

Paramedics' Clinical Reasoning and Decision-Making in Using Clinical Protocols and Guidelines

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ABSTRACT

Paramedicine in Australia began with first aid troops and railway corps providing first aid from the turn of the nineteenth century, and the profession advanced rapidly in the late 1900s. Across this period, we have seen a shift from basic first aid training and driving people to hospital, to minimum requirements of tertiary education and training in advanced life-saving techniques. With this change in basic training, paramedicine protocols have advanced and become more sophisticated. This study is the first of its kind to investigate protocols within the profession of paramedicine, and to examine their fundamental value as decision-making tools.

Paramedics within Australia have utilised protocols since the 1970s. Before that time, they often used protocols developed for first aid training. After the training level of intensive care paramedic was introduced in the mid-1970s, societal expectations of pre-hospital care changed. Many ambulance services have moved to the use of guidelines as opposed to protocols, sparking a debate on their relative benefits. Guidelines are considered to offer paramedics more freedom for independent thought, and less focus on set instructions, whereas protocols are stricter and more algorithmic.

Constructivist grounded theory was used as the methodology for this study, with interview data gathered within a cyclic framework until theoretical saturation occurred. Interviews were conducted with paramedics, historians and creators of the protocol documents from several states within Australia. Data were also gathered from the New South Wales Ambulance protocols, and the protocols for resuscitation, mental health and epilepsy were analysed in detail.

The analysis of the protocols and the interviews identified that educational background, vocational or university, has a significant influence upon how paramedics consider their ownership of their education and consequently their ability to transition to

higher levels of independence in using protocols and clinical decision-making. Additionally, the paramedics' scope of practice and length of service were also associated with particular trends in using protocols. Paramedics use protocols not only for patient care, but as teaching and training tools, especially those following a vocational model of education. Later in their career most paramedics discard their protocol book and use it as a reference only when they feel they need a refresher. This can be problematic with regards to maintaining best practice and mitigating risk.

During the interviews and the analysis of the protocols, it became evident that protocols are valued by organisations as tools to monitor paramedic performance and to meet organisational and governmental key performance indicators. Fundamental to creating 'good' protocols that are functional, guide best practice, and are translatable to the 'on-road' environment, is understanding who the audience is and considering the expectations/requirements of both the paramedic and the organisation. The findings of this dissertation led to the development of substantive theory on *building trust and managing risk: using protocols and guidelines to guide clinical decision-making*. The Model of Purposes for Paramedic Clinical Practice Guidelines was also constructed as a framework to assist in the development of paramedic guidelines which can be tailored to each organisation. Together, this theory and model provide a significant contribution to knowledge by providing the first detailed analysis of how (if and why) paramedics use (or don't use) protocols to make decisions about patient care. Understanding these processes is critical to improved practice, patient outcomes, and advancement of the profession of paramedicine.

DECLARATION

I certify that this dissertation does not incorporate without acknowledgment 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.

Signed

A handwritten signature in blue ink, appearing to read 'S. Maria'.

Date

17th December 2020

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When I began postgraduate study in paramedicine in 2008 I never thought that it would lead to a PhD. During the writing of this dissertation I have moved countries, lived through earthquakes, fought a ravaging flood, experienced the biggest bushfires in Australian history, and now am facing a global pandemic. If there were ever barriers or reasons to falter then I think I may have faced a few along the way. However, in the face of this adversity, lady luck also threw me many lifelines. Several years into my research I met Dr Louise Roberts and in her endearing and patient way she settled me (finally) into a positive study pathway. I really cannot thank her enough for everything she has done. Louise also introduced me to Professor Sharon Lawn and Emeritus Professor Eileen Willis, who joined my team of superhuman supervisors who guided my journey. I feel very lucky to have had such a great team who brought so much experience and knowledge to this process.

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ACRONYMS AND ABBREVIATIONS

AHPRA	Australian Health Practitioner Regulation Agency
AMI	Acute myocardial infarction
CCSS	Common Core State Standards
CDM	Clinical decision-making
CGT	Constructivist grounded theory
CGTM	Constructivist grounded theory methodology
CPD	Continuing professional development
CPG	Clinical practice guideline
CPR	Cardiopulmonary resuscitation
CRG	Clinical review group
CTP	Certificate to practice
CYA	Cover your arse
GT	Grounded theory
GTM	Grounded theory methodology
ICP	Intensive care paramedic
ILCOR	International Liaison Committee for Resuscitation
KPI	Key performance indicator
LAP	Low-acuity pathway
MOU	Memorandum of understanding
NHMRC	National Health and Medical Research Council
NICE	National Institute for Health and Care Excellence
NRAS	National Registration and Accreditation Scheme
NSWA	New South Wales Ambulance
OHCA	Out-of-hospital cardiac arrest

P1	Intermediate Level Paramedic
QAS	Queensland Ambulance Service
RCA	Root cause analysis
VCP	Variation to clinical practice

GLOSSARY

Protocol – Protocols are a detailed written set of instructions to guide the care of a patient or to assist the practitioner in the performance of a procedure.

Guideline – A guideline is a statement that promotes or advocates a particular course of action in clinical care.

Clinical practice guidelines – Also known as ‘CPGs’. A common term for the protocols or guidelines associated within an ambulance service for use as decision support aids.

Paramedic – The title paramedic is given to a fully qualified officer and is the base level qualification for most ambulance services. As discussed in Chapter 2, the majority of paramedics nowadays have a bachelor’s degree prior to starting their role within the industry; however New South Wales still has an option to train vocationally within their system. These paramedics are trained to a diploma level.

Intensive care paramedic – Intensive care paramedics (ICPs) have an extended scope of practice over and above that of a paramedic. They have skills and can administer pharmacological agents that require further training and knowledge. An intensive care paramedic may also have completed postgraduate studies. In 2020, a graduate diploma has become the standard level of education required for this role.

CHAPTER 1: INTRODUCTION

1.1 OVERVIEW

This chapter will contextualise the research undertaken for this dissertation by providing background information about guidelines and protocols and their role within paramedicine.

This background discussion will then flow into the problem statement that has been proposed, the research purpose and the aims of the study. The significance of the research is then explained with relation to the study design and the key terms are defined. An overview of the dissertation's structure will then be presented.

1.2 BACKGROUND

The role of a paramedic has had a significant coming of age within the twenty-first century. From humble beginnings two centuries ago as transport officers to degree and postgraduate degree qualified practitioners, paramedics are in many places redefining their scope of practice and level of autonomy. The evolution of their role has been accompanied by the development of documents that have guided, defined, limited and shaped their practice.

Protocols and guidelines in some form have always been at the heart of a paramedic's clinical role and are used to guide decision-making. How they guide decision-making is the subject matter of this dissertation enquiry.

Paramedics are required to independently make complex clinical decisions and perform interventions in a diverse range of emergency and primary care settings away from further support and this is a significantly different setting to the hospital-based model from which many protocols originated (McKay, 1985; Oglesby, 2007). Often care occurs in uncontrollable or challenging environments due to the emergency nature of many ambulance calls. This work that paramedics do, quite often in crisis situations, can put decision-making

skills under pressure, meaning that protocols and guidelines may be incredibly important to professional practice. Making careful and well-considered decisions is often difficult due to a lack of time, or an inability to perform more complex assessments that may assist diagnosis that can happen in hospital, for example x-rays or blood tests.

Paramedic decision-making has been quite intensively researched over the last 30 years, with many studies aimed at understanding the mental processes of paramedics, and other studies focused on decision-making within specific subject areas such as resuscitation, end-of-life care, non-transport of patients and the treatment of the mentally unwell (Brandling et al., 2016; Jones & Woollard, 2003; O'Hara et al., 2015; Parsons, 2011; Shaban, 2004; Shaban, 2005; Sheffield et al., 2016; Wiese et al., 2012). A preliminary search of the literature found no less than fifty articles pertaining to the decision-making of paramedics in specific subject fields of patient care (See Appendices A–C). However, and unfortunately, research into the use of protocol and guidelines within paramedicine has predominantly focused upon specific skills or health conditions with little to no research on the broader topics of design, implementation or useability.

In 2008, a systematic review about protocol and guideline development and implementation in health care was conducted which described factors that influenced usability and this research reported very few findings relevant to paramedicine (Francke et al., 2008). There has been broader research into the development of guidelines within health practice and tools have been developed, such as the AGREE II instrument (AGREE Next Steps Consortium, 2014), the standards developed by the Australian National Health and Medical Research Council (National Health and Medical Research Council (NHMRC), 2016) and the UK (National Institute for Health and Care Excellence (NICE), 2014); however, this research has failed to translate into paramedicine practice, with little advancement of clinical practice guidelines. It is apparent, that in 2020 the evidence base is still thin, and research that

explores implementation strategies more deeply in the field of paramedicine is still needed. There are a few articles that have touched on the potential composition of clinical practice guidelines for paramedics (Colbeck & Maria, 2018; Colbeck et al., 2019) and the issues around using evidence-based practice (L. H. Brown et al., 1999) and mobile electronic solutions (Losiouk et al., 2016); but again, within these articles, no researcher has asked paramedics *why* or *if* these assist in decision-making. As paramedicine has become increasingly complex, it would seem that research into the roles of guidelines for decision-making is lacking.

A predominant focus within paramedicine research has been on difficulties with adherence or ‘how well’ a paramedic stays within the guideline, and again there is quite a lot of literature around non-compliance. However, within these two topics of ‘adherence’ and ‘compliance’ researchers have failed to look at decision-making within the paramedic role and instead have focused upon reporting information such as incidents, rates of compliance and patient outcomes (see for example the work by Bosse et al. (2011), Ebben et al. (2012), Ebben et al. (2013), Figgis et al (2010), Kirves et al. (2007) and Ricard-Hibon et al. (2008)). Whilst these topics are of interest, they do not address the issue of *why* a paramedic may or may not choose to follow a procedure. To not use a protocol may even be considered an act of deviance or arrogance about one’s ability, as Palmer and Gonsoulin (1990) suggested. These assumptions it could be argued contributes and establishes a lack of understanding of a paramedic’s motivations in using protocols and guidelines.

Ten years after the above-mentioned review by Franke et al. (2008), Ebben et al. (2018) undertook another systematic review in which they stated that:

Our review does not allow firm conclusion on how to promote guideline and protocol adherence in prehospital emergency care, or the combination of prehospital and ED care. For ED settings, the sole use of reminders or educational

interventions and the use of multifaceted strategies of education combined with audit and feedback are all likely to be effective in improving guideline adherence.

Disappointingly, this demonstrates that we have little to no research within paramedicine that focuses primarily on how or why, as a general rule, paramedics use the documents intended to guide patient care. This lack of progress appears to be because we are too concerned with small silos of care, and not the holistic big picture. Much of the research pays attention to specific skills such as leaving people at home, or cannulation, or how to decide if or when to perform resuscitation. Little research has examined the reasoning undertaken by paramedics for using the protocols/guidelines themselves. Even the developers of the guidelines in paramedicine at the senior national level are not happy with their own regional practices (Colbeck et al., 2019). Developing protocols and guidelines that are trusted by paramedics to assist with important decision-making would seem imperative to providing good patient care and we are still waiting on the research to guide us along this important journey.

We do know that education plays a factor in the uptake of clinical guidelines and their ability to affect health professionals' practice (Cantwell et al., 2014), and we also know that several clinical guideline development tools encourage the end users to collaborate with the developers to ensure that there is an adequate exchange of knowledge and awareness of new practices (Martineau & Romand, 2011). We do not know if this is the same in paramedicine, given the distinctive nature of the work, as there is no research to suggest this, but it would seem likely as paramedicine has followed similar trends to other healthcare fields.

Some authors researching related issues in broader health care suggest the lack of evidence-based procedures within the documents themselves causes a deficiency of trust. That is, there is a malalignment with modern practice that causes the end user to stop using a protocol or guideline (L. H. Brown et al., 1999; Martineau & Romand, 2011; National Health and Medical Research Council (NHMRC), 2016). While this does seem a reasonable step in

logic, I would suggest that it has not been verified within paramedicine: we do not understand the issues of trust by paramedics, nor do we have evidence of mistrust. No researchers have yet asked the questions needed to validate or refute this supposition.

How paramedics use protocols and guidelines every day in practice in their decision-making has yet to be researched. We do not know how, as a general rule, how and under what conditions these documents influence decision-making, and we do not know what makes a ‘good’ protocol or guideline in paramedicine. There is no evidence to suggest that using evidence-based care within paramedicine will make a paramedic more ‘compliant’ or more likely to ‘adhere’ to a protocol or guideline. In fact, there is no evidence that delves into paramedics’ holistic perceptions or expectations about their contents at all (whether protocols, guidelines, reference texts or skills guides). We only have fragments of information about particular pieces of care which seem to be based on the ‘flavour of the month’ in research, such as intubation, patient restraint and resuscitation.

As a profession, we have yet to enquire, confirm or understand:

- what is ideally required for the contents of a protocol/guideline book;
- how paramedics would like to use protocols and guidelines in practice, based upon an appreciation of their modern role;
- how the graphic design (layout, structure and design, etc.) affects the accessibility of protocols and guidelines, and how this could be made suitable for the often challenging out of hospital environment; and
- how different protocol and guideline modalities may be implemented to suit a variety of environments, and work synergistically (e.g. compendiums versus electronic versions).

In summary, we know very little about what paramedics value as useful to support their decision-making, and whether the protocol/guideline book is even appreciated at all.

1.3 PROBLEM STATEMENT

Protocols and guidelines may be considered fundamental to providing the latest evidence to support best practice and critical decision-making for paramedics. The possibility that paramedic preferences in using protocols and guidelines may have a considerable impact on clinical reasoning and decision-making practices warrants further investigation in order to understand how to develop and implement these documents proficiently within paramedicine.

1.4 STUDY AIM

The purpose of the study is to generate a substantive grounded theory about how paramedics use guidelines and protocols for reasoning and clinical decision-making. More specifically, the aim of this research is to explore factors and barriers that impact decision-making and consider these with regards to the future development and implementation of clinical practice guidelines (CPGs) within paramedicine

1.5 STUDY DESIGN

This study uses a constructivist grounded theory methodology to guide the research process. The methods used to gather data are interviews and a document analysis of protocols and guidelines. Triangulation of the data provides a rich description of the subject and gives valuable insight into the final analysis which creates the substantive theme.

1.6 GUIDING RESEARCH QUESTION

How and why do paramedics use protocols and guidelines to inform decision-making?

1.7 SIGNIFICANCE OF THE RESEARCH

This research is significant because it contributes an enhanced understanding and adds valuable insight into a longstanding problem within paramedicine – the lack of discipline-specific information that can contribute to creating tailored and more suitable guidelines for clinical practice. This insight is derived through an inductive approach to research which allows for deeper understanding and the development of foundational concepts. The current body of evidence dates back to the 1990s. However, it is significantly skewed toward research examining ‘silos of care’ such as focusing upon specific skills, patient complaints, or topics such as compliance and adherence (Anantharaman, 2004; Ebben et al., 2012; Hagiwara, Suserud, et al., 2013; Morris, 2003).

Understanding the rationales underpinning reasoning and decision-making practices is an important first step when new models for guiding practice are needed for a specific group of health professionals. This is of particular importance for paramedics, who arguably have a very unique workplace ‘on the road’ that changes from day to day (Losiouk et al., 2016). This dissertation goes beyond describing current attitudes and practices to using protocols and guidelines. It explores people’s meanings and actions as they make decisions around whether or not to use these documents within their daily practice. Also included in this study is the voice of historians who can describe important cultural aspects that have significant influence upon practice as well as stories from current policy makers and the creators of the documents. These perspectives add a further dimension and complexity that enables protocols and guidelines to be related back to organisational requirements, staff training, and the creation of patterns of behaviour that are often reportable to governmental agencies.

The grounded theory developed during this study will also help inform developers of future policy and guidelines, and educational institutions tasked with the education and

training of paramedics, as well as making important recommendations for future research, both in Australia and internationally.

1.8 STRUCTURE AND ORGANISATION OF THE DISSERTATION

The structure of this dissertation reflects one generally used in constructivist grounded theory methodology (CGTM) and, as such, it does not follow the traditional format used to present findings of traditional qualitative or quantitative research. Primarily, literature is often gathered along the way as needed or even if required, as opposed to ‘front loading’ a literature review within a normal dissertation.

Following this introductory material contained in Chapter 1, Chapter 2 provides the reader with the historical beginning of protocol/guideline use primarily within the Australian context. The evolution of protocols and guidelines are discussed and additionally these are linked to educational programs that are used to provide paramedics with the underpinning knowledge needed to perform their tasks. The wide variations of education within an ambulance service demonstrate the heterogeneity of the paramedic workforce, and this plays a role in the development of documents that guide patient care. The chapter concludes with a discussion of the current lack of formal structures to proactively research and incorporate evidence into the development of future protocols.

Chapter 3 presents the research methodology and the theoretical framework that were used to meet the study aim. I also describe how I have used symbolic interactionism, and social and critical constructivism within the grounded theory to provide a lens to analyse the data, and how this complements my study objective. The chapter concludes with the ethical considerations that played a part in the development of this research study.

Chapter 4 provides a detailed description of the research methods that were used within this study. This includes using sensitising concepts, theoretical sampling and sensitivity when collecting the data. I also describe how I incorporated triangulation to

diversify my data collection strategy and to build richness into my methodological framework. The constant comparative method in grounded theory is explained, as is coding. I conclude with a discussion of the strategy for selecting the documents for analysis and how I incorporated text complexity tools into a conceptual framework to analyse the protocols.

Chapter 5 is the first of two chapters that discuss the findings. I explore the paramedic interviews and add supplemental findings from interviews with historians and creators of the documents. Nine emerging themes from the interviews are presented that offer valuable insights into the reasoning processes of paramedics using the protocols and guidelines for decision-making in their work. These are:

1. Protocols/guidelines face an identity crisis of social construction that challenges the interpretation of their role within paramedicine.
2. Paramedics who are university trained are more inclined to pursue CPD activities and self-directed learning.
3. Protocols/guidelines are used for a wide variety of activities and reasons in practice.
4. Paramedics are very hesitant to admit to any variations of practice, even though they face challenging and dynamic work environments.
5. Paramedics believe protocols and guidelines can (and do) promote safe clinical practice.
6. The level of daily usage relates to paramedics' experience and scope of practice.
7. Paramedics believe that the protocols and guidelines prescribe the minimal level of care required.
8. Text content, layout and complexity play an important role in protocol and guideline functionality.
9. There is uncertainty about organisations' expectations of the reality of practice.

Chapter 6 describes the conceptual framework designed to analyse the protocol documents. I begin by briefly explaining again how I chose the protocols and then complete a detailed analysis in three steps of each protocol. This conceptual framework looks into the historical and cultural influences on the development of each protocol, as well as how they were prepared, after which I finish with an analysis of text complexity. I used validated text complexity tools as well as the Common Core State Standards (Tesol International Association, 2013) to analyse the texts for their degree of challenge.

Chapter 7 triangulates the data by bringing together the results of both the interviews (Chapter 5) and the document analysis (Chapter 6). The emerging themes are combined into the final three themes and these are further explored and abstracted. Theme 1 concerns organisations' role in controlling risk by influencing decision-making capacity using protocols and guidelines. Theme 2 brings to the forefront the concept of paramedics' trust and how they use the protocols and guidelines to guide them towards safe decision-making. Lastly, Theme 3 identifies ways in which protocols and guidelines are used as tools for learning and managing risk, and the effect of education, level of experience and scope of practice. I also propose a substantive theory of *building trust and managing risk: using protocols and guidelines to guide clinical decision-making*. I explore this theory with the use of a 'Model of Purposes for Paramedic CPGs' which I created to explain how organisational considerations, the level of autonomy of decision-making, and the benefit of their use as training tools are fundamental considerations when creating protocols and guidelines for use in practice. This model incorporates discussions around each dimension and how they fit together when considering their implementation within paramedicine.

In the last chapter, I provide a discussion of the overall study contribution to knowledge made by this dissertation before detailing the strengths and limitations of the

research. I present the implications of the study for future research, practice, education and policy development. Using the ‘Model of Purposes for Paramedic CPGs’ I reflect upon the NSW Ambulance structure and suggest recommendations that could be useful for future guideline development. I also discuss the generalisability of my findings to the wider audience of ambulance services.

You’ll note as you read this dissertation, I have intentionally written in a narrative style in the first person. Hallberg (2006) suggests that in constructivist grounded theory, the researcher presents the research as more of a story rather than as a theory. In this way I have endeavoured to present a narrative approach as it describes my journey through the process of enquiry, while additionally building a theoretical understanding of the experiences of paramedics using protocols and guidelines for decision-making as well as the voices of the documents’ creators and historians. Using my own voice rather than the more traditional third person to report this qualitative research acknowledges my role as the researcher during what Charmaz (2006, 2014) refers to as a co-construction of knowledge.

All information gained from persons within the interviews and correspondence has been deidentified and pseudonyms used. You may use the quick reference for participants within the appendix section to see further details regarding their demographics and backgrounds.

CHAPTER 2: THE HISTORY AND DEVELOPMENT OF AMBULANCE SERVICE PROTOCOLS AND GUIDELINES IN AUSTRALIA

1.9 INTRODUCTION

An exploration of the historical development of ambulance service clinical practice guidelines in Australia provides a contextual backdrop to understand their current cultural framing within the industry. Research into their history is important as it reveals their relevance not only in paramedicine, which is a relatively young profession, but also other relevant health professions and provides insight into the early development of patient-centred pathways. The foundation of first aid training as a fundamental beginning for ambulance services in Australia is discussed with particular relevance to the construction of the modern-day protocol used by NSW Ambulance (NSWA). Lastly, the creation of the current ambulance service guidelines will be reviewed in relation to clinical governance and evidence-based practice. These considerations are important and provide an understanding of the foundations of patient-centred pathways that form the basis of modern-day practice for paramedicine.

To appreciate how ambulance service protocols and guidelines developed alongside other healthcare-related fields, we need to first understand the establishment of first aid, where they had their beginnings. In order to complete this introductory chapter on the history of protocols and guidelines used in paramedicine I extensively researched any available literature as well as corresponding with and interviewing historians to uncover important details.

1.10 HISTORICAL BEGINNINGS

In describing the Order of St John and its history throughout this chapter it is important to note that the order has within itself many groups whose names have changed throughout history. Where possible I have attempted to keep naming consistent for clarity and for time periods, but I appreciate that there has ultimately been many iterations to include ‘St John’, ‘St John Ambulance’, ‘St John Brigade’ and ‘St John Association’.

Within Australia, the Order of St John established their first Ambulance Association in 1877 (Little, 2011). The purpose of the ambulance association was to attend to a need for effective first aid training in order to manage the growing number of accidents occurring within the increasingly industrialised and urbanised society. An inaugural public first aid course in the ‘St John method’, was held at the Eveleigh railway workshops in Sydney in 1881 (Howie-Willis, 2002). The ‘St John method’ was developed by Surgeon Major Peter Shepherd (Pearn, 2014). Shepherd had created a new first aid curriculum for civilian first aid classes entitled *Handbook describing aids for cases of injuries or sudden illness* (Shepherd, 1878). In early 1879 Shepherd’s manuscript was published in an initial print run of 25,000 copies and was to go on to become known as the ‘Little Black Book’ of St John first aid training across six continents. After Shepherd’s untimely and tragic death in 1879, only one year after he developed the book, his curriculum was collated and published as *First aid to the injured*, with credit given to Shepherd’s name, by Dr (later Sir and Lieutenant-General) James Cantlie (Pearn, 2009).

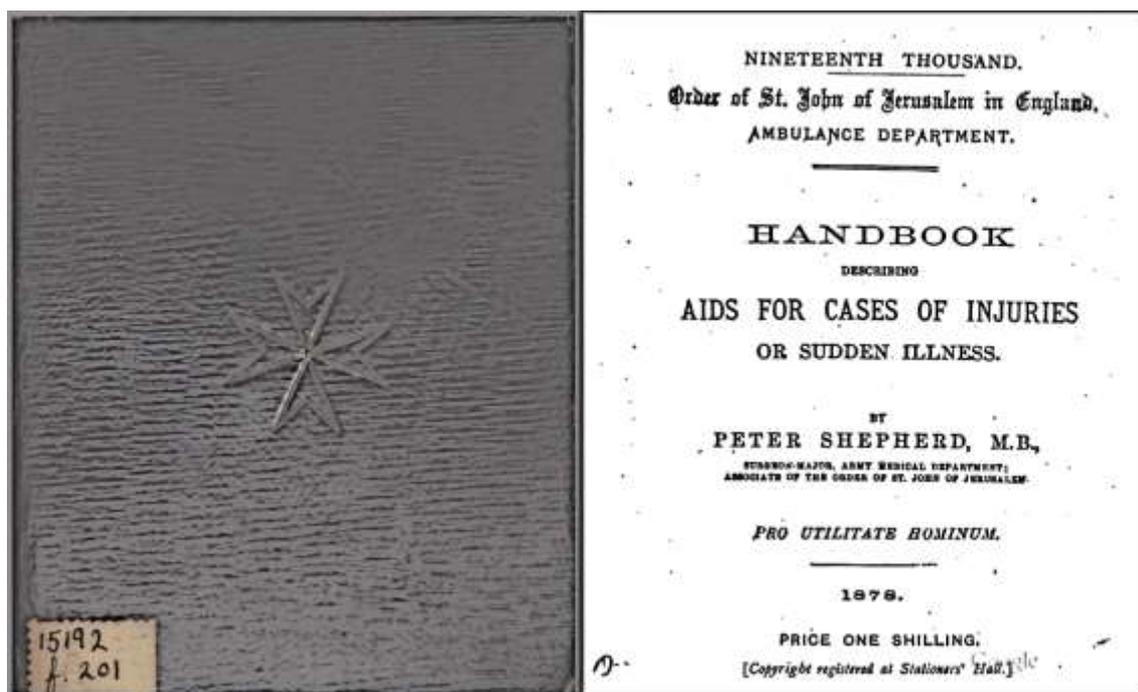


Figure 1. Peter Shepherd's handbook

The first Australian St John branch was formed in Victoria after a public meeting was held in the Melbourne Town Hall in early June 1883 and formal first aid services commenced soon afterwards (Mawdsley, 2013). By the end of that month, a centre for the branch was established under the leadership of Edward Neild (Mawdsley, 2013). Shortly after, in 1890, the first NSW St John Association was formed and not long after the first St John Ambulance Brigade (which became known as the First Aid Services/Operations Branch) was established in 1903 in Glebe, NSW (Stirton, 2002). With the popularity of the courses, new units and divisions were established. St John had created essentially two arms of service, its 'Ambulance Brigade' which was used for attending events and incidents, and its other arm being the provision of first aid teaching to the public.

During these early decades of the twentieth century, teaching in first aid was predominantly based on these early textbooks from England and the writings of Shepherd and Cantlie. Those texts, and the following revised editions, encapsulated the entire curriculum for all basic first aid classes and ambulance brigade teaching until well after World War II

(Pearn & Howie-Willis, 2013). It was not until 1969 that a first aid text was written for Australians and printed in Australia (Napoli & Stirton, 2003).

