact of networks in the form of Medicare Locals and Local Health and Hospital Networks should be carefully evaluated and fed back to the Department of Health and Ageing, which will fund their roll-out.

Analysis of events within the CMCN beg questions about what models of care are appropriate for rural maternity services and about what training is appropriate for professionals destined to work within these models of care.

## **9.6 Conclusion**

What can be learnt from the development of CMCN? The first lesson is that a small microsystem MCN can collapse if it does not have a supporting, high-performing macrosystem focused on clinical improvement. Finding a solution to part of a ‘wicked problem’ does not mean that the solution will be robust enough to survive ‘the pluralities of politics’ into which an innovative change program is thrust.

The second lesson is that it is possible to establish an MCN in a low volume rural context that does not include a regional hospital, and that such a network can be a learning organisation that is receptive to innovation and diffuses that innovation across the health service microsystem. The third lesson is that Australian health care does not make explicit the relationship between culture and performance and the linked roles of micro- and macrosystems in pursuit of improved patient care.



**Appendix One:**  
**Managed Clinical Networks in the United Kingdom**

## Managed Clinical Networks in the United Kingdom

National Managed Clinical Networks NHS Scotland (80)	
Topic	Website URL
Acquired brain injury	<a href="http://www.sabin.scot.nhs.uk/">www.sabin.scot.nhs.uk/</a>
Adult neuro-oncology	<a href="http://www.neurooncology.scot.nhs.uk/">www.neurooncology.scot.nhs.uk/</a>
Children & teenage cancer (CATSCAN)	<a href="http://www.catscan.scot.nhs.uk/">www.catscan.scot.nhs.uk/</a>
Children with exceptional healthcare needs (CEN)	<a href="http://www.cen.scot.nhs.uk/">www.cen.scot.nhs.uk/</a>
Cleft lip palate	<a href="http://www.cleftsis.scot.nhs.uk/">www.cleftsis.scot.nhs.uk/</a>
Complex burn injury	<a href="http://www.cobis.scot.nhs.uk/">www.cobis.scot.nhs.uk/</a>
Complex mental health	<a href="http://www.childrenmind.scot.nhs.uk/">www.childrenmind.scot.nhs.uk/</a>
Cystic fibrosis	
Diagnostic imaging	<a href="http://www.imagingnetwork.scot.nhs.uk/">www.imagingnetwork.scot.nhs.uk/</a>
Diaphragmatic hernia	<a href="http://www.nsd.scot.nhs.uk/services/nmcn/cdh.html">http://www.nsd.scot.nhs.uk/services/nmcn/cdh.html</a> <a href="http://www.sdhcn.scot.nhs.uk/">http://www.sdhcn.scot.nhs.uk/</a>
Endocrinology	
Eyecare	
Familial arrhythmia	<a href="http://www.nsd.scot.nhs.uk/services/nmcn/fans.html">www.nsd.scot.nhs.uk/services/nmcn/fans.html</a>
Forensic MH services	<a href="http://www.forensicnetwork.scot.nhs.uk/">www.forensicnetwork.scot.nhs.uk/</a>
Genital anomalies	<a href="http://www.nsd.scot.nhs.uk/services/nmcn/sgan.html">www.nsd.scot.nhs.uk/services/nmcn/sgan.html</a>
Hepatopancreatobiliary	<a href="http://www.shpbn.scot.nhs.uk/">www.shpbn.scot.nhs.uk/</a>
Immunology	
Inheritable metabolic diseases	<a href="http://www.imd.scot.nhs.uk/">www.imd.scot.nhs.uk/</a>
Muscle	<a href="http://www.smn.scot.nhs.uk/">www.smn.scot.nhs.uk/</a>
Neurosurgery	<a href="http://www.neurosurgery.nhsscotland.com/">www.neurosurgery.nhsscotland.com/</a>
Paediatric epilepsy	<a href="http://www.spen.scot.nhs.uk/">www.spen.scot.nhs.uk/</a>
Parenteral nutrition	<a href="http://www.shpnmcn.scot.nhs.uk/">www.shpnmcn.scot.nhs.uk/</a>
Pathology	<a href="http://www.pathologyscotland.org">www.pathologyscotland.org</a>
Phototherapy	<a href="http://www.photonet.scot.nhs.uk/">www.photonet.scot.nhs.uk/</a>
Renal	<a href="http://www.sprun.scot.nhs.uk/">www.sprun.scot.nhs.uk/</a>
Rheumatology	
Sarcoma	<a href="http://www.ssn.scot.nhs.uk/">www.ssn.scot.nhs.uk/</a>

Uveitis	<a href="http://www.nsd.scot.nhs.uk/services/nmcn/uveitis.html">www.nsd.scot.nhs.uk/services/nmcn/uveitis.html</a>
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<b>Regional Networks in Scotland</b>		
<b>Topic</b>	<b>Area</b>	<b>Website URL</b>
Blood borne viruses	West of Scotland	
Breast & upper GI cancer	West of Scotland	<a href="http://www.woscan.scot.nhs.uk/">www.woscan.scot.nhs.uk/</a>
CAMHS (obligate network)	North of Scotland	<a href="http://www.nospg.nhsscotland.com/">www.nospg.nhsscotland.com/</a>
Cancer (NoSCAN)	North of Scotland	<a href="http://www.noscan.scot.nhs.uk/">www.noscan.scot.nhs.uk/</a>
Cancer (SCAN)	South East Scotland	<a href="http://www.scan.scot.nhs.uk/">www.scan.scot.nhs.uk/</a>
Cancer (WoSCAN)	West of Scotland	<a href="http://www.woscan.scot.nhs.uk/">www.woscan.scot.nhs.uk/</a>
Child protection	West of Scotland	<a href="http://www.childprotectionmcn.scot.nhs.uk/">www.childprotectionmcn.scot.nhs.uk/</a>
Colorectal, gynae, haematological and upper GI Cancer	North of Scotland	<a href="http://www.noscan.scot.nhs.uk/">www.noscan.scot.nhs.uk/</a>
Eating disorders	North of Scotland	<a href="http://www.eatingdisorder.nhsgrampian.org">www.eatingdisorder.nhsgrampian.org</a>
Epilepsy	West Scotland & Tayside	<a href="http://www.epilepsy.scot.nhs.uk">www.epilepsy.scot.nhs.uk</a>
Forensic MH	North of Scotland	<a href="http://www.forensicnetwork.scot.nhs.uk/regional.html">www.forensicnetwork.scot.nhs.uk/regional.html</a>
Gynaecology & colorectal cancer	West of Scotland	<a href="http://www.woscan.scot.nhs.uk/">www.woscan.scot.nhs.uk/</a>
Haematological cancer network	West of Scotland	<a href="http://www.woscan.scot.nhs.uk/">www.woscan.scot.nhs.uk/</a>
Head & neck cancer network	West of Scotland	<a href="http://www.woscan.scot.nhs.uk/">www.woscan.scot.nhs.uk/</a>

Learning disability	South East Scotland	<a href="http://www.ldmcn.scot.nhs.uk/">www.ldmcn.scot.nhs.uk/</a>
Lung cancer	West of Scotland	<a href="http://www.woscan.scot.nhs.uk/">www.woscan.scot.nhs.uk/</a>
Oral health/dentistry	North Scotland	
Paediatric gastroenterology	West of Scotland	
Paediatric respiratory	West of Scotland	
Palliative care cancer Network	West of Scotland	<a href="http://www.woscan.scot.nhs.uk/">www.woscan.scot.nhs.uk/</a>
Skin	West of Scotland	<a href="http://www.woscan.scot.nhs.uk/">www.woscan.scot.nhs.uk/</a>
Urological cancer network	West of Scotland	<a href="http://www.woscan.org.uk/">www.woscan.org.uk/</a>

<b>National Networks Wales</b>		
<b>Topic</b>	<b>location</b>	<b>Website URL</b>
Wales Neonatal network	South & West Wales	
South East Wales Critical Care network	South East Wales	<a href="http://www.wales.nhs.uk/sites3/home.cfm?orgid=736">http://www.wales.nhs.uk/sites3/home.cfm?orgid=736</a>
South East Wales cancer network	South East Wales	<a href="http://www.wales.nhs.uk/sites3/home.cfm?orgid=362">http://www.wales.nhs.uk/sites3/home.cfm?orgid=362</a>
Mid and West Wales critical care network	Mid & West Wales	<a href="http://www.wales.nhs.uk/sites3/home.cfm?orgid=768">http://www.wales.nhs.uk/sites3/home.cfm?orgid=768</a>
North Wales critical care network	North Wales	

South East Wales cardiac network	South East Wales	
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<b>Local Networks</b>		
<b>Topic</b>	<b>Area</b>	<b>Website</b>
Airways	Forth Valley	
Blood borne viruses	Lanarkshire	
Blood borne viruses	Ayrshire & Arran	
Blood borne viruses	Fife	
Blood borne viruses	Tayside	<a href="http://www.nhstayside.scot.nhs.uk/BBVMCN/BBVW_elc.shtml">www.nhstayside.scot.nhs.uk/BBVMCN/BBVW elc.shtml</a>
Cancer partnership	Highland	
Cancer services	Tayside	<a href="http://www.improvingnhstayside.com/cai/mens_affiliated.htm">www.improvingnhstayside.com/cai/mens_ affiliated.htm</a>
CHD	Ayrshire & Arran	
CHD	Argyll & Bute	
CHD	Dumfries & Galloway	<a href="http://www.nhsdg.scot.nhs.uk/dumfries">www.nhsdg.scot.nhs.uk/dumfries</a>
CHD	Fife	
CHD	Grampian	<a href="http://www.nhsgchdmcn.scot.nhs.uk/?page_id=13">www.nhsgchdmcn.scot.nhs.uk/?page_id=13</a>
CHD	Greater Glasgow & Clyde	<a href="http://www.nhsggc.org.uk/myhsd">www.nhsggc.org.uk/myhsd</a>
CHD	Lanarkshire	
CHD	Lothian	<a href="http://www.lothianchdmcn.scot.nhs.uk/">www.lothianchdmcn.scot.nhs.uk/</a>
CHD	Shetland	<a href="http://www.shb.scot.nhs.uk/initiatives/mcn/CHDindex060106.asp">www.shb.scot.nhs.uk/initiatives/mcn/CHDindex 060106.asp</a>
CHD	Western Isles	<a href="http://www.wihb.scot.nhs.uk/chdsmcn/index.htm">www.wihb.scot.nhs.uk/chdsmcn/index.htm</a>

CHD	Borders	
CHD	Forth Valley	
CHD	Highland	<a href="http://www2.nhshighland.scot.nhs.uk/Health%20Services/CHD/about/projects/pathways/index.htm">www2.nhshighland.scot.nhs.uk/Health%20Services/CHD/about/projects/pathways/index.htm</a>
CHD	Orkney	<a href="http://www.orkney-mcn.org/CHD/index.html">www.orkney-mcn.org/CHD/index.html</a>
Dementia services	Tayside	<a href="http://www.improvingnhstayside.com/cai/mcns_dementia.htm">www.improvingnhstayside.com/cai/mcns_dementia.htm</a>
Diabetes	Dumfries & Galloway	<a href="http://www.dgdiabetes.scot.nhs.uk/">www.dgdiabetes.scot.nhs.uk/</a>
Diabetes	Grampians	<a href="http://www.nhsgrampian.org/nhsgrampian/diabetesnew.jsp?pContentID=3324&amp;p_applic=CCC&amp;p_service=Content.show&amp;w">www.nhsgrampian.org/nhsgrampian/diabetesnew.jsp?pContentID=3324&amp;p_applic=CCC&amp;p_service=Content.show&amp;w</a>
Diabetes	Lanarkshire	<a href="http://www.nhslanarkshire.org.uk/Services/Diabetes/Pages/default.aspx">www.nhslanarkshire.org.uk/Services/Diabetes/Pages/default.aspx</a>
Diabetes	Shetland	<a href="http://www.shb.scot.nhs.uk/initiatives/mcn/Minutes190905.asp">www.shb.scot.nhs.uk/initiatives/mcn/Minutes190905.asp</a>
Diabetes	Ayrshire & Arran	
Diabetes	Argyll & Bute	
Diabetes	Lothian	<a href="http://www.nhslothian.scot.nhs.uk/ourservices/diabetes/">www.nhslothian.scot.nhs.uk/ourservices/diabetes/</a>
Diabetes	Orkney	
Diabetes	Tayside	<a href="http://www.diabetes-healthnet.ac.uk/">www.diabetes-healthnet.ac.uk/</a>
Diabetes	Western Isles	<a href="http://www.diabetes-hebrides.org/">www.diabetes-hebrides.org/</a>
Diabetes	Greater Glasgow & Clyde	<a href="http://www.nhsggc.org.uk/myhsd">www.nhsggc.org.uk/myhsd</a>
Diabetes	Highland	<a href="http://www.diabetes-highland.scot.nhs.uk/Steering%20Group/index.htm">www.diabetes-highland.scot.nhs.uk/Steering%20Group/index.htm</a>
Diabetes	Fife	
Diabetes	Forth Valley	<a href="http://www.nhsforthvalley.com/home/Services/A-Z/Diabetes/MCN/Diabetes_MCN_Main.html">www.nhsforthvalley.com/home/Services/A-Z/Diabetes/MCN/Diabetes_MCN_Main.html</a>
Hepatitis C	Greater Glasgow & Clyde	<a href="http://www.hepcenet.scot.nhs.uk/">www.hepcenet.scot.nhs.uk/</a>

Malignant cord compression	Lothian	<a href="http://www.scan.scot.nhs.uk/health_professionals/tumour-specific/general_information/mscc.aspx">www.scan.scot.nhs.uk/health_professionals/tumour-specific/general_information/mscc.aspx</a>
Multiple sclerosis	Ayrshire & Arran	<a href="http://www.nhsayrshireandarran.com/view_item.aspx?item_id=3793&amp;open2=false">www.nhsayrshireandarran.com/view_item.aspx?item_id=3793&amp;open2=false</a>
Neurological disease	Forth Valley	<a href="http://www.nhsforthvalley.com/home/Services/A-Z/MS/Website/MS_Service_Managed_Care_Network.html">www.nhsforthvalley.com/home/Services/A-Z/MS/Website/MS_Service_Managed_Care_Network.html</a>
Nutrition & dietetic	Tayside	<a href="http://www.improvingnhstayside.com/cai/mens_affiliated.htm">www.improvingnhstayside.com/cai/mens_affiliated.htm</a>
Ophthalmology	Lothian	
Orthodontic	Tayside	<a href="http://www.taysideorthodonticmcn.scot.nhs.uk/">www.taysideorthodonticmcn.scot.nhs.uk/</a>
Palliative care	Forth Valley	
Palliative care	Dumfries & Galloway	
Palliative care	Lothian	
Palliative care	Lanarkshire	<a href="http://www.nhslanarkshire.org.uk/Services/PalliativeCare/Pages/default.aspx">www.nhslanarkshire.org.uk/Services/PalliativeCare/Pages/default.aspx</a>
Respiratory	Dumfries & Galloway	
Respiratory	Lothian	<a href="http://www.lothianrespiratorymcn.scot.nhs.uk/">www.lothianrespiratorymcn.scot.nhs.uk/</a>
Respiratory	Lanarkshire	
Respiratory	Shetland	
Respiratory	Borders	
Respiratory	Tayside	<a href="http://www.improvingnhstayside.com/cai/mens_affiliated.htm">www.improvingnhstayside.com/cai/mens_affiliated.htm</a>
Respiratory	Ayrshire & Arran	
Sexual health	Grampian	<a href="http://www.nhsgrampian.org/sexualhealthnetwork">www.nhsgrampian.org/sexualhealthnetwork</a>
Stroke	Lothian	<a href="http://www.lothianstrokemcn.scot.nhs.uk/">www.lothianstrokemcn.scot.nhs.uk/</a>
Stroke	Tayside	<a href="http://www.improvingnhstayside.com/cai/mens_affiliated.htm">www.improvingnhstayside.com/cai/mens_affiliated.htm</a>
Stroke	Lanarkshire	
Stroke	Ayrshire &	<a href="http://www.nhsayrshireandarran.com/view_item.aspx?">www.nhsayrshireandarran.com/view_item.aspx?</a>

	Arran	<a href="#">item_id=2332&amp;open2=false</a>
Stroke	Shetland	<a href="http://www.shb.scot.nhs.uk/initiatives/mcn/Strokehome210905.asp">www.shb.scot.nhs.uk/initiatives/mcn/Strokehome210905.asp</a>
Stroke	Argyll & Bute	
Stroke	Orkney	
Stroke	Borders	
Stroke	Forth Valley	
Stroke	Dumfries & Galloway	
Stroke	Grampian	<a href="http://www.nhsgstrokemcn.scot.nhs.uk/?page_id=4">www.nhsgstrokemcn.scot.nhs.uk/?page_id=4</a>
Stroke	Western Isles	<a href="http://www.wihb.scot.nhs.uk/chdsmcn/index.htm">www.wihb.scot.nhs.uk/chdsmcn/index.htm</a>
Stroke	Greater Glasgow & Clyde	<a href="http://www.nhsggc.org.uk/myhsd">www.nhsggc.org.uk/myhsd</a>
Stroke (Lead)	Fife	<a href="http://www.fifestrokenetwork.scot.nhs.uk/">www.fifestrokenetwork.scot.nhs.uk/</a>
Unscheduled care	Borders	

#### Managed Clinical Networks across the United Kingdom

Topics	Geographical area served	Webpage address
South West London HIV & GUM clinical services network (Human Immunodeficiency Virus and Genito-Urinary Medicine)	South West London, England	<a href="http://www.swagnet.nhs.uk/index.htm">http://www.swagnet.nhs.uk/index.htm</a>
United Kingdom Gene testing network	UK	<a href="http://www.ukgtn.nhs.uk/gtn/index.html">http://www.ukgtn.nhs.uk/gtn/index.html</a>

#### Managed Clinical Networks in England

Topic	Geographical area served	Webpage address
Anglia cancer	Norfolk, Suffolk,	<a href="http://www.angliacancernetwork.nhs.uk/index.php">http://www.angliacancernetwork.nhs.uk/index.php</a>



network	Bedfordshire & Cambridgeshire, England	
Essex cancer network	Essex, England	<a href="http://www.essexcn.nhs.uk/default.asp">http://www.essexcn.nhs.uk/default.asp</a>
Mount Vernon cancer network	Hertfordshire, Luton and South Bedfordshire, England	<a href="http://www.mountvernoncancernetwork.nhs.uk/">http://www.mountvernoncancernetwork.nhs.uk/</a>
Anglia stroke and health network	Norfolk, Suffolk, Bedfordshire & Cambridgeshire, England	<a href="http://www.angliacn.nhs.uk/site/">http://www.angliacn.nhs.uk/site/</a>
Essex cardiac and stroke network	Essex, England	<a href="http://www.essexcardiacservices.nhs.uk/1-Home.aspx">http://www.essexcardiacservices.nhs.uk/1-Home.aspx</a>
Bedfordshire & Hertfordshire heart & stroke network	Bedfordshire & Hertfordshire, England	<a href="http://www.bhhsnetwork.nhs.uk/Home.aspx">http://www.bhhsnetwork.nhs.uk/Home.aspx</a>
East Berkshire diabetes network	Berkshire East	<a href="http://www.berkshireeast-pct.nhs.uk/involved.asp?fldID=310&amp;fldSubAreaNum=9">http://www.berkshireeast-pct.nhs.uk/involved.asp?fldID=310&amp;fldSubAreaNum=9</a>

**Appendix Two: Key Lessons for Network Management in Health  
Care from Networks *Briefing***

# Key Lessons for Network Management in Health Care from Networks *Briefing*

Network management	Network structure
<p><b>Ten key lessons for managing networks</b> Each type of network requires different management styles. For each of the ten key lessons, the types of network for which the management practice is most appropriate are listed:</p> <ol style="list-style-type: none"> <li><b>Achieve a position of centrality within the network.</b> Centrality is crucial in individualistic and hierarchical networks. Network co-ordination should be financed, proactive and 'in-control'. Consider employing a neutral manager or agency where there are competing interests.</li> <li><b>Have a clear mission statement and unambiguous rules of engagement</b> particularly within hierarchical networks.</li> <li><b>Be inclusive – ensure all agencies and individuals gain ownership of the network</b> especially within enclaved networks, but also helpful in hierarchical ones.</li> <li><b>Large networks should be avoided – they incur high administrative costs and lead to inertia in all networks.</b></li> <li><b>Develop strategies for network cohesion</b> <ul style="list-style-type: none"> <li>Joint finance arrangements, pooled budgets, agreed care protocols and common targets help promote cohesion across hierarchical and enclaved networks, as does the removal of physical and jurisdictional boundaries.</li> <li>A 'boundary spanner' acting as an intermediary between organisations and agencies allows individualistic networks to function effectively and helps hierarchical networks engage with peripheral agencies.</li> <li>IT can be a key enabler in promoting network cohesion across all network types.</li> </ul> </li> <li><b>Ownership may be facilitated by formalised contracts and agreements</b> since clear and established operational procedures can lead to trust and understanding. However, over-regulation of hierarchical networks should be avoided.</li> <li><b>Actively engage respected professional leaders who will promote the network to peers</b> (all networks).</li> <li><b>Avoid network capture by, for example, a professional elite or a dominant organisational culture</b> (all networks).</li> <li><b>Respond to the needs of network members in such a way that the network remains relevant and worthwhile</b> (all networks).</li> <li><b>Professionals in networks must provide the mandate to allow managers to manage and govern their activities</b> (individualistic, hierarchical).</li> </ol>	<p>Three key, active network types exist:</p> <ul style="list-style-type: none"> <li>● <b>Enclave networks</b> have a flat internal structure with no central authority; they are based on shared commitment. Such networks are often most successful in enabling information and ideas to be shared among professionals with a common interest.</li> <li>● <b>Hierarchical networks</b> have an organisational core and authority to regulate the work of members via joint provision, inspection and/or accreditation. They are most successful in co-ordinating and controlling a pre-defined task that involves complex division of labour.</li> <li>● <b>Individualistic networks</b> are those in which an individual or organisation develops a loose association of affiliates. They are often based on the procurement of a network of service providers through the negotiation of contracts. Individualistic networks are highly responsive to change and are most successful for exploring innovations and flexible working practices.</li> </ul> <p>Each network type has strengths and weaknesses and real networks are often hybrids of these forms.</p>
	<p><b>Network governance</b></p> <ul style="list-style-type: none"> <li>● All regulators 'outside' a network face a common problem associated with authority to enforce their power.</li> <li>● Enclave and individualistic networks tend to be self-governing with little formal accountability; mandated networks often work poorly because network members have not accepted the authority required for them to be governed in this way.</li> <li>● The potential solutions to this governance gap include providing incentives (individualistic networks) or building upon already shared principles (enclaved networks) for members to agree to a system of self-regulation and governance.</li> <li>● Networks based on the use of contracts along a care pathway might engender compliance, but evidence suggests such networks are less effective in integrating care provision than managed networks or single organisations.</li> <li>● Government targets, audit and incentive arrangements need to be harmonised to promote and reward working in networks.</li> </ul>

Source: NHS Service Delivery and Organisation R&D Programme. Networks *briefing*: key lessons for network management in health care: 2004. Available from:

<http://www.netscc.ac.uk/hsdr/files/adhoc/39-briefing-paper.pdf>

Research findings adapted from Goodwin N, 6 P, Peck E, Freeman T, Posaner R. Managing across diverse networks of care: lessons from other sectors. Final Report to the National Co-ordinating Centre for NHS Service Delivery and Organisation R & D (NCCSDO), 2004.

### **Appendix Three: Perinatal Data Collection Form, Hardcopy**



**Appendix Four: Submission for Funding of the Corangamite  
Managed Clinical Network**

# **Submission for Funding of the Corangamite Managed Clinical Network**

## **Corangamite Managed Clinical Network**

### **Funding submission: Camperdown, Timboon and Terang Managed Clinical Network**

#### **Purpose**

The purpose of this submission is to seek Department of Human Services (DHS) funding to support a model to ensure the provision of best practice maternity services with inbuilt quality assurance in the Corangamite region. It is envisaged that implementation of the initiative will be staged. This funding submission is for the initial stage: the employment of a project officer to facilitate the establishment of the Corangamite Managed Clinical Network (MCN). The second stage will be employment of an administrative officer, the identification and development of the infrastructure required for the support of the Managed Clinical Network and the facilitation of recruitment, retention and training of health professionals to maintain the Managed Clinical Network.

#### **Objectives of the Corangamite Managed Clinical Network (CMCN)**

- To provide maternity services in the Corangamite region using a patient centred service model sharing expertise and resources between the hospitals in Camperdown, Terang and Timboon
- To deliver a quality assurance program for these maternity services by
  - delivering local protocols from clinical guidelines
  - Auditing compliance with local protocols
  - Developing local clinical outcome measures
  - Auditing clinical outcome measures
  - Developing a risk management plan
  - Developing an information technology based clinical information system
- To act as a facilitator for professional development for members of the multidisciplinary team within the Corangamite Managed Clinical network

- To research and implement succession planning for clinicians in maternity services. (Within the CMCN the term clinician will be used in reference to midwives and doctors.)
- To demonstrate a model of maternity service that has the potential to enhance the delivery of maternity and other services (eg. Emergency medicine, anaesthetics or palliative care) in this and other parts of Victoria.
- To develop a management structure for the Corangamite Managed Clinical Network

### **Background: The Corangamite Managed Clinical Network**

The rural communities of Camperdown, Terang, and Timboon are served by a small number of highly skilled doctors and midwives (clinicians). The clinical services in these communities are good examples of wider trends. Locally, nationally and internationally there is a decrease in interest in rural procedural practice particularly among younger clinicians and the impact of this is felt in rural communities as the clinicians age and few younger clinicians follow in their footsteps. In many communities this leads inexorably to loss of procedural services. A model is proposed which addresses quality of care, workforce support and provision of relevant professional development for clinicians. This model will be referred to as the Corangamite Managed Clinical Network (CMCN).

### **Birthing Services Victoria**

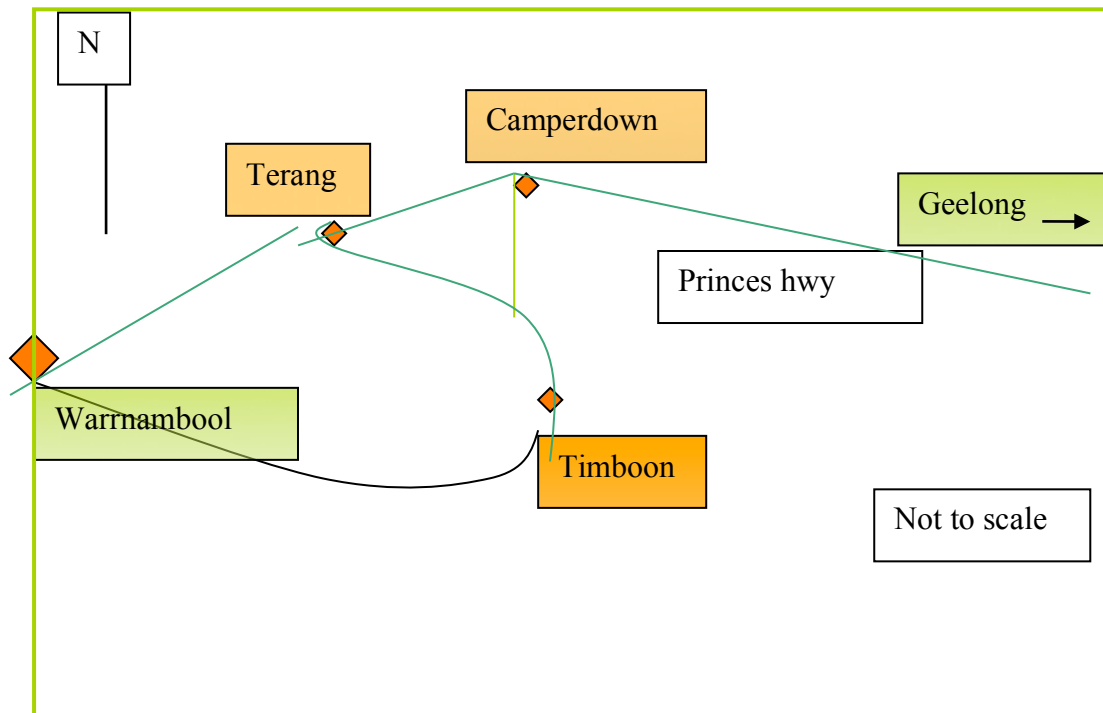
The Corangamite Managed Clinical Network responds to policy developments within the Department of Human Services during 2004 and is based on two publications on policy direction, Future Directions for Maternity Services (DHS 2004) and Rural Birthing Services Victoria Planning Framework (DHS 2004). The patient centred nature of this model with the emphasis on continuity of care fits neatly within the Maternity Services Initiative.

### **The Corangamite Shire**

The Shire of Corangamite has a population of 16,675 people (2001 census) and lies in the south west of Victoria. Camperdown, Timboon, and Terang are service towns for the shire. Terang is 22 kilometres west of Camperdown, and Timboon is 40 kilometres south of Camperdown with the distance between Terang and Timboon



being 50 km on a northwest to southeast axis. The major referral centre is South West Health Care Warrnambool campus. Warrnambool is 75 km to the south west of Camperdown, 53 km south west of Terang and 56 Km west of Timboon. Most residents of the region covered by the CMCN birth within in the CMCN; additionally a percentage of the Corangamite deliveries are to women who reside outside the shire, sometimes at a significant distance.



**Figure One: A map of the major towns of the Corangamite Managed Clinical Network**

The numbers of clinicians in Camperdown, Timboon and Terang are shown in table one.

**Table One: Clinicians in Corangamite**

Town	Number of doctors			Number of midwives	Number of deliveries July 03-Jun 04
	With obstetric anaesthetic skills		With caesarean skills		
	GA/spinal	Epidural			
Camperdown	1	0	4	9	44
Terang	2	1	0	12	29
Timboon	2	1	0	8	68
Total for CMCN	5	2	4	29	141

### **Development History of Corangamite Managed Clinical Network**

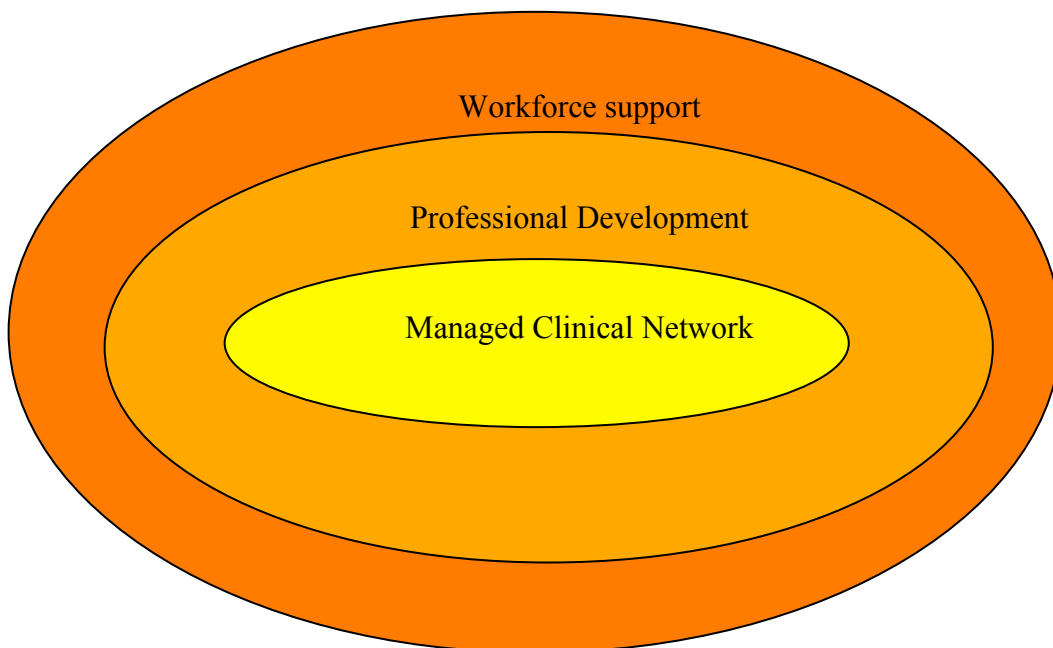
In November 2003 a meeting was held in Camperdown attended by representatives of medical, nursing and administration from the three Corangamite hospitals, specialist obstetricians from Warrnambool, the Otway Division of General Practice (ODGP), Greater Green Triangle University Department of Rural Health (GGT UDRH) and Greater Green Triangle General Practice Education and Training (GGT GPET), Rural Workforce Agency Victoria (RWAV) and Department of Human Services. The meeting emphasised the interdependence of all stakeholders in provision of services to the Corangamite communities and a collaborative approach was agreed upon. A steering committee was formed and funding obtained from the Rural Workforce Agency of Victoria, the Otway Division of General Practice and each of the three hospitals (Camperdown campus of South West Health Care, Terang and Mortlake Health Services and Timboon and District Health Service) to employ a project officer to scope the services in the area and to develop a detailed model.

After a tendering process, the Centre for Ambulance and Paramedic Studies at Monash University in collaboration with the Greater Green Triangle University Department of Rural Health was contracted by the Otway Division of General Practice. Funding was also obtained from the Rural Workforce Agency Victoria and the boards of management of the Terang, Timboon and Camperdown hospitals. The tender was to develop a preferred model for the creation of a rural obstetrics department in consultation with clinicians and administrators in the three hospitals.

The project objectives were to

- Develop a preferred model for the creation of a rural obstetrics department in consultation with nominated stakeholders.
- identify and develop a range of programs and activities to be delivered with strategies for their implementation;
- identify and address issues applicable to an appropriate governance structure
- identify barriers to the effective implementation of such a model
- prepare a funding submission for the establishment and maintenance of a rural obstetrics department.

The work done by the project officer identified the extreme fragility of the current workforce structure and focussed on the necessity to support and attract clinicians by developing a rural health service model with three “onion” layers; the central being a Managed Clinical Network, supporting this is a layer of professional development and then surrounding all of this are the strategies to ensure maintenance of skilled workforce numbers. (Figure Two)



**Figure Two: The rural health service model**

## Managed Clinical Networks

Managed Clinical Networks (MCN) are defined by the National Health Service (NHS) Scotland, the body within which the concept was developed, as “linked groups of health professionals and organisations from primary, secondary, and tertiary care, working in a co-ordinated manner, unconstrained by existing professional and Health Board boundaries, to ensure equitable provision of high quality clinically effective services”<sup>1</sup>

Using the Managed Clinical Network model, clinical staff, clinical effectiveness, clinical governance and administration of birthing services can be coordinated across several health services at a time. A Managed Clinical Network focuses on services and patients rather than upon buildings and organisations.

The NHS has defined core principles for MCNs.<sup>1</sup>

- **Network management arrangements must be clearly defined**, including the appointment of a person who is recognised as having overall responsibility of the network, whether a lead clinician, clinical manager or otherwise. An annual report should be produced by the network for appropriate hospital boards and stakeholder groups.
- **Each network should have a defined structure** that sets out the points at which the service is to be delivered and the connections between these.
- **Each network must have specific clinical and service goals** that clearly state the improvements which patients could expect as a result of the establishment of the network.
- **Each network must use a documented evidence base** and must be committed to expansion of the evidence base through appropriate research and development.
- **Each network must be multidisciplinary** and include patient representation from the earliest stage of development
- **Each network must have a clear policy on dissemination of information to patients**

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<sup>1</sup> NHS MEL (1999) 10, Scottish Executive, St Andrew’s House Edinburgh EH1 3DG, [http://www.show.scot.nhs.uk/sehd/mels/1999\\_10.htm](http://www.show.scot.nhs.uk/sehd/mels/1999_10.htm).

- **All participating clinicians must agree to practice in accordance with the evidence base** and the governing principles of the network.
- **A rigorous quality assurance programme must be an integral part of the network.** All health professionals must produce audit data to required standards and participate in open review of results.
- **The educational and training potential of each network must be used to the full** by exchanges between clinicians in the primary, secondary and tertiary care sectors.
- **All networks must improve patient access and enable professional skills to be maintained** by providing a programme of continuous professional development for every member of the network
- **All networks must include a mechanism for ensuring the programme is being followed.**
- **There must be evidence that the potential for the network to generate better value for money has been explored.**

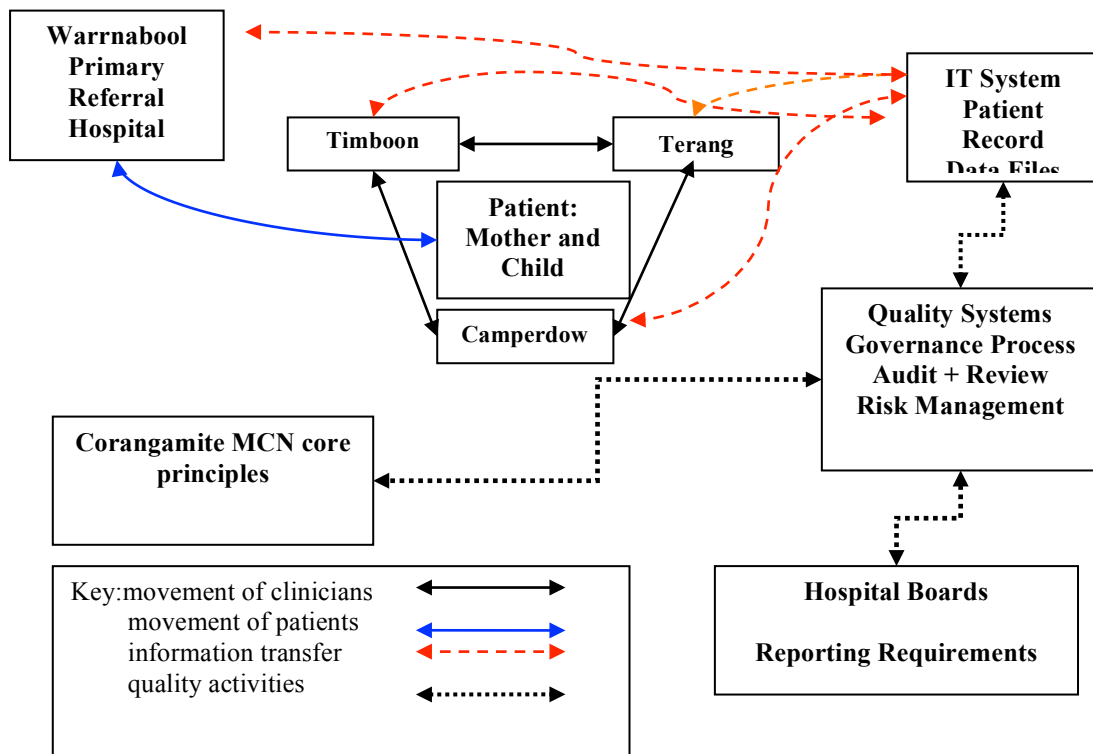
A key factor in the success of MCNs in Scotland has been the use of integrated clinical information systems that span traditional organisational barriers. Such technology allows accurate and timely transfer of information on the results of patient care and treatment to the multidisciplinary team, connection between patients and their carers for health education, disease prevention, health promotion and disease management, the promotion of professional education and agreed clinical guideline dissemination, and facilitation of the tracking of patients through the health care system for clinical audit purposes. In the South West the South West Alliance of Rural Health (SWARH) information and technology network provides an ideal platform for these purposes.

### **Method**

A steering committee of 8-10 people will be established with representatives from each of the hospitals, from each of the professional groups within the model including a specialist obstetrician from Warrnambool, and consumer representatives, to oversee the project. A chair of the steering committee will be elected from within the committee, and an executive committee including the fundholders and the chair will be established. In stage one a project officer will be employed by the CMCN to scope the resources in place and those needed to develop the network and with the aid of the

steering committee identify and establish the clinical and administrative processes, practices and protocols necessary for an effective managed clinical network.

The chair of the steering committee will be the contact person to whom the project officer, and later the administrator/chief executive officer will refer for day-to-day management decisions. The project officer, the chair and later the administrator/chief executive officer will be directly accountable to the steering committee. The steering committee will deliver to each hospital board quality data to enable reporting to the Department of Human Services (DHS) and shall report on a regular basis directly to the DHS. This reporting pattern will enable the Steering Committee of the CMCN to advocate for the provision and maintenance of requisite infrastructure to support the clinical activities of the CMCN. A memorandum of understanding should be established between the three hospital boards and the fund holder for the CMCN outlining the duties and responsibilities of the CMCN and each of the Key Stakeholders.



**Figure Three: Proposed service model of Corangamite Managed Clinical Network**

### Patient Centred Care Planning

Patients will enter the model by attending a General Practitioner when pregnant or contemplating pregnancy. The doctor will then commence antenatal care planning and refer them to the hospital where midwives will introduce the patient to the available hospital services and engage them in antenatal education and support services. In consultation with the treating doctor the midwives will involve the patient in planning the management of her pregnancy, labour, delivery and post partum care. Antenatal consultations will occur with doctors and midwives in the hospitals and the GP clinics. This model encourages movement of midwives and doctors between hospital and clinic to maximise flexibility of service delivery and promote choice between services for the patient. Patients will carry with them patient held maternity record cards.

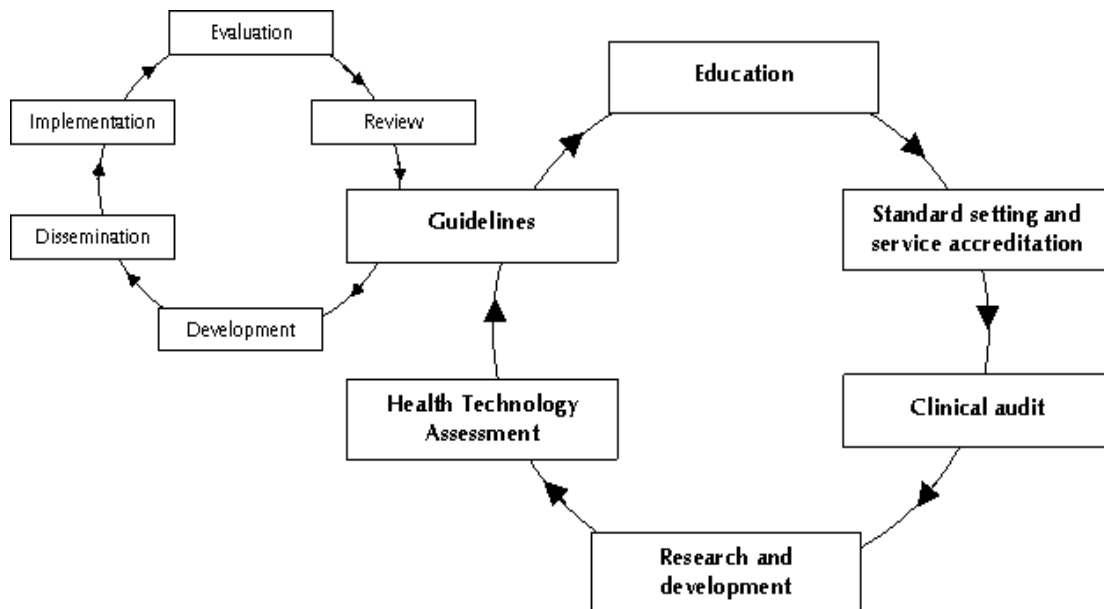
Clinicians will be able to move between hospitals when required, and administrative processes will be established to facilitate this. The existing strong and mutually supportive relationship with the specialist obstetricians in Warrnambool will be maintained. Patients will choose where they wish to birth and, as long as their obstetric risk is consistent with CMCN's level of service, they will be delivered there. Postpartum care will be coordinated by midwives, doctors, and maternal and child health nurses whilst the woman is an inpatient and will continue after her discharge from the hospital.

A designated subcommittee of the MCN steering committee will identify evidence based or "next best" clinical guidelines, and from them develop local protocols which will be followed in all three towns, along with clinical outcome measures to be audited.

Participation in the CMCN will be contingent upon agreement to practice in accordance with the evidence base and general principles of the CMCN. Performance to the guidelines will be audited and openly reviewed following the clinical effectiveness principles of continuous review and feed back.

## Clinical Effectiveness Cycle<sup>2</sup>

Clinical effectiveness is the deployment of interventions, procedures, regimens or services known to produce the best result in practice. The components of clinical effectiveness are shown in figure four.



**Figure Four: Clinical effectiveness cycle**

The use of this cycle within the CMCN is a core principle and will ensure that best practice is implemented throughout the network. Implementation of the clinical effectiveness cycle will prevent incidents and system error such as those highlighted in the inquiries into the failure of delivery of services at King Edward, Royal Melbourne, Camden and Campbelltown hospitals, where there was a lack of governance structures with controls assurance for clinical standards. The Hume Hospitals Services Report among other things adds urgency to the development of safety and quality standards for rural obstetrics.

<sup>2</sup> SIGN 50: A guideline developer's handbook, <http://www.sign.ac.uk/guidelines/fulltext/50/index.html>



## **Sustainability of Maternity Services**

As identified in “Obstetric Workforce Survey in Victoria- Rural and Urban”<sup>3</sup> Clinicians commencing their practice in maternity care are looking for a structured clinical environment offering support with appropriate professional development opportunities and mentoring. “Attention to the professional support of diplomates and Fellows [of the Royal Australian and New Zealand College of Obstetrics and Gynaecology] is needed as there are perceived deficiencies in many area from training through to maintenance of skills and knowledge”<sup>3</sup> The CMCN model can be seen to offer these. The model can therefore be promoted to clinicians who have newly completed their training as a safe and supported professional environment in which to commence practice. It is hoped that this will increase the recruitment and retention of new clinicians to the area and to any other areas which adapt a similar model.

## **Role of Project Officer to be Employed by the Corangamite Managed Clinical Network**

The project officer will be required to:

1. Scope the project answering the questions of who, what, where and how adequate and appropriate are the current maternity services resources within the Corangamite Region. (This work has been commenced by the initial project officer)
2. Work with the steering committee to define the management structure of the CMCN including the appointment of a person having ultimate responsibility of the Network (chair) and the reporting responsibilities of the network
3. Co-ordinate meetings of the subcommittee with responsibility to identify and source appropriate evidence based guidelines and standards for professional development.
4. Work with the steering committee to define the roles of each clinician, consumer representative and administrative worker within the network.
5. Provide administrative assistance for clinicians within the network to meet their credentialing obligations

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<sup>3</sup> Loy CS, Warton, Dunbar JA, Obstetric Workforce Survey in Victoria - Rural and Urban. Department of Human Services, Victoria and the Greater Green Triangle University Department of Rural Health, Warrnambool, Victoria 2004

6. Coordinate delivery of professional development for clinicians and administrators within the CMCN
7. Source Funding from federal, state and local government sources for the establishment, maintenance and continuation of the CMCN
8. Encourage exploration of the potential for the Managed Clinical Network model to enhance related areas of health service provision eg: anaesthetics, accident and emergency and paediatrics.
9. Liase with the evaluation officer.

### **Outcomes of the Corangamite Managed Clinical Network**

The objectives of the CMCN will have been met if the following outcomes are observed:

- Maternity services in the Corangamite region are provided using an established patient centred service model, sharing expertise and resources between the hospitals in Camperdown, Terang and Timboon
- A quality assurance program for these maternity services is delivered and
  - local protocols from clinical guidelines have been established
  - An audit shows compliance with local protocols
  - Local clinical outcome measures have been developed
  - Clinical outcome measures have been audited
  - A risk management plan has been developed
  - An information technology based, clinical information system has been developed
- Professional development for members of the multidisciplinary team within the Corangamite Managed Clinical network has been facilitated.
- Succession planning for clinicians in maternity services has been researched and implementation of the plan has begun.
- A model of maternity service which has the potential to enhance the delivery of maternity and other services in of rural Victoria is demonstrated.
- A management structure for the Corangamite Managed Clinical Network is established

### **Evaluation of the Corangamite Managed Clinical Network**

The initial stage of the CMCN will be evaluated using both qualitative and quantitative methodology by a clinician who will work on a consultancy basis within the budget of the first stage of the CMCN and will provide work in kind evaluating the process of establishing the CMCN. This work in kind will form the content of a Masters Science (research) thesis for the Flinders University faculty of Health Sciences with the Greater Green Triangle University Department of Rural Health. The process of evaluation will be performed by assessing the degree to which the outcomes of the project fulfils the objectives set, using clinical audit data, and the action research methodology of participant observation including formal and informal interviews with clinicians, administrators and consumers within the CMCN. The evaluation of the first twelve months performance of the CMCN will be delivered fifteen months after the commencement of the project.

## **Appendix Five: Corangamite Managed Clinical Network Meeting Etiquette**

## Corangamite Managed Clinical Network Meeting Etiquette

### CORANGAMITE MANAGED CLINICAL NETWORK MEETING ETIQUETTE

#### **Information discussed in the forums is confidential**

The forums are a collaborative effort where we all try to learn as much as possible from what is presented

Everybody should be able to contribute ideas, alternatives and explanations without fear of put downs

All opinions need to be respected, and full and free discussion is to be encouraged

There is no place for competition or withholding information

When clinicians are generous enough to present please accord them with the respect of focusing on there presentation

Some clinicians are "old hands" at presenting, others are new to it - please be patient and encouraging

Good information sources should be revealed



Adapted from Sturnberg, J,

Reid, S and Khandra, M (2000) University of New South Wales,  
Greater Murray Clinical School, Facilitator Handbook

## **Appendix Six: Interview Questions for Study One**

## **Interview Questions for Study One**

### **Interview questions for study one:**

‘Maturation of the model: SWOT analysis within the Corangamite maternity services and analysis of the capacity of the CMCN to respond to these issues’

### **Questions for the first round of interviews:**

- 1.a** What do you think are the strengths of the maternity service provided at Camperdown/Terang/ Timboon?
- 1.b** What do you think are the weaknesses of the maternity service provided at Camperdown/ Terang/ Timboon?
- 1.c** What do you think are the opportunities for the maternity service in Camperdown/ Terang/ Timboon?
- 1.d** What do you think are the threats to the maternity service provided in Camperdown/ Terang/ Timboon?
- 2.** Could you please explain to me what a Managed Clinical Network is?
- 3.** The ‘Virtual Obstetrics Unit’ discussion paper written by Dr John Menzies in May 2003 described and proposed a model of maternity service co-ordination between the three hospitals in Camperdown, Terang and Timboon. The virtual obstetric unit model was subsequently adapted to the Managed clinical Network model. Do you feel that this emerging model offers solutions to each of the problems you have identified in this maternity service?
- 4.** What do you see as the strengths of the Managed Clinical Model for the Corangamite maternity services?
- 5.** What do you see as the weaknesses of the Managed Clinical Network model for the Corangamite maternity services?
- 6.** What do you see as the opportunities of the Corangamite Managed Clinical Network?
- 7.** What do you see as the threats to the Corangamite Managed Clinical Network?

## **Appendix Seven: Corangamite Managed Clinical Network Steering Committee**



## **Corangamite Managed Clinical Network Steering Committee**

### ***TERMS OF REFERENCE***

#### **AIM:**

The Steering Committee will provide governance and direction to the CMCN, which will provide quality maternity services in the Corangamite region.

#### **PARTICIPATING ORGANISATIONS/REPRESENTATIVES:**

The Steering Committee will comprise:

- up to two representatives from the Department of Human Services — Barwon South Western Region,
  - the CEO or delegate of each of the participating health services,
  - the Executive Officer of Otway Division of General Practice,
  - a General Practitioner nominated by the Otway Division,
  - a Specialist Obstetrician,
  - a Midwife Representative,
  - up to three consumer representatives
  - a GP Program Adviser
  - a Program Co-ordinator employed by the Otway Division of General Practice
- any stakeholder may attend as an observer at the discretion of the chairperson

#### **NOMINATED MEMBERS:**

Jill Dunbar/Mo Fisher, Department of Human Services – Barwon South West Region

Mark Johnson, Terang & Mortlake Health Service

Elaine Collins, Timboon & District Healthcare Service

Ruth Mitchell, Southwest Healthcare, Camperdown Campus

Peter O'Brien/Karen McKinnon, Southwest Healthcare

Sarah Williams, Terang & Mortlake Health Service

GP Representative, Otway Division of General Practice

Kathleen Braniff, Specialist Obstetrician

Julie Wallace, Sam Fenton, Corangamite Shire Breastfeeding Association, consumer representatives

Marilyn Lynch, Executive Officer, Otway Division of General Practice

Dr Ruth Stewart, Program Adviser (ex-officio)

Jill Donnelly, Program Coordinator (ex-officio)

#### **CONSUMER REPRESENTATION:**

There is provision for up to three consumers, and for the consumer positions to be shared by a number of consumers

#### **FREQUENCY AND LOCATION OF MEETINGS:**

Meetings of the Steering Committee will be held monthly, normally alternating between 4.30pm on the second Tuesday of each month, and 12.30pm on the second Wednesday of each month, with a combination of teleconference and face-to-face meetings held at Otway Division Offices, Camperdown, as well as each of the hospital campuses.

#### **QUORUM:**

A minimum of 7 members will form a quorum at any meeting of the Steering Committee. It is expected that participating organisations will provide a representative at every meeting. If a member is unable to attend, he or she may nominate a proxy.

#### **ACCOUNTABILITY:**

The Steering Committee reports to the Otway Division of General Practice Committee of Management, who will forward regular reports to the Department of Human Services as required.