The formation of state ambulance services within Australia has a long and convoluted history which goes far beyond the short discussions of this chapter about guideline development. Little (2008) also notes that ‘additionally the history is not well documented and deserves further explorations’ (p.37). Another link in this puzzle of the development of guidelines is the influence of the state railway services. To understand this connection, we must explore the influence of railway services further.

1.11 INFLUENCE OF THE RAILWAYS CORPS

At the turn of the nineteenth century, a time of significant industry growth had begun in the Western world but not the proportional and commensurate growth of safety practices. Consequently, this was a time of frequent horrendous injuries (O'Meara & Grbich, 2009) in both Australia and other countries. According to Garfield (2002), the creation of the enormous railway systems across the world had with them brought consequences for subsequent human injury. An example is stated in England where the Liverpool to Manchester railway, a distance of just 48 kilometres, it was claimed that they could have almost laid the entire line on sleepers made from the legs of injured men (Little, 2011).

Railway companies in their early days were large-scale organisations that had additional responsibilities extending beyond the mere provision of transport and employment for many in the community. These additional responsibilities included providing services of first aid and ambulance transport to the public and their workers. Seeing a high demand for both serving their workers and the public, the NSW Railway Service formed the first Railway Corps first aid division in 1883 and began teaching primarily the St John method (NSW Government, 2015). After two years, they founded their own Ambulance Corps (NSW State

Records, 1970) and by 1908 most railway companies had ambulance corps established as centres of the St John Ambulance Association (Little, 2011).

The first 'textbook' for the Railway Corps was created by Commissioner Goodchap in 1882 and began as a small book of seventeen pages loosely based upon Shepherd's previous text. It is not known why Goodchap did not just take up the version written by Cantlie in 1880, but what is evident is that the book was tailored for the environment of the Railway Corps. Goodchap, quite disconcerted by Shepherd's surprising death three years earlier, made this book available to the railway staff before the founding of the Railway Ambulance Corps in 1885 (Little, 2011). In its first edition the book is prefaced by the following quotation from GPM Woodward (pg.8):

Shepherd's 'first aid' ... is now out of print (as is also a very handy little pamphlet on 'Accidents and their treatment' prepared by the Commissioner, and formerly issued to railway employees) ... I know of no other which to my mind so fully meets the requirements of ambulance students; I have, therefore (at the request of the Commissioner for Railways), compiled this work, as an extension of the one previously issued by the Department; extracting largely from Shepherd's and other authors, and have introduced much matter.

G P M Woodward, MD, FRCSI
Railway Medical Board NSW
167 Macquarie Street North
Sydney December 1887

This book is the first to mention that its intended users are specifically ambulance staff. Interestingly, Goodchap based the text on a first aid manual but added what he thought was other essential information for the first known ambulance officers in Australia. This book for training was used by the NSW Corps for approximately thirty years before the revised edition of Cantlie's *First aid to the injured* was again adopted. I am not completely sure why this

occurred but there is evidence to suggest that there was a need for standardisation for first aid yearly competitions, which were common at the time (Little, 2011).

These two entities, the Railway Corps and St John Ambulance, were the foremost providers of first aid in many Australian states such as Victoria, Queensland and NSW and predated other providers, such as the first civilian ambulance service in Australia which was established in Brisbane in 1892. It should be noted that an Ambulance Corps was formed by the Prince Henry Infectious Diseases Hospital (the Coast Hospital, Sydney) in July 1881. However, this Ambulance Corps was not so much formed to treat the acutely ill; instead, its purpose was: ‘The disinfection of infected premises, the removal of patients from infected houses, the making of coffins and the burying of those dead of disease’ (p.37) (Boughton, 1963).

The following timeline summarises the formation of the principal first aid and ambulance organisations in Australia.

Table 1. Establishment of ambulance associations 1881–1909

Date/year	Event
1881	Prince Henry Hospital Ambulance Corps founded in Sydney
1883	St John Ambulance Association Centre established in Victoria
1884	St John Ambulance Association Centre established in Adelaide
1884	St John Ambulance Association Centre established in Newcastle
1885	Formation of the NSW Railway Ambulance Corps
1888	St John Ambulance Association Centre established in Bundamba (QLD)
1890	St John Ambulance Association Centre established in Brisbane (QLD)
1891	St John Ambulance Association Centre established in the Western Australia Colony
1892	St John Ambulance Association Centre established in Perth
1892	Formation of the Queensland Railway Ambulance Corps
1892	Formation of the City Ambulance Transport Brigade in Brisbane (first civilian ambulance service)
1895	Formation of the NSW Civil Ambulance and Transport Brigade
1887	St John Ambulance Association Centre established in Launceston

1892	St John Ambulance Association Centre established in Sydney
1902	Brisbane's City Ambulance Transport Brigade becomes the Queensland Ambulance Transport Brigade
1902	The Australian Army Medical Corps formed. In 1948 it became the Royal Australian Army Medical Corps.
1904	First St John Ambulance Brigade in WA
1909	St John Ambulance Association Centre established in Hobart

(NSW Ambulance, 2016; Prince Henry Hospital Nursing and Medical Museum, 2020; Queensland Ambulance Service, 2021a; St John Ambulance Australia (NT), 2021; Trove, 2021)

Those who were employed in St John or the Railway Corps were typically men who had trade backgrounds and were volunteers who had acquired skills through experience as volunteers, rather than having any underpinning medical knowledge (Reynolds, 2009).

Medical practice for ambulance officers was quite simplified and it was not until around the 1960s and 1970s that St John Ambulance employees working on ambulance vehicles were trained to use oxygen equipment (Fahey, 2013). This information is contained within the content of textbooks used for training manuals at that time, such as the South Australian Manual of Ambulance Transport Nursing of 1963, and the St John First Aid Manual of 1965 (Berry, 1963; St John Ambulance Association, 1965).

The first civilian ambulance services were much smaller organisations than St John or the Railway Corps; they were little more than a collection of self-funded autonomous collections of people that worked in isolation. These groups relied upon first aid textbooks for training in first aid well into the 1960s. Most were locally funded by charities with limited and non-standardised training opportunities. The provision of care was very basic, and little was expected other than to 'bear', or transport, someone to hospital.

Significant changes in the development of ambulance-specific protocols and guidelines came about when ambulance services became united, larger and better funded (in particular, state government funded). Smaller civilian services amalgamated with larger St John or railway services and agreements were set up to amalgamate both training and the

provision of service. A well-documented example of this is in Victoria where St John Ambulance have operated since 1883 and the first horse-drawn carriage ambulance began in 1899 (Ambulance Victoria Museum, 2019). Over the next 80 years, services expanded and were supplied cooperatively by St John Ambulance, the Civil Ambulance Service and a multitude of local area services. In the 1980s the Metropolitan Ambulance Service evolved when several smaller area services and sixteen regional services were combined into five. The Victorian services amalgamated again in 1997 and in 2008, becoming a single entity, Ambulance Victoria (Ambulance Victoria, 2015; Health Outcomes International, 2016; Roon, 2008). This example is typical of the various Australian states' ambulance service histories (Dunstan, 2013; Queensland Ambulance Service, 2016).

As organisations merged, their systems became more organised and sophisticated to develop a variety of emergency out-of-hospital services. Training became diversified and specialist groups were formed to deal with task-related duties such as air ambulance, intensive care transport, and rescue and retrieval (Ambulance Victoria Museum, 2019; NSW Government, 2016a; St John Ambulance Australia, 2016). The use of formalised protocols for dealing with specific injuries that were beyond the scope of basic first aid became more common. Training programs for staff in more advanced techniques with accompanying formalised training materials, and instructions on how to use them, were developed. These first collections of materials were called 'protocols' within ambulance services.

Two ambulance services are known to have had their own versions of protocols dating back to the mid-1970s; these are NSW (NSW Ambulance, 2016) and Ambulance Victoria (Norman, personal communication, 15 September 2016). They also had a head start on other jurisdictions by establishing their own training schools for their ambulance staff with assistance from specialist doctors who, providing further medical oversight and advice, developed new protocols (NSW Government, 2016). By 1975, NSW had a total of 51

specialised protocols to deal with both medical and traumatic emergencies. These protocols had moved beyond the scope of the traditional first aid manual and incorporated new skills and pharmacology which was revolutionising the role of a paramedic and the care they could provide to patients in the community (NSW Ambulance Service, 1975). These protocols were brought in primarily to support the new role of the intensive care paramedic (ICP) which was introduced at that time. The protocols were used by ICPs and were guarded, revered and learned by rote by ambulance staff (Andrew, personal communication, 28 September 2016). Many other state ambulance service providers followed suit during the next ten years with the first Coronary Care Protocols & Procedures developed by the Queensland Ambulance Transport Brigade in 1986 as a prime example (Queensland Ambulance Services Board, 1986; Mike, personal communication, 30 August 2016).

Ambulance service staff were rapidly becoming more educated and, as stated previously, vocational training schools for ambulance officers were emerging throughout the country with the consolidation of ambulance services (NSW Government, 2016). After the lull through the 1920s to 1960s, basic educational requirements within services were also quickly changing, from the level of first aid to expectations of certificates (late 1970s), diplomas (from the mid-1980s onwards) and advanced diplomas (late 1990s), to associate degrees and undergraduate degrees (2000–2010s).

From the early 2000s onwards, there was movement at a national level to transition to a graduate entry program as the minimum standard for employment of ambulance staff (Joyce et al., 2009; O'Brien et al., 2014; Williams et al., 2010). This is similar to other professions such as nursing, osteopathy and chiropractic training in the last 30–40 years which have had a staggered progression (Baer, 2006; Cameron, 1998; Halcomb et al., 2006). Table 2 shows the educational expectations across Australia in 2019 for the lowest and highest clinical levels of staff within ambulance services. NSW is the last service to move

to a pre-employment tertiary qualification model (solely), with both vocational training and a graduate entry pathway currently available. There has been some interest in changing this system to become like other states across Australia (Andrew, personal communication, 28 September 2016). Understandably, there are considerable strategic, industrial and political motivations/implications to consider that may impact the operational environment if NSW choose to do this and align with their colleagues in other states.

Table 2. Current education requirements for paramedics

Service	Entry level	Highest clinical level
NSWA	Two pathways 1. undergraduate degree 2. vocational diploma	Intensive care paramedic with vocational training +/- bachelor's degree
Ambulance Victoria	Graduate entry that requires an undergraduate degree	Intensive care paramedic with postgraduate diploma
South Australian Ambulance Service	Graduate entry that requires an undergraduate degree	Intensive care paramedic with postgraduate diploma
ACT Ambulance Service	Graduate entry that requires an undergraduate degree	Intensive care paramedic with postgraduate diploma
St John Ambulance Northern Territory	Graduate entry that requires an undergraduate degree	Intensive care paramedic with postgraduate diploma
St John Ambulance Western Australia	Graduate entry that requires an undergraduate degree	Intensive care paramedic with postgraduate diploma (Helicopter) Intensive care paramedic with vocational training +/- bachelor's degree
Queensland Ambulance Service	Graduate entry that requires an undergraduate degree	Critical care paramedic with postgraduate diploma
Ambulance Tasmania	Graduate entry that requires an undergraduate degree	Intensive care paramedic with vocational training +/- bachelor's degree

(Adapted from Wilkinson-Stokes, M. (2021))

1.12 THE EVOLUTION FROM FIRST AID MANUALS TO PROTOCOLS AND GUIDELINES

The evolution of the current-day concept of clinical protocols and guidelines has involved many iterations which reflect the changes in expectations from both the ambulance service sector and the public it serves.

A deep dive into the historical development of guidelines and protocols of ambulance services over the past 100 years reveals a trend of specialisation, with the level of detail, depth of expected knowledge and complexity of the texts spiralling and circling upward. It becomes clear that the level of information provided has ebbed and flowed over time. The first books for first aid were incredibly detailed, with drawings and reference material as well as specific detail about patient management and treatments. Those who delivered first aid were trained to a set of general rules and principles and attended a course which was taught by either Railway Corps or St John (or something similar), and they went away with an elementary education and a first aid manual. They used this training and tacit knowledge to supply care as best they could. This care was rudimentary, and the books that were supplied were incredibly detailed, descriptive, and contained far more reference material than what lay ahead in the next iterations. Fast forward fifty years and that the books had become algorithm driven and smaller in size, to become more portable and user-friendly (Herman, personal communication, September 2016).

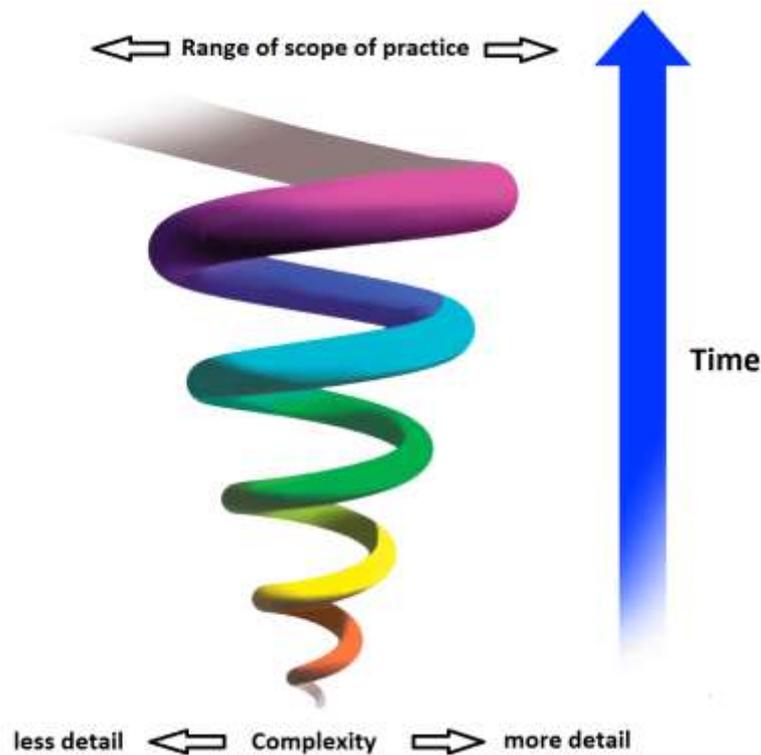


Figure 2. Upwards spiral of protocols and guideline growth

Throughout the period 1970–2000, the trend across Australia was that paramedics were expected to know their protocol book by rote and practise the same way (Mike, personal communication, 30 August 2016). The protocols were not considered guides but were explicit in the way they were to be used. There was little reference material or educational explanation as to why procedures should be performed. This expected knowledge was taught in class when the books were supplied, and the protocols were stripped back to contain only essential information (Mike, personal communication, 30 August 2016). These decades at the end of the twentieth century were a period of rapid change which had several influencing factors, one being that the paramedic role was developing quickly, nationally and internationally. Expected education levels were increasing and new skill sets were expected to be performed by paramedics such as airway maintenance, advanced cardiac care and cannulation (Shah, 2006; Sheather, 2009; Williams et al., 2009). A second factor is the perceived change in the paramedic’s role, which was influenced by popular media at that

time. Public perceptions of expanded scopes of practice were being portrayed in American television shows, influencing societal expectations of what care paramedics should be providing to the public (Bledsoe, 2007). The influence of popular media on role perception has been well explored (Grilli et al., 2002; O'Connor, 1998; Schwitzer, 2004; Young et al., 2008) and television shows such as *Emergency* (1972), *Rescue 911* (1989) and *Paramedics* (1998) glorified the paramedic role by portraying the daily experience of paramedics' work as crisis after crisis, where high-level skills are needed for every case (Bledsoe, 2007).

During this time of the late twentieth century, 'in-service training', which is in-house training conducted on a periodic basis, evolved to become an important way for paramedics to stay up to date with the latest protocols. Updates to education post initial training were offered on a yearly basis in most states and a revised set of protocols reflected these changes. Paramedics would attend in-service training for up to one week each year to be 'signed off' in the latest skill sets and offered a new set of protocols for their practice (Herman & Andrew, personal communication, September 2016). This process of protocol training and delivery was repeated throughout all Australian services whenever a new set of protocols or guidelines was added. In NSW, this pattern is still repeated today and has not changed in over sixty years. In-service training is delivered once every 12–18 months and is a part of the ongoing requirement to maintain a certificate to practice (CTP). Without a CTP, the paramedic is not allowed to use their full scope of practice, including the application of certain treatments and drug therapies.

This period of the 1970s–2000s illustrates how the protocol manuals, which had become quite compact and scantily detailed, were full of implicit knowledge expectations. For example, in the unconscious patient, paramedics are to 'maintain the airway' but no information is provided as to how this is achieved (see QAS and NSW in particular). This care is simply assumed of the paramedic without any extra information to explain what type

of airway support is appropriate and how this is to be inserted or performed. If this were a first aid manual, there would be diagrams and steps that detailed how to perform the task. Therefore, as paramedics have become more highly trained, the manuals have become less explanatory and higher in their expectations.

After discussing the above shift in expectations with paramedics in the field who were employed at this time, it seems that many practices and skills were kept out of the protocol manuals and were assumed to be implicit knowledge (K. B., S. P. & L. B., personal communication, 12 November 2016). What became apparent in the late 1990s and early 2000s is that protocol manuals evolved to exclude these details of the skill sets and the scope of a practising paramedic. They had reached a point where many of the skills and procedures were absent from the practice manual but were known and expected within the skill set (Herman, personal communication, September 2016). The manuals created during this time are heavily algorithm-based aide-memoires of treatment plans. However, in the early 2000s, other assistive companion books to accompany the main protocol manual became commonplace. These add-on companions are called ‘Skills Guides’ (NSWA) or ‘Coronary Care Protocols’ (Queensland) and are used in addition to the normal practice manual. In some states, this may be a set of skills that are relevant for a specialised group, for instance mobile intensive care ambulance paramedics in Victoria or intensive care paramedics (ICP) in New South Wales, Queensland or Tasmania. Other variations include an additional reference guide, such as the procedural skills manual (versions found in all states) which is used to review the ‘how to’ of practice. These manuals contained procedures such as ‘How to take an ECG’ or ‘How to cannulate’. Many services during this time also were using separate manuals for diverse types of content. Examples found include the following:

- a skills manual which describes the ‘how to’ of practice;

- a protocol manual that contains patient care pathways, algorithms of care, checklists, flowcharts and some reference material;
- a separate pharmacology pocket-sized book used by paramedics;
- a low-acuity pathway (LAP) book that guides cases which may have a treat and refer option available. That is, the patient can be assessed and may be either left at home, or alternatively guided to another part of the health system besides the emergency department;
- authorised care plans, which are alternative pathways for care for cases such as palliative care; and
- extended care paramedic pathways, which are only used by paramedics who have completed additional training in extended care paramedic skills.

The list above is typical of most ambulance services. With the addition of so many resources and add-ons, around the early 2000s, a decision was made in many states to move to an all-encompassing guide and compendium. The manuals were changing again, becoming longer and more detailed, and included skills guides, pharmacology, protocols and patient-centred pathways (see examples from ACT, Queensland and Victoria). Expectations about the level of knowledge required to use these manuals has also changed over time from the ‘layperson’ to the ‘ambulance officer’ and then to the ‘paramedic’. Paramedics must have a solid educational background, be completing further education through the vocational education and training sector, or be studying undergraduate degrees at university to broaden their medical knowledge. Books are becoming generalised and broader in scope and understanding of concepts; they are becoming compendiums of care, not unlike the original St John first aid manuals where it all began.

Table 3. Current clinical guides used by Australian ambulance services

Service	Type/name	E-version available?	Notes
NSWA	<ol style="list-style-type: none"> 1. Protocols and pharmacology 2. Clinical skills manual available on local intranet 3. Low-acuity pathways (LAP) 	Yes	<p>Protocol and pharmacology manual also contains reference material.</p> <p>LAP is a separate booklet kept in the vehicle.</p>
Ambulance Victoria	<ol style="list-style-type: none"> 1. Clinical practice guidelines 2. Clinical work instructions (skills) available on local intranet 	Yes	Contain reference material as well as protocols and pharmacology.
South Australian Ambulance Service	<ol style="list-style-type: none"> 1. Clinical practice guidelines (2 versions available for paramedics and volunteer ambulance officers) 2. Clinical skills manual available on local intranet 	No	Describes ‘protocols’ of treatment for lower qualified staff and uses the term ‘guideline’ in a separate book for paramedics and higher qualified staff. Some reference material.
St John Ambulance Northern Territory	<ol style="list-style-type: none"> 1. Clinical practice guidelines 	No	Is comprehensive of skills, pharmacology, protocols and patient care pathways. Also contains some additional reference material.
Ambulance Tasmania	<ol style="list-style-type: none"> 1. Clinical practice guidelines 2. Clinical work instructions (skills) available on local intranet 	Yes	Contain reference material as well as protocols and pharmacology.
St John Ambulance Western Australia	<ol style="list-style-type: none"> 1. Clinical practice guidelines (2 versions available for paramedics and volunteer ambulance officers) 	No	Contain reference material as well as protocols and pharmacology.
Queensland Ambulance Service	<ol style="list-style-type: none"> 1. Clinical practice manual (compendium) 	Yes	Is comprehensive of skills, pharmacology, protocols and patient care pathways. Also contains some additional reference material.
ACT Ambulance Service	<ol style="list-style-type: none"> 1. Clinical management guidelines 2. Clinical skills manual available on local intranet 	No	Contain extensive reference material as well as protocols and pharmacology.

As illustrated in Table 3 above, in 2020, most Australian ambulance services are using manuals that provide a range of information, combining elements of a skills guide, patient pathway algorithms, and references for pharmacology and treatment algorithms. Some manuals are more comprehensive than others and provide additional reference material such as ‘cheat sheets’ or aide-memoires for remembering key points of patient assessment.

It is interesting to note that the names of the documents that guide care have also changed, predominantly in the early 2000s, with nearly all state ambulance services renaming their protocols as guidelines. This reflects a cultural shift at the time favouring language that reflects the presumed autonomous nature of the profession and the move away from the ambulance ‘driver’ stereotype that had previously shaped the role. I will explore the language used to label the two document types in the following section.

1.13 UNDERSTANDING THE DIFFERENCES BETWEEN PROTOCOLS AND GUIDELINES

Both protocols and guidelines within healthcare are known to be adjuncts to clinical decision-making tools which are intended to assist a clinician in making clinical choices during the provision of patient care. How prescriptive this treatment direction is often delineates whether the document is called a protocol or guideline. Morris (2003) suggested ‘that a continuum exists from the detailed protocol to the general guideline’. Wolf et al (1999) further states that the term ‘Guideline’ implies a somewhat more adaptable framework aimed at eliminating discrepancy between what the scientific evidence supports and what clinicians actually do, but agrees with Morris (2003) that a protocol is viewed to be more rigid, where adherence is necessary to achieve the best outcome for the patient. Although at first these descriptions seem distinct enough, recent literature debates the descriptions and interpretations of each and the distinction has become less clear and more ambiguous.

1.13.1 What is a protocol?

Protocols are used to *assist* the implementation of guidelines. Grol et al. (2013) add that a protocol can be developed to specify how to implement a guideline; it can formulate exactly how to perform a particular function and specifies which steps to follow. Further definitions explain that *protocols* are a *detailed* written set of instructions to guide the care of a patient or to assist the practitioner in the performance of a procedure (O'Toole, 2003); whereas, *clinical protocols* describe 'precise and *detailed* plans for the study of a medical or biomedical problem and/or plans for a regimen of therapy' (Medical Dictionary Online., 2013).

From the language of the texts, it becomes apparent that protocols are considered more like a set of rules, which are seen as stricter than a guideline. Common descriptors include the words 'detailed', 'specific' and 'precise'. In contrast, guidelines are consensus statements, directions or principles to guide the clinician.

1.13.2 What is a guideline?

Field and Lohr (1990) describe clinical practice guidelines as 'consensus statements about specific clinical topics or diagnoses that should be systematically developed to assist the practitioner in making decisions about patient diagnoses and management' (Field & Lohr, 1990, p.8). A 'guideline' recommendation is also defined as 'any statement that *promotes* or *advocates* [emphasis added] a particular course of action in clinical care' (Lugtenberg et al., 200, p.386).

Further online and dictionary sources use the term 'practice guideline' (Online Medical Dictionary, 2013). Practice guidelines are often created by government agencies and organisations with a panel of experts and assist healthcare providers with assessment techniques, diagnostic advice, as well as treatment goals for specific medical problems. Practice guidelines are aimed at standardising practice between clinicians and also provide a

potential framework to assess a standard of care and reduce variations in practice (Online Medical Dictionary, 2013). The NSW Department of Health (2005) makes the distinctions between protocols and guidelines shown in Table 4.

Table 4. Similarities and differences between guidelines and protocols

Clinical protocols	Clinical guidelines
Specify details concerning the treatment and/or procedure endorsed by the employing agency. Vary in the degree to which they are optional.	Composed of elements describing different aspects of the patient’s condition and the care given.
Vary in the specificity and quantity of operational information they contain. Contextual and not always evidence-based.	Recommendations for management are supported by evidence.

Source: New South Wales Department of Health (2005).

Australian ambulance services for the most part use protocols (disguised as guidelines) which are described as algorithm-like instructions for clinical decision-making and these instruct the paramedic toward a ‘pathway’ of care (Morris, 2003). Within their protocols or guidelines book, these pathways are often visually represented as decision tree statements (yes/no) or algorithms and short statements that provide a defined order of actions. These actions are designed to achieve a patient management strategy that is aligned with that of the organisational aims and a treatment outcome with optimal efficiency (Campbell et al., 1998). However, often they provide few details about how to decide specific clinical choices as choices are not often provided. So much of the ‘detail’ that is mentioned in the traditional definitions above appears to be missing from modern-day paramedicine protocols and guidelines.

Protocols have the potential to be more restrictive than guidelines and may define limits in the ability of the paramedic to make independent clinical decisions that benefit, or possibly cause detriment to, the patient. Alternatively, guidelines could be considered open to

interpretation by the paramedic, allowing optimal patient-centred care or increasing the potential for error. It is recognised in the health literature that both ‘checklist’ algorithms and guides to practice with a level of clinician autonomy have both benefits and negative consequences (Morris, 2003). The effort given by the creators of the clinical practice protocols and guidelines to not describe this difference in interpretation has the potential to create confusion and is of interest in this research.

Previous studies have identified that a failure to make this distinction between protocols and guidelines is common. For example, the claims that ‘protocols are meant as guides ... as the general default management decision unless ... clinicians can justify a departure’ (MacIntyre et al., 2001, p.80) or ‘protocols should not represent strict rules but rather dynamic guidelines’ (Holcomb et al., 2001, p.308) both of which suggest a misunderstanding in terminology that would be likely to be obscure and vague to many paramedic clinicians. Both contribute to clinical risk when oppositional factors influence the clinical setting where clinical decision-making takes place. For instance, a paramedic clinician who is following protocols may feel an obligation to continue working through the protocol treatment algorithm because this is prescriptive treatment which cannot be varied, even though they may believe that the patient does not necessarily need further management. Therefore, a distinction should be made between the differing concepts of protocols and guidelines as this may influence (albeit inadvertently) the decision-making ability of the paramedics involved.