#### **STEERING COMMITTEE RESPONSIBILITIES:**

The steering committee will:

1. Provide overall direction and governance structure for the CMCN.
2. Elect a Chair from the membership of the Steering Committee. The program coordinator and project adviser will meet regularly with the chair to discuss current issues within the CMCN

3. Ensure the CMCN is developed in accordance with Government policy.
4. Provide multi-disciplinary expertise and key stakeholder perspective to the development and implementation of the CMCN.
5. Establish a Memorandum of Understanding between participating hospital boards and the fundholder, identifying duties and responsibilities of key stakeholders.
6. Delegate a subcommittee.
  - to source evidence-based clinical guidelines
  - develop local protocols for the Network.
  - develop and audit clinical outcome measures
7. Delegate a subcommittee to co-ordinate a team based multidisciplinary education program for local maternity service professional development, and any further subcommittees as deemed necessary by the steering committee
8. Receive reports on progress from working Groups/Sub-committees appointed by the Steering Committee as required
9. Receive regular reports from the Program Coordinator and intermittent reports as appropriate from the project adviser on the progress of the evaluation of the CMCN
10. Provide direction and governance for the evaluation of the CMCN.
11. Receive regular financial reports from the fundholder and ensure budgetary compliance.
12. Deliver quality data to participating hospital boards.
13. Develop a sustainable model of funding for the future of the CMCN.
14. Communicate lessons learnt in the Managed Clinical Network model for provision of health services in rural areas.
15. Develop and implement a two-tiered communication strategy i.e. Internal, (within hospitals and medical practices), and external (community based)
16. Discuss issues and share information relevant to the delivery of maternity services within the CMCN
17. These terms of reference to be reviewed in July 2006.

**Appendix Eight:**

**Memorandum of Understanding — Corangamite Managed Clinical  
Network**

# **Memorandum of Understanding — Corangamite Managed Clinical Network**

## **MEMORANDUM OF UNDERSTANDING**

### **Corangamite Managed Clinical Network**

The Agencies listed below located in the Department of Human Services (DHS), Barwon - South Western Region hereby establish a Heads of Agreement to enable the development of a Managed Clinical Network, hereinafter referred to as the CMCN from July 2004 to July 2007. The participating agencies are bound by this agreement for the initial project of implementing best practice, sustainable, and collaborative maternity services.

### **THE HEALTH SERVICES (AGENCIES) BOUND**

**The agencies to this agreement are:**

#### **Department of Human Services - South Western region**

South West Healthcare - Camperdown  
Terang and Mortlake Health Service  
Timboon and District Healthcare Service  
Otway Division of General Practice

### **BACKGROUND**

The CMCN is comprised of South West Health Care Camperdown campus, Timboon and District Healthcare Service, and Terang and Mortlake Health Service. This Network was established in 2003. Births in this network total approximately 150 each year. There are nine GPs practising obstetrics and twenty-nine midwives who provide this service. The referral hospital, Warrnambool, has three specialist obstetricians. There is financial commitment by all participating agencies to this project. Funding has been provided to July 2007.

### **PURPOSE AND PARAMETERS OF MEMORANDUM OF UNDERSTANDING**

The purpose of this Memorandum of Understanding is to provide a common understanding between the signatories confirming their willingness to collaborate in the planning, coordination implementation and ongoing commitment toward

improved delivery of maternity services through the development of a Managed Clinical Network.

Under this Memorandum of Understanding each agency will remain autonomous and retain responsibility for the management and delivery of clinical services.

It should be noted that this memorandum of understanding has no legal status.

The agreement of the CMCN Steering Committee as outlined in this Memorandum of Understanding will endure for a period of 3 financial years. Subject to review, the MOU may be extended for a specified period or its arrangements renegotiated.

## **SHARED VALUES**

The steering committee endorses the following underlying values, that:

- Each participating agency is viewed as an equal partner
- The relationship among partners is to be based on trust and mutual respect
- Each participating agency will be respectful of the philosophy, priorities, service approaches and arrangements of the other agencies
- Each participating agency is responsible and accountable for the management, organisation and delivery of its services
- The focus of this initial project of the managed clinical network is to improve the provision of maternity services to consumers throughout the catchment

## **THE CONTEXT**

The context of this agreement is in relation to:

1. The region and all agencies recognise that there is a need to develop and implement a rigorous quality assurance program for maternity services in the region, based upon local protocols developed from evidence based guidelines, with regular clinical audits of compliance to these protocols. The stakeholders acknowledge that collection of maternity services clinical audit data is a valuable aid to quality assurance within the region.
2. The allocation of funds for the provision of professional development for clinicians working in maternity services is insufficient and needs to be organised in such a way as to provide multidisciplinary team based education within the region.
3. The region and all agencies recognise that a co-ordinated approach to maternity services workforce recruitment, retention, support and planning is required.
4. The need for a co-ordinated collaborative approach to the implementation of the government's policy direction in relation to maternity services best practise initiatives for optimum outcomes

## **THE PURPOSE**

### **The purpose of this Agreement is to:**

1. Establish a formal relationship between DHS and each agency on the basis of progressing with the development of the CMCN and a collaborative approach to the delivery of maternity services.

### **Through this Agreement:**

1. All agencies agree to support the development of a Managed Clinical Network and the implementation of a collaborative model for delivery of sustainable, quality maternity services.
2. Funding for the program will be provided by the Department of Human Services, Otway Division of General Practice and the three participating Health Services.
3. The DHS funds will be cash flowed to the Terang & Mortlake Hospital and managed by the Otway Division of General Practice as the auspicing agency. This agency will be responsible for the administrative management of the Project Coordinator employed to co-ordinate this project.

## **AUSPICE AGENCY**

### **The Otway Division of General Practice has been nominated the Auspice Agency for the CMCN.**

The Auspice Agency role has been defined to the functions identified below:

- Fund holder/banker
- In collaboration with the steering committee, allocate resources
- Employer/sub/contractor
- Accountable to DHS for the use of resources and administration of the budget
- Administrative secretariat support

The Auspice Agency may be changed by a majority vote of the Steering Committee. As a consequence the above functions and responsibilities are handed over to the new auspicing Agency.

### **Terang and Mortlake Health Service will be responsible for:**

- Signing a DHS service agreement on behalf of the stakeholders
- Managing DHS funds and reporting in compliance with the service agreement
- Liaising with and reporting to the Department of Human Services

- Transferring DHS funds and reporting to the steering Committee on a regular basis

## **STEERING COMMITTEE MEMBERSHIP**

Membership of the steering committee shall comprise representatives from the Department of Human Services Barwon South Western Region, the Chief Executive Officer or delegate of each of the participating Health Services, the Executive Officer of the Otway Division of General Practice, a General Practitioner nominated by the Otway Division of General Practice, a Specialist Obstetrician, 2 Consumer Representatives (ex-officio membership) registered Midwife nominated by the participating Health Services, and the employed project co-ordinator (ex-officio membership)

## **MANAGEMENT OF THIS AGREEMENT**

1. Under the agreement the agency representatives will meet on a regular basis to plan and implement measures that enable the intent of this agreement to be achieved.
2. Formal minutes of the meetings are to be kept by the auspice agency and disseminated to each of the steering committee representatives.
3. The steering Committee will meet on a monthly basis initially and this will be reviewed after a period of six months.
4. A minimum of five official members will form a quorum at any meeting of the steering committee. It is expected that participating organisations will provide a representative at every meeting. If a member is unable to attend she or he may nominate a proxy.
5. The agreement is to be signed by all participating agency Boards of Management or Executive Directors who have the delegated authority to fund and commit to this Agreement.
6. Each agency shall receive a copy of the agreement and the original will be held with the Department of Human Services<sup>7</sup>. The Agreement is to take effect from 1 July 2005 and will be reviewed annually.

## **DISPUTE RESOLUTION**

The parties have entered the agreement in the spirit of cooperation and goodwill and will endeavour to settle any dispute through collaboration. In the event of an unresolved dispute:

1. In the first instance the complainant should talk directly to the person/parties involved in an attempt to resolve the dispute.



2. Any unresolved dispute will be referred to the Chair elected by the Steering Committee for investigation and conciliation, or to another member of the Steering Committee if the matter involves the Chair in any way.
3. In the event of a dispute remaining unresolved it should be referred to the Manager Health and Aged Care, Barwon South Western region, Department of Human Services who will seek to mediate or, if necessary, direct a resolution.
4. Should this process remain unsuccessful in resolving the dispute then the agreement would move to termination.

**TERMINATION**

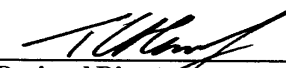
Termination of this agreement is on the following basis:

1. Any agency may terminate its participation in this Agreement by giving three months written notice to all other listed agencies.
2. If an agency terminates, Department of Human Services funds would still remain within the network, but the agency that has terminated would not be entitled to have access to these funds or the benefit derived from these funds.
3. The agency that has terminated will not have use of documentation, protocols, or guidelines created by the Corangamite Managed Clinical Network.
4. The Rural Maternity Initiative Funding, provided to each agency by the Department of Human Services would not be affected upon the termination of an agency from this agreement.
5. The terminating agency would not have funds that were paid to Corangamite Managed Clinical Network Project refunded. In the situation where an agency had agreed to a financial commitment but had not paid it at the time of termination, then this contribution should be honoured as had been previously agreed by the terminating agency.

**SIGNED by CEO/Directors,**

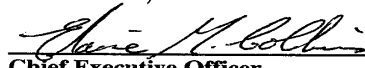
*Noted on behalf of*

**Department of Human Services  
Barwon South Western Region**

  
A/ **Regional Director**  
Date 26/10/05


*Signed on behalf of*

**Timboon & District Healthcare Services**

  
**Chief Executive Officer**  
Date 18-10-2005

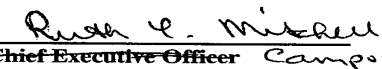
*Signed on behalf of*

**Terang & Mortlake Health Service**

  
**Chief Executive Officer**  
Date 18/10/2005

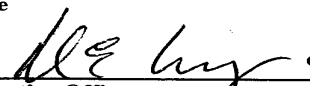
*Signed on behalf of*

**South West Healthcare Camperdown Campus**

  
~~Chief Executive Officer~~ **Campus Manager**  
Date 18/10/2005

*Signed on behalf of*

**Otway Division of General Practice**

  
**Executive Officer**  
Date 18/10/05

**Appendix Nine: Terms of Reference and Goals of the Quality,  
Guidelines and Protocols Committee**

## **Terms of Reference and Goals of the Quality, Guidelines and Protocols Committee**

**Aim:** The quality assurance, guidelines and protocol group, (QGPG), will be responsible for developing a comprehensive quality assurance programme for the CMCN.

### **Participating Organisations/Representatives**

- Three midwives from separate campuses
- Three GPs from separate campuses
- A Quality Assurance coordinator
- The CMCN co-ordinator

### **Nominated Members**

- Anne McMeel, Timboon & District Healthcare Service
- Sarah Williams, Terang and Mortlake Health Service
- Cheryl Grey, Southwest Healthcare, Camperdown Campus
- Ruth Stewart, Camperdown Clinic
- Jean Brown, Timboon Clinic
- Tim Fitzpatrick, Terang Clinic
- Bambi Vagg, QA, Southwest Healthcare, Camperdown Campus
- Jill Donnelly, CMCN project co-ordinator
- 

### **Frequency and locations of meetings**

Meetings will be held on monthly, using a combination of face-to-face and teleconferencing. They will rotate around the campuses usually on the third Tuesday of each month

### **Quorum**

A minimum of five members will form a quorum. It is expected that participating organisations will provide a representative at each meeting. If a member is unable to attend, he or she may nominate a proxy.

**Accountability**

The QGPG reports to the CMCN steering committee and will provide regular reports to this committee

**QGPG responsibilities**

- Identify high quality evidenced based guidelines
- Establish a priority list of clinical conditions for which protocols will be developed
- Develop local protocols from identified clinical guidelines
- Commence auditing compliance with local protocols
- Develop local clinical outcome measures
- Develop a risk management plan
- Develop an information technology based clinical information system
- Coordinate Clinical Audit meetings on a bi-monthly basis within the CMCN

**Review**

- The terms of reference will be reviewed in six months

## **Appendix Ten: CMCN Clinical Practice Guidelines**

# **CORANGAMITE MANAGED CLINICAL NETWORK**

## **CLINICAL PRACTICE GUIDELINES**



**CORANGAMITE MANAGED CLINICAL NETWORK  
CLINICAL PRACTICE GUIDELINES**

**CONTENTS**

**Anaemia In Pregnancy**

**Antepartum Haemorrhage**

**APH Quick Reference Guide**

**Breech Presentation**

**Cord Prolapse and Cord Presentation**

**Delays in Second Stage Labour**

**Fetal Growth Accelerated**

**Fetal Growth Restricted**

**Hyeremisis in Pregnancy**

**Induction of Labour**

**Post Term Pregnancy**

**Preterm Labour Management**

**Preterm Prelabour Premature Rupture of Membranes (PPROM)**

**Management**

**Primary Post Partum Haemorrhage and Retained Placenta**

**Shoulder Dystocia**

# CORANGAMITE MANAGED CLINICAL NETWORK

## CLINICAL PRACTICE GUIDELINES

### ANAEMIA IN PREGNANCY

#### February 2007

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in August 2004. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

#### Introduction

- Iron deficiency is the most common cause of anaemia in pregnancy worldwide
- Anaemia is defined by the World Health Organisation as a Hb below 110 gm/L in pregnancy
- Normal ranges of red cell indices in pregnancy:
  - Haemoglobin (Hb) 110 -150 g/L (Yip 2000)
  - Mean cell volume (MCV) 80-100 femtolitres (fl) (a rise of 20 fl above baseline may occur in normal pregnancy but should not cause the MCV to fall outside of the normal range)

#### Physiological changes

- Both the red cell mass and the plasma volume expand in the first and subsequent trimesters of pregnancy. The plasma volume expansion of 30 - 40 % in pregnancy exceeds the 20 - 25 % increase in red cell mass. As a consequence there is a dilutional drop in haemoglobin concentration. This creates a low viscosity state, which promotes oxygen transport to the tissues including the placenta. This is associated with a physiological macrocytosis (increasing on average 4 fl at term) (Howells et al. 1986)
- Absence of these physiological changes indicates a failure of maternal adaptation to pregnancy. **It should be seen as a warning sign for inadequate placental function**

#### Anaemia

- A Hb of 100-110 g/L, particularly when microcytic and occurring only in late pregnancy, does not necessarily need further investigation or treatment.
- A Hb below 100 g/L requires investigation and treatment
- The origin of anaemia in pregnancy falls into one of the following categories:
  - Iron deficiency
  - Megaloblastic anaemia (vitamin B12 and folate deficiency)



- Haemoglobinopathies
- Other conditions

### **Iron deficiency**

- Approximately 600 mg of elemental iron are required for the increase in red cell mass during pregnancy and a further 300mg for the foetus
- Many women, particularly multiparous women, commence pregnancy with reduced iron reserves
- In uncomplicated pregnancy the mean red cell volume (MCV) usually rises by 4 fl. Therefore a fall in MCV is the earliest sign of iron deficiency. This is followed by a fall in mean corpuscular haemoglobin (MCH) and finally anaemia.
- Anaemia with a low MCV that does not respond to iron supplementation should be investigated with iron studies. True iron deficiency is characterized by the following taking all parameters into account:
  - A low ferritin (< 15 mg/L)
  - High transferrin (> 3.6 mmol/L) concentration (transferrin levels are higher in than outside pregnancy)
  - Low serum iron levels (< 8 mmol/L)
  - Low transferrin saturation (< 10 %)

### **Treatment of established iron deficiency**

- Treatment of iron deficiency has obvious benefits to the mother
- Oral iron supplementation is the first line of management
- A high iron diet should be recommended where possible including red meat, iron fortified cereals and drinks
- Intravenous and intramuscular iron treatments carry a risk of anaphylactic reaction. Their use should be reserved for cases of severe malabsorption

### **Recommended iron dose**

- For iron-deficient anaemia the recommended dose is 120 to 240 mg of elemental iron per day. Depending on the drug prescribed, the total dose can be achieved with 1 to 3 tablets, which are preferably taken before meals (e.g. one tablet every twelve hours or every eight hours) – Ferrogradumet and Ferrogradumet C contain the equivalent of 105 mg elemental iron
- The treatment of iron deficiency is twofold. In addition to taking 1 to 3 iron tablets per day it is recommended that each meal contains 25 to 50 mg of ascorbic acid to enhance dietary non-haeme iron absorption (either in the form of vitamin C tablets or orange or other juice containing vitamin C) (Ballot et al. 1987)
- The elemental iron content in mg of the most common preparations is:
  - FGF 80 (as ferrous sulphate) + 0.3 mg folate
  - FGF 500 105 (as ferrous sulphate) + 0.5 mg folate

- Fefol 87 (as ferrous sulphate) + 0.3 mg folate
- Ferrograd C 105 (as ferrous sulphate) + 562 mg sodium ascorbate
- Ferrogradumet 105 (as ferrous sulphate)
- Fergon 33 per 5 mL syrup (as ferrous gluconate)
- Oral iron treatment is often poorly tolerated. The side-effects of oral iron can exacerbate those of pregnancy such as constipation, heart burn, nausea and vomiting
- Advice regarding these symptoms including blackening of stools should be given
- The choice of oral preparation of iron can be guided by its tolerability

### **Megaloblastic anaemia - folate and vitamin B12 deficiency**

- Megaloblastic anaemia is the second most common nutritional anaemia seen during pregnancy
- Folate deficiency is a more common cause of megaloblastic anaemia than vitamin B12 deficiency
- Folate and its co-factor vitamin B12 are required for DNA synthesis and cell division. During pregnancy, requirements are increased approximately 5-10 fold and stores may be exhausted if increased folate intake does not occur
- Except in strict vegans, true vitamin B12 deficiency is unlikely despite the increased requirements of pregnancy due to the extent of vitamin B12 stores
- Folate stores are much smaller and more easily exhausted
- True folate deficiency in pregnancy may be difficult to diagnose early. However it should be thought of and excluded in the presence of:
  - increasing MCV ( $> 100$  fL but may be of the order of 120 fL)
  - development of anaemia
  - development of large hyper-segmented neutrophils are a late sign in pregnancy
  - falling platelet count ( $< 100 \times 10^9/L$ )
- Vitamin B12 and folate measurements should be undertaken to exclude deficiencies of both haematinics
- Sole folate deficiency without malabsorption can be due to increased requirements in excess of folate intake

### **Treatment of megaloblastic anaemia**

- In the case of folate deficiency supplemental folate is given at 5 mg per day and continued throughout the pregnancy. Lack of reticulocytosis should raise the question of folate malabsorption

- In strict vegans 1,000 micrograms of vitamin B12 by intramuscular injection may be given at 3 monthly intervals to prevent the development of vitamin B12 deficiency

### **Haemoglobinopathies**

- Inherited defects of haemoglobin, resulting from:
  - Impaired globin synthesis (thalassaemia syndromes) or
  - Structural abnormality of globin (haemoglobin variants)

### **Thalassaemia**

- Thalassaemia trait may be first diagnosed in pregnancy
- Pregnancy will exacerbate the anaemia of thalassaemia minor (normally 100 - 120 gm/L) and may result in symptoms of anaemia in the first trimester
- The MCV (55 - 65 fl) will be lower than expected for iron deficiency and the red cell count high ( $> 5.5 \times 10^{12}/L$ )
- Co-existent iron deficiency should be excluded and treated before diagnostic tests for thalassaemia, as Hb electrophoresis may be falsely negative for thalassaemia in iron deficiency
- Once the diagnosis of either alpha or beta thalassaemia is made, informed discussion with the woman must be undertaken and where possible the father of the foetus should be tested initially by complete blood picture to exclude the presence of thalassaemia trait
- Discussion with a clinical geneticist is advisable before proceeding with further characterisation of the foetus where there is a risk of thalassaemia major

### **Other conditions**

- Other conditions may occur in pregnancy that give rise to anaemia. These are uncommon and should be managed by an experienced obstetrician and physicians (haematologist or nephrologist) appropriate to the diagnosis
- Acute leukaemia: 1 in 75,000 pregnancies
- Aplastic anaemia may be associated with pregnancy. Is extremely rare but may recur in the individual
- Micro-angiopathic anaemia: this occurs in a spectrum of disease states notably pre-eclampsia, eclampsia, abruptio placenta, thrombotic thrombocytopenic purpura/haemolytic uraemic syndrome. Also seen in the HELLP syndrome (haemolysis, elevated liver enzymes and low platelets). These conditions mandate urgent referral to an experienced obstetrician

# CORANGAMITE MANAGED CLINICAL NETWORK

## CLINICAL PRACTICE GUIDELINES

### ANTEPARTUM HAEMORRHAGE

October 2006

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in June 2004. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

**Antepartum haemorrhage is defined as bleeding from the genital tract after the 20th week of pregnancy**

- Occurs in approximately 2-5% of pregnancies (Konje and Taylor in James et al. 1999)

#### Causes

- Placental abruption } Diagnosis confirmed in approximately 50% Placenta Praevia }
- Indeterminate Diagnosis confirmed in 40-50%
- Lower genital tract bleeding (< 5% of all APH and rarely serious)

#### **Placenta Abruptio**

The management of a significant APH is included in this CPG to address the unusual but possible scenario, of a woman presenting in such a circumstance. It may for example, occur as a result of a motor vehicle accident. The aim would be to stabilize the woman and transfer to either Warrnambool or a Tertiary centre, depending on gestation.

#### **Definition**

- Refers to bleeding due to the premature separation of a normally sited placenta from its attachment to the uterus (Neilson 2003). May be described as:
  - Concealed
  - Revealed
  - Mixed

#### **Incidence**

- Varies between 0.5-1.5% of births
- Concealed in 20-35%
- Revealed in 65-80%
- Perinatal mortality rate of 119 per 1000

## ***Risk factors***

Independent associations may occur with:

- Abdominal trauma e.g. motor vehicle accident
- Severe IUGR
- Prolonged rupture of membranes (especially early preterm prelabour rupture of the membranes)
- Chorioamnionitis
- Hypertension
- Maternal thrombophilias
- Increasing maternal age, parity
- Cigarette smoking
- Substance abuse (crack, cocaine, amphetamines)
  - Sudden decrease in uterine volume (e.g. SROM in the presence of polyhydramnious, or after delivery of a first twin)
  - External cephalic version (ECV)

## **Clinical features**

- Vaginal bleeding is usually associated with abdominal pain, uterine contractions, tenderness and/or irritability
- May be faint and/or collapse
- Signs of haemorrhagic shock
  
- Consider concealed abruption if abdominal or back pain is present

## **Strongly associated with:**

- Preterm labour
- Signs of fetal compromise on CTG

## **Observe for:**

- Clinical and haematological signs of disseminated intravascular coagulopathy
- Be aware of increased risk of PPH

## **MANAGEMENT: ACTIVE BLEEDING PRESENT**

### **Principles of early management**

- Intravenous (IV) access 16 gauge x 2
- Indwelling catheter

- Urgent bloods for group and cross match, D-dimer, thrombin time, fibrinogen levels, creatine, and pre-eclampsia screen if indicated. **State “I need compatible blood urgently” Send by taxi, inform driver of urgency and instruct driver to wait and return with bloods**
- Maintain and record frequent observations i.e. B/P, pulse, FBC and PV loss
- Continuous fetal monitoring
- Consult with Warrnambool Obstetrician regarding management
- Give Anti D if indicated

### **Management when active bleeding, woman and foetus stable**

- If gestation 32–34 weeks consult with Warrnambool re transferring to them (will depend on clinical picture)
- If Warrnambool not able to accept woman contact PERS and organise transfer to tertiary centre. Administer corticosteroid before transfer
- If gestation 34 weeks or greater organise transfer to Warrnambool. Attending doctor to accompany woman.

**The cornerstone of appropriate management is adequate resuscitation with intravenous fluids (in absence of blood, use plasma volume expanders, eg. Normal Saline 0.9%)**

### **Management when active bleeding, woman stable and foetus compromised**

- If gestation 32–34 weeks consult with Warrnambool re transferring to them (will depend on clinical picture)
- If Warrnambool not able to accept woman contact PERS and organise transfer to tertiary centre. Administer corticosteroid before transfer
- If gestation 34 weeks or greater organise transfer to Warrnambool. Attending doctor to accompany woman.

When fetal demise appears imminent

- Consult with Warrnambool about the appropriateness of proceeding with LSCS at local hospital. If a decision is made to proceed with a caesarean, contact PERS and organise for NETS to attend the hospital.

**24 hour PERS and NETS Emergency Hotline: 1300 137650**

## Fetal death confirmed

- If the woman is stable, the labour and birth may be conducted at the local hospital, or the woman may be referred to Warrnambool. The decision about place of birth will be made after discussion with the Warrnambool obstetrician and following discussion with the woman and her partner/nominated support person.
- Fetal death must be confirmed with an ultrasound scan.
  
- Note increased risk of PPH
- If woman **not** stable, it may be safer for her to birth at local hospital – ring Warrnambool to consult with obstetrician and make a plan

## Placental examination for:

- Completeness
- Any area of abruption
- Associated pathological features e.g. abnormal degree of calcification
- Send for histopathology

## PLACENTA PRAEVIA

### Definition

- Placenta is inserted wholly or partially in the lower uterine segment (Konje, Taylor 1999)

### Incidence

- Approximately 0.5%
- *Only 10% of low lying placentas identified at the 16-20 week USS will remain low at term* (Bricker, Neilson 2003)
- *Rescan woman at 30 weeks*

The major causes of maternal and perinatal mortality and morbidity with placenta praevia are haemorrhage and (often elective) preterm birth.