Additionally, the choice to use guidelines or protocols has implications for education and organisational implementation. When considering the use of guidelines, the organisation may still have expectations or requirements for minimum standards of care, whereas following a protocol would most likely meet this objective. Again, using guidelines would assume a minimum level of education required to interpret and follow them, omitting

unnecessary steps or modifying care where it seems appropriate to tailor care to the individual patient's needs. Protocols on the other hand may encompass educational requirements (to a certain extent), making underpinning or extensive knowledge less important. Therefore their implementation, which denotes how they are 'rolled out' within the organisation, may be different.

1.14 DISCUSSIONS ON CLINICAL GOVERNANCE

It is only recently that ambulance services have begun to use research and an evidence base for the creation of their protocols and guidelines. In the past this was instead driven by grandfathering of traditional practice, trial and error, or from guidelines borrowed from other healthcare settings (Burgers et al., 2003). The idea of using research and evidence from outside sources is still in an evolutionary stage as a growing body of evidence for the paramedic profession develops. Unfortunately, until then paramedic protocol and guideline development is still heavily influenced by 'extensive expert opinion' (Smith & Kenneally, 2013). These expert opinions were consensus decisions amongst ambulance service medical directors and representatives from various other groups, with most, but not all, including paramedics in the development. One historical reason for this is a paucity of credible research within paramedicine, so there is a lack of discipline specific knowledge in order to build enough data for evidence based practice. Carter and Thompson state that this creates concerns relating to the acceptable limit for the transference of evidence between healthcare professions (Carter & Thompson, 2013). The result of which is seen when paramedicine borrows from other medical field's expertise to create adapted protocols and guidelines for clinical practice.

Most modern-day protocol and guideline development in ambulance services within Australia is governed by quality systems that are overseen by a clinical governance committee. The clinical governance committee may also oversee processes such as clinical

professional development (CPD) and certificate to practice (CTP). It is worth noting here that these are not nationally recognised processes, and only apply to the local system that the paramedic is employed in. Until December 2018, there were no national standards for minimum educational requirements or continuing professional development, including registration for paramedics; each state had its own code of practice. The industry's professional body, the Australasian College of Paramedicine (then known as Paramedics Australasia), had been working on having paramedicine recognised as a profession under the National Registration and Accreditation Scheme (NRAS). This finally came to fruition in 2018 when paramedicine became the 15th registered profession with a practitioner board administered by the Australian Health Practitioner Regulation Agency (AHPRA) (Paramedicine Board of Australia, 2018c). Each profession has a national board that regulates and registers practitioners, and develops standards, codes and guidelines for that profession. AHPRA administers the NRAS and provides administrative support to the national boards. Now that registration has occurred, the minimum educational requirement is an undergraduate degree for all states with the exception of NSW who have an interim grandfathering clause to allow the use of a diploma. At the time of the final editing of this dissertation (December 2020), the paramedic registration board has now been formed and consists of practitioner members and jurisdictional members.

The impact of registration on the development of guidelines is not clear at the moment but foreseeably in the future there may be some areas of clinical practice that will be based on national and international consensus. Those who are not part of this collaboration may still elect to follow some of these new guidelines and standards by choice anyway. Such is the case with the Australian Resuscitation Council guidelines, which each ambulance service currently bases their resuscitation treatment algorithms upon. The formation of national guidelines already has a precedent in many other industries such as nursing, medicine and

allied health (see examples in asthma, obstetrics, stroke, cardiac arrest and diabetes) but this could be very challenging for the ambulance services. However there would be benefits, which have been experienced by other health professions, such as the ability to tap into evidence-based practice and expertise, and opportunities to receive National Health and Medical Research Council funding (National Health and Medical Research Council., 2015). This would also have great benefits for the individual clinician. Having national guidelines would create easier transferability of staff across state barriers which would aid staff mobility (Colbeck and Maria, 2018).

1.15 NSW CLINICAL GOVERNANCE AND THE DEVELOPMENT OF PROTOCOLS

Traditionally, like most other ambulance services within Australia, up until 2003, NSW had a medical director who was responsible for the clinical protocols including ensuring that they were kept up to date with best practice. Also, up until this time, protocol changes that did happen were not completed on a regular basis but were more ad hoc (Andrew & Penny, personal communication, October 2016).

In 2006, the case *Ambulance Service of NSW v Worley* [2006] NSWCA 102 went to appeal after being heard originally in 2004. This case was about a postal worker who was injected with adrenaline by an ambulance crew in NSW after having an allergic reaction. This case drew into focus the importance of ambulance services having up-to-date evidence supporting their protocols and guidelines as even though this was correct practice within the organisation, it went against the best evidence and practice at the time within other health fields. One of the disputes in that case was the term ‘asthma in extremis’ within the protocol and how this was defined by the paramedic. If the patient was ‘in extremis’ then it was indicated by the ambulance services clinical protocols that they would receive an intravenous dose of adrenaline. There was conjecture and argument in the case regarding ‘what is

extremis?'; 'what does extremis mean?' and by "what objective means are you measuring 'in extremis?'"'. In addition, evidence was supplied that 'in extremis' had multiple definitions and that expert opinion differed on when adrenaline should be given. As a result of being administered adrenaline intravenously, the postal worker suffered a minor stroke. The argument proposed in court was that the injury could have been avoided had the protocols been up to date and an intramuscular injection given instead of intravenous. An intramuscular injection carries less risk and would still have been an effective choice.

The individual paramedic was not found criminally liable and therefore the plaintiff could not sue the individual directly, but they could sue the ambulance service or the health service corporation. Worley successfully sued the ambulance service for \$2,628,032.57 for both negligence by the officers who gave adrenaline and the Ambulance Service (statutory authority) in preparing and promulgating a protocol with unacceptable risk of severe consequences. It is interesting to note that with the advent of paramedic registration in 2018, this may change the outcome of future cases like this one. Professional registration mandates responsibility for the paramedic to maintain their own knowledge as a part of their ongoing clinical practice requirements. Therefore, the paramedic could technically become individually liable for negligence (Eburn & Bendall, 2010).

The Ambulance Service of NSW v Worley [2006] NSWCA also highlighted issues of governance (such as regulation and calibration of equipment), clinical risk, and quality assurance and was significant as it appears to be the first in NSW that went to court and held an ambulance service liable over maintaining their clinical protocols. After this case, the term "in extremis" was removed and a need was identified for further rigour across the remaining protocols. This case was the impetus for the creation of the clinical governance directorate in 2007 which transitioned the service from having a medical director who was solely responsible for the clinical protocols to using teams of industry experts (up to around 40-50

people) to guide their clinical governance processes (Penny. personal communication October 2016). Around that same time the institute of clinical excellence was formed which was a quality and safety group and transitioned into a statutory government department that later became the clinical excellence commission for NSW Health. Its role is to govern the quality and safety across all NSW public health facilities, including NSW Ambulance (Clinical Excellence Commission, 2019a).

1.16 CURRENT STATE OF AFFAIRS: ROUTES THAT MAY EVOKE PROTOCOL CHANGE

In contrast to their humble beginnings, most ambulance services in Australia currently use a clinical protocol/guideline advisory committee that is made up of paramedics, nurses and doctors with various speciality fields such as obstetrics, mental health, and cardiac and stroke care. The role of medical director has now shifted to being an advisor, and is usually a part-time role. Organisationally mandated clinical protocol evaluations are generally done on a rotational basis every one to two years. This process is facilitated predominately by three clinical review structures: root cause analysis (RCA) of critical incidents, reporting of variations to clinical practice (VCP) and clinical risk reporting.

RCA in NSW is a legislated instrument where clinicians can be reviewed for a particular incident, not a series of events, to identify system-wide issues (NSW Government., 2016b). An RCA should be completed within 70 days of the original incident being discovered (Government., 2016b). The clinician is interviewed and may speak freely without fear of prosecution as the notes of the RCA cannot be produced in a court. The disclosure of the proceedings of the RCA analysis is a prosecutable offence with a penalty of up to \$50,000 or 6 months in gaol for each disclosure. If issues arise that are outside the scope of the RCA inquiry, such as negligence or criminal activity, the RCA investigation is halted, and a letter is sent to the Clinical Excellence Commission to notify them that the interview was ceased.

After this normal punitive processes are initiated by the organisation, but the results of the RCA cannot be used. Further proceedings must be based on the discoverable evidence on the record and the parties are not permitted to talk to the RCA team. In essence, an RCA is a non-punitive process and focuses on creating change at a higher (and not individual) level.

Recommendations must be system wide and may not be against, or in relation to, an individual. RCAs are only allowed to find systems issues and not performance issues, which are managed through the normal health services performance management processes. The results from the RCA are usually discussed with the Executive Director of the ambulance service before recommendations are proposed. Although, within the RCA legislation and policy, there is scope for recommendations to be made that disagree with the opinions of the executive (Penny, personal communication, October 2016).

RCAs are one mechanism by which protocols and drug administration practices may be changed. The second is a variation to clinical practice (VCP), which is managed by the clinical governance unit. A VCP is where a paramedic performs outside of a normal clinical protocol or guideline and self-reports. The process has two functions, the first being to provide feedback to the individual about whether the variation was appropriate, and the second to provide information for the organisation to inform potential future improvements. The self-report goes to a clinical review group (CRG), which is usually a team of people with varying specialities (usually some clinical, managerial and clinical governance staff) who reply by letter to the paramedic with guidance and advice on the matter. The turnaround time specified in the policy is 35 days but this does not always happen due to the part-time dedication to the role of CRG staff within these speciality groups (Penny, personal communication, October 2016). The VCP process can provide confidence to the individual paramedic about practice and provides the governance team the ability to monitor clinical protocols that may not be being used effectively or that have additional issues. For example,

in 2015 it was noted that there was a heavy and ineffective use of the drug midazolam to sedate patients who were combative or psychotic after using methamphetamines. Many paramedics were self-reporting with VCPs that they were going outside the normal scope of practice to try to effectively manage patient agitation. After review and further research, the CRG introduced the drug droperidol, which will hopefully improve overall patient management strategies (Penny, personal communication, November 2016). VCPs will work to directly change protocols when there is a critical mass of people who are reporting a variation of the same type.

The third mechanism is like VCP and uses the clinical risk reporting process. Paramedics are encouraged to report any negative outcomes, near misses or issues they had with protocols or pharmacological management. These reports are also reviewed by the clinical review group, which will respond. Sometimes issues are referred on to local managers and educators to manage locally (Clinical Excellence Commission, 2019b).

Currently no formal structures are in place to proactively research and incorporate evidence into the development of future protocols. The development and systematic review of protocols and the evidence-based frameworks which guide the process are at present in NSW left up to the clinical review group. However, there has been significant interest in establishing this function, which would sit outside of the CRG but within the Clinical Governance Unit. While a formal research committee for the development of protocols is yet to be set up within NSW, other ambulance services have begun using research tools to build and redefine their protocols and guidelines. One such service is Ambulance Victoria, which signed up to use the AGREE II guideline evaluation and development framework in 2014/2015 (Ambulance Victoria, 2019). The Queensland Ambulance Service has followed suit and additionally uses an analogue version of the AGREE II instrument (Queensland Ambulance Service, 2021b). The AGREE instrument is a tool that assesses the

methodological rigour and transparency with which a guideline is developed, and it is used internationally (Brouwers et al., 2010). Within Ambulance Victoria the AGREE II instrument has been shortened and simplified to an analysis of performance data, published evidence presented in international guidelines and systematic reviews, internal and external targeted consultation (including paramedic consultation), and consideration of context specific requirements and risks (Ambulance Victoria, 2019). This abridged version of the AGREE II instrument is particularly useful when a CPG may need to be created on short-notice to an issue, e.g. COVID. If a guideline was produced for COVID due to an outbreak in Australia, there would not be time to do a comprehensive literature review and consult with relevant stakeholders. Instead, a guideline could be produced based on existing Centers for Disease Control and Prevention or World Health Organization guidelines so long as there was transparency about what processes were used, the urgency of the situation, and that this was approved by the medical advisory committee. This contrasts with other CPGs which may be produced over the course of 6–12 months and sometimes longer (Justin, personal correspondence, October 2016).

1.17 CONCLUSIONS

The historical context of ambulance service protocol and guideline development demonstrates the influences over time upon the formation of paramedic roles and how the manuals, guides and training resources have evolved. In the early days, out-of-hospital care was initiated by many diverse groups who had little to no training and so the guides (first aid manuals) they relied upon were comprehensive and detailed. As times changed, so did the role of paramedics, and this had a direct effect upon how the content of these resources was developed and presented. The modern-day compendiums of care have spiralled upwards again in detail and complexity.

Alongside the historical development of the role of the paramedic from stretcher bearer to expanded scopes of practice was the education requirements and expected knowledge level of the paramedic. The guidelines and protocols have had to reflect these changes in the roles of the people using them. Provisions are made to cater for a wide range from beginners to paramedics with advanced skills and knowledge. Expectations of how the guidelines and protocols should be followed are reflected in their language and terminology.

The terms protocol and guideline appear to be used interchangeably by ambulance services, but these terms do have their own meanings and intentions. Each ambulance service has an expectation of the level of dedication to following its protocols and guidelines, and these have changed over time from following by rote, to now being used more freely by paramedics. How these terms are defined by the paramedics in the organisation can provide insight into their perceptions of the use of guidelines and protocols in decision-making. In hand with this is how they are then governed by the organisation.

The procedural frameworks that guide paramedics' work, such as clinical governance within the organisation, have a direct bearing upon how guidelines and protocols are designed and implemented. These frameworks have evolved over time to be a very complex arrangement that is multilayered and involves a multitude of people with various specialties. RCA, VCPs and clinical risk reporting all have a role to play in the creation and adaptation of current resources used in everyday paramedic practice. Therefore more research is needed that examines and ties together the modern day role of the paramedic, the decision-making required (and freedom to apply it) and how this aligns with their obligation to the organisation and the patient. How clinical protocols and guidelines are used to shape and modify clinical decision-making behaviour, from both the organisations' perspective, as well as the paramedics', is worthy of observation and research.

CHAPTER 3: METHODOLOGY

1.18 INTRODUCTION

The previous chapter discussed the background to and evolution of protocols and guidelines within paramedicine throughout Australia. It also discussed how paramedicine has recently become a profession and how this may change the dynamic of how future practice is performed. Paramedicine may learn from looking into other areas of practice such as nursing or pharmacology, which have followed a similar trajectory over recent years. From analysing these professions and their subsequent transitions to tertiary education and professional registration we can also reflect upon how these have altered clinical decision-making abilities within the professions. However, we must also remember how unique paramedicine is among the health professions. Often considered an emergency service, rather than a health service, paramedicine may have in fact hampered its own ability for growth in the professional health arena. This blurred line of service requires its own unique research which seeks to understand how paramedics work within paramedicine. Paramedicine needs to continue to forge its professional identity and develop its own practice based upon paramedic research; hence the need for this type of study of how paramedics use their own tools for decision-making. By having its own body of knowledge for decision-making, paramedicine can continue to grow and mature in the professional field.

In this chapter, I will introduce, explain and justify the methodology selected to increase understanding of decision-making within paramedicine. It begins with a thorough discussion of the various theoretical perspectives that allowed me to appreciate and discover an appropriate research paradigm. The chapter then proceeds to a discussion of the grounded theory method along with the constructivist grounded theory methodology. What follows is an examination of ethical considerations such as merit and integrity, researcher–participant

relationships, ethics approval, informed consent and confidentiality. In essence, this chapter captures the intricacies surrounding the development and selection of the methodology for conducting an ethical and relevant research study for this dissertation.

1.19 CHOOSING AN APPROPRIATE RESEARCH PARADIGM

In the beginning when I was considering what type of methodology may fit with this study, I reflected upon what I felt I needed to know the most. I wanted to understand the complex reasons behind why the protocols and guidelines were designed in a particular way, and why paramedics choose to use them (or not). This led me to my first realisation about sensitising concepts and how I could use them to direct my focus towards an appropriate methodology.

1.19.1 Using sensitising concepts to develop the research aims and methodology

Sensitising concepts were first described by Blumer (1954), who differentiated between definitive concepts and sensitising concepts. Definitive concepts are clearly defined in terms of fixed attributes or benchmarks, as opposed to sensitising concepts, which lack such specifications, so that the user is unable to move directly from the instance to the relevant content. Charmaz (2003) has referred to sensitising concepts as ‘those background ideas that form the overall research problem’ (p.259).

Given my own background as a paramedic in the industry, I acknowledged that I had seen a transition over time in the move from protocols to guidelines. Even though I had not previously worked within NSW, I was aware that this was the only state left that called their treatment procedures ‘protocols’ and not ‘guidelines’. I was curious to know if this actually reflected a different type of thinking on how these protocols were implemented into care. After I had looked at the differences between the layout and content between services I was, however, quite sceptical about there being any difference at all and thought the use of ‘protocol’ was just nominal. These initial ideas and concepts certainly sensitised me to being

inquisitive in this area. I was also interested in whether factors such as the type of case and the setting influenced paramedics' choice to follow (or not) a certain protocol. In my own practice, I knew that particular types of cases were always difficult and sometimes I had 'massaged' the case sheet to make it appear consistent with what I believed were the expectations of practice. I had seen myself grow over time to be more confident and comfortable within a paramedic role, and felt I understood some of the challenges of providing care within the boundaries and recommendations of the protocols.

These sensitising concepts that I brought to the enquiry formed the points of departure from where I could begin to build this research. I realised I was not so interested in the *what* but rather the *how* and *why* of paramedics deciding to use protocols, at least at the initial stage. The research would predominantly be about how paramedics seek information from and ascribe meaning to guidelines and protocols to inform their decision-making. This was what was most important to me and further shaped my interview ideas and initial questions that began the enquiry. It was with these concepts in mind that I initially thought of my research aims, and subsequently the research structure developed upon further study into the types of methodology that might suit the purpose. The research methodology needed to be a reflexive and iterative approach in which potential links between meaning making and actions could be explored.

In grounded theory methodology (GTM), background assumptions and disciplinary perspectives alert a researcher to look for certain possibilities and processes in the data (Charmaz, 2006, p. 16). In keeping with the context of using an iterative approach and being reflexive, I knew that my study would be qualitative and that my own epistemological standpoint leaned towards a constructivist view. As a researcher, I felt that knowledge is socially constructed and reality is ultimately subjective, which is in line with the interpretivist paradigm (Broom & Willis, 2007).

Rubin and Rubin (2011) propose that interpretive social research is about discovering what things mean to research subjects. The ‘events’ that I wanted to look into were the use of guidelines in care, how paramedics construct or translate meaning from them, and how they influence decision-making. How does this occur, and is this a shared experience between paramedics? It is identifying and interpreting this complexity and subjectivity which, Ezzy (2002) and a few others argue, should support and underpin qualitative research projects. As a researcher positioned within a constructivist and interpretivist paradigm, I was motivated to use qualitative methods to gather my data, such as in-depth interviews, focus groups and ethnographic observation (Broom & Willis, 2007). These types of approaches and techniques are commonly found within the interpretivist paradigm because they aim to capture data that would enable me to reflect on paramedics’ perceptions and interpretations of guideline use, the social and culturally embedded nature of the individual experiences, and the relationship between myself and the research participants (Rubin & Rubin, 2011).

1.20 MY THEORETICAL FRAMEWORK

The following theoretical framework has been applied throughout this study. It will be expanded upon and discussed further within this chapter.

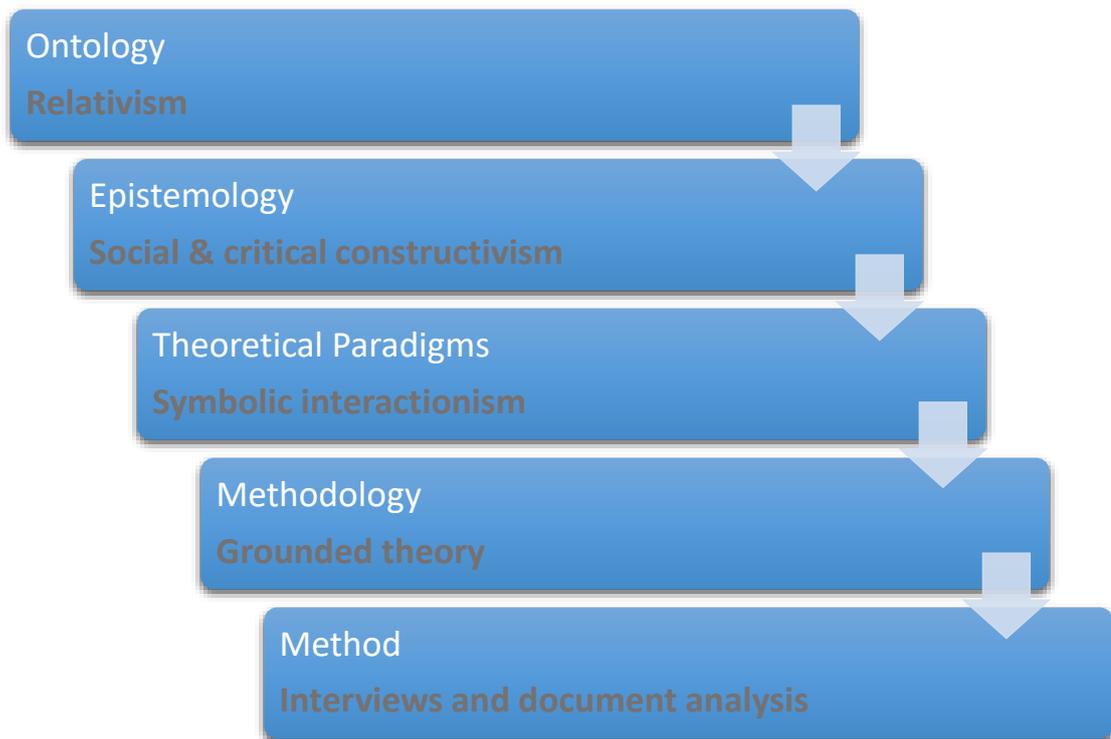


Figure 3. Theoretical framework

1.21 GROUNDED THEORY AND CONSTRUCTIVIST GROUNDED THEORY METHODOLOGY

No inventor has permanent possession of the invention ... a child once launched is very much subject to the combination of its origins and the evolving contingencies of life. Can it be otherwise for a methodology? (Strauss and Corbin, 1994, p. 283)

Modern day grounded theory (GT) as a method allows the researcher flexibility to be both reflexive and exploratory. However GT in its original form created by Strauss and Glaser was not particularly flexible or iterative. Having its roots in an era dominated by positivist and pragmatist thinking that demanded authenticity, GT was originally a method that described a process of investigating interview data in a repetitive coded manner in order to demonstrate rigour to the positivists. This reflected scientific theories about what was considered good research technique at the time.

But GT has evolved in many ways since its first inception by the two sociologists, Glaser and Strauss (1965), when they explored the experiences of patients dying in hospital. The seminal work they created from their study, *Awareness of dying* (1965), was formed from the situation of the two researchers wanting to explore this phenomenon but feeling limited by the expectations of research at that time which was very positivist and deductive (and possibly reductionist) in nature. Glaser's positivist background combined with Strauss's recognition of the profundity and richness underlying the complexity of life formed what is now known as classical grounded theory. This method, which was later described in *The discovery of grounded theory* (1967), was a systematic approach combining the traditions of sociology, positivism, pragmatism and symbolic interactionism (Blumer, 1969; Denzin & Lincoln, 1994; Mead, 1932; Ralph et al., 2015).

Forty years later, GT has significantly changed, but there is still a lack of consensus on how to 'correctly' use the method (Ralph et al., 2015). This has become a point of contention among researchers and is often dependent upon their philosophical standpoint, since many forms have evolved from the original framework. From the post-positivism of Glaser and Strauss, to the symbolic interactionism roots of Strauss and Corbin, up to the constructivism of Charmaz, developments and modifications have grown through the differing lenses of ontological, epistemological and methodological perspectives. One view from Ralph et al. (2015) is 'that through the process of symbolic interactionism, in which generations of researchers interact with their context, moments are formed and philosophical perspectives are interpreted in a manner congruent with GT's essential methods' (p.1). Others would agree and add 'that all variations of grounded theory exist on a methodological spiral and reflect their epistemological underpinnings' (Mills et al., 2006b, p.26). Considerations of epistemology are particularly relevant when discussing GT in its various forms, because of the role which contemporary epistemology played in its creation and the ways in which

developments in epistemology influenced the subsequent evolution of the method (Bryant, 2009; Bryant & Charmaz, 2007).

Image removed due to copyright restriction.

Figure 4. Grounded theory tree of knowledge

Gardner et al. (2012)

Constructivist grounded theory (CGT) has a theoretical basis in both symbolic interactionism and social constructivism and is positioned epistemologically as subjectivist. I felt that this was useful within my research method and echoed my own experiences, as it assumes in the researcher an understanding that they are a part of those researched, because they cannot be completely objective, and acknowledges the interrelationships between researcher and participant (Mills et al., 2006b). This statement of ontological position defines my own personal perspective of the world and its reality. Ontologically, I have assumed a

relativist position; this means that, within the broader framework, I understand that the concepts of reality and truth exist within a contextual positioning of cultures, times and places (Charmaz, 2006). I consider this emic view to be essential to interpret the data within my enquiry. I am an academic paramedic clinician and therefore have a view on the use and interpretation of the protocols, and through my position of understanding the culture and how the organisational structure directs social engagement with the document, I need to position myself as a participant.

The first premise of symbolic interactionism is that human beings act towards things on the basis of the meanings that the things have for them (Blumer, 1969). Central to this, I needed to ensure that my techniques to discover meaning would allow me to enter the participants' symbolic world and understand how this meaning shaped their use of the guidelines and protocols. By using a constructivist approach, I would explore their definitions, use of language, social norms and organisational expectations, and cases attended to on the road for examples to attempt to interpret their assumptions and implicit meanings (Charmaz, 2006). This is also congruent with Blumer (1969) second premise of symbolic interactionism in that 'this meaning is derived from, or arises out of, the social interaction that one has with one's fellows' (p. 2). Blumer's last premise is that these meanings are handled in, and modified through, an interpretative process used by the person in dealing with the things they encounter (p.3). Symbolic interactionism is understanding that human beings place meaning in things that are fundamental in their own right and to disregard this is seen as falsifying the behaviour under study.

1.22 CONSTRUCTIVIST, CRITICAL AND SOCIAL VIEWPOINTS ARE SYNERGISTIC

Expanding upon the meanings of a constructivist or interpretative approach, I assume that reality is a subjective construct that consists of stories or meanings grounded and situated

within paramedics' 'natural setting'. In particular, constructivists note that there is no 'objective' social reality 'out there', although there may be shared experiences across practising paramedic groups.