### Risk factors

- Large placental area e.g. multiple pregnancy
- Advanced age
- High parity
- Deficient endometrium due to:

- Uterine scar (previous caesarean section)
  - Endometritis
  - Previous history of manual removal of placenta
  - Curettage (especially for miscarriage or termination of pregnancy)
  - Submucous fibroid
- Association exists with placenta accreta
  - Perinatal mortality and morbidity are proportional to how much of the placenta is placed centrally over the internal cervical os i.e. how much of the placenta is adherent to the lower uterine segment
  - 16% of cases of placenta praevia are associated with IUGR (especially in case of multiple APHs)

## Clinical features

- Painless vaginal bleeding, usually bright red, but variable amount
- Uterine tenderness and irritability unusual
- Fetal malpresentation or unusually high and mobile presenting part
- May be an incidental ultrasound finding

## Management

### Active bleeding

Principles of early management

- Do not do a digital or speculum examination
  - Intravenous (IV) access 16 gauge x 2
  - Indwelling catheter
  - Check USS results for indication of low lying placenta
  - Continuous CTG
  - Urgent bloods for group and cross match, D-dimer, thrombin time, fibrinogen levels, creatine, and pre-eclampsia screen if indicated. **State “I need compatible blood urgently” Send by taxi, inform driver of urgency and instruct driver to wait and return with bloods**
  - Maintain and record frequent observations i.e. B/P, pulse, FBC and P.V loss
  - Continuous fetal monitoring to assess for fetal compromise
  - Give Anti D if indicated
  - Consult with Warrnambool Obstetrician regarding management Check USS results for indication of low lying placenta

**Note: Placenta praevia is usually detected on USS. If it is noted to be low lying on the 18 week scan the woman should be rescanned at 30 weeks. If it is still low her care should be handed over to Warrnambool. Occasionally, however, a praevia may be missed on USS, or the woman may not have had a scan. For this reason management is included.**



### **Management when woman stable and foetus compromised**

- If gestation 34 weeks or greater, consult with Warrnambool and organise transfer. Attending doctor to accompany woman
- If gestation under 34 weeks, contact PERS and organise transfer: administer corticosteroid before transfer

### **When fetal demise appears imminent**

- Consult with Warrnambool about the appropriateness of proceeding with LSCS at local hospital. Contact PERS and organise for NETS to attend the hospital

### **Fetal death confirmed**

- The decision about place of birth will be made after discussion with the Warrnambool obstetrician and following discussion with the woman and her partner/nominated support person.
- Aim for vaginal delivery with ARM and Syntocinon® if condition stable: plan to occur in consultation with Warrnambool obstetrician
- Fetal death must be confirmed with an ultrasound scan.
- Note increased risk of PPH

### **Unclassified bleeding**

- More often painless
- Commonly due to marginal haemorrhage from the edge of the placental insertion site (marginal haemorrhage)
- Sometimes a circumvallate placenta
- Sometimes associated with perinatal morbidity and mortality if associated with preterm birth
- Monitor fetal growth by ultrasound
- Anti D prophylaxis for Rh negative women
- If there is no growth restriction or other pathology and a single mild episode, there is no evidence that elective delivery is needed at or before 40 weeks

### ***Management of unclassified bleeding at local hospitals***

(NB. Placenta praevia and significant placental abruption have been ruled out)

- Clinical history, including any predisposing factors such as sexual intercourse
- CTG
- Speculum examination
- Stay until there has been no bleeding for 24hrs and USS has been performed and reported.

- Check pad 4 hrly while in hospital
- Discuss with woman need to return if bleeding recurs
- Anti D prophylaxis if indicated

### **Distal genital tract/gynaecological bleeding**

(Consider anti D prophylaxis for Rh negative women)

#### **Cervical**

- Carcinoma
- Benign polyps
- Ectropion/inflammation
- Cervical malignancy requires consultation with a gynaecological oncologist to plan time of delivery

#### **Vaginal**

- Tumours e.g. condylomata
- Inflammation
- Trauma

#### **Vulva**

- Varicosities
- Trauma
- Tumour
- Inflammation

#### **Non-genital tract**

- Rectal
- Hematuria

**CORANGAMITE MANAGED CLINICAL NETWORK  
CLINICAL PRACTICE GUIDELINES**

**APH QUICK REFERENCE GUIDE  
October 2006**

**Assessment**

Vital signs  
Estimated blood loss  
History - check USS results  
Gentle abdominal palpation  
CTG

**Serious causes of APH**

Placenta praevia  
Placental abruption  
Vasa praevia (rare)

**Other causes**

Lower genital tract bleeding,  
< 5%  
Indeterminate, 50%

**IS THE CTG NON - REASSURING, OR IS THERE ANY MATERNAL COMPROMISE, OR SIGNIFICANT BLOOD LOSS, OR SIGNIFICANT PAIN?**

YES

NO

Summon help: press buzzer 3 times  
Call GP, GP obstetrician and GP anaesthetist to hospital

**Resuscitation (Concurrent)**

IV access 16g x 2  
Collect and send blood: FBC, Gp and X match, Coag profile, kleihaur, advise lab of urgency  
If sig blood loss IV replacement (saline until blood arrives)  
Oxygen, 8L via mask  
Indwelling catheter  
Continuous CTG  
Maternal monitoring, ongoing vital signs and blood loss  
Contact Warrnambool for management advice

**If known to have placenta praevia:**  
Take history  
CTG  
Give corticosteroid if under 34 weeks  
Insert 16 g cannula  
Transfer to appropriate hospital  
Cross match 2 units packed cells

Clinical history and examination, check USS results  
CTG  
Speculum  
If Rh neg FMH test (Kleihaur), and anti D if required  
Stay 24 hrs for 4 hrly pad checks  
Organise follow up USS to recheck placental site

**24 hour PERS and NETS Emergency  
Hotline: 1300 137650**

**NB:** Please refer to APH clinical practice guideline for full details

**Aim: stabilise woman and transfer to appropriate facility depending on gestation and safety**

**Below 32 weeks transfer via PERS to tertiary Melbourne facility**

**32-34 weeks, possibly Warrnambool depending on clinical picture**

**34 weeks, usually Warrnambool, after consultation**

If woman is stable and fetal demise seems likely without immediate delivery contact Warrnambool to discuss LSCS at local hospital. Contact PERS and organise NETS to attend if LSCS proceeds

# CORANGAMITE MANAGED CLINICAL NETWORK

## CLINICAL PRACTICE GUIDELINES

### BREECH PRESENTATION: ANTENATAL AND INTRAPARTUM MANAGEMENT February 2007

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in April 2004. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

#### Introduction

This guideline has been included in the CMCN clinical practice guideline portfolio for use during the antenatal period and also to provide guidance for the situation of an **unexpected** breech birth.

***All clinicians must attend an annual training session on managing an unexpected breech. Each hospital has clinicians responsible for delivering this training.***

#### Definition

- The buttocks, foot or feet (instead of the head) are presenting in the birth canal

#### Three classifications:

##### *Frank breech*

- Hips flexed, knees extended

##### *Complete breech*

- Hips and knees flexed and feet not below the fetal buttocks

##### *Footling breech*

- One or both feet presenting (as the lowest part

#### Contributing factors

- Multiparity
- Previous breech birth
- Uterine (anatomical) anomaly
- Oligohydramnios
- Polyhydramnios
- Early gestation
- Fetal abnormality

- Poor fetal growth

### **Antenatal examination**

- Antenatal abdominal examination in late pregnancy should assess fetal presentation

### **Suspected breech presentation at or beyond 37 weeks**

- Ultrasound (USS):
  - Confirm type of breech presentation (frank, complete or footling breech)
  - Estimate fetal weight
  - Exclude hyperextension of the fetal head
  - Exclude placenta praevia
  - Assess fetal morphology
- Hyperextension of the fetal head greater than 90 degrees warrants caesarean delivery because of the risk of spinal (cervical) cord damage during vaginal delivery
- The chance of spontaneous version from breech to cephalic diminishes with advancing gestation although this may still occur in up to 25 % after 36 weeks gestation

### **Literature review**

- Breech presentation becomes less frequent with advancing gestational age and accounts for 3-4 % of pregnancies at term
- Breech presentation is associated with increased mortality and morbidity, largely due to:
  - Preterm gestation
  - Congenital malformations
  - Birth asphyxia or trauma
- Caesarean section is the recommended mode of birth for singleton breech pregnancy (RCOG 2001)
- External cephalic version significantly reduces the frequency of breech presentation and of caesarean section for term (> 37 weeks) breech presentations (Hofmeyr and Kulier 2003)

**All women with uncomplicated breech presentation at or near term should be offered ECV - USS and theatre facilities available when this procedure is attempted**

## **External cephalic version (ECV)**

This information is included to ensure that clinicians are conversant with the procedure allowing them to discuss it with women in the first instance. Full discussion and consent will of course occur with the Warrnambool O&G.

- Studies have shown no effect from the use of postural techniques such as the knee-chest Elkins procedure to correct the position of the baby from breech to cephalic (Hofmeyr, Kulier 2003)
- With ECV, appropriate selection of women and adequate surveillance are necessary to ensure a low complication rate

## **Contraindications to ECV**

- Antepartum haemorrhage in current pregnancy
- Ruptured membranes
- Multiple pregnancy
- Severe fetal abnormality
- Caesarean section necessary for other indications
- Previous caesarean section (relative contraindication)
- Poor fetal growth
- Severe hypertension

The risks to the mother of ECV are exceedingly small and relate to possible effects from tocolysis and the rare complication of placental abruption

For the foetus at term the risks are small if carried out with adequate surveillance by skilled personnel and with theatre facilities for immediate intervention in the event of a complication.

## **Guideline for ECV**

### ***On admission***

- Ensure verbal consent obtained
- Abdominal palpation
- Review blood group

### ***Maternal/fetal observations***

- Record pulse and blood pressure.
- Record a cardiotocography CTG

### ***Senior medical review:***

- Confirm breech presentation and absence of a nuchal cord by ultrasound
- Consider intravenous access if tocolysis is required

### ***Breech confirmed and CTG normal***

- ECV should be conducted by an experienced person
- CTG for 30 minutes after the attempt
- Ultrasound to confirm success

### ***ECV unsuccessful***

- Consider salbutamol infusion if due to uterine tone

### ***Anti D***

- A dose of 625 IU CSL Rh D immunoglobulin should be administered to all Rhesus negative women with no pre-existent endogenous anti-D (follow link to Anti-D prophylaxis)

### ***Discharge***

- When the CTG after ECV has been reviewed as normal, the woman may be discharged and referred back to the CMCN clinician who referred her.

## **Breech delivery management**

### **Elective Caesarean section**

- Book not earlier than 38.5 weeks

### **Vaginal breech birth**

- It is important that clinicians and labour and delivery units are prepared for the occurrence of vaginal breech birth

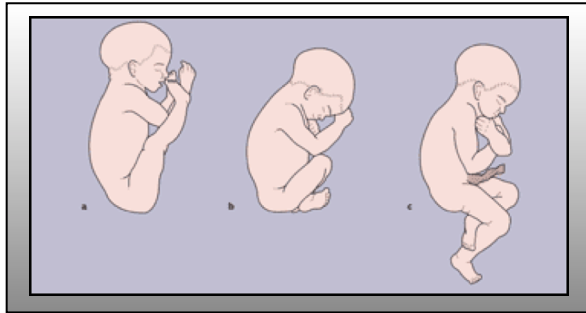
Unexpected vaginal breech birth may occur in the following situations:

- Precipitate labour that does not allow time for caesarean section
- Undiagnosed breech presentation

### ***Management***

- Press buzzer three times – this is an obstetric emergency
- Call for obstetric and anaesthetic GP, as well as other available personal
- PV prior to pushing to confirm full dilatation
- Frank or complete breech may be delivered vaginally if there is no recourse to a caesarean
- Refer to diagrams below



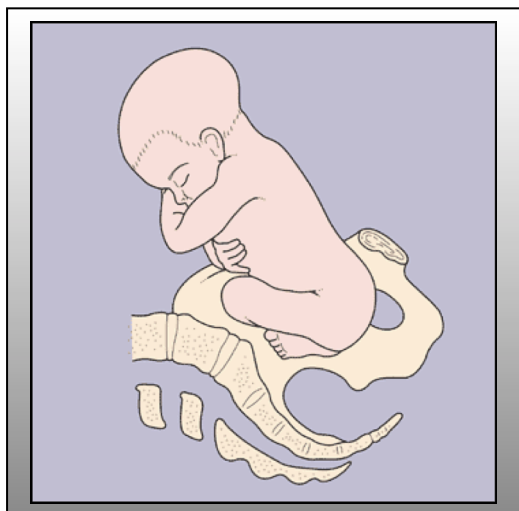


Types of breech presentation.

(a) Breech with extended legs (frank)

(b) Breech with flexed legs (complete)

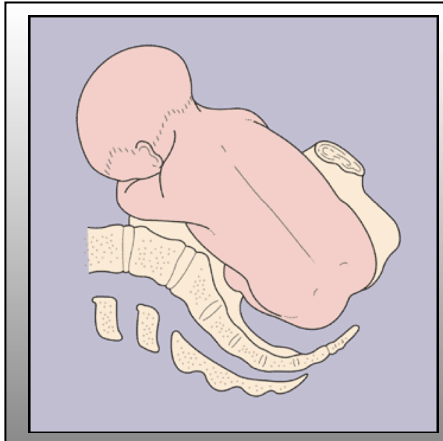
(c) Footling



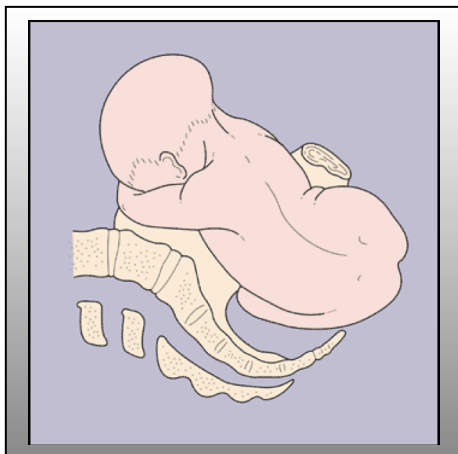
The breech is presenting as a right sacroanterior.

The Bitrochanteric diameter of the buttocks has entered the pelvis in the transverse diameter of the pelvic brim.

With full dilatation of the cervix, the buttocks descend deeply into the pelvis.



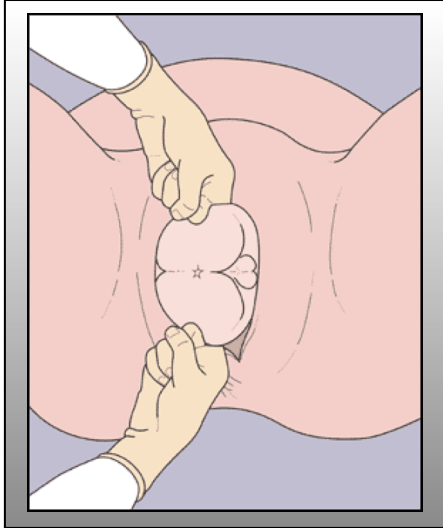
When the buttocks reach the pelvic floor, the pelvic 'gutter' causes the buttocks to rotate internally so that the bitrochanteric diameter lies in the anteroposterior diameter of the pelvic outlet.



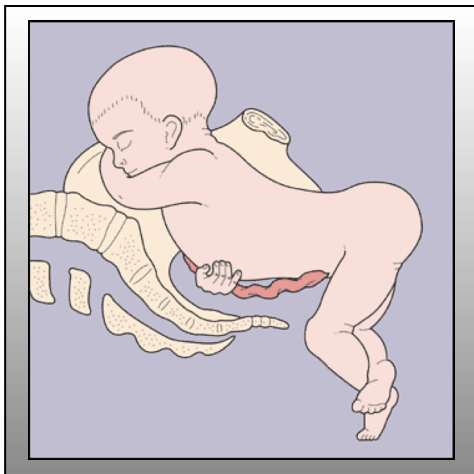
The anterior buttock appears at the vulva. With further uterine contractions the buttocks distend the vaginal outlet.

Lateral flexion of the fetal trunk takes place and the shoulders rotate so that they may enter the pelvis.

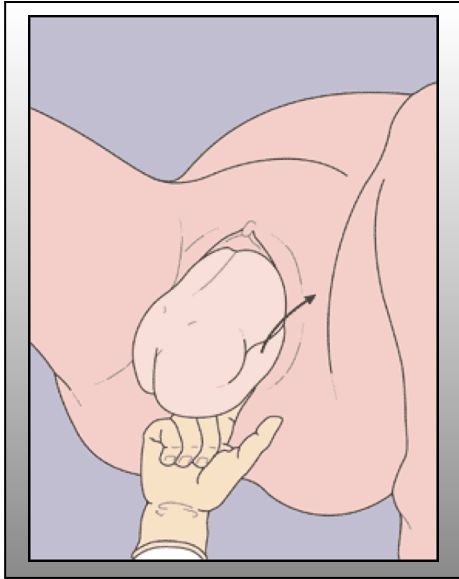
At this stage the attending doctor or nurse-midwife has donned gown and gloves and is prepared to aid the delivery.



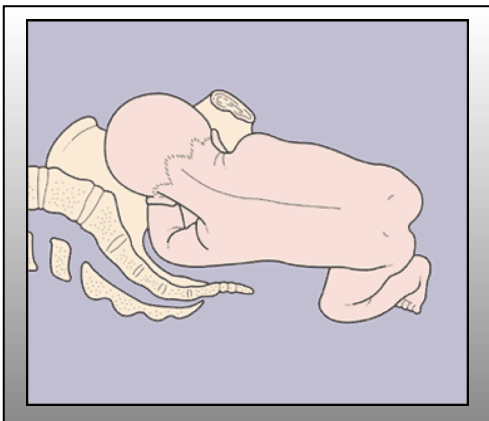
If the buttocks make no advance during the next several contractions, an episiotomy is made and the buttocks are born by groin traction.



The buttocks have been born and the shoulders have entered the pelvis in its transverse diameter. This causes the external rotation of the buttocks so that the fetal back becomes uppermost.



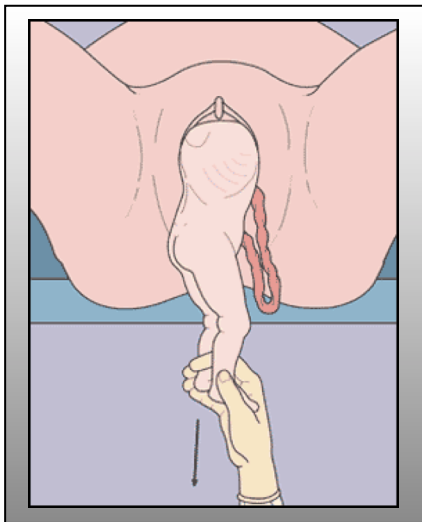
If the foetus has extended legs, the attendant may have to slip a hand along the anterior leg of the foetus and deliver it by flexion and abduction, so that the rest of the birth may proceed.



The fetal shoulders have reached the pelvic 'gutter' and have rotated internally so that the bisacromial diameter lies in the anteroposterior diameter of the outlet.

Simultaneously, the buttocks have rotated anteriorly through 90°. The fetal head is now entering the pelvic brim, its sagittal suture lying in the brim's transverse diameter.

Descent into the pelvis occurs with flexion of the fetal head.



The baby has been born to beyond its umbilicus.

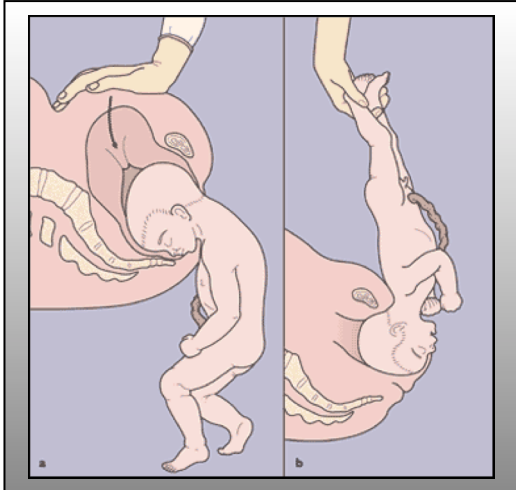
A loop of umbilical cord is pulled down to make sure that it is not holding back the birth.

Gentle traction downwards and backwards is made by the attendant, so that the anterior shoulder and arm are born.

The baby is now lifted upwards in a circle so that the posterior shoulder and arm may be born. Sometimes one arm is extended and has to be dislodged downwards.

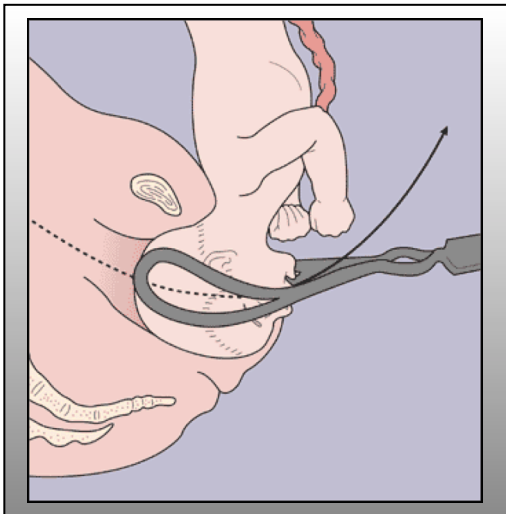
The procedure requires skill otherwise a fractured clavicle or humerus may result.

Once the anterior arm has been born, the baby's body and the posterior arm are freed in a similar manner.



(a) The baby hangs unsupported from the mother's vulva. The doctor applies slight suprapubic pressure to encourage further flexion of the head. When the nape of the baby's neck has appeared, the attendant holds the baby by the feet and swings it upwards through an arc.

(b) This manoeuvre, by using the lower border of the sacrum, pulls the head down and rotates it through the pelvic outlet so that the chin, nose and forehead appear.



An alternative is to deliver the fetal head by forceps.

Diagrams from RWN CPG, last updated Feb 2006 NB Disclaimer on this site

# CORANGAMITE MANAGED CLINICAL NETWORK CLINICAL PRACTICE GUIDELINES

## CORD PROLAPSE AND CORD PRESENTATION October 2006

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in November 2005. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

### Introduction

- Presentation and prolapse of the umbilical cord may occur in any situation where the presenting part does not "fit" well in the maternal pelvis
- With cord presentation or prolapse, blood flow through the umbilical vessels may be compromised from compression of the cord between the foetus and the uterus, cervix or pelvic inlet
- Cord presentation and cord prolapse are life threatening obstetric emergencies that may result in fetal asphyxia or death
- Caesarean section is the safest delivery option for the viable foetus, especially in the first and early second stage of labour

### Definitions

- **Cord presentation** occurs when a loop of cord lies below the presenting part of the foetus in the presence of intact membranes (Lindsay 2004)
- **Cord prolapse** occurs when the umbilical cord descends below the presenting part in the presence of ruptured membranes (usually during labour) (Kahana et al. 2004)
- **Occult cord presentation** occurs when a loop of cord lies beside the presenting part and is often related to unexplained signs of fetal compromise (deep variable decelerations of the fetal heart) in labour (Lindsay 2004)

### Incidence

- 0.2-0.5% of births
- Cephalic 0.2-0.4%
- Breech 2-4%
- Multiple Pregnancies 4%

(RWH CPG Jan 2006: [www.rwh.org.au](http://www.rwh.org.au))

### *Literature review*

- The incidence of cord prolapse varies between 0.14–0.62% (McGeown 2001; Ezra et al 2003; Qureshi et al. 2004)
- Perinatal mortality rates have been reported to be as high as 50% for cord prolapse. However, over the past 15 years mortality rates have improved to around 20% to 30% with most deliveries by emergency caesarean section (Boyle and Katz 2005)
- A finding of cord presentation on ultrasound is associated with an increased risk of cord prolapse; however, the majority of sonographic cord presentations are not followed by cord prolapse (Ezra et al. 2003)
- A recent retrospective study reported a higher incidence of cord prolapse among women who undergo induction of labour (artificial rupture of the membranes) (Boyle and Katz 2005)

### *Risk factors*

- Breech and other malpresentations e.g. shoulder presentation
- Preterm labour +/- low birth weight < 2500g
- Multiple gestation (usually the second born twin)
- High head at onset of labour +/- artificial rupture of the membranes
- Grand multiparity
- Abnormal placentation
- Long cord
- Polyhydramnios (Steer, Danielian 1999; Kahana et al. 2004)

**NB:** Obstetric manipulations such as external cephalic version increase the risk of cord presentation

### *Diagnosis*

- Cord presentation/prolapse is more likely to occur after artificial rupture of the membranes or sudden spontaneous rupture of the forewaters (with malpresentation or high presenting part) than in association with a hind water leak (Steer and Danielian 1999)
- Diagnosis is usually made during a vaginal examination when the examiner feels a soft, usually pulsatile structure
- On examination, the cord may be presenting (alongside the presenting part), or prolapsed (in the vagina or in the introitus)

### *Management*

**The sudden appearance of large fetal variable decelerations or prolonged fetal bradycardia on the cardiotocogram in labour or after spontaneous rupture of the membranes is an indication to perform a vaginal examination to exclude or confirm the presence of cord presentation/prolapse**



**Once cord presentation is confirmed treat as an obstetric emergency with aim to expedite birth**

**The priority is to relieve pressure on the cord while preparations are made for emergency caesarean section**

### **Fetal heart present, first stage labour (or birth not imminent)**

- Call for assistance - ring buzzer 3 times
- Second person to organise a GP obstetrician and GP anaesthetist to attend hospital immediately (Someone must stay with woman and begin emergency management)
- Position the woman in the deep knee-chest position or on the left side with hips elevated in exaggerated Sims' position (also known as Trendelenburg) so that the pelvis and buttocks are elevated.
- Elevate the foot of the bed where possible.
- Using sterile gloves, the clinician should insert their fingers into the vagina, identify and carefully elevate the presenting part to reduce the amount of cord compression (maintain this manoeuvre until help arrives or the baby is born).
- If the cord is protruding outside the vagina replace it gently within the vagina in order to prevent chilling and spasm of the umbilical vessels.
- If the cord is unable to be replaced within the vagina, a pad soaked in warm saline (sodium chloride 0.9%) may be used to cover the cord

### **Arrange immediate delivery by caesarean section**

- Site 16 gauge cannula
- Obtain and send group and save
- Administer oxygen via Hudson mask at 8 litres per minute
- Ensure continuous fetal monitoring until in theatre and commencing caesarean section

**If a delay in caesarean section is expected, rapid instillation of 500–700 mL sodium Chloride 0.9% (at least at room temperature) into the maternal bladder via a Foley catheter immediately may be an effective method of elevating the presenting part. Place in Trendelenburg position, before passing urinary catheter. Concurrent use of tocolysis may be considered (Rogers and Chang 2002)**

## Acute Tocolysis

Acute intravenous tocolysis to relieve pressure on the cord (*see regimen below*) may be an effective adjunct treatment

- **Terbutaline:** 250 micrograms IV or SC: Recommended at RWH

The ampoule comes as 500mcg/1ml. The volume to be given is therefore 0.5ml IV if there is already IV access or 0.5ml SC if there is not

- **IV Salbutamol:** 100 micrograms IV

Make up 1 ampoule of salbutamol sulphate for injection 500 µg (**NOT** Ventolin **Obstetric**), to 10 ml in normal saline (final concentration 50 µg/ml)

Administer 100 µg (2 ml of the preparation, above) over 1-2 minutes

- **Sublingual GTN spray** 400 µg

Product in form of sublingual spray (Nitrolingual®)

One metered spray (=400 µg) administered under the tongue

If response is inadequate, repeat the dose after 5 minutes

(RWH CPG July 2006: [www.rwh.org.au](http://www.rwh.org.au))

**The aim should be to deliver the baby as soon as possible in a manner that provides for safe anaesthesia for the mother: often this is a GA**

- Explain situation to woman to facilitate co-operation
- A focused anaesthetic assessment of the woman must be conducted before anaesthetising the woman
- If the woman has a working epidural in place, there may be time for this to be topped up, by the GP anaesthetist, either before or en-route to theatre, thus avoiding general anaesthesia

- Although expeditious spinal anaesthesia has been performed in cases of cord presentation, the majority of caesarean sections, where there is no epidural in-situ, are performed under general anaesthesia
- It is a high priority to move the woman to the operating room
- The usual prophylaxis to prevent the adverse effects of the aspiration of gastric contents should still be given to the woman, e.g. sodium citrate plus ranitidine
- Delegate someone to document