Within my constructivist view, I was also interested to examine the issues of authority, power, and control that may serve to dominate a persons' understanding of the social world (e.g., how power dynamics within a social system serve to generate a given set of meanings [dominant ideologies] about social reality and lived experiences). Also, the notion of protocols implies an authority position, an expertise or hierarchy of knowledge, and correct behaviours arising from it. Having the sense that paramedicine has styled itself within a 'paramilitary' historical profile, I believed that this cultural perspective could influence the practice of translating the protocols into care. I wanted to critically reflect on the content of the protocols and guidelines used, and how this could be persuasive in controlling the behaviours of paramedics. I wanted to understand if paramedics are willing participants in their use or if there is any resistance or unwilling compliance. How are they perceived and translated in everyday practice, and what does this mean for how they use the protocols as decision-making tools?

This critical standpoint was important to me and I felt it would be necessary in order to develop and understand the substantive themes arising from my analysis of the data. Critical constructivism questions the foundational assumptions about the nature of social reality and evolved from postmodern traditions of research. Postmodern perspectives can be helpful to look at how society functions and how those are privileged by occupying positions of power can influence the behaviour/life of others. Exposing and liberating social justice is an important goal of the critical research paradigm. 'The search for 'truth' is not a goal of this perspective; rather, reality is assumed to always be 'representational' rather than 'real' or 'truthful'' (Hesse-Biber, 2010. p.455).

When examining protocols, the social and critical constructivist viewpoint was adopted to look at not only how they are socially constructed, but how these tools can demonstrate power and control over paramedic behaviour. I looked at both when paramedics do and do not use them and how they perceive the repercussions or consequences of not following them. I was interested to know if they associate failure to follow protocols with punitive actions, and how this is viewed: as punishment, or if there is apathy and acceptance of the status quo. I wanted to explore the impact of organisational trust upon paramedics' actions and how this may affect decision-making, and if there is fear of persecution or social exclusion, professional or individual, on account of following either choice. Paramedics socially construct the meaning of the protocols in their practice and this affects their decision-making pathways. These meanings and behaviours could be inherited, for example, from cultural practices within stations where paramedics work. Alternatively, they may be taught and reinforced through educational processes from the ambulance service; for instance, in the regular in-service education provided to paramedics, or from flyers, emails or other communication provided by management sources.

1.23 ANTI-ESSENTIALISM AND ANTI-REALISM

Understanding the underlying philosophies of research is important for several reasons: to appreciate the interrelationships of the selected methodology and methods; as a defence of one's chosen position; and to avoid confusion when discussing theoretical positions (Crotty, 1998). Theorising makes assumptions transparent, and is an integral function of any research; as Crotty (1998) suggests, 'Without it, research is not research' (p.17).

In applying these theoretical underpinnings to this research, I first discuss the protocols and the meaning they may have within two constructed social realms: 1) protocols exist within the context of an organisation's translation of evidence into documents and policy that are critically and socially developed from their perspective to protect their

processes; and 2) these documents are concurrently socially constructed by clinicians in a way that generates meaning to drive their practical use and interpretation.

The evidence used to support protocol creation predominantly comes from a positivist (accepted scientific paradigm) and essentialist framework, and therefore tends to exclude other forms of evidence. The creators of the documents carry the burden of producing rigorous and robust protocols that are considered safe for organisational practice. This then provides legitimacy and a concrete basis for policies that are arguably 'best practice' for the organisation. Such an approach creates a sense of standardisation, which is believed to be essential for both economic sustainability and management of safety and risk factors. After the registration of paramedicine as a profession in 2018, there is now a first iteration of nationally recognised standards and guidelines for practice, similar to the steps that have developed within nursing over the past few decades (Paramedicine Board of Australia, 2018a, 2018d).

But this 'essentialist' view might arguably be lost or modified when social factors such as education and individual interpretation reconstruct the meaning and influence the use of the protocol documents. This is primarily an anti-essentialist concept; that the document moves from a concrete scientific base to a being translated by those who use them in real circumstances, a process which is socially and bureaucratically created. Anti-essentialism refutes the notion that a single paramedic's experience of guideline use reflects a clear, constant meaning for all paramedics in that group. Anti-essentialism would suggest that the social world, including ourselves as people, is the product of social processes which do not have any predetermined nature or essence (Yanqing, 2016). Working in a complex environment with changing patient needs, it would be expected that multiple factors influence protocol use by paramedics; for example, experience, complex patient presentation, level of training, station locality and time to hospital. All this suggests that translation is not merely a

one-way process, but rather more interactive, nuanced and relational. The paramedic is required to consider many factors in practice that relate to each situation and must apply the guidelines to that situation.

Paramedics' use of protocols will be dependent, situational and personal for each person. In this view, we can never know the 'things in themselves' that cause perceptual experiences, because even the phenomena of experience are shaped by mental relationships. Kant (as cited in Friedrich, 1949), one of the forefathers of constructivist thought, stated that

our senses are affected in a particular manner by objects that are unknown in themselves and are entirely distinct from these phenomena ... For we only know nature as the sum total of phenomena, i.e., as the sum total of images or representations in our mind. (§36)

Thus, even the most basic experiences are constructs, since they have been given form by mental categories and relationships.

Reflecting back upon my research and also tying this to my ontological relativist position, I can appreciate that these concepts of reality and truth are also understood within their contextual positioning. Since ontology refers to the study of the nature of reality, a constructivist ontological view is that reality is constructed by the individual. Individuals construct the subjective meaning of their experiences – directed toward certain objects or, for my purposes, protocols. It is not objectively measurable and, furthermore, participants construct their reality by associating meaning with certain events or actions (Grant, 2016). Constructivists 'generate or inductively develop a theory or pattern of meanings' (p.26) (Creswell, 2009) throughout the research process. My research aim is to learn and understand the full complexity of how paramedics use guidelines and protocols. I am less focused upon generalisability or external validity, and more upon reliability and internal validation; that is, representing the actions, attitudes and perceptions of the paramedics who are being studied.

Rather than establishing universal truths about the paramedical world in general, this qualitative constructivist research is about gaining an understanding of how differently positioned paramedics discuss their experiences of using protocols and the meanings they associate with perceived actions. This is a worthy and valuable approach since, so often in the process of attempting to generalise, we miss aspects of a process that do not fit our presuppositions about a particular phenomenon. I am not measuring or categorising behaviour or attitudes; I am focused upon the considerations of paramedics surrounding protocol use and am pursuing an analysis based on the constructivist ontological position that individuals actively negotiate meaning. These considerations are well represented in Figure 5 in the branches of interrelationships and developing understanding.

Image removed due to copyright restriction.

Figure 5. The assumptions of constructivist grounded theory

Gardner et al. (2012)

1.24 THE PARADOX OF BEING OPEN AND CLOSED AT THE SAME TIME

Constructivist grounded theory is something of a paradox of being open and closed at the same time (Gibson & Hartman, 2013). The process of understanding paramedics' everyday experiences of using protocols is not an impartial or objective one; it is negotiated between the researcher and the participant. By discussing with the interviewee their experiences we build an understanding together and CGT focuses upon the co-construction of meaning making between the researcher and the data. There is an extra burden upon the researcher to understand their own predilections and how they influence their interpretation of the participants' perspectives. As a constructivist researcher, I have targeted the specific context in which paramedics live and work in order to understand the cultural aspects and realities that influence their decision-making. To allow the cultural and constructed meanings from paramedics to predominate, I need to recognise the factors that shape my own experiences which may influence my perspective of the research (Creswell, 2009). Where I position myself is important, since this will have an impact on how I interpret the meanings that others make of the world.

This level of reflexivity and acknowledgment of one's own position results in a significant paradigm shift from classical grounded theory as it was originally intended, and there are compromises. Gibson and Hartman (2013) state that CGT no longer seeks merely to describe what is going on, but instead identifies with how people construct their experiences. This alteration in the underlying paradigm was heavily influenced by Charmaz's (1991) work with those experiencing chronic illness. Charmaz acknowledged her research interests at the outset and approached the enquiry with an openness that had not generally been seen before or acknowledged within classical grounded theory. Within Charmaz's research, she has not forced her analysis, but instead through the text she very carefully constructs the meaning of chronic illness for each participant, which is noteworthy and demonstrates ethical integrity

vis-à-vis the participants. Throughout her work, Charmaz has been able to demonstrate the sociological story of the participants involved.

Within the constructivist standpoint, Charmaz (1990) reasons that, by making transparent the epistemic perspective, by using techniques of validating and questioning meaning making, the researcher can enrich their data analysis by clarifying the concepts of reality. Without such an explanation it could be argued that there are research risks in not applying more varied research strategies that articulate research problems (Bendassolli, 2013). As the researcher takes each step through the research process, they apply certain assumptions about realities for themselves; as Bredo (1999) puts it, there is no ‘innocent eye’, no escape from the influence of our a priori assumptions.

1.25 THEORETICAL SENSITIVITY AND REFLEXIVITY

My prior experience as a paramedic afforded me the ability to comprehend the many nuances of language and nomenclature within the paramedic culture that other researchers may have had a hard time understanding at the outset of the study. I was, however, mindful that this might also lead me to take for granted meanings that others would not accept without question. I had to be careful, and adopted at times a Socratic style of questioning, in which I assumed a mindset of ignorance (Oyler & Romanelli, 2014). This encouraged me to think critically about how I responded to participants’ statements and encouraged richer conversations. I also felt it was important to prompt participants to reflect on their perceptions and statements, to go deeper into articulating the what, why and how they thought about what they were telling me. Although this was challenging at the beginning, I did gain experience with time, and this was readily identifiable when I was coding and reviewing the gathered interviews.

To gain theoretical sensitivity, I followed leads and tried to see the data from multiple vantage points, making comparisons and building on ideas. Charmaz (2006) further explains

this as: ‘When you theorize, you reach down to fundamentals, up to abstractions, and probe into experience’ (p.135). As a qualitative researcher, I am neither neutral nor have authority, and my assumptions of what is real are open to scrutiny (Charmaz, 2006). Every CGT researcher should endeavour to be reflexive, since it is an integral component of this methodology. This requires more than just telling the reader this is so; the researcher should transparently show that it is the case through the manner in which the research is undertaken and written about (Stige et al., 2009).

With this in mind, reflexivity is essential through every stage of the research process. In order to be reflexive, I needed to have an awareness of my own prior assumptions, as recommended by Dey (2007), to understand how they affected the research and my interpretations and the participants’ interpretations. For me this meant that I was particularly interested in exploring differing backgrounds such as qualifications and experience and contrasting these against confidence and barriers to the use of the guidelines. I also was fascinated to explore any differences in ‘upbringing’ (slang for rural paramedic versus metropolitan paramedic) and whether this affected paramedics’ perceptions of protocols controlling their behaviour. If for example in the interviews I was not able to be reflexive, I could well introduce bias in the questioning and place more or less emphasis on following up certain paths of exploration with participants. Additionally, this would affect the process of my analysis.

1.26 ETHICAL CONSIDERATIONS

1.26.1 Merit and integrity of this research

Ethical considerations play a vital role in qualitative research, because of the close interaction between the researcher and participants (Liamputtong, 2009) and often the sensitive nature of the enquiry. For this reason a qualitative, constructivist grounded theory approach was used

in order to promote participant wellbeing and respect, which was in line with Charmaz's methodological principles (Charmaz, 2004; Charmaz, 2008). Charmaz (2008) stresses the importance of showing respect for participants by acknowledging them as thinking, feeling and acting individuals rather than merely as objects of study. This is further discussed in the section 4.35 on interview strategies. By maintaining this respect, I could address justice (equality), beneficence (benefit) and non-maleficence (no harm) throughout the research process.

1.26.2 Relationship between the participants and the researcher

The constructivist approach taken during this research relied on acknowledgement of the subjective interrelationship between the researcher and the participants (Charmaz, 2006). This also included potential power differentials and the formation of judgement stances (Mills et al., 2006a).

During this research, I used a reflexive manner that helped me build and negotiate the required critical consciousness forming the basis of good ethical relations between myself and the participants (Aluwihare-Samaranayake, 2012). I ensured that there was no ambiguity in my questioning, and that the interview process was clearly described and agreed upon. I also acknowledged that the constructivist approach allowed the building of a relationship of reciprocity between interviewer and interviewee, which ultimately led to the co-construction of knowledge and meaning (Charmaz, 2006). With this view, I believe that I developed a critical consciousness that involved questioning and reflecting on how participants and I as the researcher could work together to ensure that their voices and experiences were represented with due consideration to respect for participants, non-maleficence and beneficence. Ethical qualitative research requires that both the participant and researcher are

in a bidirectional relationship and care needs to be taken in the co-construction of knowledge and meaning.

1.26.3 Ethics approvals and getting access to NSW

Securing the initial project approval followed by ethics approval was a convoluted process because of the organisations' bureaucratic requirements. At the outset, a project plan was formed with my supervisor and this was then agreed upon by NSW. This project plan took over a year from initiation to obtaining the approval of the various teams within NSW departments. The ethics form was sent back and forth many times during this process, before agreement could be arrived at among the parties. The major difficulty encountered was building an understanding of and subsequent 'buy in' to the research subject (decision-making and interpretation of protocols and guidelines) and use of a research methodology which was unfamiliar to those involved. Since ethics committees function as effective gatekeepers (Emmerich, 2016), what became apparent is that it is very important to have a balance of staff that have a range of expertise and are familiar with both quantitative and qualitative research.

Increasingly, institutional ethics committees and review boards demand that researchers submit detailed descriptions of their research plans and completed instruments for review (National Health Medical Research Council, 2007). Such detail is inconsistent with the emergent nature of qualitative research in general and grounded theory methods in particular (Charmaz, 2006). I faced a similar problem when convincing NSW that the research methods I wanted to use were entirely ethical. Securing the approval of review boards and human subjects committees for interview questions has its own issues. While the interview questions need to be explicit enough to reassure evaluators that they do not jeopardise the interests of the research participants, they must also allow for the emergence of

unanticipated material in the course of the interview process (Charmaz, 2006). Although some of the initial scepticism about the process was unnerving, having a well-thought-out list of open-ended questions and general topic themes certainly helped allay their fears.

Ethics approval had to be gained from four different bodies: the university where I worked (Charles Sturt University), the university in which my PhD candidature was situated (Flinders University), New South Wales Ambulance and also the ethics committee that NSW uses for research projects within their organisation (South Eastern Sydney Local Health District Ethics Committee). I encountered some disharmony and disagreement between these groups, mainly around the sampling strategies and overall research design, which was challenging to navigate to get consensus. Over time these were worked through, and in March 2016 we had agreed upon the process and I had successfully gained ethics approval from the Flinders University Social & Behavioural Research Ethics Committee (Flinders) (SBREC Project Number 6485), the Human Research Ethics Committee (CSU), the South Eastern Sydney Local Health District Ethics Committee (HREC ref no: 15/282 or HREC/15/POWH/614) and a site-specific report from NSW (SSA/16/ASNSW/5).

1.26.4 Informed consent

During the research, care was taken to ensure that the participants were fully informed of the processes and that they were able to make informed decisions about their role and engagement. Participation was entirely voluntary. Each participant was provided a letter of introduction, a consent form and an information sheet at the start of the project which described the benefit, ideals and limitations of the study (see Appendices D–F). This information is attached as appendices to this dissertation. All were offered the opportunity to review their transcripts and provide follow-up comments if they wanted to. Out of the cohort only one participant wanted information removed from their transcript and one other

followed up with extra information by email. By signing the consent form, the participants agreed to take part in the study, but it was made clear that they could withdraw until the initial coding of interview transcripts was done and included in the initial thematic analysis. Understandably once their data had been completely processed, it would not have been possible to withdraw it.

1.26.5 Confidentiality

Although all data collected was potentially re-identifiable (because I was aware of the times and dates of the interviews), care was taken to use pseudonyms and de-identify the data as much as possible. Any interviews that were recorded were coded by number, and all transcripts had names and places removed and generic names and placeholders were inserted. Data was kept on my secure, password-protected computer at my workplace to which no one else had access. All data will be stored for a minimum of five years from the submission of this dissertation for examination.

Data that was shared between myself and my supervisors was de-identified and then sent by secure, password-protected email and treated confidentially by the supervisors.

1.27 CONCLUSION

The sensitising concepts, which constitute the background notions forming the general research problem, assisted me to come up with the study's aims and methodology. In this way, this dissertation centres on *how* and *why* paramedics use protocols to assist with their decision-making. Accordingly, I chose to select a flexible methodology with an iterative approach to discover potential connections between the construction of meaning and actions.

I explored both traditional and modern day iterations of grounded theory methodology to decipher which best reflected my ideological stance, and I felt that my research best aligned with the constructivist approach to grounded theory. In particular a critical standpoint

was important as it encouraged me to question foundational assumptions about the nature of social reality and power dynamics within paramedics' workplaces. Critical constructivism helped me to question this power dynamic as it related to decision-making and how this is potentially controlled by organisations. It was appropriate for this dissertation because it aided in understanding the processes paramedics utilise in constructing meanings from their intersubjective experiences (Charmaz, 2004; Suddaby, 2006). This allowed me as the investigator to leverage my disciplinary perspectives and background assumptions to consider the specific findings and processes in the data.

With this methodology, I could transition beyond description to conceptual theorisation that explained decision-making based on the employment of protocols and guidelines from the viewpoint of paramedics with experiences of the phenomenon (Birks & Mills, 2011; Charmaz, 2006) Moreover, I used CGTM because the technique can deliver a comprehensive behavioural outlook, help elucidate the thinking processes of paramedics, and scaffold the advancement of a conceptual, theoretical paradigm suitable for practical circumstances (Charmaz, 2006; Glaser & Strauss, 1967).

In summary, the results of applying the framework suggested by Crotty (1998) to the approach I adopted for my research are illustrated in Figure 3. This figure demonstrates both the relationship between the elements as well as their compatibility, showing that this was a suitable framework within which to conduct this research. This chapter has discussed and validated the methodology underpinning the research process. The next chapter leverages the information discussed in this chapter to detail the research methods used in this study.

CHAPTER 4: RESEARCH METHODS

1.28 INTRODUCTION

The purpose of this study is generate a grounded theory about how paramedics use guidelines and protocols for reasoning and clinical decision-making. More specifically to explore factors and barriers that impact paramedics' decision-making and consider these with regards to the future development and implementation of clinical practice guidelines within paramedicine. The previous chapter justified and detailed the methodology used for the study. This chapter will describe the constructivist grounded theory (CGT) procedures and methods that were used to generate and analyse the data. I will also demonstrate how the principles and practices outlined by Charmaz (2006, 2014) can be used to generate substantive grounded theories to help understand paramedics' use of protocols and guidelines. As described in the previous chapter, the CGT approach implemented in this study was guided by a social/critical constructivist perspective and symbolic interactionism. How these perspectives were used to both generate and analyse data will be discussed within this chapter.

The following pages describe the study's methods in an apparent chronological order, but the CGT methodological process is not so linear; so, while the procedures are presented in this way, in keeping with CGT methodology tenets, they were actually applied in a cyclical process. Figure 6 is a diagrammatic representation of the procedures and approaches used and shows the relationships between numerous phases of the research. Each phase is discussed in detail within this chapter.

As I have mentioned previously in Chapter 1, the writing style throughout this thesis is narrative and intentionally written in the first person to include myself into the research which is recommended by Charmaz and Mitchell (2001), Mills, Bonner and Francis (2006a)

and Webb (1992). This acknowledges my role as a researcher by using my own voice rather than a more traditional third person.

1.29 FINDING MY SENSITISING CONCEPTS, OPENING RESEARCH PROBLEMS AND QUESTIONS

As discussed in Chapter 3, my prior experience as a paramedic had instilled in me preconceptions about my own guideline use. But also, in my time in practice, I had seen there was ‘more than one way to skin a cat’. Paramedic care is very much situational and paramedics must factor in circumstances such as time to hospital, scope of practice and time criticality of the patient. That is, how ‘sick’ the patient is determines whether to ‘stay and play’ or ‘load and go’. My historical research into protocol development within Australia confirmed to me that over time there has been an overall change in the governance of paramedicine that demonstrated protocols were evolving and guidelines were forming. There appeared to be an ebb and flow of structure and complexity. This made me curious about how the protocols reflect the practice of paramedics; I wondered how influential they are in determining care and what perceptions paramedics have of using them as decision-making tools. These were the early questions I had that then shaped the aims I developed for this study.

I wanted to know why NSW still called their documents ‘protocols’ and if this made any difference to the way they then translated the documents into clinical practice. Were there other reasons that I should be more critically aware of? Were they designed as instruments of clinical control that mitigated risk (which, consequentially, is also a social construct) and even potentially favoured organisational stability over patient care? I had to be careful of my own potential biases when considering these thoughts as objects of interrogation. I knew that I would need to make enquiries not only of paramedics, but also of the people who governed the protocols, and created them. I also needed a research method

that pulled apart the documents in a structured manner that would allow me to process them in a way that could critically answer these questions. I could not have one without the other; interviews without looking at the documents critically and vice versa. By using constructivist grounded theory I am stimulated to question the data during the enquiry of the emerging themes. This technique is also described by Charmaz (2016) which encourages examining the taken-for-granted methodological individualism that is found in qualitative research and calls for the researcher to develop a methodological self-consciousness. By developing these skills during the research process it will lead me to be more critical of my own interpretations and nascent analysis (Salkind, 2010).

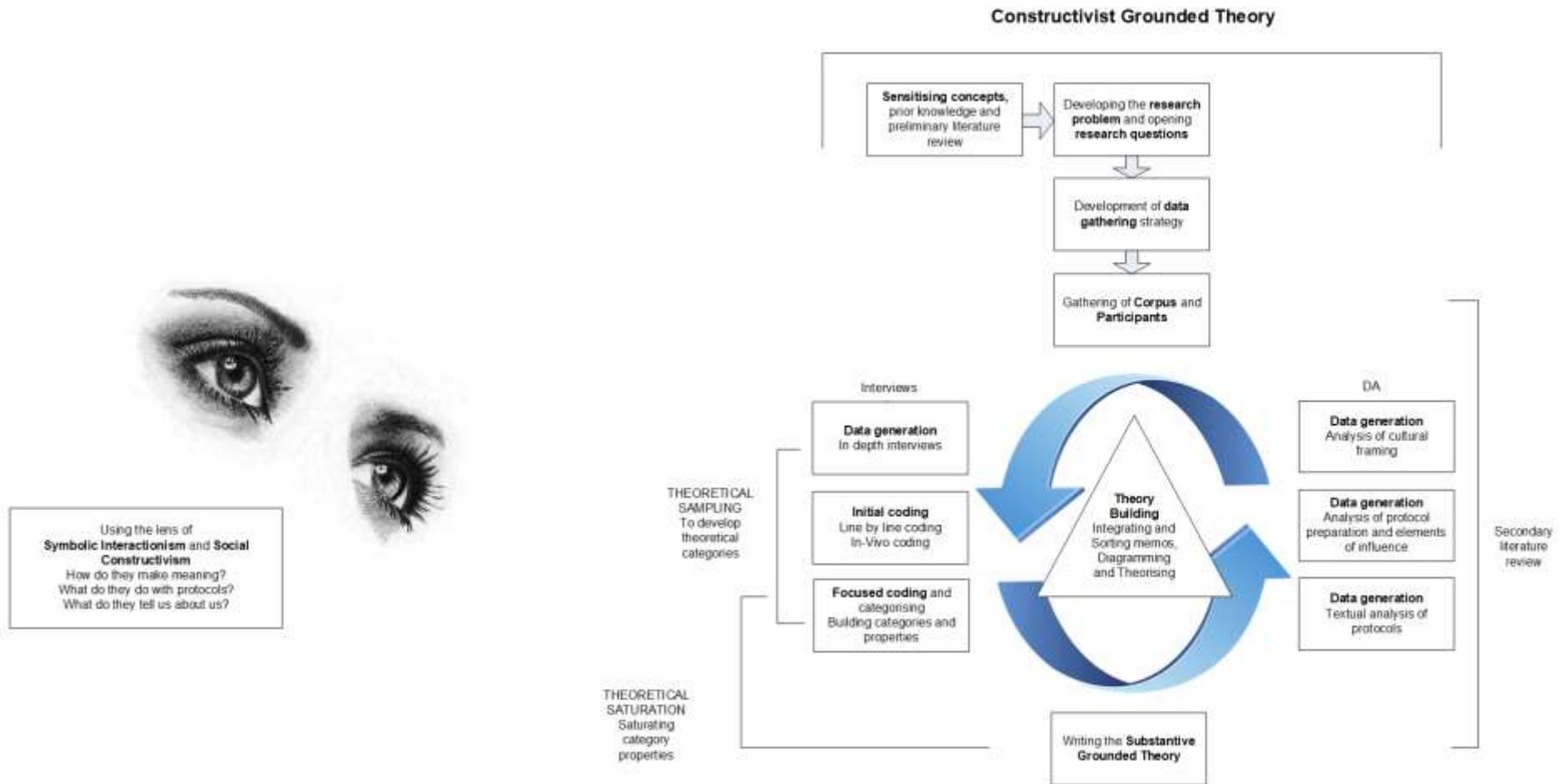


Figure 6. The methodological framework and its relationship to the methods implemented

1.30 TRIANGULATION STRATEGY

I suspected I would need multiple data-gathering techniques to capture the information, as single-method studies only capture a small slice of complex reality (Paul, 1996). From these points above, I had decided that interviews and document analysis would be my best options to gather data. Being able to compare what the paramedics said, both individually and as a group, to what the organisation provided in the form of protocols, would hopefully enhance understanding and help answer the research question and aims more comprehensively than using a single method alone. This initial triangulation strategy would be a critical point of reflexivity in my overall CGT methodology framework. I wanted to look at the social constructivist, as well as a critical constructivist angle, and triangulation between both would lead to a successful endpoint to answer my questions.

Triangulation is the process in which several methods (data collection, theories or methodologies) are used to study one particular phenomenon (Denzin, 1989). According to Denzin (1978), triangulation is based the logic of the premise that ‘no single method ever adequately solves the problem of rival causal factors. Because each method reveals different aspects of empirical reality, multiple methods of observations must be employed’ (p. 128). This echoes the sentiments of my research paradigm.

Triangulation originally was performed within research projects as a way to promote, testify and improve the validity of results from research. However, Flick (2018) states that ‘triangulation is less a strategy for validating results and procedures than an alternative to validation ...which increases scope, depth and consistency in methodological proceedings and thus puts findings on a more solid foundation’ (p. 192). Additionally Patton (2002) cautions that triangulations’ aim is frequently misconstrued to try achieve consistent results which is not the case and in fact, is quite the opposite. Patton states that finding

inconsistencies in the data are an opportunity to enrich our understandings and should not be seen as weaknesses, but an opportunities to uncover deeper meaning.