### **Cord pulsating, second stage of labour**

- If the woman is in the second stage of labour and vaginal birth is imminent with the presenting part at or below spines, the GP should prepare for operative delivery (vacuum extraction or instrumental) with support as available
- If immediate vaginal delivery is not feasible, expedite delivery with caesarean section and manage as described above under first stage of labour

### **Cord not pulsating**

- Confirm fetal death with ultrasound scan
- Allow labour to proceed as for vaginal birth of fresh stillbirth

### **Counselling**

- The woman and her significant support persons should receive ongoing explanation and updating of events as they occur to ensure that emergency management is expedited with the woman's cooperation
- In the case of planned immediate caesarean section, the woman will require a general anaesthetic unless a functional epidural is already in place. Explain that the support person may not be able to attend the theatre in this situation

### **Communication with women and their support people during caesarean section**

- It is important that staff counsel any support persons who are unable to be present in theatre for the emergency caesarean section about the need for immediate intervention to maximize fetal outcomes

### **Postnatal follow up**

- Staff involved in the care of the woman should follow her up in the postnatal period to clarify the sequence of events related to the cord prolapse/presentation and provide the woman with an opportunity to ask any questions she may have

**CORANGAMITE MANAGED CLINICAL NETWORK  
CLINICAL PRACTICE GUIDELINES**

**DELAYS IN SECOND STAGE LABOUR  
October 2006**

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in August 2005. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

**Length of 2nd stage varies according to:**

- Pushing efforts of the woman
- Quality of the uterine contractions
- Type of analgesia (Archie & Biswas 2003)
- If women have a functional epidural in, no adverse maternal or fetal outcomes have been demonstrated when the second stage is prolonged up to 5 hours (Hansen et al. 2002)
- The evidence also suggests that, in controlled circumstances, allowing women in second stage to rest and await fetal descent has beneficial effects including:
  - Reduced maternal fatigue in nulliparas
  - Less fetal heart rate decelerations
  - Reduced pushing time for both nulliparas and multiparas (Hansen et al. 2002)

***Length of second stage: range and median***

**Primigravida**

- 30 minutes to 3 hours (median duration: 50 minutes)

**Multigravida**

- 5-30 minutes (median duration: 20 minutes)

**Clinical Practice Point**

**Upright positions in second stage facilitates gravity to help with decent and optimal positioning, stimulates contractions and increases the diameter of the pelvic outlet**

**Effective positions for “pushing” include**

- **Squatting:** use support people, furniture, birth bar
- **Kneeling:** use cushions, mats, bean bags
- **Standing:** leaning against people, wall, furniture
- **Sitting on toilet or birthing stool**

**(Pairman et al: Midwifery, preparation for practice. Churchill Livingstone P. 408)**

## Delayed descent in second stage

### ***Exclude the following:***

- Full bladder
- Malpresentation of the fetal head e.g. occipito-posterior or occipito transverse, or deflexed fetal head
- Inelastic perineal tissues, especially in the older primipara
- Inadequate uterine activity (Enkin et al. 2000)
- Observe for possible indicators of obstructed labour eg. On V/E moulding, caput or asynclitism

### ***Possible indicators of obstructed labour***

- Failure to progress
- Maternal and fetal tachycardia
- Hypertonus with frequent, strong contractions
- Vaginal bleeding
- Haematuria
- Maternal temperature
- Constant severe abdominal pain
- Physiologic retraction ring (Bandl's ring)

## Management

- Catheterise the bladder
- Abdominal and vaginal assessment
- Ultrasound can improve the accuracy of determining the position of the baby – consider using if available
- Provided there are no maternal or fetal complications, in consultation with GP obstetrician, decide whether there is any advantage to waiting
- If there is a reason for the second stage to be expedited, decide on the most appropriate type of instrumental delivery e.g. simple forceps, rotational forceps or ventouse
- Consider trial of forceps/ventouse in operating theatre if difficulty is anticipated

Syntocinon® augmentation in the second stage for a primigravida is a safe option to overcome inadequate uterine activity. Extreme caution should be exercised in a multigravida

**Facilitate the woman into positions which increase the diameter of the pelvis. Upright and lateral positions have been shown to reduce the length of second stage eg. Hands and knees, supported squat, standing, sitting on the toilet or birthing stool, left lateral, straddled forward over an armless kitchen type chair.**

**CORANGAMITE MANAGED CLINICAL NETWORK  
CLINICAL PRACTICE GUIDELINES**

**FETAL GROWTH - ACCELERATED  
February 2007**

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in December 2004. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

**Definition**

**Macrosomia**

- Is variably defined as a birth weight over 4,000 g, over 4,500 g, or above the 90th centile of weight for gestation
- For non-indigenous Australians the 90th centile at 40 weeks gestation is 4,000 g for female infants and 4,170 g for male infants (Roberts and Lancaster 1999)

**Risk factors**

**Maternal:**

- Race
- Maternal size
- Previous history of a large baby
- Matrilineal tendency to give birth to large babies.
- Maternal diabetes mellitus/glucose intolerance
- Maternal age over 30 years
- High parity
- Post-term pregnancy (> twofold risk)
- Excessive maternal weight gain in pregnancy (> 20 kg)

**Fetal:**

- Hydrops fetalis
- Male infant (as opposed to female)

**NB:** Few pregnancies with any or a combination of these risk factors will result in a baby with macrosomia

**Pre-Pregnancy counselling**

- Encourage women with high body mass index who are planning pregnancy to participate in weight reduction and exercise programs before becoming pregnant

- Studies show that the amount of weight gain during pregnancy rather than pre pregnancy weight has the greatest influence on fetal weight (RCOG 2003)
- Encourage a well balanced diet

### Clinical assessment

- The predictive value of abdominal palpation, symphysial-fundal height and ultrasound in estimating birth weight in the third trimester is limited

**The NICE guidelines state: “Symphysis-fundal height should be measured and plotted at each antenatal appointment” (A/N care. Oct 2003, Clinical Guideline 6. Ref # N0309)**

- It is recommended that a customised chart is used for each woman – excellent information related to this is found on:  
[www.perinatal.nhs.uk/growth](http://www.perinatal.nhs.uk/growth)
- Customised charts may be downloaded from [www.gestation.net](http://www.gestation.net)

### Ultrasound

- Routine morphology scan at 18-20 weeks
- Serial measurements of abdominal circumference and estimated fetal weight are useful to identify accelerated fetal growth
- Consider follow up ultrasound if:
  - Estimated fetal weight at routine ultrasound is > 90th centile and dates are accurate
  - Symphysial-fundal height is persistently above the 90th centile according to the symphysio-fundal chart
  - Symphysial-fundal height is > 40 cm at term
  - Maternal perception suggests fetal weight is significantly greater than in a previous pregnancy

### Antenatal Care

- Confirm due date
- Detailed history to identify risk factors, especially diabetes
- Routine antenatal care/tests in pregnancy
- Inform and offer screening for neural tube defects and Down syndrome:
- Consider early oral glucose challenge test (OGCT) if fetal weight > 90th centile on routine ultrasound
- Appropriate counselling as indicated (e.g. balanced diet, exercise)
- Consider whether appropriate to deliver at local hospital

### Timing of delivery

Should not be based solely on estimated fetal weight

- Induction of labour for suspected fetal macrosomia in non-diabetic women has no effect on maternal or neonatal morbidity (Sanchez-Ramos et al. 2002; Irion and Boulvain 2003)
- If macrosomia is predicted in the foetus of a diabetic woman, consider induction of labour at 37 - 38 weeks
- Research has found that induction of labour for suspected fetal macrosomia has no effect on the rates of caesarean section, and instrumental or spontaneous birth (Irion and Boulvain 2003)
- If fetal macrosomia is suspected, induction at term may be reasonable if the cervix is favourable (Nocon 2000)
- One cohort study found that the use of a fetal weight threshold of = 4,250 g in diabetic women for elective caesarean reduced the incidence of shoulder dystocia in this population (Conway and Langer 1998)

### **Complications of macrosomia**

- Reduction in maternal perception of fetal movements
- Meconium stained liquor and aspiration
- Abnormal heart rate patterns.
- Cephalopelvic disproportion
- Shoulder dystocia
- Clavicular fracture
- Brachial plexus injuries and paralysis
- Low Apgar score
- Hypoxic ischaemic encephalopathy
- Perinatal mortality

### Also

- Increased childhood and adult morbidity (Neilson 2003; Orskou et al. 2003)



# CORANGAMITE MANAGED CLINICAL NETWORK

## CLINICAL PRACTICE GUIDELINES

### FETAL GROWTH - RESTRICTED

February 2007

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in November 2003. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

#### Definitions

##### Normal fetal growth

- Defined as the expression of the genetic potential to grow in a way that is neither constrained nor promoted by internal or external factors

(NB: It is difficult to identify real or true variation from normal growth in an individual fetus)

##### Small for gestational age (SGA)

- Birth weight below the 10th centile of weight for gestation. This does not necessarily indicate fetal growth restriction
- The majority of foetuses with a birth weight below the 10th centile for gestational age are constitutionally small (RCOG 2002)

##### Related birth weight definitions

- Low birth weight <2,500g
- Very low birth weight <1,500g
- Extremely low birth weight <1,000g
- Low birth weight can be due to preterm birth, constitutionally small infants or growth restricted infants

#### Common factors associated with low weight for gestation include:

- Race
- Maternal size
- Female infant (as opposed to male infant)
- Nulliparity (as opposed to 2nd or 3rd infants)
- History of a baby of low weight for gestational age
- Matrilineal tendency

#### Common factors associated with fetal growth restriction include:

##### Maternal factors

- Smoking, alcohol, amphetamines, cocaine/crack

- Social disadvantage/domestic violence
- Preeclampsia
- Chronic hypertension, especially if associated with atherosclerosis
- Connective tissue disorders
- Acquired and genetic thrombophilias
- Diabetes - especially the white classes indicating diabetic vasculopathy
- Cardiac disorders - primarily cyanotic cardiac disease
- Maternal hypotension (< 60 mm Hg diastolic)
- Respiratory disease - severe asthma
- Anaemia
- Renal disease
- Drugs (anticancer agents, narcotics)
- Poor nutrition

### **Fetal factors**

- Fetal infection
- Malformations
- Chromosomal defects

### **Placental factors**

- Abruptio placentae, placenta praevia
- Thrombosis, infarction (fibrin deposition)
- Placentitis, vasculitis
- Chorioamnionitis
- Placental cysts, chorioangioma
- Decreased uteroplacental blood flow

### **Uterine factors**

- Fibromyoma (large submucosal fibroids)
- Morphologic abnormalities - especially uterine septum

### **Pre-pregnancy counselling**

#### **Behavioural modification**

- Inform women that smoking has been associated with low birth weight, preterm birth and perinatal death
- Encourage/offer enrolment in smoking cessation programs to reduce/stop smoking. Effective interventions for a small minority of smokers include physician advice, group sessions and behavioural therapy

## Nutrition

- Severe dietary restriction is related to decreased birth weight
- Under-nutrition may be recognised by a low fasting glucose or by low maternal weight for height
- Low fasting glucose has also been associated with low birth weight in Australia.
- Encourage a well balanced diet
- Nutritional advice is moderately effective in increasing the protein and energy intake of pregnant women

## Clinical assessment

### Abdominal examination

- The predictive value of abdominal palpation and symphysial-fundal height measurements in estimating fetal weight in the third trimester is limited
- Serial symphysial-fundal height measurements may improve the rate of detection of SGA but the sensitivity and specificity are poor

**The NICE guidelines state: “Symphysis-fundal height should be measured and plotted at each antenatal appointment” (A/N care: Oct 2003, Clinical Guideline 6. Ref # 03090**

- It is recommended that a customised chart is used for each woman
- Excellent information related to this may be found on: [www.perinatal.nhs.uk/growth](http://www.perinatal.nhs.uk/growth)
- Customised growth charts can be downloaded from: [www.gestation.net](http://www.gestation.net)

## Ultrasound

- Routine dating and morphology scan at 18-20 weeks
- All growth restricted foetuses require careful assessment for malformations
- Serial measurements of abdominal circumference and estimated fetal weight are useful to identify restricted fetal growth
- Structural abnormalities with normal liquor volume and normal uterine or umbilical artery Doppler may also be associated with chromosomal defects (consider karyotyping) (RCOG 2002)
- Oligohydramnios without an obvious cause (e.g. renal agenesis) is associated with high perinatal mortality

## Laboratory tests:

- Complete blood picture (hemoconcentration, decreased platelet count)

## Monitoring fetal movements

- A large randomised trial failed to demonstrate that charting fetal movements is of value (Grant et al. 1989)
- A general enquiry about fetal movements may be worthwhile

## Cardiotocography

- Has not been found to be an effective screening test but is useful in the surveillance of growth restriction

## Umbilical artery Doppler

- Abnormal Doppler wave forms are found in association with restricted growth
- A systematic review found that monitoring high risk foetuses with umbilical artery Doppler reduces perinatal morbidity and mortality (Neilson and Alfirevic 2003)
- Doppler surveillance also lowers the rate of antenatal admissions and inductions of labour
- Close correlation between abnormal flow velocity wave forms and fetal hypoxaemia and acid base status has been reported
- If increased resistance is found, repeat assessment in two weeks
- If absent or reversed diastolic flow is found **refer to Warrnambool for admission:** reverse flow usually means delivery is required **within days**

## Antenatal care

- Detailed history to identify risk factors: if significant risk factors care may need to be transferred to Warrnambool O & G
- Appropriate counselling as indicated (e.g. balanced diet, stop smoking or other substance abuse, stopping work)

The following options of management have been proposed for pregnancies at risk of fetal growth restriction but have not been demonstrated to be beneficial thus far:

*(NB: Woman in this risk category would be cared for at Warrnambool)*

- Aspirin
- Hospitalisation and bed rest
- Betamimetics or calcium channel blockers
- Plasma volume expanders

## Early onset growth restriction (identified at < 32 weeks gestation)

### Laboratory tests:

- Maternal serology for CMV, toxoplasmosis, syphilis infection
- Complete blood picture (haemoconcentration, decreased platelet count)
- Refer to Warrnambool O&G for consultation and probable hand over of care

## ***In case of severe early onset IUGR hand over care to Warrnambool O&G***

### **Late onset growth restriction (detection after 32 weeks)**

- Consult with Warrnambool O & G
- Usually mild to moderate uteroplacental dysfunction due to a variety of causes
- Serial ultrasound measurement of growth (2 weekly) and amniotic fluid index
- Regular CTGs 2-3 x per week

### **Timing of delivery**

- Varies according to aetiology, severity and duration of pregnancy

### **Moderate growth restriction**

- Management plan developed between the woman, the obstetrician and the neonatologist.
- Delivery can be delayed until = 37 weeks in the presence of end diastolic flow and when other surveillance findings are normal (RCOG 2002)
- If clinical picture indicates delivery required prior to 37 weeks, hand care over to Warrnambool O & G

### **Significant growth restriction**

- Refer to Warrnambool O&G
- Very growth restricted foetuses are usually delivered between 34-36 weeks

### **Delivery**

- Current evidence does not support elective caesarean section for all growth restricted foetuses, however, growth restriction associated with absent or reversed flow almost universally requires birth by LSCS
- Continuous CTG in labour with use of fetal scalp blood sampling for significant signs of fetal compromise (These women would usually be cared for at Warrnambool)

## **Placental pathology**

- Always send the placenta to an experienced placental pathologist. The examination can indicate the cause of growth restriction - e.g. maternal thrombophilias, infection, etc
- Send placenta to Gribbles Pathology at Warrnambool Base Hospital for examination.
  - Place in container of formalin and courier to Warrnambool
  - Address: Histology, Gribbles Pathology, Warrnambool Base Hospital
  - Results will usually be available within a week

## **Complications**

- Poor perinatal outcome among small for dates infants is largely due to the high rate of fetal growth restriction among them (20 % of small for dates foetuses have growth below the 5th centile) (RCOG 2002; Walkinshaw and Cochrane 2003)

## **Small for dates foetuses are at increased risk of:**

- Reduction in maternal perception of fetal movements
- Meconium stained liquor
- Abnormal heart rate patterns intrapartum
- Intrauterine fetal death
- Hypoxic ischaemic encephalopathy
- Poor neurological development
- Delay in cognitive development
- Sudden infant death syndrome

## **In adult life**

- Type 2 diabetes and hypertension (RCOG 2002)

**NB:** Good catch up growth in the first few months of life may predict a healthy outcome.

**CORANGAMITE MANAGED CLINICAL NETWORK  
CLINICAL PRACTICE GUIDELINES**

**HYPEREMESIS IN PREGNANCY  
February 2007**

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in May 2004. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

### **Introduction**

- Nausea and vomiting are among the earliest symptoms of pregnancy
- The term hyperemesis gravidarum is used when symptoms are severe enough to require hospital admission and rehydration. Women with hyperemesis are usually ketotic and unable to maintain adequate oral hydration
- Hyperemesis gravidarum affects about 0.5 to 10 women per 1,000 pregnancies (Hod 1994)

### **PATHOGENESIS**

#### **Hormonal**

- High levels of Human chorionic gonadotrophin (hCG) and oestrogen have been implicated in hyperemesis in some but not all studies (Kauppila 1979; Soules 1980; Goodwin 1992)

#### **Mechanical**

- There is a fall in lower oesophageal pressure, decreased gastric peristalsis and gastric emptying in pregnancy (Walsh 1996)

#### **Emotional**

- Various psychological and social factors are associated with hyperemesis, but it is debatable whether these are consequences of the condition, rather than causal (Deuchar 1995; Naeff 1995)

### **Diagnosis and investigations**

- The diagnosis of hyperemesis is only made after exclusion of other pathology
  - Obtain detailed history including any maternal disease or conditions related to nausea and vomiting

- Clinical assessment for signs of dehydration
- Exclude maternal disease, molar or multiple pregnancy
- Investigations are required to determine the degree of physiological disturbance and to exclude significant pathology if indicated by history and examination.
  - Urinary urinalysis, microurine and culture
  - Blood for urea, electrolytes and serum creatinine
  - Blood sugar if diabetic
  - Liver function tests (specific hepatitis serology if indicated)
  - Thyroid stimulating hormone, free T4 level to exclude thyrotoxicosis
  - Serum amylase if pancreatitis considered
  - Obstetric ultrasound to confirm ongoing pregnancy and exclude multiple pregnancy or hydatidiform mole

Exclusion of other pathology before diagnosis of hyperemesis gravidarum

Possible cause	Investigations if indicated by history and examination
Urinary tract infection	Urinalysis, microurine, urine culture
Gastroenteritis	Stool culture
Drug induced vomiting	
Multiple pregnancy	Obstetric ultrasound
Hydatidiform mole	Obstetric ultrasound
Diabetic ketoacidosis	Urinalysis, electrolytes, blood sugar level
Hepatitis	Liver function tests Specific hepatitis serology
Addison's disease	Electrolytes, creatinine
Thyrotoxicosis	Thyroid stimulating hormone, free T4 level
Pancreatitis	Serum amylase
Bowel obstruction	Erect/supine abdominal x-ray with appropriate shielding
Raised intracranial pressure	MRI or CT head

## Management

- Hyperemesis gravidarum may result in:
  - Hyponatraemia
  - Hypokalaemia
  - A metabolic hypochloraemic alkalosis
  - Ketonuria
  - Raised haematocrit



- Increased specific gravity of the urine

## TREATMENT OPTIONS AND EVIDENCE OF TREATMENT EFFICACY

### Intravenous rehydration

- This is the most important component of management
- Use normal saline to replace fluid loss and assess potassium requirement
- It is recommended glucose is avoided as it may precipitate Wernicke's encephalopathy (Bergin 1992).
- Consult Warrnambool O&G if vomiting persists

## PHARMACOLOGICAL TREATMENTS

### Antiemetics

- A meta-analysis of 12 controlled studies involving over 1500 women demonstrates a significant reduction in nausea using antiemetic medication with no increase in miscarriage or fetal abnormality (Jewell 2004)
- Metoclopramide (Maxalon) - 10 mg tablets, one tablet taken three times a day. Side effects may include extrapyramidal signs and oculogyric crises
- Doxylamine (Restavit) - 25 mg tablets, one at night. Doxylamine with Vitamin B6 (Diclectin) is the only medication approved in Canada for nausea and vomiting in pregnancy (Category A)
- Promethazine theoclate (Avomine) - 25 mg morning and night. Side effects include sedation
- Prochlorperazine (Stemitil) - Suppositories, 25 mg once or twice daily for severe, persistent and uncontrolled hyperemesis gravidarum, not relieved by the above treatment
- Promethazine and prochlorperazine - Category C for use in pregnancy, as when used in large doses late in pregnancy, they have been associated with extrapyramidal side effects in the infants after birth

### Ondansetron

- Selective 5HT<sub>3</sub> receptor agonist
- Reported as effective in two cases of intractable hyperemesis (Giukontes 1992; World 1993), but no benefit over antihistamines demonstrated in a small pilot study

(Sullivan 1996). [Has been associated with chest pain and myocardial ischaemia, and myocardial infarction (Frigiero 1996)]

- Only initially prescribed for cases of severe hyperemesis gravidarum, in association with intravenous rehydration, thiamine and electrolyte correction
- Doses: 4-8 mg intravenous or orally, 8-12 hourly, available as wafers to dissolve in the mouth
- Category B1 in pregnancy

### **Corticosteroids**

- Case reports of the successful use of corticosteroids in intractable hyperemesis (Nelson-Piercy 2001) are supported by a randomised controlled trial of oral methylprednisolone (16 mg three times daily, halved every three days) compared to promethazine that found the oral steroid was more effective than the antihistamine in preventing readmission (Safari 1998)
- Blood sugar levels should be monitored carefully. Occasionally, insulin may be needed to maintain normoglycaemia

### **Vitamins**

- Studies report pyridoxine (vitamin B6) significantly reduces nausea, but there was no significant reduction in vomiting (Sahakian 1991; Vutyavanich 1995)
- Pyridoxine - 25 mg tablets, one tablet taken three times a day

### **Ginger powder**

- One trial of 70 women comparing ginger with placebo reported ginger to be of benefit for both nausea and vomiting in pregnancy (Vutyavich 2001)
- A recent trial of 291 women compared ginger with Vitamin B6 and reported ginger to be equally effective as Vitamin B6 in relieving the severity of symptoms of nausea, dry retching and vomiting in early pregnancy (Smith et al. 2004)

### **Non pharmacological**

- Acupuncture and acupressure are different treatment modalities and cannot be compared directly

- Acupuncture has not been shown to be effective in reducing nausea and vomiting in pregnancy (Jewell 2004)
- Two trials have reported acupressure at the P6 acupuncture point decreases nausea (Jewell 2004), although the largest study (which provided continuous data) showed no improvement in either frequency or severity of vomiting (Belluomini 1994)
- A recent study comparing both acupressure and acupuncture with sham acupressure and acupuncture reported no difference in vomiting, but women's health status improved with time (Smith et al. 2002)

## **DAY ADMISSION GUIDELINE FOR HYPEREMESIS GRAVIDARUM**

### **Eligible women**

- Women suffering from hyperemesis gravidarum who require hospital admission for:
  - Parenteral antiemetic treatment
  - Intravenous rehydration for ketonuria or dehydration

### **Assessment and management**

- Medical admission
  - Assess the woman's hydration state and general well being
  - Intravenous access

### **Investigations**

#### ***At each admission:***

- Ward urinalysis on admission and before discharge (document ketonuria)
- Urine for MSSU
- Blood for urea, electrolytes and creatinine

#### ***If not already done***

- Ultrasound examination to exclude multiple pregnancy and gestational trophoblastic disease
- Thyroid function tests
- Dietician referral
- Social work referral, if appropriate

## **Treatment with intravenous fluids and antiemetics**

- Intravenous fluid replacement - usually 2 litres of sodium chloride 0.9 % with each litre given over 2 to 3 hours. This may be reduced but should not be exceeded according to assessment of fluid balance. Potassium containing fluids should be used depending on the most recent electrolyte measurement.
- Medication: Metoclopramide - 10 mg intravenously every 6 hours (suggest alternative if past history of dystonic reaction to metoclopramide or phenothiazines)
- Observations: Temperature, pulse, respiratory rate and blood pressure on admission and every two hours during intravenous fluid treatment.

## **Discharge**

- The effectiveness of treatment needs to be assessed before discharge

## **Medication**

- The recommended discharge antiemetic treatment is pyridoxine 25 mg, orally three times a day and metoclopramide 10 mg orally every 8 hours. (If vomiting persists prochlorperazine 25 mg suppositories twice daily may be prescribed).
- Persistent vomiting requires medical review - consult with Warrnambool O&G

## **Follow-up/readmission**

- Arrange follow-up within three days of discharge

**CORANGAMITE MANAGED CLINICAL NETWORK  
CLINICAL PRACTICE GUIDELINES**

**INDUCTION OF LABOUR  
October 2006**

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in January 2004. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

**Definition**

Induction of labour (IOL) may be defined as ‘an intervention designed to initiate uterine contractions artificially leading to progressive effacement and dilatation of the cervix and birth of the baby’ (RCOG 2001).

Induction of labour should only follow fully informed consent by the woman. Explain:

- Reasons for induction
- Method of induction of labour
- Potential risks
- Consequences of accepting or declining an offer of induction of labour (RCOG 2001)

A detailed vaginal examination and pelvic assessment should precede induction of labour, including the “Bishops Score”

**Indications**

- Generally whenever continuation of the pregnancy is more hazardous for mother and/or baby than ending pregnancy.