Weick (1979) states: ‘if a simple process is applied to complicated data, then only a small portion of that data will be registered ... Accurate registering requires the matching of processes to the characteristics of their inputs’ (p. 189). I was worried that, by only interviewing paramedics, I would be missing the importance of other factors that influence decision-making structures, such as those that may be economic, risk averse or even evidence-based for better patient care outcomes (Arrieta et al., 2017; Lawton et al., 2019; Rice, 2013).

In this research, I have used the between-method of methodological triangulation (Salkind, 2010). That is, I have adopted several strategies to obtain data for examination but still stayed within the one (qualitative) paradigm. The between-methods triangulation endeavours to leverage off the strengths of more than one method while reducing their weaknesses (Paul, 1996). One methods strengths may in fact be a weakness in another which is where the potential to leverage lies (Paul, 1996).

The benefits of using this between-methods triangulation approach for this particular research are explained well by Cohen et al. (2013): this technique can attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one viewpoint. Having the protocols explained by paramedics and the document creators, and also dissecting the documents themselves, would ultimately lead to a more balanced and detailed picture of the situation (Altricher et al., 2005).

1.30.1 Participant profile, sampling and recruitment

After I had decided upon the research strategy, I began the process of selecting and recruiting participants. The first participants were all paramedics who were employed by NSW and had worked on the road for at least 12 months prior to being interviewed. All had a current

certificate to practice and were currently practising as a paramedic in either a single or double crewed role.

The following two tables are also reproduced in the appendices for quick access (see Appendices G and H).

Table 5. Participant profiles

Pseudonym	Length of service	Scope of practice	Vocational or university trained	Age	Gender
Leo	2.5 years	Paramedic P1	Vocational	30	Male
Andy	2.5 years	Paramedic P1	Vocational	34	Male
Pete	7.5 years	Paramedic P1	Vocational	40	Male
Ned	15 years	Paramedic P1	Vocational	50	Male
Susan	8 years	Intensive care paramedic	Both. Started at university, finished with vocational.	30	Female
Carol	13 years	Intensive care paramedic	Vocational (has nursing degree)	35	Female
Ann	13 years	Intensive care paramedic	University (2 degrees)	36	Female
Abe	14 years	Intensive care paramedic	Vocational (also has nursing degree)	48	Male
Sally	20 years	Intensive care paramedic	Both. Started vocational, finished with university	48	Female
Leon	29 years	Intensive care paramedic	Both. Started vocational, finished with university	47	Male

In keeping with the tenets of GTM, all participants who were included in this study had experienced using protocols and guidelines throughout their paramedic career and, as such, shared an understanding of how they use them in clinical practice (Glaser 1992, p. 4). Therefore, they were able to provide experiences and insights into the research aims. As participants responded and interviews took place over time, an emergent process was

occurring that drove further sampling processes (see discussion on theoretical sampling in Section 4.6).

Further to the paramedic interviews, I also recruited and interviewed several other participants who added valuable meaning on the history and creation of the protocol documents. I have already mentioned some of these participants in the history and backgrounds section where you are able to see their contributions with their pseudonyms. This was due in part to their request for anonymity, but also due to the sensitivity of the information that they were sharing about the ambulance service that some were still involved with or worked for.

Table 6. Additional participants

Pseudonym	Role
Herman	Clinical manager/education manager/operational manager/historian/protocol developer
Albert	Clinical manager/education manager
Andrew	Paramedic/protocol developer
Mike	Paramedic/education manager/historian
Henry	Medical director/protocol developer/historian
Norman	Paramedic/historian
Gail.	Paramedic/historian
Penny	Paramedic/academic/clinical governance officer
Miles	Paramedic/academic/protocol developer
Justin	Paramedic/protocol developer

Using the principles of GTM, sampling was based on the desire to represent those who could share their experience on a given issue (e.g. the use of protocols by practising paramedics within the NSW) (Glaser, 1992). Purposive sampling was initially used to

locate participants relevant to this study from within both ambulance services and historical societies. I recruited potential participants within ambulance services by using a bulletin sent to ambulance stations which advertised my project and also through snowball sampling as the interviews got underway. Bulletins were distributed across NSW ambulance stations and were put up in station tearooms. Emails were also sent out by the organisation's clinical services team to operational on-road paramedics. This approach is consistent with that recommended by Glaser (1978), who noted 'that in the initial stages of a study researchers will go to the groups which they believe will maximise the possibilities of obtaining data and leads for more data on their question' (p. 45).

1.30.2 Data generation and management

1.30.2.1 Semi-structured intensive interviews

When using an interpretive enquiry methodology, interviews are a useful data collection method as it allows for an in-depth exploration of experiences and gives the interviewer an opportunity to discover more information (Lofland & Lofland, 1995). As my research methodology lens was the constructivist and symbolic interaction perspective, I attempted to facilitate meaningful interviews as conversations in a way that augmented a co-constructed understanding of experiences of using the protocols and guidelines. The data collected was unforced and exploratory and the interview process allowed the participants to share significant experiences that shaped their clinical decision-making.

Initially, I used a pilot interview with a paramedic colleague to test my draft interview questions. From this initial test and after talking to my supervisor, I changed my approach to using themes to guide the conversation and more open-ended questions. After the first interview, I shared my thoughts and reflections with my supervisor and again we went back

over several aspects of interview technique to ensure that I felt comfortable and that I had enough scope and breadth in my conversation technique.

During the interviews, after introducing the initial themes, I followed these responses with additional questions that were open-ended and allowed further exploration and co-construction of knowledge between myself and the participant. After each interview, I wrote memos for myself about how I could improve and make adjustments to my technique for subsequent interviews. These memos included notes about making sure that I was using active listening and allowing the participants to tell their story without disruption.

1.30.2.2 Data generation from the interviews

Participants took part in interviews that ranged from 35 to 55 minutes. I began the interviews with an aim to establish rapport and trust so that the participants felt comfortable to express their views. The participants self-elected the time and place for the interview and most chose this to be conducted over the phone. This made sense as many of the interviews were with people who lived in other towns or cities several hours away. Other locations included coffee shops, my office or theirs, and their homes. Interestingly, and what I found surprising at the beginning, was that it was easier to listen when on the phone than in person. I think this was due in part to the distraction of body language, facial expressions and other people/objects in the environment in which the face-to-face interviews took place. I realised that I found in-person interviews challenging and that it was an area that I needed to work on. I noted this early in my interviews and attempted to overcome this by more self-awareness, and I realised that phone interviews missed much of the interesting detail that could be gleaned by looking at someone when talking. Body language, more precisely described by Hans and Hans (2015) as the use of kinesics, haptics and proxemics, was integral to our communication and I actively sought to use video links if possible to at least be able to visualise the person I was interviewing. I wrote the following memo after the second interview:

Memo excerpt following Phone Interview 2

After listening again to the section on managing difficult patients I feel I need to be more careful and work on active listening. I think in this part there is more of me talking than of him! Being a fairly new paramedic on the road 'Leo'¹ doesn't have a lot of experience in this subject and I was continually poking for ideas. In future, I think that I need to just be quiet when this is the case and stop trying to force the data. Not everyone is going to have an opinion on everything that I have in my list of themes. Also, I wonder if he would have been different in person, he comes across a little hesitant so perhaps the phone was actually better in this case?

1.30.3 Interviewing, symbolic interactionism and social constructivism

My constructivist approach meant I attempted to preserve meaning and shape the understanding that was built from the interview process. By reducing ambiguity and clarifying statements through the use of exemplars, I encouraged the participants to be involved with the making of meaning, as evidenced in the following interview excerpt. During interviews, I was cognizant of not assuming that the definitions of the language and the culture of the paramedics' world would be similar to my own. I am well aware that explanations of events take shape through the lens of the participant and our purpose as researchers is to construct their meanings from this knowledge. Because we see facts and values as linked, we need to realise and acknowledge that what we see, or do not see, rests on values. Without reflexivity, we could bring preconceived ideas into our work and remain unaware of our prior assumptions.

The symbiotic relationship between constructivism and GT helped to foster my ability to be reflexive about my own interpretations as well as those of my interviewees. In playing the part of active listener and enquirer, I felt that I was able to digest the information being

¹ All names within this thesis are pseudonyms.

transferred to me and offer my paraphrasing back in response to get to clearer meaning making with the participants, as the following interview excerpt demonstrates:

Participant: Yeah. I know not everyone views them the same way and I know some people prefer them to be black and white and some people are more like me. Yeah, so how do I view them? I view them more as a guideline for myself and more as a point of reference for what I want to do and I often try and make them work for me.

Interviewer: That's really interesting. So, you said 'Some people may prefer them to be black and white'.

Participant: Yep, definitely.

Interviewer: Who are those people?

Participant: Generally speaking, they're our older paramedics because that's the way they were trained. I was VET trained [vocational education and training] which I think is probably important. Whilst I have an undergrad, I was actually originally VET trained because there was no university pathway when I started. So, I think grouping everyone and saying 'All VET-trained people prefer black and white' is not appropriate but I would say people who are VET trained, who have probably not expanded on their scope of practice since they were originally trained, would be an appropriate banner. So, VET seems to prefer, who haven't kind of advanced and moved along, they prefer black and white and those now that we see coming out as graduate or have done graduate studies, postgraduate studies, prefer more guideline-based.

The above statement about vocationally trained people piqued my interest in the potential differences in beliefs about protocols versus guidelines. The notion of black and white versus more grey (suggesting a preference for protocols versus guidelines) guided my research into a literature review about the naming of 'protocols' in health care, which forms part of the narrative in Chapter 2. This paramedic really did seem to think there was a difference, but I really wanted to make sure that he explained this back to me; hence my questioning of 'Who are these people?' All interviews were audio-recorded, which allowed me to fully participate

in the discussion and actively engage. This assisted me to build rapport and trust with the participants as I gave them my full attention (Charmaz, 2006) and took notes to remind myself of key points at a later date. After the interview was complete, I transcribed the recording and shared the data with the interviewee, enabling them to read what had been discussed and to have the opportunity to reflect further on what they had said during the interview, if they chose to do so. These full transcribed interviews proved an invaluable source of data as they provided opportunity for comprehensive data analysis with verbatim quotations, and additionally could provide trust in the data if required for evidence.

1.30.4 Memo taking and documenting of informal communication

Taking memos is an integral part of GT which assists the researcher to continually build upon ideas throughout the data collection process (Glaser & Strauss, 1967). It is the pivotal intermediate step between data collection and writing drafts of papers (Charmaz, 2006). Memo taking in this research was completed before, during and after all stages of data gathering and allowed me to elaborate on categories that were developing, specify their properties and define relationships. From the outset, much of my memo taking involved noting simple ideas around coding and writing summaries of ideas in participants' statements. As this evolved over time, I found myself moving from the descriptive and mechanical to becoming more abstract and theoretical. I also began to form ideas using mind-mapping techniques, which assisted me to see relationships and burgeoning concepts that I would explore in later interviews or when analysing the documents.

During the interviews, I often wrote key words which created some interesting word clouds² for later reflections. After the interviews, I would write a more detailed summary of

² Word clouds (also known as text clouds or tag clouds) work in a simple way: the more a specific word appears in a source of textual data (such as a speech, blog post or database), the bigger and bolder it appears in the word cloud.

my thoughts and reflections about the material and the person who was being interviewed. This included my own feelings towards the data that I had collected and also ideas for further exploration in subsequent interviews. Later, once the interview had been transcribed, I made more complex memos, in particular during the coding processes whilst using NVivo 11. GT particularly focuses on studying processes (Charmaz, 2006), and memo taking allowed me to continually be reflexive about the new data that I was collecting.

1.30.5 The interview guide and topics

When originally constructing the research proposal, I had some difficulty in convincing the participating ambulance service that an interview guide with outlines of themes was all that was necessary to begin my research. Understandably, as they were mostly unfamiliar with qualitative research, and in particular also the nature of GT, the 'loose' nature of the guide may have generated uncertainty and a level of anxiety for them. This required me to build a level of trust that allowed me to approach their staff to be my research participants. In an otherwise quite traditional and regimented industry, using a research methodology that was qualitative and a method that was interpretivist, must have been a little unnerving. It was challenging to build an interview guide that was sufficiently detailed to convince evaluators that no harm would befall research participants, yet open enough to allow unanticipated material to emerge during the interview. This in some ways explains why my first drafts of the interview guide were very much question focused and very explicit (almost survey-like in some ways). I soon realised though that this was not being true to either the methods or methodology and that I had to have a more flexible topic guide or theme guide to get started. This is provided in Appendix I.

Each interview began with a description of what was going to happen, that the interview would be audio-recorded and that the participant would have an opportunity to

review the transcription later. No participant objected to recording and prior to commencing each interview I double-checked that I had a consent form completed by the participant. We began with a short demographic questionnaire that assisted me to get some background data on each participant and also to help to get a feel of ‘who they were’ or ‘who they told people they were’. This was a good ice breaker to get the interview started and then the flexible interview guide was used to frame questions which explored the participants’ attitudes, beliefs, experiences and actions, which was congruent with both the methods and methodology underpinning this research (Charmaz, 2014).

Topics included in the interview guide were the participant’s view of protocols, how they incorporated these into practice, what they saw as barriers or facilitators, and any other conclusive information that the discussion added. I did not ask the same questions for each participant, but I did try to cover the same general topics throughout the discussion.

As mentioned in Section 3.8 regarding reflexivity, I was particularly interested in exploring differing backgrounds such as qualifications and experience and contrasting these against confidence and barriers within the protocols. These topics gave me a general guide to explore the protocols as clinical decision-making tools, or documents that define scopes of practice. The participants discussed the benefits of having and using protocols in practice and how and if this influences care and management of patients in practice. During the interviews, the participants also discussed how protocols may be used as learning tools and terms of reference. I was particularly interested in the examples given by the paramedics as they helped me to explore the way protocols were used before, during and after a case was attended.

Lastly as part of generating meaning and understanding of the use of these documents, I explored what paramedics saw as barriers to their use and what features made them practical and potentially valuable in their work. I thought this knowledge may be insightful

for those who are tasked with the development of paramedic protocols, to help them understand what a paramedic wanted from them. What factors created difficult decisions such as difficult patients and environments was another issue that I wanted to draw out from the conversations. The concept of patient safety was a concept that I wanted to explore and how this may contribute towards the language I might see within the documents themselves. What happened when the patient did not 'fit' the protocol? What happened if the paramedic did not, or could not, follow the protocol? Did the paramedic believe that following the protocol would promote safe, clinical practice?

As memo taking, data gathering and analysis progressed, so did the range of interview questions and guiding topics. Differences between groups of participants emerged and I found that I discussed certain types of experiences with particular groups and not with others. This also caused me to reflect upon my further potential questioning for that particular group. Charmaz (2014) states that over time the interview questions will become increasingly focused which permits the gathering of specific data to cultivate the emerging theory and additionally adds to the theoretical sampling process. I noted this happening and, for example, added additional prompts about using the variation to clinical practice forms and whom participants thought the protocols were actually designed for (what level of practice).

My questions often did not follow the linear progression of the theme guide, and quite commonly did not include all of the topics that could be discussed. Instead, I adopted a more adaptive and constructivist approach with the aim to elicit the definitions of terms, such as 'massaging the case sheet' or 'covering your arse' or the explanation of events and situations which provided examples of meaning making for the participant. Charmaz (2014) encourages this technique to identify assumptions, implicit meaning and tacit rules that participants may use during the interview.

On a more general level, I was well aware of the assumptions and perspectives that I might inadvertently bring into the discussions as the interviewer (Charmaz, 2006). I needed to remain active in the interview but mindful of not leading the conversation or forcing the data. As a researcher with an understanding of the practice contexts, it was difficult to remain ‘outside’ the conversation and I became very mindful of not leading or forcing the conversation. In the midst of the conversation, it was difficult to retain the etic view and I therefore developed strategies (such as repeating and paraphrasing back to the participant) to further understand any ‘taken-for-granted meanings’ (Charmaz 2014). This was important to ensure that I did not impose my own meaning over and above those expressed by participants and instead to use their understandings, but also to make further meaning of that with them, as evidenced in the following excerpt.

Interviewer: So are they guidelines or protocols?

Participant: I couldn’t actually answer that from a corporate level, but they’re changing. They’ve recently turned into flowcharts, but the flowcharts can be equally prescriptive. Is rate less than 80? Yes, do this. No, do that. So I guess they’re still prescriptive. The way I look at them is they’re more legal justification for doing what I’m doing. So if I pop you in an MRD and take you to hospital, the protocol has it in black and white that if this happens, then I can do that.

Interviewer: MRD, is that a patient restraint?

Participant: Yes. What was the question again, sorry?

Interviewer: Yeah, so guidelines versus protocols. So, the way that people interpret them is of interest to me. You talk about them being prescriptive and the people potentially adding or omitting certain parts, and I’m interested to know who you think those people are and how they do that.

Participant: I think the protocols are written for the worst case scenario of each case. So if I get to a patient and they’re really crook, then questions will be asked if I didn’t follow every step. And I think that’s appropriate. If the patient is not so crook, the protocols and certainly more so these days offer a little bit of leeway.

Like if pain is severe, go to opiate, et cetera. So the protocols do have some built-in flexibility. Yeah. You'd find very few ambos willing to completely step outside the protocols. To give a drug that's not clearly indicated in the protocol or pharmacology, it wouldn't be a good idea and you'd find very few ambos willing to do that. And that's good, it's a good system I think.

By using this technique of repeating and paraphrasing, I actively engaged in the meaning making, as well as clarified terminology, and delved for interesting leads that I wanted to explore in further detail.

1.31 DATA ANALYSIS OF INTERVIEWS

When using constructivist grounded theory methodology (CGTM) the researcher works to develop theory by conceptualising empirical data into a more abstract form that can explain what is going on. This is primarily achieved by coding data, which Charmaz (2006) describes as 'the pivotal link between collecting data and developing an emergent theory to explain these data' (p. 45). Charmaz also states that GT coding usually consists of at least two main coding phases: 1) The first phase which involves naming each word, line or segment of data, followed by 2) a more focused and, selective phase that uses the most noteworthy or recurrent initial nodes to categorise, synthesise, integrate and organise large amounts of data (Charmaz, 2006. p.46).

1.31.1 Initial coding and double coding

After transcribing my interviews into Word documents, they were initially coded using the NVivo 11 software. During the initial coding, I allocated short labels (nodes) within NVivo to sentences and statements and also occasionally highlighted or identified single words. These nodes provided an initial map of the information I had gathered. I followed the advice given by Glaser (1978) and later Charmaz (2014) in that the initial coding should be spontaneous,

precise and focus upon maintaining gerunds³ to preserve actions. I kept the nodes simple and initially used a line-by-line approach, illustrated below. Occasionally, I kept the participants' descriptions of events (or emotions) intact to preserve the associated meanings. All of these initial codes were provisional, comparative and grounded in the data. An example of early coding from the second interview is provided in Table 7.

Table 7. An example of early coding

Initial node (code)	Interview excerpt
Importance of job Largeness of company	It's people's lives. This isn't some dingy little 20-man company. There's nearly 4,000 frontline paramedics who rely on this stuff.
Frustration (emotions) Also, errors in book (expectation of org) Get that one off my chest.	Like how can you not just use spell-check? That shits me to tears. I had to get that one off my chest.
Cases – CPR child Cases – Adrenaline in anaphylaxis Double checking dose or not? Using the intranet (or not!!) Checking it on the job?	Something like CPR ratios for a paediatric, for a one year old, or the amount of adrenaline for anaphylaxis, like if you're not going to be double-checking that, that's scary. So they always say, 'Look, you can always refer to the intranet', but who's going to do that on the job? Honestly.
Honestly (honesty) (?emotions) Old & jaded don't make corrections (?) Assumptions of use Get that off my chest.	And as you get more old and jaded, you're not going to check on the intranet to make those corrections in your book. You're just like, 'I was given this book. I'll use it.' Sorry, I had to get that off my chest.

This mining of early data created some interesting initial nodes that included ideas around patient safety, organisational expectations, and paramedic education and background which I thought warranted more exploration. During this time, I was getting feedback about further coding from my supervisor as well as looking through some literature about interview

³ A gerund is a noun formed by taking a verb and adding the suffix '-ing'. The gerund form of 'give', for example, is 'giving'.

techniques and methodologies. As a novice researcher, I realised that I had much to learn about coding after I had completed the first transcript. I consulted with my supervisor and we also double-coded the first few interviews as I sought additional feedback and further tuition which I used for subsequent coding.

1.31.2 Focused coding

Focused coding is a technique which enables the alignment and organisation of alike coded data into groups or 'families' because they have common characteristic and patterns. Lincoln and Guba (1985) state that qualitative researchers 'are said to use classification reasoning plus their tacit and intuitive senses to determine which data 'look alike' and 'feel alike' when grouping them together' (p.347).

After the third interview, I realised that I had already begun to start grouping and comparing some concepts, for instance, the emotions that I had kept as in-vivo codes were placed into their own code simply labelled 'emotions'. I did not know if this was to become anything but it seemed logical at the time. I had wondered if these emotions would come more to the fore about particular issues so I decided to isolate them initially. Consistent with GTM, I was constantly comparing codes used in previous interviews with new emergences to analyse these events and look for new perspectives or understandings. Another grouping that seemed evident was 'expectations of care'. This was becoming very interesting as there was a clear difference in expectations from what the paramedics had said about using protocols and guidelines to what they believed the organisation thought. I also wanted to know more about this dichotomy and had questions about whether this was demographically specific.

So, coding is a cyclical act and rarely is the first cycle of coding data perfectly attempted (as seen above). The second cycle, and so on of further recoding compares, reorganises, filters, highlights and emphasises the most important features of the code in order

to generate groups, concepts and themes to attain meaning, and in this research, build substantive theory. Coffey and Atkinson (1996) propose that ‘coding is usually a mixture of data [summation] and data complication ... breaking the data apart in analytically relevant ways in order to lead toward further questions about the data’ (pp. 29–31). My emerging focused code of ‘expectations of care’ was taking shape and after three consecutive interviews with high-level practice paramedics, I felt strongly that the data was demonstrating differences between paramedics at different practice levels and their use of the protocols and guidelines. I began to see links and the emergence of substantive themes that I wanted to further explore with comparisons to the documents themselves.

1.32 USING THE CONSTANT COMPARATIVE METHOD WITHIN CGTM

An explanation of the constant comparative method is important at this point in the dissertation as it is a core tenet of all GTM studies. The purpose of this method was first described by Glaser and Strauss (1967) as being ‘to generate theory more systematically ... by using explicit coding and analytic procedures’. Charmaz (2006) later defined it as:

a method of analysis that generates successively more abstract concepts and theories through inductive processes of comparing data with data, data with category, category with category and category with concept. Comparisons then constitute each stage of analytical development. (p. 187)

By breaking down and disassembling the data into discrete ‘incident’ or ‘units’, the constant comparative cyclically codes them into categories (Glaser & Strauss, 1967; Lincoln & Guba, 1985). The categories created from this method usually take two forms: the first being created from the participants’ customs and language, and the second from what the researcher may identify as important or significant to the field of inquiry. The goal of the first is ‘to reconstruct the categories used by subjects to conceptualise their own experiences and world view’ (Lincoln & Guba, 1985, p. 334); the goal of the latter is to assist the researcher in

developing theoretical insights into the social processes operative in the site under study; thus: ‘the process of constant comparison stimulates thought that leads to both descriptive and explanatory categories’ (Lincoln & Guba, 1985, p.341). Constructed categories receive continual improvement and refinement as more units and incidences are compared against these codes and emerging themes. As the understanding of the emerging codes grow, the properties of the categories may change and relationships between other codes become apparent. This is part of the cyclical analytical process in which Taylor and Bogdan (1984) summarise as follows,

in the constant comparative method the researcher simultaneously codes and analyses data in order to develop concepts; by continually comparing specific incidents in the data, the researcher refines these concepts, identifies their properties, explores their relationships to one another, and integrates them into a coherent explanatory model. (p. 126)

I used constant comparison throughout my research analysis in many ways: 1) to compare the attitudes, beliefs, actions and experiences of individuals; 2) to compare patient case presentation and decision-making; 3) to compare demographic differences between experiences of use of protocols and guidelines; and 4) to make comparisons between nodes, themes and categories from all types of data including memos, interviews, emails and sticky notes. This technique allowed me to look for similarities and differences in the data and to refine emerging theoretical analyses from focused coding.

1.33 THEORETICAL SAMPLING DURING THE INTERVIEW DATA GATHERING

Following on from the purposive sampling strategy that was used originally, my next recruitment of participants was more carefully considered. After initially coding the data and categorising information, I needed to further direct my sampling strategies to help me develop particular concepts and themes. This is consistent with the concept of constant

comparison as described above (Charmaz, 2014). Theoretical sampling differs from conventional sampling because it is responsive to the data rather than establishing the entire sample before the study begins (Charmaz, 2014; Corbin & Strauss, 2008).

Some emergent categories tended to form because of participants' similar backgrounds in education, training and years of experience – and early on I was seeing potential similarities in participant group types which pushed me to interview more participants from the categories that were forming to see if this was indeed the case. This early theoretical sampling allowed me to identify and define gaps in my participant categories. A good example of this is the difficulty experienced in understanding terminology and language that was first described by a vocational paramedic of around three years' experience. I followed this up with other interviews with participants with similar backgrounds and compared these to participants who were university graduates to see if these were shared experiences. I then compared these experiences to those of more experienced paramedics of both training backgrounds to see if this changed over time and at what point these differences became negligible. It was apparent that participants with a similar job type (clinical training officer, intensive care paramedic, paramedic, student vocational, student graduate) also seemed to share similar viewpoints and I kept exploring these until I was satisfied that these were not coincidental, but rather that these groups had their own construction of views that were combined experiences.

In the final stages of this data processing I used theoretical sampling to validate links between categories. I asked participants for whom particular concepts were apparent or which seemed to be emphasised more than other concepts to share their experiences to add to my existing data set about a particular theme that had emerged or was emerging. These participants supplemented my information, creating new links between categories. By permitting me to stipulate the pertinent properties of each category, theoretical sampling

increases the strength of this study which in turn improves category precision and moved coding beyond description to abstract analysis (Charmaz, 2006).

1.34 THEORETICAL SATURATION WHEN GATHERING DATA

Within my research strategy, samples that I took were both representative and guided by the emerging theory (Stern, 2007), but I did not rely on size as a measure of adequacy. Instead, as Morse (1994) suggests, I was guided to collect data until saturation occurred. Theoretical saturation means that no additional data are being found whereby the researcher can develop further properties of the category (Glaser & Strauss, 1967). I achieved this through constant comparison of incidents in the data until the process produced no new properties or dimensions from further coding and comparison (Holton, 2007).