**Maternal:**

(NB: depending on severity of condition, woman may be referred to Warrnambool for IOL)

- Hypertensive disorders of pregnancy
- Diabetes
- Renal disease
- Social
- Other conditions requiring the end of pregnancy

## Fetal:

(NB: depending on severity of condition, woman may be referred to Warrnambool for IOL)

- Post-term pregnancy
- Intrauterine growth restriction (IUGR)
- Oligohydramnios
- Isoimmunization

**Table 1: Cervical Screening Modified Bishop's (Calder) cervical score system**

Characteristic	0	1	2	3	Score
Dilatation (cm)	< 1	1-2	2-4	>4	
Length (cm)	> 4	2-4	1-2	< 1	
Consistency	firm	average	soft	-	
Position of cervix	posterior	middle/anterior		-	
Station	-3	-2	-1 to 0	+1 to +2	TOTAL

Women with a cervical score > or equal to 5 generally labour more easily than those with a cervical score < 5 (see literature review at end of document)

***'A policy of induction of labour before 41 weeks would generate increases in workload with no reduction in perinatal mortality' (RCOG***

## Methods

Several effective methods of cervical ripening and induction of labour are used for initiating labour at or around term. Currently, medical expert consensus recommends the following:

- Sweeping the membranes
- Artificial rupture of membranes (ARM)
- Prostaglandin E2 (PGE2)
- Cervidil (see South West Health care practice guideline)
- Intravenous oxytocin (Syntocinon®)

## *Sweeping the membranes*

- Refers to the digital separation of the fetal membranes from the lower uterine segment via vaginal examination (this is known to stimulate intrauterine prostaglandin synthesis)
- Cervical massage has been suggested if the cervix is closed
- Research has found that sweeping the membranes reduces the duration of pregnancy and subsequent need for post-term IOL; however there is a slight increase in prelabour rupture of membranes (Enkin et al. 2000)

## **Contraindications:**

- Low lying placenta
- Planned elective caesarean

## **Education:**

- Membrane sweeping does not increase maternal or neonatal infection
- The procedure may be uncomfortable
- There may be a small amount of blood loss after the procedure (NICE 2001; RCOG 2001)

## **Artificial rupture of membranes (ARM)**

- ARM is a surgical procedure to induce or augment labour

## **Indications**

- Cervix is favourable (*see Table 1*)
- Augmentation when labour progress is unsatisfactory due to inadequate contractions
- To observe the colour and amount of liquor as clinically indicated
- Labour should begin within the next 12 hours and birth should occur within 18 hours to minimize the risk of ascending infection

## **Contraindications**

- Non cephalic presentation
- Head not engaged

## **ARM Procedure:**

- Abdominal examination
- The clinician identifies the cervix and membranes via vaginal digital examination and confirms cephalic presentation
- An appropriate instrument is introduced in the vagina and the membranes are pierced (usually with an amnihook or amnicot)

- The fetal heart rate is recorded immediately following ARM and should continue to be recorded every 15–30 minutes until the woman is established in labour
- Once the woman is established in labour, the fetal heart rate should be recorded every 15 minutes to 30 minutes (RCOG 2006)
- Continuous CTG if indicated
- ARM is often followed by secondary intervention with intravenous oxytocin after four hours. However, research has not identified a recommended time frame from amniotomy to secondary intervention (Bricker and Luckas 2003)

### **Intravenous antibiotics in labour are recommended for:**

- Women with clinically suspected chorioamnionitis
- Women with maternal Group B Streptococcal vaginal colonization or GBS unknown
- Rupture of membranes over 18hrs

### Prostaglandins

#### **Best practice notes**

- **Assess woman and review indication before commencing induction of labour**
- **Document cervical score in case notes**
- **If the cervical score is > 7 and the woman is not in labour, negotiate an appropriate time to perform ARM as clinically indicated**
- **Continue or repeat CTG if regular uterine activity is present or if clinically indicated**
- **Inform the woman to notify the midwife should uterine contractions become regular and/or painful, or if the woman has any vaginal loss**
- **Ensure there is a documented plan for ongoing management in the woman's case notes**
- **If not in labour within 12 hours of the first dose of dinoprostone gel,**

### **Introduction**

- Dinoprostone (Prostin E<sub>2</sub>; 1 mg and 2 mg in gel) is currently the preferred prostaglandin for intravaginal use in induction of labour
- Onset of labour after dinoprostone administration is variable (6–18 hours)

### **Indications**

- Dinoprostone (PGE<sub>2</sub>) may be used for cervical ripening for women around term who have a clinical indication for induction of labour (Hofmeyr et al. 2003)



## Contraindications

- Known hypersensitivity to dinoprostone or its constituents (triacetin or colloidal silica)
- History of previous uterine surgery including caesarean section
- Grand multiparity (five or more previous births)
- Ruptured membranes
- Signs of fetal compromise on cardiotocography
- Any contraindication to vaginal birth

## Dosage and administration

- Intravaginal mode of administration

### Dosage

- The initial dose for dinoprostone gel is 2 mg per vaginam (PV) for nulliparous women, 1 mg PV for multiparous women and **1 mg PV in cases of suspected fetal compromise (IUGR)**
- A second dose of 1mg or 1-2 mg **for primips** of dinoprostone gel may be administered after 6 hours if required

### ***Before procedure:***

- Complete 20 minutes CTG tracing that fulfils the hospital's accepted criteria
- Ensure the woman has emptied her bladder
- Confirm maternal pulse, blood pressure, respiration rate and uterine activity meet accepted criteria
- Abdominal palpation to confirm cephalic presentation
- Vaginal examination to obtain a modified Bishop score (*Table 1*)

### **Administration**

- Insert dinoprostone gel into the posterior fornix of vagina
- Advise the woman to remain recumbent in 30° left lateral tilt for at least thirty minutes (allows prostaglandin absorption) before sitting up or walking around

### ***After the procedure:***

- Continue CTG monitoring for 20 minutes after insertion of dinoprostone gel. Discontinue CTG only if accepted criteria are met
- Perform regular observation of maternal pulse, blood pressure, respiration rate and FHR as indicated

### **Adverse effects**

- Gastrointestinal (e.g. nausea, vomiting), back pain, fever
- Increased intraocular pressure in women with a history of glaucoma
- Uterine hypercontractility (more than five contractions in 10 minutes, or contractions lasting more than 2 minutes)
- Placental abruption or uterine rupture

### **Management of uterine hypercontractility (hyperstimulation)**

- Uterine hypercontractility occurs more frequently with dinoprostone (PGE<sub>2</sub>) gel than with intravenous oxytocin (Syntocinon®) (Enkin et al. 2000)

The following interventions may be instituted:

- Change maternal position.
- Continuous CTG monitoring
- Administer emergency tocolysis
- Consider manually removing the dinoprostone (PGE<sub>2</sub>) gel
- Consider caesarean section if hypercontractility and fetal compromise persist

### **Acute Tocolysis**

Acute intravenous tocolysis to relieve pressure on the cord (*see regimen below*) may be an effective adjunct treatment

- **Terbutaline: 250 micrograms IV or SC: *Recommended at RWH***

The ampoule comes as 500mcg/1ml. The volume to be given is therefore 0.5ml IV if there is already IV access or 0.5ml SC if there is not.

- **IV Salbutamol:** 100 micrograms IV

Make up 1 ampoule of salbutamol sulphate for injection 500 µg (**NOT** Ventolin **Obstetric**), to 10 ml in normal saline (final concentration 50 µg/ml)

Administer 100 µg (2 ml of the preparation, above) over 1-2 minutes

- **Sublingual GTN spray, 400 µg**

Product in form of sublingual spray (Nitrolingual®)

One metered spray (=400 µg) administered under the tongue

If response is inadequate, repeat the dose after 5 minutes

## Intravenous oxytocin (syntocinon®)

### Indications

- Syntocinon® is a synthetic oxytocin and the most common induction agent in use
- It may be used:
  - Alone
  - In combination with amniotomy
  - After cervical ripening with other pharmacological or non pharmacological methods (Kelly and Tan 2003)
- Induction of labour using a combination of amniotomy and intravenous Syntocinon® is the preferred method of induction for women who have a favourable cervix
- When compared to dinoprostone (PGE<sub>2</sub>) gel, induction with Syntocinon® results in a lower rate of some infective sequelae e.g. chorioamnionitis in women who have ruptured membranes (Tan and Hannah 2003)

### Administration

- Syntocinon® infusion is run as a separate line piggybacked into the mainline
- RCOG (2001) recommends the following Syntocinon® regimen guidelines:
  - Allow a delay of six hours after administration of vaginal prostaglandins before commencing Syntocinon®
  - Amniotomy should be performed before starting a Syntocinon® infusion
  - Commence Syntocinon® at 1-2 mU/minute (i.e. 6-12 mL/hour of 10 IU/1000 mL solution)
  - Use the *minimum dose possible* and aim for a maximum of 3-4 contractions in ten minutes
  - Prescribe and record the dose of oxytocin being delivered (i.e. mU/minute)
  - Continuous CTG whenever Syntocinon® is used for induction or augmentation. Maximum Syntocinon® infusion dosage
  - The summary of product guidelines recommends a maximum dose of IV Syntocinon® 20 mU/minute (120mL/hr of 10iu syntocinon in 1000 mL saline)
  - In cases where labour progress is unresponsive, RCOG recommends higher doses which **should not exceed** 32 mU/minute (192 mL/hr of 10iu syntocinon in 1000 mL saline)

**NB: Individual organisations may differ in their management**

### Best practice notes

- Discuss Syntocinon® augmentation for primip with GP if the woman is > 5 cm dilated. If the woman is a multip the GP is to discuss this with a consultant
- Uterine hypercontractility without signs of fetal compromise:
  - Reduce Syntocinon® infusion rate and seek review
- Uterine hypercontractility with associated signs of fetal compromise:
  - Decrease or discontinue Syntocinon®
  - Position woman on her left side
  - Increase intravenous fluids
  - Review by medical officer
  - Oxvaen at 6 litres for duration of fetal compromise

Prepare an infusion of 10 IU Syntocinon® in one litre of Hartmann's solution and infuse using an appropriate volumetric infusion pump

### Indications:

- Induction of labour in primigravida or multigravida
- Augmentation of labour

### Initial rate:

- 12 mL/hour (2 mU/min)

### Increments:

- Increase every 30 minutes by 12 mL/hour (2 mU/min) Maximum:
- 192 mL/hour (32 mU/min)

**Table 2: Syntocinon® Infusion Regimen**

10 IU Syntocinon® in one litre of Hartmann's solution		
Initial rate	Increments	Maximum
12 mL/hour (2 mU/min)	every 30 minutes	192 mL/hour (32 mU/min)
	Increase with: 12 mL/hour (2 mU/min)	

**Please complete Induction of Labour Audit Form following birth.**

## Literature review

▪

Women with a low cervical score (primiparous and multiparous) experience higher rates of unsuccessful induction and caesarean section (Enkin et al. 2000)

Randomised trials comparing induction of labour to waiting have shown that, for a number of indications e.g. maternal diabetes at 38 weeks, term PROM and gestation > 41 weeks IOL increases the number of epidural and operative vaginal deliveries

There is no increase in caesarean section rate (RCOG 2001)

One cohort study (Hilder et al. 1998) revealed the following in relation to spontaneous vaginal birth:

\*40 weeks: 58% of women gave birth spontaneously

\*41 weeks: 74% of women gave birth spontaneously

\*42 weeks: 82% of women gave birth spontaneously

Studies on breast (nipple) stimulation are too small to evaluate the efficacy and safety of this practice. The medical expert consensus is that breast stimulation should not be recommended as a means of stimulating cervical ripening and or labour in high risk pregnancies (Kavanagh et al. 2003)

Oral misoprostol is currently being trialled at major South Australian hospitals for induction of labour around term. However, oral misoprostol remains unlicensed for use in pregnancy and its use for induction should not be initiated until optimal regimens and safety are established in appropriate randomised controlled trials (Alfirevic 2003)

# CORANGAMITE MANAGED CLINICAL NETWORK

## CLINICAL PRACTICE GUIDELINES

### POST TERM PREGNANCY

October 2006

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in January 2004. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

#### Definition

- Pregnancy lasting 42 completed weeks or more (294 days or more) from the first day of the last menstrual period (LMP) (Hilder et al. 1998; Enkin et al. 2000)
- Post dates, prolonged pregnancy, post term and post mature are used as synonyms but are laden with different evaluative overtones

#### Incidence

- Depending on the accuracy of pregnancy dating approximately 6 to 7% of pregnancies will reach 42 weeks

#### Adverse outcomes

Post term pregnancy is associated with increased:

- Intrapartum fetal compromise
- Neonatal morbidity
- Perinatal mortality
- Meconium stained liquor (MSL)
- Operative delivery
- Intrauterine infection
- Asphyxia
- Early neonatal convulsions
- Congenital malformations
- IOL rates

(SOGC 1997; Enkin et al. 2000; RCOG 2001; Crowley 2003).

#### Measures to prevent pregnancy continuing to post term

##### Primary

- Routine 18 weeks pregnancy ultrasound to confirm dates
- Sweeping of membranes beyond term

##### Secondary

From 41 completed weeks:

- Twice weekly CTG for conservative management

- Ultrasound for biophysical profile

### **Induction of labour compared with expectant management**

Compared with expectant management:

- IOL at or after 41 weeks **reduces** the caesarean section rate without compromising perinatal outcome
- IOL at or after 41 weeks is associated with **less** intrapartum fetal compromise, meconium-stained liquor (MSL) and macrosomia (> 4,000 g) (SOGC 1997)

### **Management**

- Offer IOL at or after 41 weeks
- Method of IOL depends on cervical findings

# CORANGAMITE MANAGED CLINICAL NETWORK CLINICAL PRACTICE GUIDELINES

## PRE TERM LABOUR MANAGEMENT October 2006

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in May 2004. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

### Preterm labour

#### Definition

- Preterm reflects a gestational age of less than 37 completed weeks of gestation (WHO and FIGO definition)

#### Diagnosis

- Uterine contractions - 1:10 minutes or more in association with cervical effacement and dilatation.
- **Confirm with fetal fibronectin test: this must be done BEFORE V/E**
- Cervical length of < 1 cm
- Cervical dilatation of > 2 cm: insufficient on its own in multiparous

#### **Fetal Fibronectin Test: to avoid contamination of results:**

- **Do not perform V/E prior to test**
- **Should not be used if woman has had intercourse in previous 24hrs**
- **Do not use with any lubricants eg. KY jelly**
- **Do not use if woman has ruptured membranes**
- **Do not use in presence of moderate or gross bleeding**

### **Once pre term labour is confirmed: Aim is to transfer if less than 36 weeks, unless progression of labour prevents this**

- If less than 32 weeks contact PERS to organise transfer to tertiary facility
- If 32-34 weeks consult with Warrnambool obstetrician – transfer acceptance will depend on clinical picture
- If greater than 34 weeks but less than 36 weeks, consult with Warrnambool obstetrician and arrange transfer to Warrnambool



- *If woman is unable to transfer because labour is too established contact PERS/NETS and organise retrieval team to attend*

**24 hour PERS and NETS Emergency Hotline: 1300 137650**

## Management

### **While awaiting transfer or if woman unable to be transferred:**

- IV access with 16 gauge cannula

## **Investigations**

- Complete blood picture
- C-reactive protein (CRP)
- Low and high vaginal swabs for microscopy and culture
- Mid-stream specimen of urine for culture
- Cardiotocography (CTG) - interpretation should take early gestational age into account

### **Look for signs of clinical chorioamnionitis, such as:**

- Maternal temperature above 38°
- Maternal pulse > 100/min
- Fetal heart rate > 160
- Uterine tenderness

**Studies show that prophylactic antibiotics prolong pregnancy and reduce maternal and neonatal sepsis (Kenyon et al, 2003)**

Signs of chorioamnionitis present - included so that antibiotics can commence prior to transfer or if labour too progressed to transfer

- Begin antibiotic treatment Ampicillin 2 g IV initial dose, then 1g IV every 4 hours, gentamicin 5 mg/kg IV daily, metronidazole 500 mg IV every 12 hours
- If allergic to penicillin, give lincomycin 600 mg IV in 100 mL over 1 hour every 8 hours or clindamycin 450 mg IV in 50-100 mL over at least 20 minutes until delivery
- Do not inhibit labour, but consider hastening delivery under intravenous antibiotic cover if time does not allow for transfer, after consultation with Warrnambool obstetrician

- Consider optimal mode of delivery (LSCS versus vaginal birth) on the basis of the findings and the anticipated duration until birth, if time does not allow transfer after consultation with Warrnambool obstetrician

### Postnatal maternal antibiotics

- If chorioamnionitis, consider treatment with continued ampicillin [or amoxicillin] 1g IV every 4 hours, gentamicin IV 5 mg/kg as a single daily dose and metronidazole 500 mg IV every 12 hours for 5 days
- May change to oral antibiotics once the woman is afebrile and tolerating oral medication:  
e.g. amoxicillin 500mg every 8 hours and metronidazole 400mg every 12 hours or amoxicillin/clavulanic acid (Augmentin Duo Forte x 1 every 12 hours) for the rest of the 5 days

**If no indication of infection commence corticosteroids and consider tocolysis depending on gestation**

### Commence corticosteroids if < 34 weeks

- Betamethasone 2 ampoules of 5.7 mg IM it will be repeated after 24 hours

#### Corticosteroids

- Corticosteroids are effective in preventing adverse perinatal outcomes, most notably respiratory distress syndrome, and in increasing the likelihood of neonatal survival (Crowley 2003).
- The use of repeated doses of corticosteroids is currently under investigation and is not yet to be recommended (Crowther and Harding 2003).
- Administer IM betamethasone in two doses of 11.4 mg (5.7 mg x 2) 24 hours apart to the woman if birth is likely to occur between 23 and 35 weeks.
- The two doses can be given 12 hours apart if the continuation of pregnancy is likely to be less than 24 hours.

### Tocolytics

- Consider tocolysis dependent on gestation

### Tocolytics

- Calcium channel blockers (nifedipine)
- Betamimetics (salbutamol)
- Non-steroidal anti-inflammatory drugs (indomethacin)

## Controlled trials

- Show that tocolytic drugs delay birth and reduce the occurrence of preterm birth
- Have thus far failed to show effects of betamimetics, magnesium sulphate or atosiban on significant adverse perinatal outcomes, such as respiratory distress and perinatal mortality (NHMRC 1997).
- The use of calcium channel blockers is associated with a significantly higher tocolytic efficacy and improved perinatal outcome compared to betamimetics (King et al. 2003)

## Calcium channel blockers (NIFEDIPINE) – drug of choice

### Indications

- Suppression of preterm labour at less than 34 weeks

### Indications

#### ***Suppression of***

- Threatened Preterm Labour < 34 weeks
- Actual Preterm Labour < 34 weeks

### Contraindication

#### ***Maternal***

- Hypotension (systolic BP less than 90 mmHg)
- Allergy to nifedipine
- Cardiac disease (congestive cardiac failure, aortic stenosis)
- Concurrent use of IV salbutamol, transdermal nitrates (GTN) or antihypertensive medications.
- Hepatic dysfunction
- Nifedipine and magnesium sulphate (MgSO<sub>4</sub>): Concomitant use of MgSO<sub>4</sub> with nifedipine may result in significant hypotension, and neuromuscular blockade if using the conventional 4 – 6 g IV bolus. An alternative is continuous infusion of MgSO<sub>4</sub> 1 g/hour (King et al. 2003)

#### ***Fetal***

- Suspected intrauterine infection
- Fetal compromise requiring delivery
- Preterm labour in the presence of placenta praevia (relative contraindication)
- Placental abruption/undiagnosed significant vaginal bleeding
- Severe growth restriction
- Lethal fetal anomalies
- Intrauterine fetal death (IUFD)

\*[Note: The TGA includes pregnancy as a contraindication in Product Information and Consumer Medicine Information]

## **Dosage**

### ***Confirm threatened or actual preterm labour***

- Give stat dose nifedipine 20 mg. The tablet should be chewed or crushed to aid the speed of absorption (grapefruit juice increases the bioavailability of nifedipine by inhibiting its metabolism)

### ***If uterine contractions persist***

- The second dose of nifedipine 20 mg is given 30 minutes after the first dose. The tablet should be chewed or crushed to maximise speedy absorption
- The maximum dose of nifedipine in the first hour is 40 mg
- Do not give any further nifedipine until three hours after the second dose

### ***If contractions continue***

- Administer nifedipine 20 mg every three hours until the contractions cease or the woman establishes in labour
- The maximum dose of nifedipine is 160 mg in 24 hours

### ***Stop the nifedipine if:***

- There is marked hypotension, e.g. systolic < 90 mm Hg
- Significant dyspnoea

## **Observations**

- Maternal baseline BP, TPR, FHR prior to administration of first dose nifedipine 20 mg
- Continuous CTG while contracting
- Continue hourly BP and maternal pulse for four hours
- Temperature every 4 hours
- The rate of observations should be tapered according to the clinical situation

## **Side Effects**

- In normotensive women, the effects of nifedipine on BP are minimal
- Headache
- Tachycardia, palpitations
- Flushing
- Fatigue
- Dizziness

- Constipation
- Nausea and heartburn.
- Peripheral oedema secondary to arteriolar vasodilatation
- Transient rise in liver function test results

## Literature review

A series of systematic reviews of comparative trials has reported nifedipine to be more effective for prolonging pregnancy in preterm labour than the betamimetic agents used in these trials (e.g. King et al. 2003).

Advantages over betamimetics (in the comparative studies):

- Oral administration
- Higher efficacy
- Fewer side effects
- Lower perinatal morbidity

## Betamimetics (SALBUTAMOL) – use if nifedipine not able to be given

- Salbutamol is the betamimetic most frequently used in Australia.
- Salbutamol has never been compared with either placebo or no treatment in preterm labour; all evidence in favour of its use is derived from analogy with other betamimetic agents.
- Intravenous betamimetic treatment may cause pulmonary oedema (especially when associated with fluid overload) and has been responsible for maternal deaths.

## Indications

- Given as IV salbutamol infusion.
- Suppression of preterm labour at less than 34 weeks
- May be used as tocolytic cover for in-utero transfer of a woman in threatened preterm labour to a level II or III hospital.

## Contraindications

- Cardiac disease
- Hyperthyroidism
- Poorly controlled maternal diabetes mellitus
- Placental abruption or significant bleeding of unknown cause
- Chorioamnionitis
- Doses that create excessive maternal (140 bpm) or fetal (180 bpm) tachycardia should be avoided
- Relative contraindication in multiple pregnancy

## Dosage/Observations

- IV access
- Connect 1000 mL Hartmann's or 0.9% sodium chloride
- Attach salbutamol infusion (with medication added label) using a three way tap to mainline (minimise dead space)
- Administer salbutamol either from the syringe or volumetric pump

### *Syringe pump*

- Add 7.5 mL salbutamol (7.5 mg) to 42.5 mL sodium chloride 0.9% or 5% glucose in syringe (50 mL total).
- Therefore 50 mL contains 7.5 mg salbutamol = 7,500 micrograms, i.e. 150 micrograms per mL

### *Volumetric pump*

- Withdraw 15 mL from a 100 mL bag of sodium chloride 0.9% or glucose 5%
- Add 15 mg (15 mL) Salbutamol to the remaining 85 mL bag of sodium chloride 0.9% or glucose 5%

## Dosage and administration

- Commence at 1 mL/hr = 2.5 micrograms per minute
- Increase rate at 10 minute intervals until response shown by decreased frequency, strength and length of contractions
- Evaluate decreased contractions, maternal and fetal well-being
- The dose is determined by the woman's tolerance (i.e. clinical indicators) of adverse affects against desired response
- The dose should never exceed 45 micrograms/min (18 mL/hr)
- Once uterine quiescence is achieved, maintain infusion rate over the next 6 hours and then reduce by 150 micrograms/hour (1 mL per hour or 2.5 micrograms/minute)
- Cease infusion only on medical order
- Continuing observation is required for a minimum of 8 - 12 hours after cessation of the tocolytic infusion

### *Decrease salbutamol infusion if:*

- Maternal pulse > 140 bpm
- Fetal heart rate > 180 bpm

### *Side effects:*

- Hypotension (widening pulse pressure)

- Hyperglycaemia
- Pulmonary oedema
- Other side effects, e.g. dyspnoea, chest pain, palpitations, nausea and vomiting
- Women should also be warned about tremors, anxiety, dizziness and headaches
- Betamimetics can cause a fall in serum potassium (K<sup>+</sup>). This is related to the movement of K<sup>+</sup> intracellularly and is usually limited and self-reversing. **No treatment is needed unless ECG changes occur** or the serum potassium falls below 2.5 mmol/L

### Emergency salbutamol tocolysis regimen:

#### Indications

- Uterine hypercontractility associated with fetal compromise
- May also be used for external cephalic version

#### Contraindications

- *A bolus dose of salbutamol is contraindicated in:*
  - Cardiac disease
  - Hypertension
  - Hyperthyroidism
- *Relative contraindication*
  - Diabetes

#### Method

- Alert theatre staff for possible emergency delivery
- Place the woman in left lateral position
- Administer oxygen via face mask at 8 litres/minute
- Ensure good intravenous (IV) access
- Continuous fetal monitoring
- *It is preferable to record the maternal ECG during the administration of emergency IV salbutamol*
- Prepare tocolytic solution
  - *Obstetric salbutamol: 5 mL ampoule 5 mg/5 mL*
    - Using a 1 mL syringe, draw up 0.1 mL (100 micrograms) of salbutamol (RANZCOG 2002)
    - Add to 10 mL syringe and make up to 10 mL with sodium chloride 0.9%
    - Administer prepared 10 mL salbutamol solution intravenously **over 1 minute while monitoring maternal pulse.**
    - *Stop IV administration if maternal pulse > 140*

## Side effects

- Fetal and maternal tachycardia, maternal hypotension, ventricular ectopics, supra-ventricular tachycardia, ventricular fibrillation, pulmonary oedema, hypoxia - secondary to increased oxygen demands + / - fluid shift in lungs, hyperglycaemia

## If labour is not arrested and progresses at local hospital

- Give IV Benzylpenicillin 3g loading dose, then 1.2 g IV every 4 hours for 48 hours or until delivery if this occurs before 48 hours, (unless GBS status is documented to be negative at presentation) Mode of delivery
- The available trials of caesarean section versus vaginal birth to determine the best route of delivery are too small to draw clinical conclusions from them (Grant and Glazener 2003). The following general suggestions are reasonably well supported by clinicians:

**Less than 26 weeks:** Vaginal birth

**26-34 weeks:** Cephalic presentation - vaginal birth

Breech presentation - caesarean section

**More than 34 weeks:** Cephalic presentation - vaginal birth

Breech presentation - caesarean section

## Care of the newborn infant

- Resuscitation measures as indicated

## Placenta

- Collect and send placenta for:
- Histopathology (including check for chorioamnionitis)
- Swabbing for microbiological evidence of infection



# **CORANGAMITE MANAGED CLINICAL NETWORK**

## **CLINICAL PRACTICE GUIDELINES**

### **PRETERM PRELABOUR PREMATURE RUPTURE OF MEMBRANES (PPROM) MANAGEMENT**

**October 2006**

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in May 2004. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

#### **Definition**

Rupture of the fetal membranes before 37 completed weeks of pregnancy and before the onset of labour (Enkin et al, 2000)

#### **Initial Assessment**

- History
- Abdominal palpation to determine fetal size and presentation
- CTG
- Temp. P, B/P
- MSU
- Speculum Examination to:
  - Exclude cord prolapse
  - Visualise pooling of liquor (note presence of vernix)
  - Collect cervical and vaginal microbiological swabs (including GBS)
  - Do amniure test to confirm membranes are ruptured

#### **Look for signs of clinical chorioamnionitis, such as:**

- Maternal temperature above 38°
- Maternal pulse > 100/min
- Fetal heart rate > 160
- Uterine tenderness
- Purulent/offensive liquor

### **Antibiotics: Consider commencing antibiotics while awaiting transfer**

No clinical signs of infection present

- Prophylactic antibiotics improve the outcome in PPROM. The drug of choice is **erythromycin** 250mg orally qid

#### **GBS Woman GBS positive**

- Benzylpenicillin, IV: initial dose 1.2gm, then 600mg IV 4 hourly: if allergic
  - If allergic to penicillin, give lincomycin 600 mg IV in 100 mL over 1 hour every 8 hours or clindamycin 450 mg IV in 50 - 100 mL over at least 20 minutes for 48 hours or until delivery if this occurs before 48 hours

#### **Clinical signs of infection present**

- Contact PERS for advice on which antibiotics to commence. Often combination of amoxycillin, gentamycin and metronidazole

PERS CPG, accessed September 2006.

### **Once rupture is confirmed**

- If less than 32 weeks contact PERS to organise transfer to tertiary facility
- If 32-34 weeks consult with Warrnambool obstetrician – transfer acceptance will depend on clinical picture
- If greater than 34 weeks but less than 36 weeks, consult with Warrnambool obstetrician and arrange transfer to Warrnambool

### **Commence corticosteroids if < 34 weeks**

- Betamethasone 2 ampoules of 5.7 mg IM it will be repeated after 24 hours

***24 hour PERS Emergency Hotline: 1300 137650***

### **Associated risks of PPROM**

- Preterm labour
- Cord prolapse
- Placental abruption
- Intrauterine infection/amnionitis
- Pulmonary hypoplasia
- Limb positioning defects

## **Tocolysis**

Where contractions are present, nifedipine may be commenced to prolong pregnancy allowing time for transfer and the 48 hours required for corticosteroid cover to be established, if there are **no signs** of chorioamnionitis (see premature labour guideline).

# CORANGAMITE MANAGED CLINICAL NETWORK

## CLINICAL PRACTICE GUIDELINES

### PRIMARY POST PARTUM HAEMORRHAGE AND RETAINED PLACENTA

October 2006

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## POST PARTUM HAEMORRHAGE (PPH)

### *Definition*

- A blood loss at birth of up to 600mL is considered to be normal
- A widely accepted definition of a PPH in many institutions is a blood loss of **600mL** for a normal birth and **750mL** for a caesarean birth

The classification of PPH in relation to the amount of blood loss is problematic, largely due to a well documented underestimation of blood loss. A clinically relevant alternative is a substantial fall in the hematocrit (e.g. 10%), or the requirement for a blood transfusion.

### Aetiology

- PPH occurs in 4-6% of pregnancies and may be associated with **(the 4 T's)**
- Abnormalities of uterine contraction (**Tone**) 75-90%
- Retained products of conception or invasive placenta (**Tissue**)
- Genital tract trauma (**Trauma**)
- Abnormalities of coagulation (**Thrombin**)

### **Risk factors**

- Over-distended uterus (twins, large foetus, polyhydramnious)
- Grande multip, P4 or greater
- Past history PPH, retained placenta or MROP
- Anaemia
- Prolonged labour
- Operative delivery
- Large baby/large placental site
- APH
- Chorioamnionitis

## PREVENTATIVE ANTENATAL MANAGEMENT

- Assess risk for all women in the antenatal period
- Where a risk is identified this should be documented in the antenatal record alongside a management plan
- Arrange antenatal consultation as appropriate e.g. physician, radiologist and anaesthetist
- Detect and treat anaemia antenatally

### **Intrapartum management of women *at risk* for PPH should include:**

- Confirmation of labour management plan with GP when the woman arrives in labour
- Establish intravenous access (16 gauge cannula)
- Group and save, and send immediately
- Active management of third stage
- Notify theatre staff that an 'at risk' woman has been admitted to hospital

Clinical signs of blood loss in the parturient are unreliable

As a rough guide:

Severity of shock	Clinical Signs	Blood loss
None	None, palpitations, dizziness, tachycardia	500-1000mls
Mild	Postural drop in BP, tachycardia, weakness, sweating	1000-1500mls
Moderate	Hypotension (80-100mmHg), tachycardia, restlessness, oliguria, pallor	1500-2000mls
Severe	Hypotension (<80mmHg systolic), tachycardia >120 bpm, altered conscious state/collapse, anuria	2000-3000mls

(RWH CPG Aug 2005. [www.rwh.com.au](http://www.rwh.com.au))

## **INTRAPARTUM MANAGEMENT OF 'AT RISK' WOMAN: PLACENTA UNDELIVERED, WOMAN NOT BLEEDING**

### **In the first 30 minutes:**

- Check if oxytocin was given at the time of birth, if not give immediately
- Wait 30 minutes for signs of placental separation
- Avoid indiscriminate handling of the uterus
- Upright position (provided there is no haemodynamic instability)
- Encourage skin to skin contact and early suckling
- Empty bladder via catheterisation

### **At 30 minutes:**

- Ring and request 2 units of cross matched blood on blood that was sent when woman admitted, state “ **we need compatible blood now**”
- Repeat controlled cord traction
- Perform a vaginal examination, if placenta sitting in vagina encourage upright position, such as squatting over a bed pan and encourage maternal effort
- If placenta remains in situ refer to management of retained placenta and contact theatre staff and anaesthetist about the possibility of woman going to theatre

**AT 1 HOUR CONSIDER PLACENTA RETAINED**

### **If the placenta is undelivered and the woman *is bleeding*:**

- Summon help: ring bell 3 times in succession
- Rub up the uterine fundus repeat oxytocin e.g. Syntocinon 10 IU IV or IM or ergometrine 250 micrograms IM
- IV fluids
- Catheterise if not already attended
- Repeat CCT
- Administer 40 IU Syntocinon in 1000mls normal saline, over 4 hours (i.e. 250 mL per hour), via IMED pump
- Prepare for manual removal of placenta
- IV fluids

**Ergometrine may also be given as a bolus dose in the following way:  
draw up 250 micrograms (0.5mls), and dilute to 5 mL sodium chloride, (1ml =  
50 micrograms). Administer 25–50 micrograms (0.5-1ml).  
May be repeated after 2-3 minutes**

**If woman has PE or has shown signs of elevated B/P in labour**

- **Do not give ergometrine or Syntometrine**
- **Beware of infusing large volumes of fluid if the woman has preeclampsia or signs of an elevated BP in labour.**

## RETAINED PLACENTA

### **Management of retained placenta – woman stable**

- Assess for clinical signs of blood loss
- I.V access using 16 gauge cannula
- Group and cross match 2 units and full blood picture to laboratory
- Commence oxygen treatment and IV resuscitation as appropriate using sodium chloride 0.9%
- Arrange for manual removal of placenta in theatre with anaesthetic

### **Management of retained placenta – marked PPH (i.e. Blood loss over 1000mL or woman showing signs of being compromised)**

- Summon help, using 3 successive buzzes
- Call for most experienced help available in hospital, and contact obstetric and anaesthetic support if not on site
- Phone for cross matched blood, state “ **we need compatible blood now**”
- Consider siting a second IV, 16 gauge
- Administer oxygen at 8L via face mask
- Lie woman flat, raise legs
- Resuscitate with appropriate IV infusion eg. sodium chloride 0.9% (crystalloid) or Gelafusion (colloid)
- To resuscitate more quickly, administer IV fluids using a pressure infusion device
- Administer second bolus dose of Syntocinon 10 IU, IV
- Prepare woman for manual removal of placenta in the operating theatre
- Consider the possibility of an abnormally adherent placenta

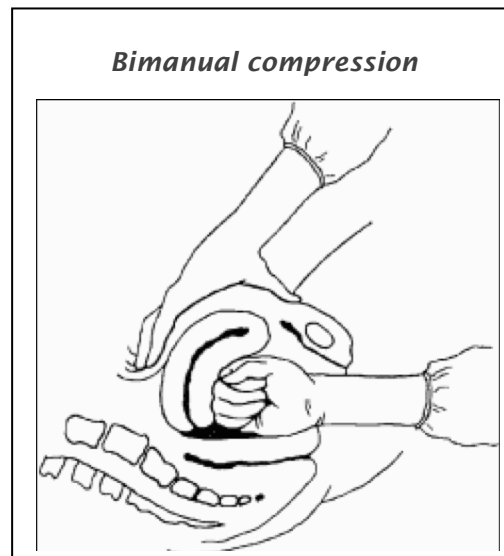
Consider prophylactic antibiotics  
(Warrnambool obstetricians give Amoxil 1gram IV and Flagyl 500mg IV)

**Give fluid replacement in relation to ongoing measured blood loss:  
the ratio IV fluid to blood loss should ideally not exceed 3:1**

IV fluids should ideally be used from the warming cupboard

If at any time the bleeding is rapid or the woman is haemodynamically unstable:

- Delegate 2 people to continue resuscitative measures
- Bimanually compress the uterus by placing a fist in the anterior fornix of the vagina and use the other hand to rub up the uterine fundus
- If unsuccessful, perform aorto-caval compression
- Contact obstetrician at Warrnambool hospital and discuss management options
- 



## **ABNORMALLY ADHERENT PLACENTA (e.g. placenta accreta)**

### **Risk factors**

- Implantation over previous caesarean scar
- Manual removal of placenta after a previous pregnancy
- Placenta praevia
- Previous vigorous or repeated curettage (particularly post partum)
- Previously treated intrauterine adhesions



- Presence of sub mucous myomata
- Pregnancy in diverticulum

## Management

- If densely adherent placenta *do not* make a further attempt to try and remove
- Remove any non-adherent portions of the placenta
- Administer antibiotics
- Contact Obstetrician at Warrnambool Hospital and discuss management options
- The woman may need uterine artery embolisation, a hysterectomy or ligation of the internal iliac arteries

## MANAGEMENT: PPH PLACENTA DELIVERED

- Press buzzer 3 times to summon help
- Call for anaesthetic assistance if not on site

**The initial treatment of PPH includes early recognition, followed by prompt attention to resuscitation and a simultaneous search of the cause for bleeding.**

## Resuscitation measures

- Rub up uterus
- Administer 8L oxygen via face mask
- Lie woman flat – raise legs
- IV access x 2 using 16 gauge cannulas
- Group and cross match 2 units of blood and order complete blood picture
- Resuscitate with sodium chloride 0.9%
- To resuscitate more quickly administer IV fluids via a pressure infusion device

## STEP WISE MANAGEMENT IS:

- Rub up the uterus
- Insert indwelling catheter
- Give ergometrine 250 micrograms IM or Syntocinon 10 IU IV or IM
- Prepare 40 units of Syntocinon® in 1 litre of Sodium Chloride 0.9% and run at 250 mL/hour, run over 3-4 hrs
- Check placenta is complete

**Do not administer ergometrine if the woman has preeclampsia or signs of an elevated blood pressure in labour.**

- If no response to Syntocinon and no contraindication to the use of Ergometrine
- (i.e. preeclampsia or signs of raised BP in labour) repeat ergometrine 25-
- 50 micrograms IV or 250 micrograms IM after 2-3 minutes
- Consider Cytotec, (Misoprostol), 400-600micrograms (2-3tablets), oral or rectal  
**(Australian Medicines Handbook. P 654 2005)** or prostaglandin F2alpha (*see next page for instructions*)

## **PROSTAGLANDIN F2 ALPHA REGIMEN FOR MAJOR POST PARTUM HAEMORRHAGE**

### **Contraindications:**

Prostaglandin F2 $\alpha$  (PGF2 $\alpha$ ) is a potent smooth muscle contractor which is 90% metabolized on first passage through the lungs. A large bolus of PGF2 $\alpha$  can overload the lung metabolic pathways and allow unmetabolized PGF2 $\alpha$  into the systemic arterial system, with resultant cardiovascular effects.

### **Side effects:**

Broncho-pulmonary and cardiovascular.

Relative contra-indications: Severe asthma, lung disease and cardiovascular disease

### **Prerequisites:**

Experienced anaesthetist on standby, intravenous access x 2 using 16 gauge cannulas. Pulse oximetry and oxygen administration, Resuscitation equipment on hand.

### **Preparation of Solution:**

Presentation: PGF2 $\alpha$  5 mg in one mL ampoule

Prepare: Dilute one mL of PGF2 $\alpha$  to 20 mL with sodium chloride 0.9% to give one mg PGF2 $\alpha$  per four mL.

### **At laparotomy/LSCS**

Infiltrate 10 mL of prepared solution (2.5 mg PGF2 $\alpha$ ) directly into myometrium using 21 gauge needles aspirating intermittently to avoid direct systemic injection. Repeat 10-15 minutes later if necessary. Avoid cervical injection because of increased risk of direct systemic uptake.

### After vaginal delivery

Using 22 gauge spinal needle inject 10 mL of solution through the anterior abdominal wall into the uterine fundus, aspirating and repeating the injection if required. Ultrasound guidance may be useful.

### The following adverse side effects have been reported

**Bronchopulmonary:** bronchospasm, pulmonary oedema due to raised pulmonary artery pressures, hypoxia due to pulmonary shunting.

**Cardiovascular:** acute hypertension - usually transient and requiring no treatment. Occasionally acute hypotension, rarely cardiac arrhythmia including ventricular tachycardia.

**Gastrointestinal:** abdominal cramps, diarrhoea and vomiting.

**Other:** convulsions (rarely), flushing, shivering, headache – usually mild and transient.

### Unsuccessful response

- Proceed to alternative management regimens which may include uterine packing or B-Lynch suture.

## **If bleeding continues despite a well contracted uterus look for other causes**

- Position woman in lithotomy with adequate anaesthetic/analgesia
- Ensure adequate lighting, assistance and instruments to provide adequate exposure
- Inspect vulva, vagina, cervix and perineum
- Consider uterine rupture
- Suture and repair as required

## **Consider coagulation abnormalities**

- Take complete blood picture and also D-dimer, coagulation studies including INR, APTT, fibrinogen, FDPs
- Contact Warrnambool and discuss management
- Contact PERS for advice

**Bedside test for coagulation: place 2 mL blood in red top tube, hold in closed fist to keep warm. Check at 4 minutes to see if clot has formed: if no clot within 7 minutes, or clot breaks down easily, suspect coagulopathy.**

**24 hour PERS and NETS Emergency Hotline: 1300 137650**

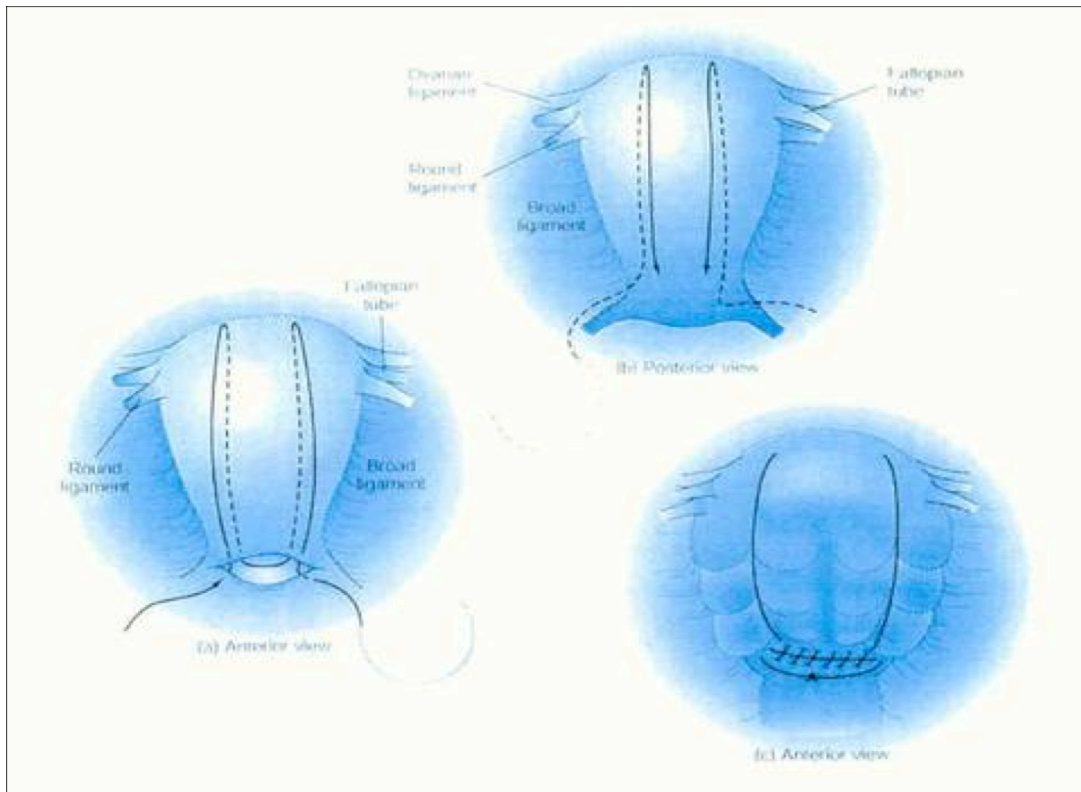
**Ring this number to speak with members of either (or both) services to:**

- Obtain assistance with arranging emergency transport (mother and/or newborn).
- Speak to a PERS or NETS consultant regarding management options.
- Gain assistance with information regarding evidence-based clinical guidelines for care in urgent perinatal situations.
- Request assistance with organizing an appropriate higher level maternal or neonatal bed.

## **IN THEATRE MANAGEMENT**

- This is included to address the situation of a woman undergoing a caesarean section who bleeds
- Consider intramyometrial injection of prostaglandin F2a
- Consider exploration of uterine cavity under anaesthetic
- Bimanually compress uterus by placing a fist in the anterior fornix of the vagina and use the other hand to rub up the uterus – if this controls the bleeding, maintain the bleeding for at least 30 minutes
- Decide whether to perform a B-Lynch suture brace (*see diagram next below*)

**Figure: B-Lynch brace suture**



**PLEASE COMPLETE PPH AUDIT FORM**

# CORANGAMITE MANAGED CLINICAL NETWORK

## CLINICAL PRACTICE GUIDELINES

### SHOULDER DYSTOCIA

August 2006

Unless otherwise stated the content of this guideline has been adapted from the Adelaide Perinatal Guidelines which was last reviewed in August 2005. References may be accessed on [www.health.sa.gov.au/ppg](http://www.health.sa.gov.au/ppg)

## Shoulder dystocia

### Literature review

- In shoulder dystocia, disproportion occurs between the bisacromial diameter of the foetus and the antero-posterior diameter of the pelvic inlet, resulting in impaction of the anterior shoulder of the foetus behind the symphysis pubis
- Difficult delivery of the shoulders ensues, requiring the use of additional manoeuvres beyond downward traction of the head and an episiotomy
- Perinatal morbidity includes asphyxia, birth trauma, and permanent neurologic injury (Ginsberg and Moisisdis 2001)
- Despite numerous studies, there is still no prospective method of accurately predicting shoulder dystocia (Ginsberg and Moisisdis 2001; Sriemevan et al. 2000; Beall et al. 1998)

### Risk factors

- An increased risk of shoulder dystocia is reported in association with:
  - Prolonged late active phase
  - Prolonged second stage of labour
  - Mid-pelvic instrumental delivery
  - Maternal diabetes with or without macrosomia (Beall et al. 1998)
    - \* A large infant (> 4.5 kg)
    - \* History of a previous large infant
    - \* Maternal obesity
    - \* Multiparity
    - \* ***These associations have not been consistently validated***
- Any combination of the above factors may significantly increase the risk of shoulder dystocia. Anticipation and preparation are recommended

- A well-organised drill to deal with the obstetric emergency of shoulder dystocia should be regularly practised in all major delivery units

## Management

- Shoulder dystocia usually becomes obvious after the fetal head emerges and retracts up against the perineum, failing to undergo external rotation (turtle sign). It is confirmed when standard delivery manoeuvres fail to deliver the foetus (Sriemevan et al. 2000, p. 581)
- Time keeping is vital because after delivery of the head, the umbilical artery pH falls by 0.04/min until respiration is established (Benedetti et al. 1987)

## Process:

- Ring the buzzer 3 times and organise for all available help to attend as well as GP obstetrician and anaesthetist : **this is an obstetric emergency**
- At least two experienced assistants may be required to achieve the following manoeuvres

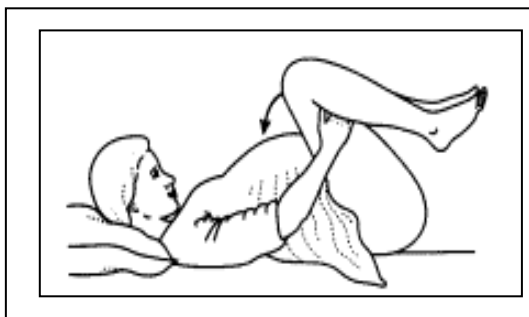
## Step wise management

### Exaggerated manoeuvre for delivery of the anterior shoulder

- Place the maternal buttocks at the edge of the bed by lowering the bottom half of the delivery bed or repositioning the woman. Apply gentle downward traction on the fetal head with the aim to deliver the anterior shoulder

### McRoberts manoeuvre

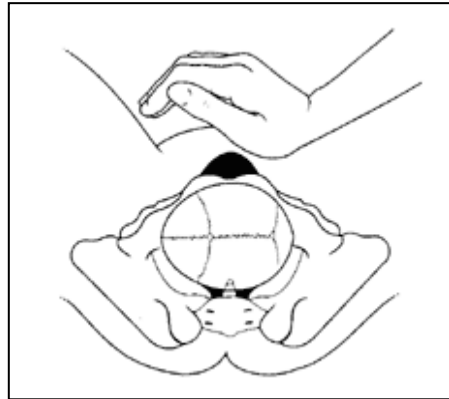
- The woman's legs should be maximally flexed on her abdomen
- Apply additional mild downward traction on the fetal head with the aim to deliver the impacted anterior shoulder
- ***This manoeuvre is successful in more than 40% of cases (over 50% when combined with supra- pubic pressure)***





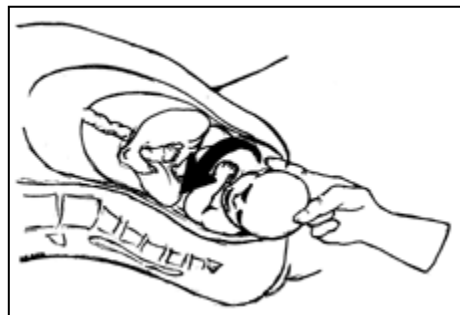
### Supra-pubic pressure (Rubin 1)

- The accoucheur applies gentle traction to the fetal head
- An assistant should apply continuous downward pressure over the anterior shoulder of the foetus in a "CPR" style above the symphysis pubis
- The heel of the assistant's hand should be over the back (scapula side) of the foetus' anterior shoulder
- The aim is to push the anterior shoulder to an oblique angle under the symphysis
- The assistant may use a rocking motion where continuous pressure is unsuccessful



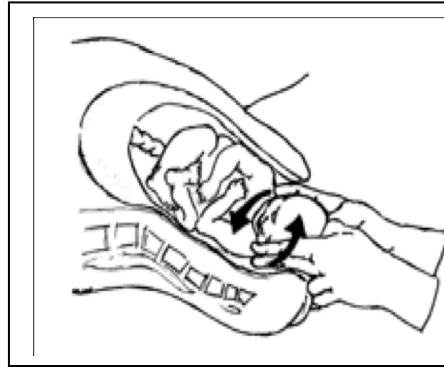
### Rubin 11 manoeuvre

- The assistant applies downward press in a "CPR" style above the symphysis pubis (Rubin 1)
- The accoucheur inserts the fingers of one hand into the vagina and applies pressure behind the back of the anterior shoulder so that the anterior shoulder is displaced towards the fetal chest (Rubin 11)
- Once in the oblique diameter, attempt delivery
- The McRoberts manoeuvre may also be applied throughout



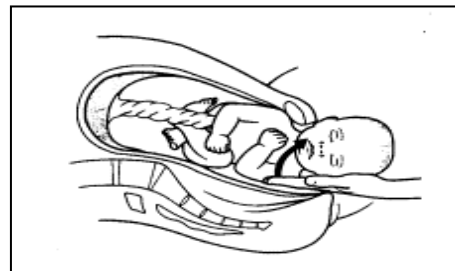
## Wood's screw manoeuvre

- The fingers of the first hand remain behind the anterior shoulder. The accoucheur inserts the fingers of her/his second hand in front (chest side) of the posterior shoulder
- Apply pressure as in Rubin 11 in combination with additional pressure to the front of the posterior shoulder to rotate into the oblique. Continue rotation throughout 180° where unsuccessful
- **Attempt delivery**



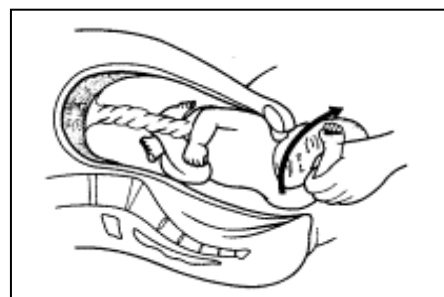
## Delivery of the Posterior Arm Reverse Woods Screw Manoeuvre

- Pressure is now applied behind the posterior shoulder with two fingers
- The posterior shoulder is then rotated 180° forward towards the fetal chest wall
- The aim is to release the anterior shoulder from under the symphysis
- The posterior shoulder passes beneath the symphysis and delivery is attempted



## Delivery of the Posterior Arm

- The accoucheur's hand is inserted into the vagina across the fetal chest to identify the fetal elbow
- The fetal arm is flexed and swept across the fetal chest and maternal perineum. This often allows the anterior shoulder to be displaced and delivered
- If this fails, then the fetal head and trunk can be rotated through 180° to allow delivery



- All fours position (rotating the pregnant woman onto her hands and knees) increases the pelvic diameters allowing better access to the posterior shoulder
- ***Consideration should be given to the time taken to achieve this position especially if the woman is obese and/or has an epidural (Sriemevan et al. 2000)***

### **Additional manoeuvres**

#### ***Zavanelli manoeuvre***

- If the above fail, then the fetal head should be replaced back into the uterus by depressing the posterior perineum and applying the palm of the hand to the vertex and applying upward pressure. Once the head is replaced, proceed to caesarean section

#### ***Cleidotomy (fracture of fetal clavicle)***

- Consider cleidotomy if all other measures have failed. It may be considered earlier if the foetus has succumbed

#### ***Symphiotomy***

Only to be considered by those with experience with this procedure

#### ***Best practice notes***

- ***Each manoeuvre should be attempted for 30-60 seconds before moving on to the next manoeuvre***
- ***Episiotomy might be considered to increase access for manoeuvring***
- ***Throughout the manoeuvres the shoulders must be rotated using pressure on the scapula or clavicle. Do not attempt to rotate the head***

### **Counselling**

- The woman and her significant support persons should receive ongoing explanation and updating of events as they occur to ensure that emergency management is expedited with the woman's cooperation

### **Postnatal follow up**

- Staff involved in the care of the woman should follow her up in the postnatal period to clarify the sequence of events related to the cord prolapse/presentation and provide the woman with an opportunity to ask any questions she may have.

**Appendix Eleven: Terms of Reference CMCN Education  
Subcommittee**

## **Corangamite Managed Clinical Network Education Committee**

### **Terms of Reference**

**Aim:** The education committee will source appropriate continuing professional development, (CPD), for clinicians in the CMCN, and funding for the education.