Similar to the need to demonstrate how a researcher practices reflexivity, Bowen (2008) argues researchers need to explain how saturation is achieved and provide supporting evidence of it happening. Dey (2007) argues there is a need to further refine the concept, suggesting a researcher never knows when saturation is reached as there may be subsequent revelation of new information following completion of a research project. Perhaps Strauss and Corbin (1998) were aware of this potentiality and the practicalities of research when they wrote:

Saturation is more a matter of reaching the point in the research where collecting additional data seems counter-productive; the 'new' that is uncovered does not add that much more to the explanation at this time. Or, as is sometimes the situation, the researcher runs out of time, money or both (p.136).

1.35 DOCUMENT ANALYSIS OF PROTOCOLS

After completing my initial set of interviews with the paramedics, historians, protocol developers (hereafter called 'creators') and clinical managers, I felt I was ready to begin the

process of examining the protocol documents. I based my method of analysis upon the critical and constructivist methodology as discussed in Chapter 3. As indicated by Punch (2013), documents ‘are a rich source of data for social science research’ (p. 158). In this second phase of the cycle of CGT, I used the 2018 NSW protocols as given to the staff on the road. The document is broken into distinct categories to assist the reader. These are:

- the introduction, which contains reference material and indices (pp. 1–12)
- the clinical practice protocols (pp. 13–210)
- pharmacology information on drugs carried by ambulance service personnel (pp. 211–262)
- extended care pathways and pharmacology (pp. 263–315)
- further reference material (pp. 317–406).

1.35.1 Selecting the protocols to analyse

I have previously explained that the central focus point of protocol selection was each protocol’s ability to inform paramedics’ decision-making. My initial idea was to look at the decision-making pathway along a sliding scale of complexity and attempt to draw protocols from each end and also a mid-point. This sounded like a good theory, but I realised it was not going to work well in practice as I did not know how a sliding scale might present. So instead, I began by looking at the overall presentation of the protocols for clues. It was apparent that many protocols used an algorithmic approach, such as following yes/no chains for decision-making, which appear to be clear, while others were heavily text based and required further clinical examinations or the use of diagnostic tools to complete and further engage with the protocol. From the previous interviews with participants, I also knew of several protocols that had come up which concerned the low-acuity patient or the complex

patient. These had previously been described by the paramedics as more complicated or convoluted in their explanations and use in decision-making. I also found further commonalities about the protocols and their use in practice expressed by participants that appeared to increase the complexity. These included the following:

- high-stakes patients – those who may be critically unwell or at risk of destabilising
- patients who cannot be transported for whatever reason. This dramatically increases the risk to both the patient and the paramedic, which in turn requires more advanced decision-making skills and clinical reasoning.
- patients who may require advanced procedures with medications or skills, again increasing the complexity.

I decided that, to the best of my ability, I would select protocols that represented these ranges of potential circumstances. All three protocols would have a wide degree of sliding scale within each of them for the patient to be transported or critically unwell. Additionally, the three protocols would cover a wide range of potential complexity, from a minor hand tremor (covered under seizures) to cardiac arrest (under resuscitation). This provided an appropriate cross-section to discuss the elements of decision-making that may be considered while utilising the protocol.

Lastly, all protocols I selected covered whether the patient could be transported to hospital for one reason or another. A resuscitation patient might not be transported if the crew decided that resuscitation attempts were futile and/or the resuscitation was ceased. For the epilepsy protocol, it is not uncommon to not transport the seizure patient (epilepsy is a chronic illness and often managed outside the hospital environment); and, for the mental

health patient, it may be more appropriate to have the patient seen by an alternative healthcare service.

1.36 CONSTRUCTING THE CONCEPTUAL FRAMEWORK

In these following paragraphs, I will discuss how I developed the conceptual framework to analyse the protocols and guidelines. The information was gathered from multiple sources and particularly grounded in the summations of the emerging themes in the interviews. By the time I had conducted the interviews I had a range of concepts to explore that fitted together to form a jigsaw puzzle.

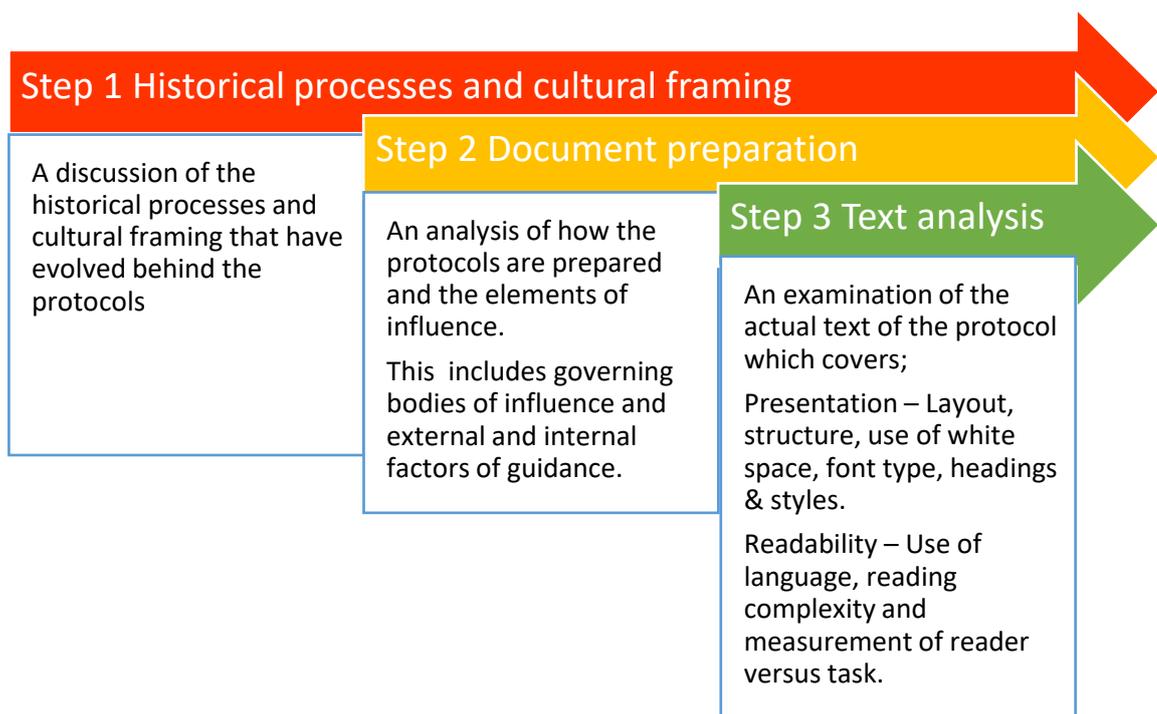


Figure 7. Conceptual framework for paramedic protocol and guideline analysis

I decided to break my document analysis into a three-step framework: 1) looking at the historical/cultural perspective; 2) analysing document preparation, which may provide

some background to modern day usage; and 3) a content analysis that breaks down the protocols into elements which can be analysed.

The historical/cultural perspective would provide important and interesting background information about the protocols themselves. The socially driven processes that were embedded deep into the cultural expectations of the role of a protocol would have a bearing upon how they were used. I wanted to know if any protocols had a long history of entrenched practice for paramedics, or if they were recent or new protocols that perhaps were a significant shift from previous practice. I would reflect upon this as a shift in practice might affect the concept of complexity.

Document preparation was a key factor to understand as it provided context for the underpinning policies and organisational requirements, and how these potentially have a bearing on practice and protocol adherence. Protocols are culturally derived and are often linked to external and internal key performance indicators used to measure risk and training needs, which potentially adds complexity to their use and interpretation.

Lastly, I wanted to understand how the content and presentation of each protocol could affect clinical practice. The overall presentation and graphic design most likely play a part in comprehension of the protocol. In my own paramedic employment over 20 years I had experienced vast differences in protocol presentation and I wanted to explore this to understand how this might affect translation of the protocol into practice.

The graphic design and layout of each protocol was not something that I had considered before beginning this research. I, like many other researchers into clinical guidelines, had been initially concerned with best evidence to support clinical practice, and had not even considered that their presentation may be a contributing factor to their uptake or use on the road by paramedics. During the interviews I had discovered that many paramedics talked about the language of the protocols and also the use of the algorithms. This piqued my

interest into the idea that presentation might be an important factor which could be explored. I knew this would be original research for paramedicine and that it would be tremendously useful for us as a discipline moving forward towards professionalism.

I had learned from the participants in the interviews that some had struggled with the complexity of the texts, and I was interested to discover more about this. I wanted to try to link the interviews to what was written on the paper and to understand why something like the resuscitation of a child or assisting a mental health patient may be more difficult than assisting a diabetic patient. Was it purely because of the nature of the case, or was there more to it in the way that the protocols are managed as well? Perhaps there were links between the written text and the way that these were comprehended by the paramedics which could be investigated.

I researched ways that text complexity can be measured and discovered that in many countries this has been well addressed by studies of early childhood development and student preparedness for college. I learned about the Common Cores State Standards (CCSS) initiative (Tesol International Association, 2013), which came into effect in 2010, which is a useful tool that specifies what students should know at each grade level and describes the skills that they must acquire in order to achieve college or career readiness. These standards also describe instruments which analyse text in uniform ways. I based some of my content analysis on this model and then expanded upon this using work by Fang (2016) and Lapp et al. (2015).

Fang in particular adds additional critical perspectives on the use of the CCSS tool and identifies other linguistic sources of complexity that may create comprehension challenges. These five additional sources of complexity are specialised vocabulary, grammatical metaphors, expanded nominal groups, intricate sentences and pronouns. I will expand on each of these elements in Chapter 6. These discourse features which are

commonly used within academic and disciplinary texts, are well inspired: they construct in functionally diverse ways across different genres to include healthcare fields. Texts that have more concentrations of these features will be generally less familiar to more readers and therefore will present an increased challenge for reading comprehension, which goes above and beyond unfamiliar topics. Being mindful of these designs that can increase comprehension difficulties gives protocol and guideline developers a principled basis for improving instructions that could assist readers to work through more challenging texts (Fang, 2016). I will be using Fang's (2016) logic as I analyse the text complexity more deeply.

I formulated questions which I could use to compare the protocols with each other (see Appendix J) and developed a framework that analysed the graphic design, text complexity and linguistic features (Figure 8).

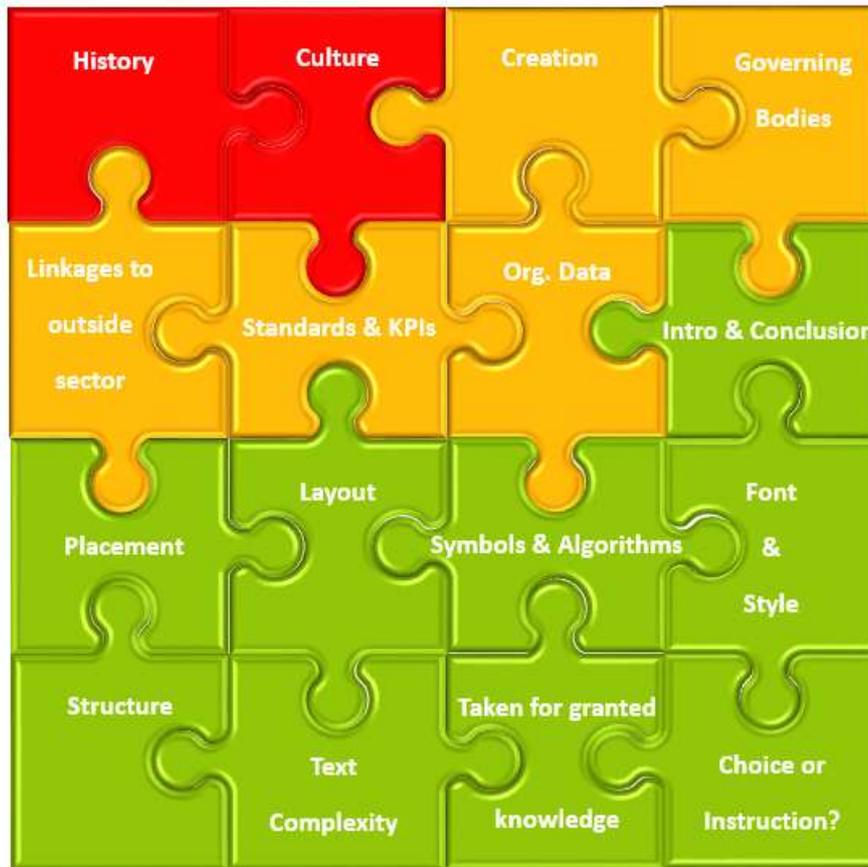


Figure 8. Concepts explored within the conceptual framework for the document analysis

1.37 CONCLUSIONS

This chapter has described the research methods used in a mostly chronological description of the methodological framework; however, the CGTM process remains non-linear. Although I have presented the methods in this way in this chapter, the process was cyclical in agreement with the tenets of the CGT methodology. This chapter also detailed the relationships among interviews and the symbolic interactionism used during the research study. I have explored social constructivist theory and how I used this approach during the process of data gathering.

I decided that triangulation of the data would be a valuable asset for my investigation; therefore, I performed both interviews and an examination of the protocol documents. The

sampling method encompassed individuals capable of sharing their experiences and demonstrating a source of richness in their differing perspectives. Data collection was through semi-structured intensive interviews, a technique that allows an in-depth examination of a particular subject and supports interpretive inquiry. The interviewing procedures were grounded in social constructivism and symbolic interactionism and guided by specific topics. Data analysis was based on grounded theory coding and, afterwards, focused coding to organise and group similar coded data into families or categories sharing compatible features. Through several coding procedures, I discovered within the interview data aspects that influence a paramedic's decision-making when using protocols and guidelines. However, I felt that I needed more than interviews to discover the meaning behind the translation of protocols and guidelines into everyday practice.

After I performed the analysis of the initial interviews, I then built a conceptual framework to critically analyse selected protocol documents. I was looking for triangulation across the two data sets to see if there were any new themes, or themes that complemented those from the interviews. I chose to implement the between method of methodological triangulation to leverage strengths associated with several techniques while mitigating associated weaknesses. This strategy was selected due to its ability to map out and explain the complexity of human behaviours by considering them from several perspectives. By developing the conceptual framework to analyse the documents, I completed the triangulation strategy, discovering a rich source of thematic discussions which gave me valuable insights into paramedics' decision-making.

CHAPTER 5: THEMES EMERGING FROM THE INTERVIEWS

This chapter details the themes that emerged from the interview data collected, as told from the participants' perspectives. Thus, this is a critical chapter in this dissertation because it provides readers with an understanding of the perspectives of paramedics on protocols, their implementation and inconsistencies, the implications of how paramedics are trained and how they apply protocols in the field.

I begin with a reflection on the protocols along with their 'identity crisis' based upon a river analogy. Next, I examine and reflect upon continuous professional development and self-directed learning, supported by quotations from interview transcripts. Other themes captured in this chapter include actual and expected uses of protocols and variations to protocol. Each theme is grounded in participants' perspectives on protocols. In this chapter, I reveal the differences in what protocols mean in relation to the training background and education level of the paramedics and then how this translates into their application in the field. From this presentation, I demonstrate that there is a need for coherency and consistency between what is expected from the training of the paramedic and what the paramedic actually performs in practice. Each theme articulated in this chapter is illustrated by quotations from the interview transcripts.

Part of this chapter also details the need for protocols as a guide for the paramedic during times when there is a need for further education or as an aide-memoire. I highlight the value of protocols and their relevance to paramedics during their everyday practice. The research also explores the barriers to the implementation of the protocols in the field by the paramedics through the analysis of the use of abbreviations and acronyms. Therefore, this

chapter describes the application of the protocols, the discrepancies in their use, and the barriers that reduce the degree to which paramedics can translate them into practice.

Image removed due to copyright restriction.

Figure 9: A journey on the river

Source: (Elusive Elements Photography, 2010).

1.38 RIVER ANALOGY

Picture a river – the edges are where the water is stagnant and slow and the middle of the river is moving freely and quicker. Visualise the edges of the river – they are rocky and the bottom is visible. The dangers, like sharp rocks and eels, are visible, but become less obvious as you move towards the centre. You can't see the bottom of the river in the middle, but you know there are potentially dangerous creatures down there which may want to hurt you or eat you.

Picture the paramedic's journey of using guidelines or protocols like the river. You are pushing your patient on a raft and using a long pole to propel yourself along. Imagine that you need to use the river to travel downstream to 'definitive care'.

The water speed, depth, visibility and dangers have an effect upon the journey. Protocols live in the shallows, guidelines in the fast and deep.

If you use the protocols to travel down the river around the edges, the journey will be slower, rockier, and a few dangers will be present but most likely you will see them coming as the bottom is evident.

Your journey using guidelines could be faster and smoother as the water moves quicker in the centre and there are no rocks. But you may never see the dangers coming as the water is not clear and the bottom is obscure. There could be dangers in the deep which you won't know about until you venture out there, and there's a chance you won't make the final destination if you get swept away by the pace.

Would your level of knowledge of the river and your experience with it make you want to take a particular route? If this was your first time, which way would you go? What about if you needed to go upstream: which route would you take?

1.39 EMERGING THEME 1: THE IDENTITY CRISIS THAT CHALLENGES THE INTERPRETATION OF CPGS WITHIN PARAMEDICINE

There appears to be a dichotomy between what paramedics said during the interviews about using guidelines or protocols and then how these documents are interpreted and used in practice; that is, the way paramedics describe what these documents are compared to how they use them in practice. All paramedics during the interviews at some point described patients as being 'grey' – the interpretation of this in many cases is that no patient can be pigeonholed easily into a particular treatment or protocol algorithm and that treatment may need to be tailored to suit the patient. This then opened up an interesting discussion about whether the participants were using the protocols as a guide, or if they were following them as a protocol which, for the most part, must be adhered to. The variances between the paramedics and their rationales shed light on the influences of service culture, educational background and experience on paramedics' viewpoints.

For the most part it appears that both education and experience play a significant role in the way in which the protocols are utilised. Both newer and less educated paramedics tended to follow the protocols more prescriptively but they still felt there was a need to use some higher-level judgement to ensure that an appropriate treatment plan was created for the patient. Prior experience before the person came into the profession also appeared to influence their approach to clinical decision-making and the way the protocols were utilised.

Leo, a paramedic with two and a half years of experience, has an interesting view of the protocols that has come from a background in the rescue industry where the motto is ‘Slow is fast, and fast is safe’:

It’s a skeleton framework, it’s a fall-back. It’s just the bones and you use that I suppose to fall back on when you’ve got no idea, and then you can sort of work out from that. You can incorporate that into your critical judgement. So to me, protocols is a step-by-step process, step one do this, step two do this, step three do this. If you’ve got no idea what’s going on, you just follow that, and then if you’re trying to delve a bit deeper into a patient’s condition, you then use your own judgement and you work off that framework. So it’s not dogma, it’s not set in stone. It’s meant to guide your decision or give you a helping hand. (Leo)

Leo’s expressed perception is that protocols are the ‘skeleton’ to which the user still needs to ‘use your own judgement’.

Ned has been around long enough to see the change in perceptions of protocols that others also mentioned. With his 15 years of experience, he spoke about his first-hand experience of being a vocationally trained paramedic coming up through the ranks and how people once viewed the protocols as ‘bibles’:

I think they’ve had a lot of evolution recently. When I first joined the job, they were absolutely prescriptive. I think that’s the right word. That means if there are seven steps in the protocol, you do the seven steps in that order and if you don’t, you’re on the carpet and the desk is being banged, ‘Why didn’t you do the seven steps in the certain order?’ That’s a sign of the old-fashioned ambulance side and

it's still somewhat prevalent. I think people are trying to change it, but it's a long, slow process. (Ned)

There is a hint here of how the perception of a punitive culture that enforces following rules may influence decision-making. Ned also feels a growing tension between vocationally trained paramedics, or 'old timers', and the newer, university-trained paramedics:

because older paramedics have been brought up to use them as a completely prescriptive tool, and in all honesty, they probably don't – just being perfectly frank, I think a lot of them don't have the mental agility or flexibility to work outside those protocols. They joined when it was, you have to lift heavy things and put them in the truck and take them to hospital, and many of them don't have the capacity to go much further than that. (Ned)

Ned's insight also covers what he believes are fundamental differences in the practice of the two groups, which have been widening over the past ten years since university graduates have become more numerous:

Younger paramedics certainly treat them more as a decision-making tool and are increasingly comfortable with leaving out steps or adding their own steps, but that causes friction between paramedics and also you've got to have a good reason for what you're doing obviously. (Ned)

Andy has been a paramedic for five years and was also vocationally trained. He described how his decision-making and attitude towards the protocols developed as he became more experienced. He talked about when you start out in paramedicine:

Like they are your rule book really, but that this changes over time, like as you get more experienced your clinical decision-making might change from stuff that you've come across. But generally I think it's like your 'go to' guide. (Andy)

Carol was a nurse prior to becoming a paramedic 13 years ago and has progressed through to the highest level of clinical practice in NSW, an intensive care paramedic (ICP). She is also

a qualified extended care paramedic. She feels that the protocols should be used as guidelines:

They identify key areas that you would need to address in a clinical situation or even a non-clinical situation, in the sense of a skill or a procedure or a policy. But they require context to be added to them in order to be applied appropriately.

(Carol)

She feels that the concept of a strict protocol is outdated and that there has been significant change in the past few years from the regimented and structured documents of the past. I asked her why she felt the change had happened and her viewpoint was similar to Ned's but she added a further dimension in that the work environment had also changed. With low-acuity patients becoming more common, paramedics need to provide a broader range of treatments:

And so clinical decision-making is a lot more appropriate and a lot more required, in terms of identifying and managing risk in patients where it is quite grey and can't be boxed off very neatly into a protocol. (Carol)

Ann is an educator within NSW and is dually qualified with a degree in education as well as a degree in paramedicine. She has been working for the service for 13 years as a paramedic. I felt that she provided a nice summary of the evolution of the protocols:

I think they've evolved a lot in the last four or five years particularly. I think they used to be a lot more structured and a lot more black and white, whereas now we've moved to more – I guess if you want to call them – a 'greyscale'. They used to be protocols whereas now I think I certainly view them more as a guideline so it's something that I interpret based on the patient presentation. (Ann)

Leo as a fairly new paramedic said the only difference between protocols and guidelines is in the interpretation of what you're reading and that 'the thinking is what makes it so'. He

believes better care can be given when a paramedic has guidelines as this gives the paramedic an ability to make more appropriate decisions:

Flexibility and freedom to treat the way you should. The downside is that a new paramedic has a higher chance of making clinical errors, especially when there is a massive amount of changes and influx of new drugs. The paramedics don't have time to keep up, especially the newer paramedics. For example the changes with droperidol and ketamine in mental health, these protocols are ambiguous and cause confusion. They have been rewritten four or five times. (Leo)

So, even though the protocols could be called bones or a skeleton, or even black and white and prescriptive, the patient is a variable that makes them appear grey. Patients introduce the greyscale and become the lens, the glasses that are looked through when viewing the protocols. The more complicated the case, the more likelihood that the protocol will be seen as a guideline. But this is not the only variable in paramedics' interpretation of strictness; the paramedics' level of qualification and education background appear to move the interpretation to a guideline rather than a strict protocol. The higher the level of a paramedic's scope of practice and associated education, the more likely they will use them as a guide rather than a prescriptive text.

1.40 EMERGING THEME 2: PARAMEDICS WHO ARE UNIVERSITY TRAINED ARE MORE INCLINED TO PURSUE CPD ACTIVITIES AND SELF-DIRECTED LEARNING

The interviews shed light on the paramedics' views on their own continuing professional development and their perceptions of the way the organisation provided and encouraged ongoing educational opportunities. The picture they painted is that staff are required to attend 'in-service training' every 18 months. These training sessions appear to be short in duration (a couple of days is the norm). During a few short days they typically cover updates and

training related to protocol changes and any urgent training matters that have come up due to critical incidents reporting.

The participants spoke about a wide variety of self-driven activities used for professional growth outside of these in-service days, conducted both inside and outside of the ambulance service. These included:

- training nights at the station
- training community first responders
- informal sessions with peers regarding cases
- home research after interesting or challenging cases
- casual academic work for universities.

Only two of the participants reported that they *regularly* participate in self-directed education, and most expected that this should be driven by the ambulance service and not themselves. The group felt there was a general lack of educational support from within the organisation and what was provided was very ad hoc or sporadic in nature. They stated that they had limited opportunities nor are they motivated once qualified to continue their educational journey, and as many of the paramedics were vocationally trained, they felt they were potentially disadvantaged compared to university graduates with their fundamental knowledge base. For some paramedics (such as Ned) this had not changed throughout his 15-year career. When reading through the interviewees' comments later, I felt that there was a general lack of interest in self-driven education or continuing professional development that may come from outside the organisation. I knew that nursing had gone through a transition when formal registration of the profession took place and I wondered if the same would happen in paramedicine.

A thought-provoking comment from Susan, who is a university-trained paramedic of 8 years within NSW, and who has also worked as an ambulance educator, shed some light on the ambulance culture that may in fact hinder staff from being more proactive in this area:

Well I do a bit of casual work at [university name], so that keeps me very well I guess in front of what's current. And I don't think I would be if I didn't have the university work. For you to go and really look for stuff to do in ambulance world is not really promoted. What I mean by that is, you're not told to go and research journal articles and things. You receive a clinical safety notice if something is changing, you'll read about why and you just accept it on face value and go, okay cool, that's what we're doing now. If you want information, you will talk to your peers, you will ask your peers more so than going and researching yourself. That's just ambulance culture in New South Wales, because we're still coming from mostly people are vocational trained. They don't understand the value and how journal articles all work and where to find them, things like that. So I think if I didn't have the uni work pushing me along, I would probably not be current with research. But now that I do it, I enjoy it and I do look for things. But yeah, that's really only been through uni work that I think that's happened. (Susan)

Leo has not completed any other training besides what he initially learnt during his vocational period. He does have an outside job in rescue where he does some regular training but this is not paramedicine related. He also said that he is ambitious and is keen to progress to a higher level within the organisation. He said that he 'knows how the system works' to become an intensive care paramedic but he does not do any study at the moment to get him prepared or ready for it. I got the sense from him that he was waiting for the organisation to tell him when to start and what to learn. This appears to be a very reactive rather than proactive means to becoming more educated for the paramedic role.

Pete has been with the ambulance service for 7.5 years and was vocationally trained. He works in a regional area that uses an on-call rostering system. In a typical week he will work day shifts in the ambulance and then take the vehicle home at night to respond if required to further calls. He then will go back to work the next day with the vehicle and be

back to a daytime roster. He touched on the fact that he is often fatigued from the shift work, which does not help to keep up his interest in doing extracurricular activities.