#### **Participating Organisations/Representatives**

- Three midwives from separate campuses
- Two GPs from separate campuses
- Project Coordinator employed by the Otway Division of General Practice

#### **Nominated Members**

- Kirsty Mitchell, Camperdown Midwife, (M/W)
- Trish Klimm, Timboon M/W
- Karen Lourey, Terang M/W
- Antony Wong, Terang General Practitioner, (G.P)
- Tony Brown, C/D GP
- Jill Donnelly, Project Coordinator
- 

#### **Frequency and location of meetings**

Meetings of the education committee will be every three months, usually on the first Wednesday of the month. The location will rotate around the three campuses.

#### **Quorum**

A minimum of four members will form a quorum. It is expected that participating organisations will provide a representative at each meeting. If a member is unable to attend he or she may nominate a proxy

#### **Accountability**

The education committee reports to the CMCN steering committee and will provide regular reports to this committee.

### **Education Committee Responsibilities**

- Each member will be a key contact person to feed information from the group they represent to the education committee, and from the education committee to the group they represent
- To establish educational needs of the clinicians in the CMCN, including needs that are highlighted in clinical audits, and develop a variety of ways to deliver education
- To develop network based core competencies
- To identify potential funding sources for CPD
- To ensure that all educational activities are in accordance with the philosophy of the CMCN, ie. that they are local, accessible, network based and focused on GPs and M/Ws training together
- To develop protocols for the development of CPD which will be ratified by the CMCN steering committee

### **Review**

- The terms of reference will be reviewed in six months

**Appendix Twelve: Terms of Reference CMCN Workforce  
Subcommittee**

## **Corangamite Managed Clinical Network Workforce Subcommittee**

### **Terms of Reference**

#### **Aim:**

The workforce committee will develop recommendations for workforce succession planning consistent with department of human services maternity guidelines, for endorsement by the steering committee and implementation by the CMCN

#### **Participating organisations/agencies**

- Three midwives from separate campuses
- Two GPs from separate campuses
- Recruitment Manager, Otway Division General Practice
- Consumer representative
- Project Coordinator

#### **Nominated Members**

- Anne McMeel, Timboon Director of Nursing, (DON)
- Noelyn Wales, Terang DON
- Ruth Mitchell, Camperdown, Campus Manager
- Mick Brownstein, Timboon General Practitioner, (GP)
- John Menzies, Camperdown GP
- Vicky Hunt, Otway Division of General Practice
- Julie Wallace, Consumer representative
- Jill Donnelly, Project Coordinator

#### **Frequency and location of meetings**

Meetings of the workforce committee will be held on a monthly basis, usually on the second Tuesday of each month. The meetings will rotate around each campus.

Teleconferencing may also be used.



## **Quorum**

A minimum of five members will form a quorum. It is expected that participating organisations will provide a representative at each meeting. If a member is unable to attend he or she may nominate a proxy

## **Accountability**

The Workforce committee reports to the CMCN steering committee and will provide regular reports to this committee

## **Workforce Committee Responsibilities**

- identify barriers to clinician recruitment and retention
- identify enabling factors to recruitment and retention
- facilitate the ability for all clinicians to work across all campuses
- each member will be a key contact person responsible for feeding information from the group they represent to the workforce committee and from the committee to the group they represent

## **Review**

- The terms of reference will be reviewed in six months

**Appendix Thirteen: Results of the CMCN Midwifery Workforce  
Survey, March 2006**

## Results of the Midwifery Workforce Survey, March 2006

Surveys were distributed to all midwives working within the CMCN.

Of the 31 that were distributed 19 were returned giving a response rate of 61%

<i>Hospital</i>	<i># distributed</i>	<i># returned</i>	<i>% returned</i>
Timboon	7	6	85%
Camperdown	11	7	64%
Terang	13	6	48%

***Respondents were asked if they thought that there was a problem recruiting midwives to their hospital, and if they did why, and what thoughts or ideas they had about addressing the problem.***

77% believed that there was a problem.

50% believed that it was related to midwives having to also work as nurses

27% believed that it was related to low birthing numbers

- Other factors cited included understaffing, lack of advertising and the rural lifestyle
- A number of suggestions were made to address the perceived problem of recruitment. 30% suggested a new model of care such as team midwifery or case loading, 22% suggested increasing birthing numbers and 22% suggested a more vigorous approach to advertising including a package deal, eg. Offering accommodation, promoting the country lifestyle, and incentives such as good remuneration and working conditions.
- Other suggestions included encouraging local nurses to become midwives by offering fees and support, a system that enables new graduates to work alongside an experienced midwife until they feel confident to work by themselves, a bonding type arrangement, and the consolidation of maternity services to one hospital.

### **Points of difference within the hospitals**

100% of the Camperdown midwives believed recruitment was a problem

71% of the Terang midwives believed it was problem

50% of the Timboon midwives believed it was a problem

- Camperdown and Terang midwives tended to focus their solutions on increasing birthing numbers and introducing a new model of care with more midwife involvement.
- Timboon midwives tended to focus on advertising

### ***Respondents were asked if they thought that there was a problem retaining midwives in their hospital, and if they did why and what thoughts and ideas they had about addressing the problem***

74% believed that there was a problem

33% believed it was related to low birthing numbers

16% believed it was related to the aging workforce

10% believed it was related to understaffing

- Other factors cited included stress, social isolation, too many nursing duties and lack of understanding from nurses about role and responsibilities of midwives
- Suggestions made to address the perceived problem of retention included increasing birthing numbers, introducing a model of care with midwives having more involvement, having a good working environment, having correct ratios, educating nurses about midwives role and having up to date equipment.

### **Points of difference within the hospitals**

Terang and Camperdown respondents believed that retention problems were related to low birthing numbers and the aging workforce. Their suggested solutions in general focused on increasing birthing numbers and creating a new model of care with midwives more involved in all aspects of the care.

Timboon midwives made no mention of these issues, instead noting understaffing and social isolation as issues. Suggestions to address the problem included employing more staff.

***Respondents were asked how they felt about working as a midwife.***

53% felt satisfied

42% felt satisfied coupled with either anxious or nervous.

1 respondent stated stressed only.

**Points of difference within hospitals**

Terang midwives tended to cite that the stress they felt was related to low birthing numbers and a lack of confidence in their skills

Camperdown and Timboon midwives tended to cite heavy workload as a cause of their stress

***Respondents were asked if they had considered giving up work in the last 12 months and if so why and what had kept them in the job.***

Two respondents did not answer this question

24% responded yes

76% responded no

- Reasons for considering giving up midwifery were varied and included overwork, concern about diminishing midwifery skills, lack of confidence in abilities, tiredness and lack of midwifery support. Reasons for continuing were also varied and included money, convenience, good team to work with and the hope that a new model of care would be introduced

**Points of difference within hospitals**

Three respondents from Camperdown answered yes to this question

One respondent from Timboon answered yes, and two did not respond at all

All of the Terang midwives answered no to this question

***Respondents were asked what factors keep them working at their local hospital***

42% cited being part of a supportive team which included midwives and GPs.

32 % stated that they believed that their community was entitled to a local maternity service

- Other reasons included being able to nurse and do midwifery, having to do midwifery so that they could do nursing, convenience, child care and enjoyment of the job.

### **Points of difference within the hospitals**

Two of the Timboon midwives stated that they did midwifery as it was part of their job which enabled them to nurse, which was their preference

Two of the Camperdown midwives stated that they enjoyed being able to do nursing and midwifery

### ***Respondents were asked if there was anything further that would encourage them to stay in the local midwifery workforce***

There were no suggestions that had not been previously noted

### ***Respondents were asked if they worked casually at any of the hospitals outside of the CMCN***

100% answered no

### ***Respondents were asked if they cared for labouring/birthing women (as opposed to postnatal woman only)***

100% answered yes

### ***Respondents were asked if they would consider working as a midwife within other hospitals within the CMCN and if not, why not***

44% stated yes

56% stated no

One responded was unsure.

- Reasons varied and included age, (“too old”), travel and stress related to working in an unfamiliar hospital
- Some of the respondents who answered yes made comments which included: they would only provide maternity care, (i.e. No nursing), it would help to have all of the birthing rooms and cots set up the same way, a warm

welcome from the “home” midwives would be anticipated, and a wondering about the possibility of resentment occurring if a “visiting” midwife got a birth, given their relative scarcity.

### **Points of difference within the hospitals**

Four of the Camperdown midwives responded yes to this question

Three of the Terang midwives responded yes

One Timboon midwife responded yes and one was unsure

### **Summary**

- Most of the respondents believe that there is a problem recruiting and retaining midwives in their local hospital
- There were a number of suggestions to addressing these problems, with strong themes from Camperdown and Terang midwives about increasing birthing numbers and creating a new model of care in which midwives are more involved across the childbearing continuum. They also identified the requirement for midwives to also work as nurses as a problem. Midwives from Timboon did not suggest creating a new model of care as a way of addressing these problems, but focused instead on the perceived need to advertise more vigorously.
- There were interesting opposing comments made about the nurse/midwife issue. Two midwives clearly stated that the only reason that they were doing midwifery was so that they could nurse, and that they found the former stressful and not enjoyable. Some midwives noted that having to work as a nurse was a disincentive for midwife recruitment, but noted that for them part of the attraction of the job was being able to do both.
- There was a very high level of job satisfaction, although this was often coupled with anxiety or stress
- There was a willingness from a significant number of respondents to look at working in all of the hospitals within the CMCN

## **Appendix Fourteen: CMCN Maternity Audit Forums**



# Corangamite Managed Clinical Network Guidelines for Maternity Audit Forums

## 1. General

- These forums will be considered a core activity within the CMCN and all clinicians should be encouraged to attend
- There will be a multidisciplinary focus; midwives and GPs will present at each forum
- De-identified information will be used
- The meetings will occur every second month and rotate around each hospital. The host hospital will be responsible for organizing a midwife and a GP to present at the forum
- There will be an elected chair and notes will be taken of key findings and distributed to members

## 2. Suggested Content of forums

- **Case presentations**

If any of the following events occurs it is suggested that the case is presented at the forum. Otherwise the case presentation could focus on a birthing outcome statistic or an ‘interesting case’ that the clinician believes would provide a valuable learning opportunity for others. The presenting hospital will be responsible for informing the project coordinator about the topic to be presented a week prior to the forum, so that the CMCN members can be informed. This will encourage attendance.

- **Discussion of Sentinel events:** this includes any unexpected event resulting in death or serious physical or psychological injury; it occurs rarely and is so significant that it warrants further individual investigation. E.g., maternal death or serious morbidity associated with labor or birth, unexpected neonatal death, significant adverse drug reaction or error, or a neonate discharged to wrong family. Following a sentinel event it is recommended that a root cause analysis is conducted. The report and recommendations from this will be presented at the forum

- **Discussion of adverse events:** this is an incident in which harm resulted to a person receiving health care, as a result of care management e.g., woman with epidural falls out of bed, prem baby born because of difficulties related to getting an intrapartum transfer.
- **Discussion of ‘near misses’:** an event which could have had an adverse outcome but did not, e.g. Syntometrine vial discovered in neonatal area instead of Naloxene
- **Discussion of maternal or neonatal transfers**
- **Discussion of PPHs**
- **Discussion of FDIUs**
- **Regular reporting of birth outcome statistics: these will be available on BOS , some go to the Perinatal data Collection Unit**
  - Number of births
  - Number of primips vs. multips
  - Unassisted vaginal birth rate
  - Medical conditions e.g. Diabetes, PE
  - Vacuum rate, and reasons
  - Forceps rate and reasons
  - IOL, mode, reasons and outcome
  - Fetal monitoring
  - Birthing position
  - Emergency LSCS, dilatation and reasons
  - Elective LSCS and reasons
  - Perineal outcomes; rate intact, 1st, 2nd , 3rd degree tears
  - Episiotomies and reasons
  - Epidurals : dilatation and reasons
  - Pethidine : dilatation and reasons
  - Nitrous ; dilatation
  - Other pain relief including TENS, sterile water injections, aromatherapy

- Third stage management and drugs used
- Blood loss
- Birth weight
- Length of stay
- Initiation of breast feeding
- Breast feeding on discharge from hospital
- Breastfeeding on discharge from Dom

- **Clinical indicators; set by ACHS, includes benchmarking**

VBAC

Agars of less than 5 at 5 minutes

IOL except for: Diabetes, PROM, isoimmunisation

fetal demise, fetal distress, chorioamnionitis, pregnancy greater than 41 completed weeks

LSCS for FTP when dilatation less than 3cm

- **Education/guest speaker**

Guest speakers welcome if time permits



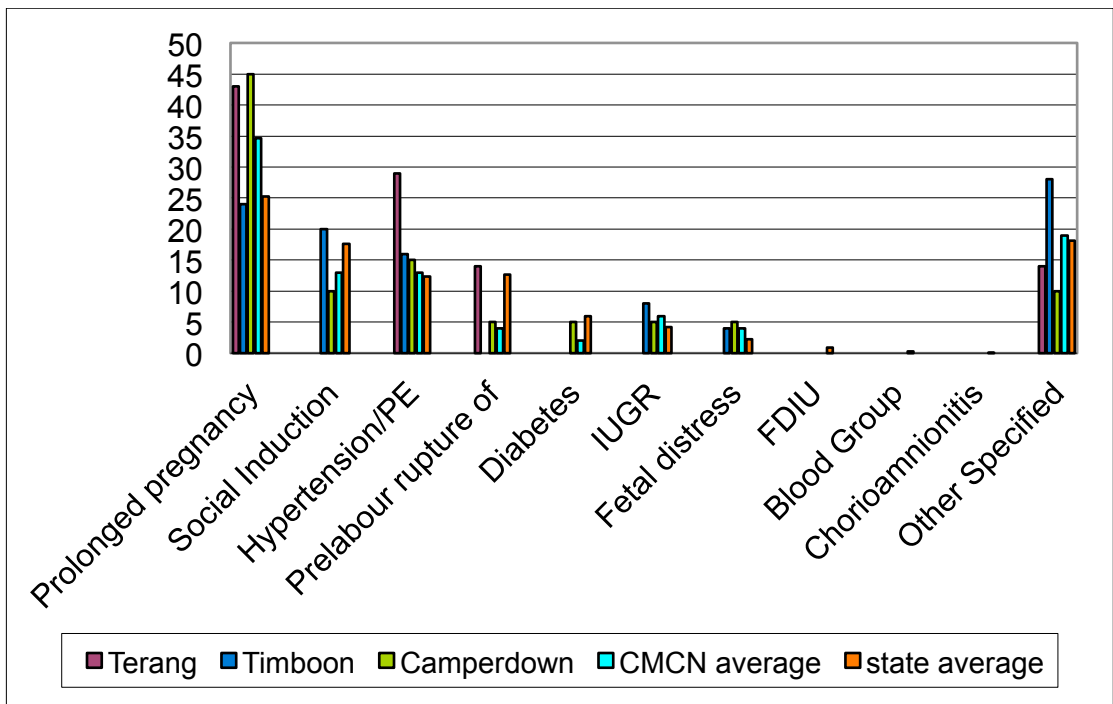
## **Appendix Fifteen: CMCN Clinical Audit Data**

**Table 7.1: Numbers of births in CMCN per calendar year by hospital and in total**

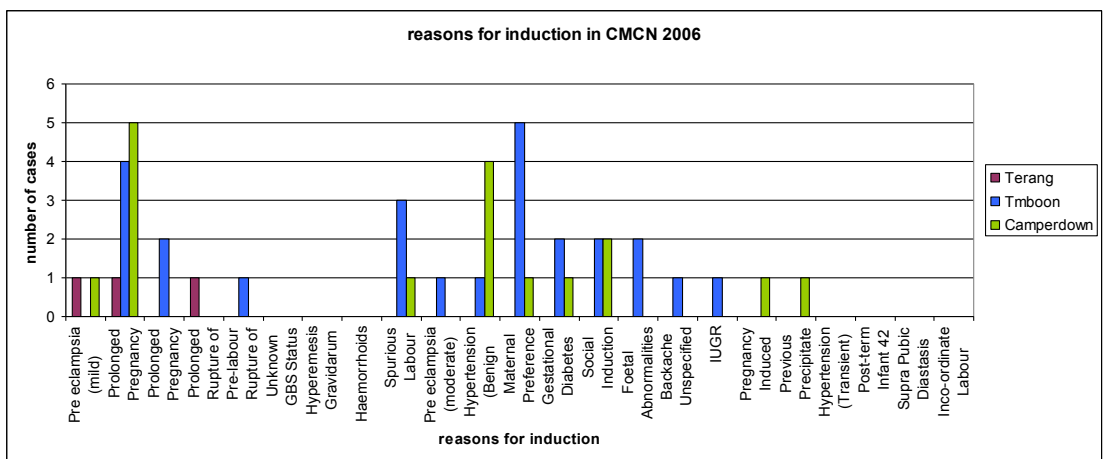
	<b>Terang</b>	<b>Timboon</b>	<b>Camperdown</b>	<b>Total</b>	<b>Average</b>
2000	33	58	65	156	52
2001	31	80	70	181	60
2002	34	70	55	159	53
2003	38	60	48	146	49
2004	25	81	56	162	54
2005	24	72	63	159	53
2006	28	71	65	164	54
2007	26	52	56	134	44
average	31	70	59	157	54

**Table 7.2: Percentage of births occurring from spontaneous onset of labour within CMCN**

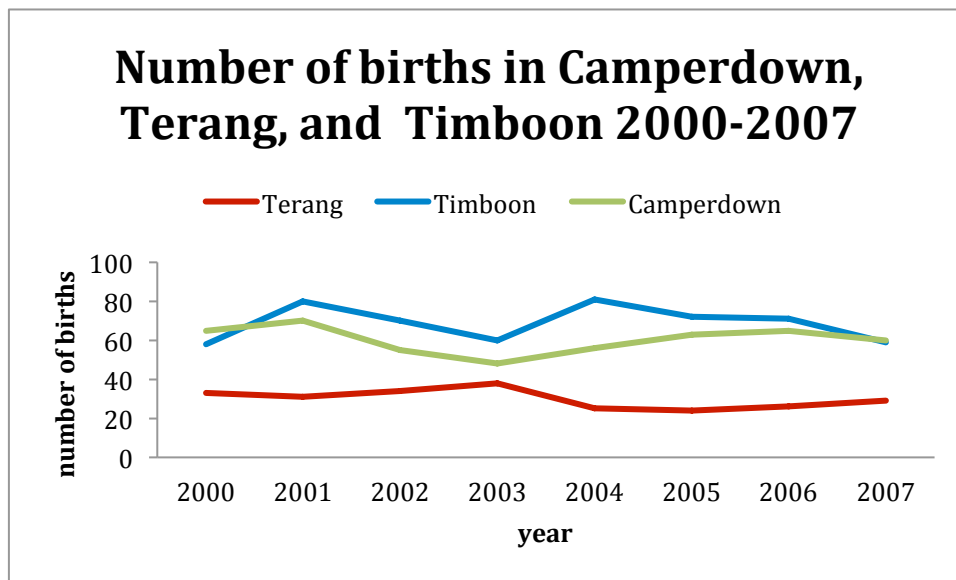
<b>Year</b>	<b>Spontaneous labour (regardless of augmentation) in the CMCN 2000-2007</b>				
	<b>Terang</b>	<b>Timboon</b>	<b>Camperdown</b>	<b>Public</b>	<b>Private</b>
2000	66.7	71.7	75	70.5	61.9
2001	75	70.3	78.7	69	60.6
2002	68.8	61.9	76.7	69.1	60.4
2003	37.9	77.4	75.7	69.4	60.2
2004	60.9	71.4	81.4	69.8	61.7
2005	66.7	59.7	63	70.9	60.8
2006	75.00	46.47	52.31		
2007	65.38	59.71	53.57		
average	64.5475	64.8225	69.5475	69.78333	60.93333



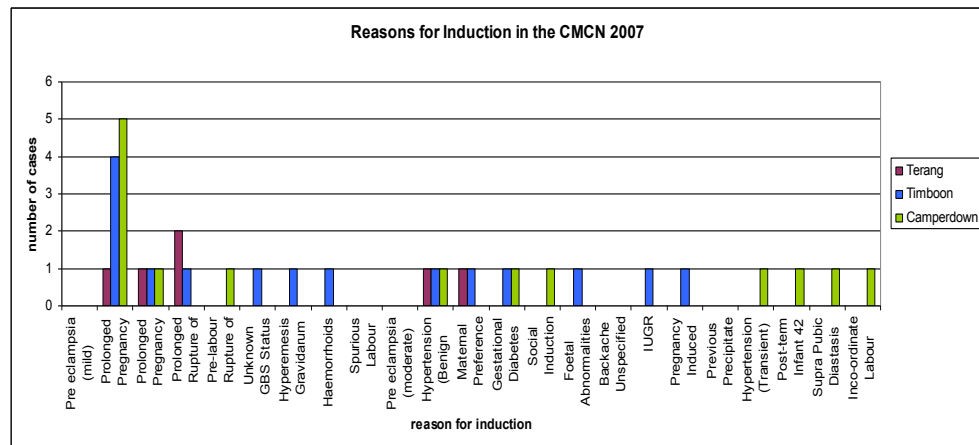
**Figure 7.3: Reasons for induction of labour within CMCN during 2005 compared with state average as a percentage of total inductions**



**Figure 7.4: Reasons for induction of labour within CMCN, 2006\***  
 \*not compared with state average as different classifications were used



**Figure 7.2: Number of births per hospital 2000–2007**

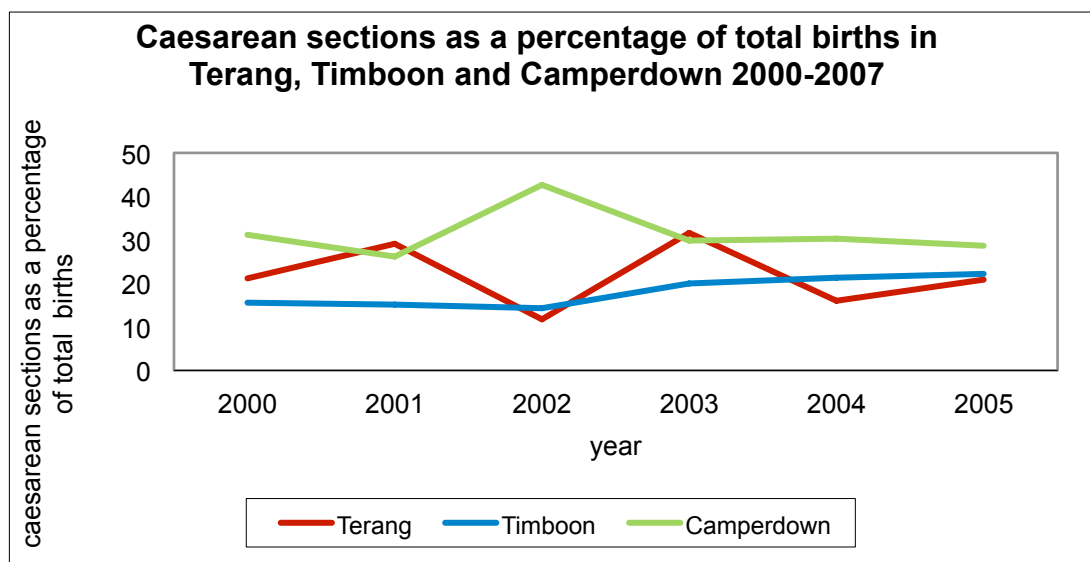


**Figure 7.5: Reasons for induction of labour within CMCN, 2007\***

\*not compared with state average as different classifications were used

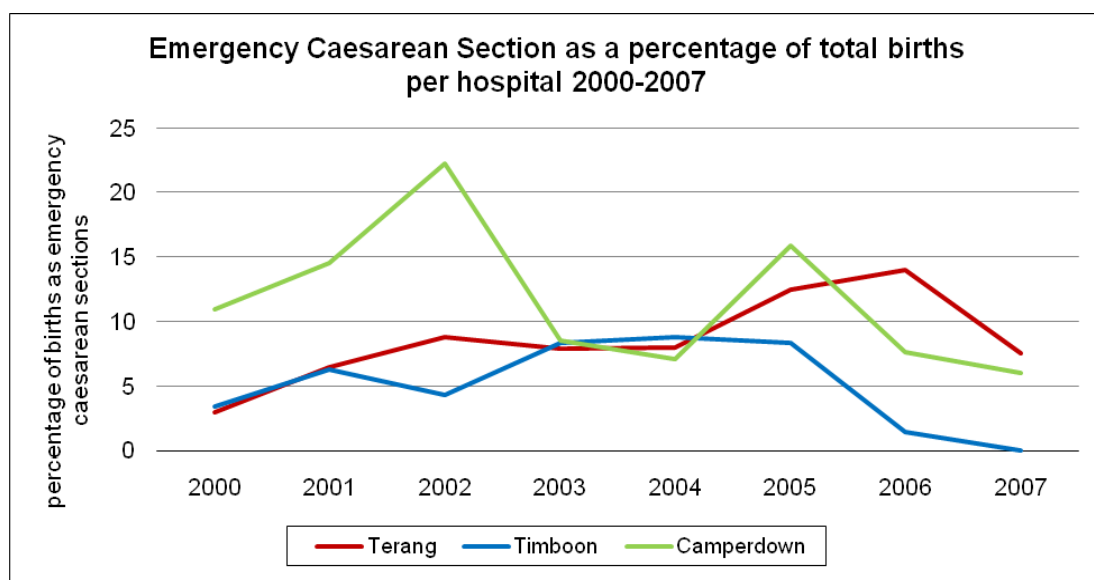
**Table 7.3: Percentages of deliveries that are caesarean sections in CMCN 2000–2005**

Year	Total caesarean deliveries					
	Terang	Timboon	Camperdown	Corangamite average	Public	Private
2000	21.2	15.5	31.2	22.6	21.2	29.9
2001	29.1	15.1	26.1	23.4	22.9	30.9
2002	11.7	14.3	42.6	22.9	25	32.8
2003	31.6	20.0	29.8	27.1	26	34.8
2004	16.0	21.3	30.3	22.5	26.8	35.6
2005	20.8	22.2	28.6	23.9	27.3	37.2
Average pre-CMCN	21.73	18.06	31.43	23.7		
2006	28.0	15.4	23.0	22.13		
2007	10.0	15.0	19.0	14.66		



**Figure 7.6: Rate of caesarean sections as a percentage of total births in Camperdown, Terang and Timboon 2000–2007**





**Figure 7.7: Emergency caesarean section according to hospital**

**Table 7.4: Parity of mothers birthing in CMCN in 2007 as a percentage of total births in each hospital**

	Timboon	Terang	Camperdown	CMCN total
<b>Primipara</b>	20	38	26	28
<b>Multipara</b>	80	62	74	72
<b>Total</b>				100

**Table 7.5: Numbers of vaginal births after caesarean section in CMCN 2006–2007 in Camperdown, Timboon and Terang**

	Terang		Timboon		Camperdown	
	2006	2007	2006	2007	2006	2007
<b>VBAC (Ventouse)</b>	0	1	0	0	1	3
<b>VBAC</b>	1	1	0	3	0	1

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