I get tired even with just the one or two callouts. I don't sleep as well, so yeah, makes it a bit harder. And that, even though the organisation has fatigue management policies, they're very blurry and I feel they're inadequate. (Pete)

As someone who has worked a similar roster to Pete myself, I reflected at this stage how during this part of my life I had put study on hiatus as I just could not keep up with work and study at the same time. Daytime and night-time often blurred during this type of shift work and my world centred upon how many hours of sleep I could get. I would not doubt that training or self-directed education were probably quite low on the list of Pete's priorities. But he did mention the following in a positive light:

We have a clinical training officer who comes out. So we can do time with them. There's online courses that, some are mandatory, some are not. But you have a certain amount of points that we have to score throughout the 18-month period before – so that you can then be recertified. (Pete)

Due to the timing of when Pete was coming back to class he noted that he was out of sync with his accumulation of points and might not have enough to recertify. He said he was not worried by this though, and said, 'That's not my job'. I do wonder if I went back and re-interviewed him a year after registration came in if he would still feel the same. Registration will place the onus on the individual to maintain currency with CPD activities. It would be interesting to discover whether the current commitment of the organisation towards education and learning changes due to pressure to support the professionalisation of paramedics' role.

Andy, like most of the others, does not do any organised self-directed CPD. This again reflects a more reactive style of self-directed learning which appears to be borne from an experience at work:

So nothing formal, but I will talk to senior colleagues and ask questions, and I might come home and do a bit of internet research on something I've come across. Something to keep a little bit up to date and learning. (Andy)

Ned does not feel like he really gets much professional development from the organisation, but he has gone back to university and completed a mathematics degree 'just for something else to do'. But about support from within the organisation he said: 'Well, we all *have* to train probationers and I really enjoy that, and I get good feedback, but that's all. There's not really much opportunity to do anything else' (Ned).

Abe, who is an educator within NSW and also like Carol is both an ICP and registered nurse, confirmed this point for me with his statement:

No. I don't think the organisation, New South Wales Ambulance, provides comprehensive ongoing tertiary-level education for staff, I think the pressure really is on individuals to go and do that themselves. (Abe)

This use of the word 'pressure' provides a little insight into what I feel may be also the 'burden' of maintaining currency in their role. I do feel that there is commonality in the experiences of those at the ends of the spectrum of scope of practice and level of experience. Those who are more experienced or educated appear to have better developed skills and motivation for self-development. I am not sure where this comes from but I speculated at this point during the interviews that these skills are taught at university which has a flow-on effect into lifelong learning, and I will follow this up in Chapter 7. This is certainly new and has not ever been researched before within paramedicine. To understand this development and transition to lifelong learning, and how it can be fostered in paramedic practice, I will have to look outside the paramedic literature. Ned, Abe, Susan and Carol all demonstrate a clear desire to do more than what is required (or what is offered) by the organisation and all have had an experience of learning through university. Conversely, those who have not attended

university appear to have an attitude of waiting for educational opportunities to come to them.

I feel it is important to mention now that, since professional registration has been introduced in December 2018, much of the above sentiments may have changed. When I did the first set of interviews in 2017, registration was not in practice and paramedics were not required to maintain their own CPD. It is obvious from the above statements that, besides the minimal few days every 18 months, the organisation did not require nor encourage paramedics to be actively involved in managing their own CPD.

1.41 EMERGING THEME 3: PROTOCOLS/GUIDELINES ARE USED FOR A WIDE VARIETY OF ACTIVITIES AND REASONS IN PRACTICE

One of the areas of interest that I asked the paramedics about was when they used their protocols, which they used, and how they used them. All paramedics that I spoke to mentioned that while in training they were expected to know them very well, often by rote, but stated that nowadays this ‘rote learning’ was considered an outdated practice. Even so this statement was given by many; the most recent graduate I spoke to had been in the service for 2.5 years but has still been encouraged to use rote learning while going through their training program. These statements suggest that this practice, even though it was said to be outdated, was most likely still occurring. Leo said the following about the training processes:

We are developing brain muscle memory – So you are confident. Protocols are memorised off by heart. But not pharmacology. I use the pharmacology section the most – especially paediatrics – that’s the stuff you don’t want to muck up. (Leo)

Checking pharmacology at the case while treating the patient is considered acceptable practice and is encouraged. All of the paramedics acknowledged that traditionally this was

not done; however in recent years the practice has been encouraged: ‘Cos you can’t “undo it’. Even the “frogs”⁴ will do it, they will check on the way and cross-check on the job’ (Leo).

During the interviews I found that paramedics were most likely to look at the pharmacology section for guidance whilst at the job. Two processes were discussed predominately: the process of how to prepare the drug, and the process of delivering the drug by the correct dose and route. Remembering a drug dose was said to be easier than remembering how to prepare the drug correctly.

Out of all of the reference books, the pharmacology book was said to be used the most. It is most frequently looked at on the way to a job to remind the paramedic of the drug doses and later used again on scene to double check, or to find out how the drug is prepared and given. They state this book is hardly ever used after a ‘job’ but as a check ‘just to get your numbers right’. Pete talked about using it to double check with his partner: ‘You can be on scene and you’ll be unclear about something, and you and your partner can then both confirm that that’s what you should be doing’ (Pete).

Pete is an officer who works in a low-workload station and may have had very few patient presentations to build his confidence in remembering the protocols, especially pharmacology. He stated:

Occasionally it gets used as a tool for training on the station, when you are just sitting around – maybe once every two months. That could be triggered by an event – or something they spoke about that they haven’t seen for a while. Out in the country they are not as well-known as what they should be, due to workload. People who have no reason to look at them don’t. Sometimes on the way to the job for when you need to refresh – especially if you haven’t been to that type of job in a while. We are in the country, so some jobs are unusual and we don’t see them very often. ... I would never read it from cover to cover and I never pull it out on

⁴ Frog is a lay term used by NSW paramedics for an intensive care paramedic. It is based on the premise that most of the patients they are called to treat are either about to or have ‘croaked’. The term was coined by a Course 1 paramedic, which in 1977 was the first intensive care training for ambulance in Australia (M. H., personal communication, 13 June 2020).

the job because the book is too big. But I pull out the pharmacology book because it fits in my pocket. (Pete)

The size of the book and its ability either to be an application on one's phone or to be carried in one's pocket appears to also directly link to when or how often the book will be used. Pete said he also looks at the pharmacology book again on the way to hospital and occasionally afterwards:

I find myself I'll often be in the back with a patient doing my paperwork, assessing the patient, and I'll pull my phone out and open the app and I'll just make sure I'm writing the paperwork properly or making sure that yes, that dose that's given, that's the right dosage for example.

[Do you pull the book out afterwards – like at the hospital?]

No. Not unless there was a tricky job and you're like, wow, I wonder if I actually covered all the bases. And then you go back through the pathways. Might be multiple pathways that you could've taken and you check, you through it and go, well I did alright. So yeah, but writing up my case sheet or any of that sort of stuff, no. That's what I did and what I didn't do. (Pete)

Like the others, Susan does not use the protocol book every day. She did state that she uses the pharmacology book more routinely than the other sections. In particular she said that anything to do with paediatrics she will double check. She was 'brought up to do that' and said that having the medication card was allowed during exams. This concept of being brought up to do that demonstrates an indoctrinated cultural behaviour that is socially constructed between the paramedics and also accepted or expected by the organisation.

So once a paramedic is out of the training period their use of the protocol book is less frequent, and it is most likely to be used to refresh their memory about a rarely seen type of job and this is usually while on the way to the case. The pharmacology book is used the most, in particular either the app or the small book that fits in the pocket. This reflects both the ease

of use, and the requirement to double check doses and preparations that appear to not be as well remembered by the average paramedic.

1.42 EMERGING THEME 4: PARAMEDICS ARE VERY HESITANT TO ADMIT TO ANY VARIATIONS OF PRACTICE, EVEN THOUGH THEY FACE CHALLENGING AND DYNAMIC WORK ENVIRONMENTS

In Chapter 2 I mentioned the ambulance service policy which is used when a paramedic treats a patient outside of their scope of practice or outside of the recommended protocol description. Change or deviation to treatment was a topic I wanted to explore as a way of delving into the judgement and decision-making of the paramedics. In the previous theme I explored ways in which protocols were interpreted and I wanted to see how far they would push this point with regards to doing interventions, skills or using pharmacology that may not be described within the protocol. I guess I wanted to see how far this concept of a protocol controlling behaviour could be ‘pushed’ before it was broken, and when it became broken, what were their options or how did they feel about that.

Leo, the most newly qualified paramedic, stated: ‘Protocols are strict – don’t deviate – that’s a painful process – you’ll only ever meet five people who have done that’ (Leo). Leo has not been in a situation where he has needed to complete a variation to clinical practice (VCP) document because he deviated from the protocol, but when I asked him for a likely scenario, he said:

Look, you know what? I know that this particular medication can be used for this condition. It’s not in the protocols, it’s not within the pharmacology, but I am 100% certain that this will make a difference, a positive difference to the patient. If I don’t give it, they will definitely deteriorate. (Leo)

He felt that this would need to be driven by a strong requirement to care for a patient and the likelihood of deterioration: ‘Like I said, you’ve got to be very confident and pretty ballsy to

do it, and most people would be lucky to do five in their career' (Leo). He was not wrong in his estimation. Only two paramedics out of the group interviewed had completed and submitted a VCP form and none had done this more than on two occasions. Most participants appeared uncomfortable during the interview when asked about the process and what factors in their own practice might require them to fill in a VCP. There was quite considerable variance in the reasons they felt they should be submitted and what would happen if they did.

Paramedics are aware that many of the drugs they carry may be used for different medical conditions. These conditions may not be described within their protocols. For those paramedics with more experience, this created some frustration within their paramedic practice and their view of themselves as health professionals. For the most part, though, they felt that this had been improving with each subsequent protocol revision over the past few years. Pete in particular talked about the wording of protocols, and that words such as 'must' have been replaced with 'should' or 'recommend'. This has allowed paramedics more scope to either give or withhold treatment if they feel patient care could be compromised. In 7.5 years Pete has not seen anyone fill in a VCP, and he has never completed one himself. He knows that they happen, but is not sure why they do.

Susan, who is one of the six intensive care paramedics who were interviewed, used examples of three drugs – aspirin, normal saline and Panadol – that she would be comfortable about giving outside of normal protocol practice and she would not fill in a VCP form for them. She also said that she quite often works beyond the protocols, but does not fill in a VCP form. She feels that what she does is safe, so there is no need to mention it. Her view is that if she fills in a VCP form, then it means that she has most likely done something wrong and most likely she would be filling out an incident report form as well. The filling in of the VCP as a governance structure, perceived as needed when a potential 'error' has occurred and needs to be justified, influences the way practice is perceived and reported and how the

document structures paramedics' practice. This perception of the VCP was mirrored in many of the other interviews and cements the idea that filling in a VCP form means that you have given incorrect treatment because it was not described within the protocol book.

Paramedics also spoke during the interviews about how they withheld drugs or gave less than the recommended doses based upon the fact that they felt their protocol may not be best practice for the patient. Likely scenarios included drugs that were vasodilators (such as glyceryl trinitrate, aka 'GTN') and potent cardiac antiarrhythmics or vasoconstrictors such as amiodarone and adrenaline.

Susan's concept of using a VCP is based upon her own perception of personal risk. She will only complete the form if there is enough risk to warrant filling one out. However she is also aware that, theoretically, the VCP process can assist change within an organisation:

And doing a VCP is not always a bad thing, because it can promote change and I probably could've maybe got an AF [atrial fibrillation] protocol in there or something. So I probably should have, but I never did. (Susan)

Susan said that some paramedics would like to have increased freedom to be able to use their skills and knowledge unhindered by the protocols. They feel that they have the required knowledge and skill level to perform at a more autonomous level, which would allow the provision of better and more tailored patient care.

Susan felt frustrated by the fact that she had the knowledge, skills and pharmacology for treating medical conditions such as atrial fibrillation but she was not allowed to do that because there was not a protocol for it (interestingly, this changed within two years after this interview). So even though she had everything she needed to do it (drugs and medical knowledge), she was not allowed to. She also gave other examples where she felt she had the knowledge, but would not be comfortable in performing outside the scope of the protocols:

Giving GTN for someone with hypertension would be another one, but I actually have never done that. Even if the patient is hypertensive, and I think that I'd like to give you some GTN, but see that's probably where I'm finding that's stepping into the realm of, I'm not comfortable with that anymore. I'm comfortable to give you Panadol for your fever, but I'm not comfortable giving you a GTN for your hypertensive crisis. And I don't know why. (Susan)

This fragmented knowledge of when to administer different drugs demonstrates an inconsistency in fundamental pharmacology understanding. This is most likely also linked to the fact that the underlying medical condition, in this case hypertension, is poorly understood by the paramedic.

There appears to be an interesting limit to practising outside of the protocols that Susan explained quite well. When it is a drug she is familiar with, and a condition she is quite sure of, she is comfortable to modify her practice and vary the protocol. However in these cases she does not fill in a VCP because that would mean to her she has done something wrong. In these situations, she instead feels comfortable that she has given correct treatment, albeit not protocol driven, but within the framework of her knowledge and level of comfort.

Ned, who is another experienced paramedic and who was one of the paramedics who had submitted a VCP, said that it was very rare: 'Because most of us are quite scared to step outside the protocols, or even to vary something' (Ned). I was curious to ask then if he thought that some may vary practice but not complete the form and he stated: 'Yes, but they'll massage the case sheet as well to reflect that' (Ned).

A few of the paramedics referred to this concept of massaging the case sheet. To clarify this point I think the following quotation may illuminate the general feeling towards VCPs. In the following I asked the probing question 'So how far away from the norm does it have to be before you feel like you have to fill one out?':

I think it's anything outside your protocol you're meant to do, except for you don't do a VCP, which is a variation to clinical practice, if you under-dose a patient on

pain relief. So say you decide to give a smaller dose on pain relief, that's fine, but anything outside your treatment, you would need to do a VCP.

[So by definition it's anything?]

So by definition, I've done the wrong thing. Yeah. And they're not always a bad thing. It's very much drummed into you, VCP is not a bad thing. It can promote change, put in a VCP. I don't know why, maybe laziness is why I don't put one in or I just can't be bothered, as if it's going to change. Maybe that apathy to things [said with sarcasm in her voice]. (Susan)

The advent of registration may also affect how practice, especially autonomous practice, is regulated. The introduction of an independent national body that is tasked with oversight and incident investigation may change how and when the VCP is used and shift how it is perceived.

In summary it appears that a paramedic's knowledge of the drug or disease condition will most likely be a consideration when deciding if or when to go outside of scope or beyond a protocol. If they are comfortable with a procedure, or the medical condition is not considered to be critical or severe, they will comfortably move outside of scope (and will most likely not fill in a VCP form). Providing good pain relief appears to be the only variance to this and a paramedic will often at times give larger or smaller doses, or even use drugs out of step with a protocol, to ensure good pain relief for a patient. In these cases, paramedics seem to have a choice between 'massaging the case sheet' to make it look correct, or putting in a VCP. Paramedics would prefer to not do the VCP as it is considered by most to produce a punitive action by the employer. There does not appear to be factual evidence within the comments that supports this, but the fear of it does seem to affect practice and it is continually being socially and critically reconstructed and reinforced by daily practice. This concept of both risk to self and risk to the patient made me consider how protocols may contribute towards safe practice.

1.43 EMERGING THEME 5: PARAMEDICS BELIEVE PROTOCOLS AND GUIDELINES CAN (AND DO) PROMOTE SAFE CLINICAL PRACTICE

Leading on from the above theme, I began to query the risks involved in both using, and not using, protocols. I questioned: if the protocols are so strict that you must always follow them, is there a risk that this could compromise quality patient care if they are not followed and how do paramedics perceive risk when using or not using the protocols? Knowing the answers to these questions could provide an idea of the value of the protocols and in what ways they may be appreciated.

To explore the concept of risk I asked the paramedics if they felt that the protocols promoted safe or best practice. Many of the paramedics answered that they were particularly useful for new or vocationally trained paramedics. Andy, who has been a paramedic for five years, says he feels they are effective for patient management and that they are ‘pretty much your “go to” book’. Carol and others made similar comments such as ‘they are a starting point and a good grounding’. Protocols were referred to as the ‘bible’ for staff starting out with little knowledge or experience.

Protocols had value for participants who did not have a high workload or those who needed a reference for case types that they had not seen for a while. In those cases, comments such as Pete’s were common:

I think that on a scale of one to five, I’d say they’re a four. They’re not the be all, end all. Personal knowledge is probably up there. But as a reference point and something to refresh your memory and all that sort of stuff, it’s always handy to have in the car. You can be in the car, so that if you’re on your way to a job that you haven’t been to for a while – especially out in the country we don’t get a whole heap of jobs out where I’m from. So it’s great to have to refresh your memory about pathways and all that sort of stuff that you might need to take. So I’d put it up there pretty high. (Pete)

This quotation suggests that, when knowledge is not fresh, the protocol becomes more valuable and more important for safe patient care. Earlier Leo mentioned a ‘skeleton framework’ and, even though they are the barest essentials, I did get the impression that the paramedics felt security and reassurance when referring to protocols. Pete said that they give you a ‘guideline’ towards safe practice (which was an interesting choice of words), but that it ‘doesn’t stop mistakes from happening’. Human errors in giving the wrong dose or treatment still happen even when a protocol is followed, but having a protocol book means there was less to remember, so less potential for mistakes to be made.

Participant paramedics stated that protocols are tools used to assist clinical decision-making and that they contribute towards safe practice. There was a belief that paramedic care has evolved significantly in the past 5–10 years and that this has played a significant role in the broadening of protocols into more complex patient care. An area of import is leaving patients at home after or without treatment, which has played a significant part in the evolution of paramedic practice.

The introduction of low-acuity pathways (LAP) into paramedicine has brought with it complexity of patient assessments and additional protocols which need to be followed to ensure patient safety. Many of these LAP protocols were referred to as being complex and convoluted, but this was necessary to ensure that everything was covered and ‘safe’. Leaving a patient at home was considered a high-risk activity and often paramedics felt that they took a patient to hospital just to cover themselves against anything going wrong at a later date. At this point in the development of themes and when first analysing the data it struck me how often the concept of erring on the side of safety and risk aversion was mentioned. It was evident in every interview, so much so, that CYA (cover your arse) became its own node (concept code) in NVivo.

The paramedics' hesitancy and tentativeness about not transporting patients was expressed across the whole participant cohort and I took away the feeling that LAPs were mostly not adhered to because of the feeling of risk and not wanting to be exposed as a clinician. Susan summed it up with this comment:

For example, a lot of people don't use LAP ... and people don't do it because it's easier to take them to hospital and they don't want the repercussions if someone has an adverse effect. (Susan)

Scene time to treat a patient through the LAP pathway was also a factor to consider. Some paramedic participants suggested that the extra time was not worth it if there was also additional risk involved. They outlined that, even though they knew that a patient may not need to go to hospital, they would take them anyway because it is easier (for the paramedic). Part of the reason that this happens, Susan proposed, is that paramedics cannot see the big picture and the holistic benefit of LAPs to the patient within the health system. The paramedic is operating only in their bubble and it is a paradigm shift from traditional practice, one which NSW is still taking time to get to grips with. Susan said a lack of station training does not help and that training officers are few and far between and unable to reinforce good practice in their expectations of patient care.

The issue of non-transport decisions can also fail in the other direction as paramedics will use the non-transport route for what some consider are the wrong reasons. Justine, who is one of our most senior paramedics interviewed, has an extensive background in both education and paramedic roles within the industry. She has been a paramedic for 20 years and has worked for several ambulance services both nationally and internationally. She reflected that, with non-transport becoming an option in paramedicine and gaining more popularity within NSW in the last five years, there has been increasing concern about placing patients

at risk. She regularly reviews patient report paperwork and is concerned that paramedics leave patients at home without covering their bases:

So they're not doing the appropriate assessment, then they're leaving these people at home and then an adverse effect happens, but if they had checked everything and done a proper assessment, then they would've realised that that person wasn't appropriate for the LAP pathway, that they required transport ... I don't know whether just not educated enough about it or that it's a laziness thing, fatigue, you know, its two o'clock in the morning. I don't know. (Justine)

Many of the paramedics interviewed stated that there had been a paradigm shift with the type of care provided to patients in the past 10 years. Justine reflected:

I think New South Wales ambulance is moving away from the technician mentality to clinician roles. You hear that term a lot where they say, 'We're not technicians anymore; we are clinicians'. So people were very scared and they covered their arses I guess, so they worked within these protocols, because I'm not going to lose my job. CYA, CYA. That's how people used to think. Now with thinking that they are more like guidelines it's different but it still depends on who you are. Like do you want to use them? Or are you just going to treat them and later on fill in the boxes? (Justine)

From these discussions with participants it appears that NSW uses the protocols to assist with the mitigation of risk. I initiated a discussion on risk and its relation to the paramedic's educational background with the participants who were educators within the cohort. Ann first introduced the topic of educational background as potentially being an issue when designing the protocols. She said that not everyone has received the same level of training and it is important to recognise this in writing the protocols to ensure that the 'basics' are being met. Protocols need to 'state the obvious' because

Not all paramedics were built the same and this created a training nightmare for educators. Sometimes I have a great deal of difficulty getting people to do the basics well, so I'm professionally concerned that if we then throw out our more

rigid protocols in preference for something really broad, like guidelines, we will end up with more clinical errors because I don't think we're there yet – I don't think we are all amazing clinicians yet. (Ann)

She went on to talk about how having a more rigid protocol is necessary when paramedics have differing backgrounds and educational levels and how this then affects protocol development. This became an important point in the discussion to note and I started to explore the effect of educational variation on protocol use and development in more detail from this point on during the interviewing process.

1.44 EMERGING THEME 6: THE LEVEL OF DAILY USAGE RELATES TO PARAMEDICS' EXPERIENCE AND SCOPE OF PRACTICE

Stemming from the discussion on education and the use of protocols I wanted to understand in more depth whom the participants thought they were designed for, as it appeared that, for the most part, qualified officers rarely used them. From what I had understood so far, many gave the impression that the 'newbies' had to know them, so I created a picture that the protocols must be created with trainees in mind. I explored this in more detail in my following questions with the creators of the documents and addressed this later in the interviews. The previous two interviewees both had mentioned that protocols had been particularly useful for learning and as a reminder tool, but that they really did not use them much anymore. They were predominately using the pharmacology books, and not the protocols. This led me to consider that, if they are mainly used by staff who are learning, then junior staff should be involved in their development and in reviewing them to make sure they are understood and functional for this target group. I resolved that when I asked about who reviews them I would see if junior staff are included. There appears to definitely be a sliding scale of use versus experience level and the ability to recall the details of the protocols:

‘Level one paramedics should look at it [the protocol book] every job and learn to memorise it – as you don’t want to be doing that at a job’ (Leo).

I asked a few of the more experienced paramedics about their use of the protocols and how well they could recite them and was quite surprised by the consistent responses of very limited recall ability:

I wouldn’t be able to sit there and quote a protocol to you, but I would be able to sit there and tell you what’s probably beneficial for my patient ... Yes, when I was new they were my bible. I used them and it was, refer to this, refer to that, because they also have in there, treat associated conditions. So I’d be like, oh, I should look for this, rather than knowing that maybe an associated condition would be dehydration for someone with hyperglycaemia or something like that. So those kind of things are now second nature to me because clinically I know how they work. I think it’s more clinical base knowledge, but before they were my bible. I lived by them because I didn’t know any different. (Justine)

This quotation is of interest because it alludes to the fact that Justine was using the protocols as a teaching tool while ‘on the job’ and learning how to perform her duties. Perhaps her knowledge was incomplete concerning ‘associated conditions’ and the protocols assisted her to understand the underlying disease process. The fact that she was vocationally trained is also significant. As we have seen previously, a vocational paramedic uses protocols as an educational resource tool as they do not have a deep or complete knowledge of disease processes when starting out in their career. Their pathway is different to the university graduate as they start their career with very little education and get trained along the way, so the protocol book becomes a resource for their education. When I spoke to Ann regarding the assumed knowledge level required to use the protocols she stated:

I think the idea is as you are trained for that and your protocols are used as a reference point, not a ‘Here is every piece of information you could possibly need’ because then anyone could do the job, you know. I think if your protocols were full of rationales for each dot point, (a) the book would be the size of an entire

room, and (b) you wouldn't need a professional; you'd just need someone that could read.

This statement that 'you are trained for that and your protocols are used as a reference point' does not appear to include the vocationally trained paramedics who come into the job with very little medical knowledge. This raises the question of taken-for-granted knowledge. Understandably Ann's statement seems to be more appropriate for university graduates, and it is less relevant to those who have had fewer opportunities for education such as vocational paramedics.

Ann is also an educator with a similar role to Justine and she acknowledged she has to modify her language when she talked about the use of the protocols being dependent on a paramedic's level of training. When I asked her about the interpretation and translation of the protocol into practice, she gave me this very insightful vignette:

I think that book – it'd be really hard to explain it actually because it would depend who you're giving it to, and I know that sounds bad probably all on its own doesn't it? If I was giving it to someone – Joe Blow, VET-trained who has no clinical background whatsoever – I would not explain it as a 'guideline'; I would explain it as a 'rigid set of rules to stick by' based on patient presentation. If I was giving it to someone with a background of clinical knowledge, I would say 'This is a book with guidelines around patient care'. So, the explanation would be different depending who I'm giving it to. Is that weird? That's probably really weird.

[So who do you think they are written for? Who do they do or don't fit?]

The title of the book probably fits more VET-based with no clinical background. The actual algorithms on the inside probably fit someone with further study.

[What about the level of the language that's used in them?]

Some of it's really basic which if I'm talking candidly, I don't like some of the language in it; I find it a bit too basic and a bit too simple and, you know, it's often talked about as 'lowest common denominator stuff' and I'm not there, as in I think

we're a professional organisation and lowest common denominator is still a qualified paramedic so I don't buy into that. (Ann)

Reflecting on Ann's statements, I thought it interesting that Ann thought the language was too basic, as many paramedics who were vocationally trained thought the opposite. This growing divide was becoming clearer the further I delved in the interviews and the persistent question remained of whom the protocols were designed for. This prompted consideration that maybe the protocols were aimed at everyone as a minimum standard of care.

To conclude this section, a quotation from Susan aptly summarises the challenge of working out whom the protocols are written for: 'The protocols are just a base for everybody for when they are starting out. There's not one specific for ICPs for sure. Whether there needs to be or not, I don't know' (Susan).

1.45 EMERGING THEME 7: PARAMEDICS BELIEVE THAT THE PROTOCOLS AND GUIDELINES PRESCRIBE THE MINIMAL LEVEL OF CARE REQUIRED

The paramedic participants who practice at ICP level tended to treat the protocols as a minimum standard for patient care. They discussed going above and beyond that minimum care, using their clinical decision-making skills and combining their pharmacology and physiology knowledge to shape and adapt the protocol for their unique use. Occasionally they also created their own protocol on the fly for cases where no protocol was appropriate, or when treating a condition that is not mentioned within the book. I have touched on this previously with the discussion around VCP form use, but I think it is also pertinent to mention how much an ICP can struggle with more complicated care and decision-making. Abe used the example of a patient with the condition hyperkalaemia, which is a disorder of too much potassium in the bloodstream:

I know that I could probably give some salbutamol to assist in that potassium, but that's nowhere near written in any of our protocols. And I might do that if I feel [like it], you know what I mean? (Abe)

He went further to also mention then having to massage the patient's paperwork to try to retrofit the protocols with the treatment he performed:

I treat what I see and what I know, and then I will move to when I'm doing my paperwork later on to say, which protocol can I fit this into. For example, let's just say I have a patient in rapid AF. I don't actually have a protocol to fit that anymore, so I've kind of just got to put an A2 basic protocol down because there's no protocol for that. You cannot put down that that's cardiac, like an ACS, because it's not, but you've given aspirin. So I find it hard, I don't find that I can work within that when I go to do my paperwork. (Abe)

In this case he gives the patient aspirin as he feels that the benefit will override any dangers.

Carol explicated further:

They're a starting point, they're a reference point. Because we do see – sorry, that was my point – because we do see so many various types of work, if there's something that you haven't seen for a long time, they're a really quick and easy way to find out anything you should absolutely consider as a minimum. But they shouldn't be the be all and end all. (Carol)

There appear to be some gaps in the background knowledge of vocationally trained paramedics that can affect the use of the protocols as a minimum standard of care. If the paramedic does not have an understanding of why a treatment or procedure could be beneficial then they might omit these steps. An example of this is the spirometer tool used in asthma. A spirometer measures the amount of breath that a person can breathe out in one breath. It is commonly used to gauge the effectiveness of treatment or degree of difficulty in breathing during an asthmatic episode. Pete, a vocational paramedic, stated that they were

never trained in spirometer use as vocational paramedics, but he knows that this is covered at university where they are able to ‘go into the details’ about asthma management.

But a vocational paramedic really doesn’t see the use for it. So there is a lack of use in the tool because of a lack of knowledge. A misunderstanding of why it may be useful as well. Such as this. Never pulled out a spirometer. Patient has got asthma, they’ve got asthma. I don’t check their tidal flow and all that sort of stuff. Generally the patient has never used a spirometer either. It’s a very old tool, I feel.
(Pete)

Pete’s limited knowledge of spirometer use may ultimately affect his ability to successfully reassess and manage the medications used in asthma, placing the patient at risk of over or under-dosing. Spirometry is still considered best practice to manage asthma both at home and by a specialist but it is fundamentally undervalued because of a lack of clinical knowledge in the untrained paramedic.

This taken-for-granted concept of what is needed as the minimum requirement to understand the protocol led me to reflect on the creation of the documents and what the creators expected in terms of education level and background knowledge. The enquiry continued as I wanted to learn more about what challenged paramedics in their interpretation of the protocols. Were there other factors such as the language or the terminology that perhaps were also being taken for granted or misunderstood? I decided I needed to broaden my questioning about their everyday use.

1.46 EMERGING THEME 8: TEXT CONTENT, LAYOUT AND COMPLEXITY PLAY AN IMPORTANT ROLE IN PROTOCOL AND GUIDELINE FUNCTIONALITY

The open-ended questions I asked around facilitators and barriers to the use of the protocols, not surprisingly, led to questions about the role and use of abbreviations, mnemonics and acronyms.

1.46.1 Abbreviations, acronyms and mnemonics

After my own experiences in using guidelines and protocols, I was fully aware that the protocol book would have many abbreviations, acronyms and mnemonics that are used to represent either treatments, assessments or diagnostic aids. In general, most paramedics are familiar with the abbreviations, but less familiar with acronyms and mnemonics which are commonly seen as patterns of letters that can be used as aide-memoires. When I spoke to the paramedics about their use within the book, many paramedics stated that the heavy use of acronyms can get confusing and they are present in almost every protocol. Another significant challenge is the protocol book does not have a glossary of terms, which means the paramedics are reliant on their memory of these terms.

Examples of acronyms that the paramedics provided during the interviews included the following from the protocol for mental health emergencies. These acronyms are used for risk assessment and assist a paramedic to make a decision regarding a patient's mental state at that period in time.

STATE

- Signs and symptoms that indicate an abnormal state of mental health including agitated behaviour
- Thoughts that indicate delusions, hallucinations, suicidal ideas or illogical thinking
- Apppearance of the patient
- Threats or acts by the patient that are potentially harmful to self or others
- Emotions of the patient that indicate feelings of sadness, distress, anger or hopelessness

THREAT

- Thinking of suicide, e.g. ‘Have you been thinking of harming or killing yourself?’
- History of previous suicide attempts, e.g. ‘Have you tried to harm or kill yourself in the past?’
- Reasons and circumstances, e.g. ‘Why do you want to harm yourself?’
- Emotionally depressed, e.g. ‘Do you feel that your circumstances are hopeless or out of control?’
- Access to lethal means, e.g. ‘Do you have access to anything that could harm you?’ and ‘Do you have access to a firearm?’
- Tactics and plans, e.g. ‘Have you been making any plans or taken any steps to harm yourself?’

Both of these mnemonics are explained in full within the text, but paramedics stated that many others are referred to and need to be remembered on an ongoing basis. I decided that I would look at these in more detail after I had finished my interview sessions. I had begun planning in my mind by this point that I needed to look at the protocols in more detail and additionally needed to ask further questions of the creators of the documents. In the document analysis section I examined the extent of the use of abbreviations, acronyms and mnemonics.

1.46.2 Terminology and language

Many of the paramedics interviewed felt that the protocols represented a minimum standard of vocabulary that was required for practice. After conducting the interviews with a wide range of paramedics I wondered if this expectation was too high for some, especially newer and vocationally trained paramedics, and how this might ultimately affect practice and interpretation of the protocols. Most paramedics would not have full command of the

vocabulary in the protocols from day one after their initial training, and it was something that they were expected to build towards.

I felt this was an unusual contradiction. The protocols were expected to set a minimum standard for terminology and language, but most vocational paramedics were not able to achieve this during their probationary period. Many never achieved a full understanding over a career. After speaking to the educators who were willing to participate in the study, they said they spent quite a lot of time helping staff understand the protocols and their intentions, and I did wonder if the terminology and level of language may not be helping. The following is an excerpt from Pete's interview. Remember that he is experienced with 7.5 years of practice, but came through a vocational system.

Akathesia – I've got no idea what that is. Another ...Purpuric, there you go. 'Haemorrhaging non-blanching rash'. I wouldn't have known that. But there's a lot of people like myself that come from the vocational background that find it hard to spell, let alone – I can't spell half the words that they use.

[Do you think there's a lot of people like you?] Yes.

[So you're saying it's the level of literacy expected to read the protocols has changed, as with the expectation, with more university grads coming out, you think the language has changed as well?] Yeah. Well I haven't worked with a lot of uni grads, so I can't really comment on that one, I don't feel.

[But the language in these?] Yes. (Pete)

A couple of things stand out in this interview excerpt that brought together a few themes that were emerging for me. Pete is an experienced paramedic and due to this experience places less reliance on the protocol book and does not read the actual protocol book in many circumstances anymore. He revealed that there are words in there that he is not familiar with and appears not to have taken the time to learn or to understand, for whatever reason, and that he considers himself not good at spelling. There appeared to be a growing disparity between

the knowledge and literacy background of those who came through the university system and those who came through the vocational system.

In comparison Ned, another vocationally trained paramedic, but who has considerable experience and a university degree in a different occupation, had a different perspective on the language use and his understanding:

[And how do you find the language that's used, the terminology?] I don't have a problem with it. I mean I accept they're wordy because they have to be, and they're probably increasingly professional, which I like. (Ned)

Susan said that, coming from a university background, she was familiar with much of the terminology when entering the workforce. She stated that now as an educator she has to assist many of the vocational staff to understand the more advanced terminology and feels that this is often taken for granted within the vocational system. Susan suggested that the organisation has a professional expectation and the complexity of the terminology reflects that:

So I think for those kind of people [new vocational staff], it would've been very much simplified because they've got eight weeks to learn anatomy and physiology, as well as how to treat and look for specific diagnoses. Obviously they've got booklets to do through probation, but that initial getting them through is eight weeks of intense learning. So maybe they do simplify things there, I'm not sure ... And I remember trying to help people just remember the terminology. It was quite hard for them.

[Do you think that that's something that potentially people could take for granted when they're writing the protocols? Is that they may be overestimating the literacy of people?] Probably. Or whether they're kind of saying, there's an expectation, this is the benchmark, and this is where you need to be.

[You should understand this. Or learn to understand this?] Yes (Susan)

Paramedics for the most part accepted this expected level of proficiency in the language and terminology to promote professionalism and felt that the language should be specialised

towards practice. Some of the more educated paramedics even went further to express their disappointment with how they felt the protocols were 'dumbed down' for lower-level paramedics without university backgrounds.

Yeah, so I don't particularly like the language. I don't find the language is always necessarily clinically based; I think it's almost always over-simplified. Most patients we see now are complex with comorbidities and have kind of varying presentations so I think using simplified language simplifies what we do and I don't think it's that easy. (Ann)

I asked Abe his perception of whom he thought the protocols were aimed at in relation to clinical practice level. He said:

I think, you know, with students, so with trainee paramedics, we need to cater for the lowest common denominator. We're going to package things aimed at the lowest common denominator. Rather than saying, essentially, 'This is where we expect the base level to be', we're going to say, 'Well, this is kind of the level where you're expected'. (Abe)

However Abe also feels there is a problem with the expectations of level 1 paramedics, as there is such a variety in abilities across the cohort:

There's a massive gap between the lowest and the highest. So you've got P1s out there who are very well educated, very qualified, who could practise at a much higher level than P1s that are down here [he is indicating with his hands], yet the education is structured more to support the people down here, and that's kind of always, I guess, been a bit of a cultural thing with ambulance. (Abe)

I spoke about this diversity in the workplace with the educators I interviewed and they described it as a daily challenge for them. They feel that this diversity is not well recognised by the organisation and creates unique issues with education and ongoing training. The protocols are aimed at a level higher than vocational ability and some paramedics need additional support to get them to the expected level.

Again, I think we're seeing a slight evolution, and I think the biggest influence on that is having graduate people moving into the workforce. Yeah, for as long as we have this mixed workforce. I think if they [the organisation] came out next year and said, 'Right, as of this day forward, any qualified paramedic who is not tertiary educated, we will facilitate that training for you to bring you up to the level that we're now expecting.' Because that's essentially what they're saying with moving towards graduate. (Abe)

[What do you think would happen to protocols if we did that?]

I think with the graduate workforce, I'm sure that in the first year or two perhaps, they would probably only use their protocol book just to reassure or reaffirm their decision-making. But I think once they reach that point where they're familiar enough with those guidelines, then they're going to be practising independently, essentially, and maybe only those occasions, as I mentioned, when you do have that job that you just haven't done in a long time, in the absence of someone to bounce that off. (Abe)

I felt this was a really nice point to close on for this topic, as within one sentence he moved from discussing protocols to guidelines. He was saying that, as paramedics' knowledge becomes greater, they will use the protocols less as a strict or rigid set of rules, and more as a set of guidelines or just as a reference guide. This theme had definitely reached saturation for me.

1.46.3 Use of algorithms

When the paramedics talked about the evolution of the guidelines they stated that NSWA has moved towards the use of algorithms and flowcharts in more recent years. These clinical decision trees are popular throughout the health sector and I decided to ask paramedics how they felt about them, including what benefits, if any, they saw from using them in practice.

Most felt that the shift to algorithm-based care was positive and that the algorithms were more inclined to push clinical boundaries than the old-fashioned dot-point protocol. It

was also interesting to note that they considered these protocols more advanced and for higher-level clinicians.

The ones with dot points – and most of them still have dot points – are probably more for the early trainee. They are helpful, they're not unhelpful – they're very helpful but doesn't leave you a lot to work with if you've got other ideas. I think what's important about the algorithm is that it asks you, the paramedic, a question. So, it says, 'Does the patient have this, this or this?' And you can answer that question, looking at your patient, and make a decision. The dot points don't ask you a question; they tell you what to do: 'You must do blah, blah, blah.' Whereas the other ones, I feel like they empower a paramedic to make a decision about patient care based on the person that's sitting in front of them. Very different.
(Ann)

The concept that the algorithm provides choices for a paramedic then also suggests that the paramedic is thinking at a higher level and the patient is getting treatment that is being tailored for them. The challenge I wanted to discuss from the algorithms and how they were perceived was to know what happened if the patient did not fit the algorithm. I asked: 'What if the patient presentation does not fit in the algorithm? What if you can't make a decision between "Yes" or "No"? Does that happen?'

Yeah, I think it happens. I think ultimately one of the things we're working on with clinical competence in paramedics is the ability to make good clinical decisions. So, it's not 'They don't fit "Yes" or "No"'. They have to fit 'Yes' or 'No' and you need to look at them and in your best clinical judgement put them in that 'Yes' or 'No' box, whatever that might be. Are they ideal boxes? No, but they will fit somewhere and they'll fit in one box better than another. (Ann)

I felt this was quasi-clinical decision-making. Paramedics still have to make a choice for fit, as patients *have* to fit somewhere. So it was still really a protocol as it did not allow freedom to create a new pathway; it just allowed a choice between two directions. It was becoming

clear to me that the documents were really a set of instructions that pointed to pathways. I made a note that I would also ask the creators of the documents their thoughts on the matter.

1.46.4 Accessibility and size

The use of electronic means for education and entertainment has significantly increased in our society and paramedicine is no exception. As described in Chapter 2, many ambulance services are moving to an online or web-based resource for guidelines and protocol management. I wanted to talk to the paramedics about this, how they thought it may affect their practice and whether it changed the way protocols were being used.

All of the paramedics I interviewed were impressed and thought positively about the online application, even though during the time I was completing these interviews the app was still in its testing phase and had minor glitches that were being rectified. The portability of a phone app and having the information handy was valued and appreciated. Similar comments were made about having the book small enough to fit in a pocket; this too was considered valuable. However, there was also an appreciation of how this affected the content and condensed the protocol, which minimalised the resource itself. Leo and a few others provided a great snapshot of these views:

Now the books used to be the size of a biology textbook, you could kill someone with them if you wanted to. So ambulance has been smart with condensing and making the book smaller. Then they made the medication calculation books which are like flipcharts. They're fantastic. And then they've gone online to an app, because everyone uses their phone. I find myself I'll often be in the back with a patient doing my paperwork, assessing the patient, and I'll pull my phone out and open the app and I'll just make sure I'm writing the paperwork properly or making sure that yes, that dose that's given, that's the right dosage for example. So I think ambulance is going down the right path. (Leo)

I'm comfortable reading off my smart phone, and I never go anywhere without it, like most young people. So I'm happy because I've got it on my phone, it's fine. And I know how to quick search things and it's an easier reference. (Ann)

[So, size then is a barrier?]

Yes, definitely, and I think portability is; size and portability, given that we're itinerant workers so we don't sit in an office, refer to a book and then go and do a job – we are in a truck and that's it and what you have with you is what you have with you and you have each other's knowledge. That's your other point of reference. (Susan)

As mentioned above, the book's presentation can significantly affect the way it is used in the 'on road' environment and online applications are a positive step towards increased usability for the paramedic. The benefit of online applications is the amount of content that can be presented within an application as opposed to a small book that could fit into a pocket. In reflection I wondered if condensing the information caused potential issues with comprehension. I decided that I would examine this within the documents later. I was keen to explore the topic of protocol layout and attenuation of information and whether this causes issues with knowledge translation. If paramedics had less information available in a pocketbook would that create more variation in practice than a comprehensive book? I would assume this consolidation and reduction in information would affect the way paramedics interpreted and translated the protocols, unless everyone was trained to interpret them the same way, and as demonstrated already this did not seem to be the case. The wide variation in training and education has an effect on the way protocols are interpreted and I theorised that having a smaller pocketbook with less information could certainly lead to a wider variation in the types of care that paramedics provide.

Overall presentation, layout, grammar and spelling were discussed as the interviews progressed as facilitators and barriers to protocols' use. One topic that popped up often was the number of 'typos' that quite often were undetected during the protocol development

stages and were only discovered after implementation. This was often a source of frustration and deserves separate exploration to provide an understanding of the issues.

1.46.5 Proofreading

Several paramedics (interestingly only the junior paramedics) expressed frustration about the implementation of the documents. They felt that there was a level of disregard and unprofessionalism in the final product, which was often recalled or amended after distribution. As a paramedic myself, I knew that this was not just a problem for NSW, but I had seen it personally in every ambulance service that I had worked within. Quite often stickers for corrections were provided after the documents were handed out, or there were even complete rewrites of the book. I empathised with their feelings as I knew how this could create feelings of mistrust in the organisation. If paramedics do not trust the protocols, if they are not sure that their protocols' doses or instructions are correct, this increases risks to the patient. These worries add to their reasoning processes, and when new guidelines or protocols were rolled out, it is always a big deal. Leo was quite animated in our discussion about implementation and was obviously frightened about its impact upon patient care:

It's so goddamn unprofessional. Like even just looking on the intranet now, so the books have all been printed up, they haven't been sent out to stations yet, I think that comes out next month, and already there's 10 typos. Not just typos, but medication errors. So when we get the books, we actually have to then whiteout the error and write the correct one, and I think that's bloody unprofessional. (Leo)

Luke worries that the service is dismissive and tells them to 'just check the intranet for the latest versions'. He feels this is a significant risk to practice and thinks that many of the more experienced paramedics may get complacent and not update their protocols when typos are found.

You're not going to check on the intranet to make those corrections in your book. You're just like, 'I was given this book. I'll use it.' So I had to get that off my chest. [laughs] I suppose the big hindrance is there's so many typos, which I actually – here's my rant I suppose. As the state health government organise it, like its run by Health, this is a public entity, I just don't see why people can't spell-check. (Leo)

The paramedics definitely perceived there is a risk to patients when this happens. This was also discussed by Pete. Remember this is the fellow who works in the country and uses the protocols in situations where he has not seen a particular type of patient presentation in a while? He uses them as memory aids because he feels that he has forgotten a lot of previous knowledge:

I do have concerns that they don't come out when they're supposed to and that they come out with so many errors, that you've got to then go back through and make changes to – like there's so many errors at the moment, but you can't write in the book because it's made of this super indestructible paper that you can't write on with biro.

Yeah, just makes it hard. It makes you lose confidence in the fact that – well it makes me feel like it's something that the service can blame you for, when I've used my tool and my tool is wrong because they made it. But it still comes down to me because I gave the drug. I don't want to be responsible in that aspect. I don't think the service would back you. I think they'd hang you out to dry. (Pete)

A low workload for Pete means that as a paramedic in 7.5 years he said he has never used Benpen (a drug used to fight severe infection), midazolam (to stop a seizure in a patient) or thrombolytics (drugs used to reverse blood clots). He also says he has not seen autonomic dysreflexia or meningococcal septicaemia and has not had a childbirth in the last five years. Being reliant on a protocol book as a gap filler and aide-memoire is particularly important for him as is being able to rely upon it for accurate and potentially lifesaving information.

Besides the above, I was keen to find out if paramedics often referred to the back sections where there is a lot of reference material about pathophysiology, handover tools, hand hygiene and other information. So I asked them, what else is in the box and was it useful?

1.46.6 So, what else is in the box?

When I discussed the reference section with Susan, she reflected upon the doubtful relevance of some of the listed items. A few examples she gave included the diagrams of the dermatomes, the airborne disease section and the hand hygiene section. I cannot help think that as of now (June 2020) with the Coronavirus pandemic, information such as this is not only quite useful, but lifesaving. It is just that it is not used by everyone all the time; just by some people, some of the time. My question then is – how does a reference become a reference? I made a note to ask the creators of the documents this point later, but first I wanted to explore what the paramedics thought about it.

As an intensive care paramedic and being university trained, Susan is in a minority within the workforce but still says that she needs to know more, and understand more, to be able to practise at an optimal level. Within her protocols she showed me how she added notes throughout and how these are functionally useful for her:

I also have notes everywhere through my protocol book. So for example, in abdominal pain, I've got how to find McBurney's point and things like that. So just prompts me to go, oh okay, this is what I use to find appendicitis. Or in my pharmacologies part, I've got actual how the pharmacodynamics of the drug work in there too. And then maybe things like adverse effects and then why that is adverse. (Susan)

Having notes helps Susan understand the drugs or patient assessment better. If the paramedic knows how the drug works in more detail, such as Susan's 'adverse reactions', she then feels

more comfortable in using the drug in cases where there is no standard protocol. An example is her previous explanation of giving a patient aspirin if they are experiencing atrial fibrillation.

I further explored the paramedics' concept of what should be contained within the guidelines manuals; in particular we discussed the use of reference material. It appeared that the reference section was thought to be provided for two main reasons. The first was as a reference guide for those who were learning and the second was that it provided additional tools for mitigating risk. If it did not fit either of these categories, then it was quite often disregarded as irrelevant information. These elements alone or in combination dictated the use of the resources/reference section.

And some of the reference points in the back of this I feel are a bit irrelevant. I've never done a drip count, I've never done the – I don't even know what it's called because I've never done it. It's in this one. I've only just got this. Here it is, spinal cord sensory and motor examination.

[How often do you get a spinal patient?] Often.

[So the dermatomes aren't really necessary to have in there?] Yeah. You know, you're more concerned with pain relief and all the rest of it, what's going on, then trying to find out at what point is the cord severed or whatever. (Pete)

Susan mentioned that the skills guide is not available electronically in the application and is mostly only accessed back at the station. She said that, with everything going digital, it would be a good time to have these available electronically via the application as well. As an ICP she feels that these would be very useful. I thought this was an interesting statement as it may represent the fact that ICPs do not have an opportunity to practise their skills frequently enough to feel confident in remembering them while on the job. With the development of the application for the protocols, there seems to be some room for improvement that could be considered.

[So having an app that had the built-in skills, the pharmacology and the protocols would be quite handy?] Oh yes, yep. Definitely skills. Hands down, I'll stamp my feet at that one. A lot of people have printed it out as an A5 size, but I don't know how many skills we've got. Like there's hundreds of them. So it's a lot of a process, and then they're updated obviously and people don't know. Then they're inside the car and it's a book and a folder, and some people get it bound, some people put it in plastic slips. Yeah. And that's if they've even done that, even been bothered to do that. It's a lot of paper wastage too if it's not correctly done, but yeah, I think skills would be the most beneficial thing. (Susan)

1.46.7 The view from paramedics about the current implementation method

I have mentioned previously when discussing the protocols how typing and grammatical errors are often overlooked through the development process and cause a ripple effect when the protocols are implemented. I was given the impression by the participants during the interviews that many of the protocols and new drugs or practices were implemented initially as a trial for paramedics at a more experienced level of practice, such as the intensive care level, before considering the final practice level it would belong to. The 'bigwigs in Rozelle', as Pete put it, watch how the drug and associated protocol is used and then see if there are any errors or confusion. Then they reassess and change the protocol accordingly. Pete's gave his unique perspective on the process of drug implementation: 'It may take two or three years, but then quite often the drug will make it down to the next level of practice' (Pete). He postulated that when a new drug or protocol is introduced it is often followed to the letter.

Because they're not comfortable with them yet. And then all of a sudden some of the smarter ones or more philosophical ones will start saying, 'Well wait, hold on. Why do I have to section them? They haven't threatened suicide or stuff like that.' And then you get all that ambiguity. So then when you have that, the ambulance will rewrite the protocols and the pharmacologies and make it very specific to get rid of that ambiguity. And then as everyone becomes comfortable, like you watch, in 12 to 28 months it will change again. It will go back to what I was saying, that there's more freedom, the wording has changed, so as opposed to [using the word]

must, it's should or consider, sort of thing. So I think that's a natural progression.

(Pete)

Besides Pete's point above, the majority of the participants were not aware of who developed the protocols and how they were implemented. Many affirmed that there was a potential for a new protocol to be developed by a VCP process or a clinical review. No paramedic involved in the study was aware of how the protocols were created and who was behind the development panel. None had been involved in the review stages either. I had several pull out their protocol book and list to me the people who were recorded inside the cover, but none had been involved in any of the processes or were aware of them. I would look to other health agencies later to discover the significance of guideline implementation for an organisation and its important role in evidence-based practice and risk mitigation.

The information that I was gleaning from the interviews built into the next step of my analysis of the protocols. As grounded theory methodology is a cyclic process, I was continually building steps towards a greater understanding. I still felt at this stage that I had some significant gaps in my picture of how protocols were viewed and used; however I had saturated the emerging themes from the interviews with the paramedics.

The information gathered about the facilitators and barriers to using protocols painted a picture that protocols in their current form do not appear to be designed for everyone. This prompted me to consider whom they are actually designed for, who benefits the most from the way that they are written currently and what level of education or background is really needed to use them effectively.

I knew that I had two significant missing links. I needed to talk to people who knew more about the history and creation of the protocols, which would help to build a better understanding of the cultural and organisational impacts of these documents, but the data from the interviews also pointed to the need to critically analyse a representative sample of

the clinical protocols. Talking to the creators of the documents would provide an understanding of whom they were designing them for (and how) and I wanted to understand their considerations about the different types of scope of practice among paramedics and their different educational levels. This analysis would provide some much needed perspective about the genesis of the protocols.

1.47 FURTHER INTERVIEWS WITH THE DOCUMENT CREATORS AND HISTORIANS

Once I made a commitment to delving more into the background of the creation of the documents I started interviewing those who were currently involved in guideline development as well as those who had been involved historically. One interview lead to another naturally as people shared connections and networks. There was certainly no shortage of document creators who wanted to share their experiences. Sadly, I also realised that none of this information had ever been captured before. Talking to people who had historically been involved with paramedic guidelines and protocol writing probably was not interesting to many people, but for me it was an opportunity to capture a brief piece of history that would otherwise be lost to time. Ultimately I talked to as many people who had been involved in protocol development as those who were currently using them in practice. I had not expected this at the beginning, but the stories that were shared were enlightening and added valuable depth to the perspectives on current practice. Much of this information has been incorporated into the themes above, but there was one additional theme that was created specifically from these interviews which was the difficulties of developing guidelines within paramedicine.

1.48 EMERGING THEME 9: THERE IS UNCERTAINTY ABOUT ORGANISATIONS' EXPECTATIONS OF THE REALITY OF PRACTICE

There was a shared perspective of a disconnection between what the organisation thinks paramedics are capable of and what may actually occur in practice. Expectations of paramedics' abilities, their underlying level of knowledge and the required depth of detail were often stated as challenges that required balancing when writing a guideline or protocol. Additionally, as protocols are developed and updated only as required, there is inconsistency across the document because of an inability to update the whole document on a regular basis. The result is that more often than not there are large differences between the protocols regarding implicit knowledge, language and level of detail. The document over time becomes a 'hodgepodge' or untidy mixture. Several developers of the documents stated that their organisation failed to adequately resource the updating of the documents and that meant they were limited in their ability to keep them up to date and at the right level of practice (with regards to evidence-based practice). This in itself was stressful to many as they were often previously on-road paramedics who were now tasked with the responsibility for guideline development without any formal training in how to create the documents appropriately:

You know it's a bit of a joke, really. We're this huge ambulance service but I'm like just one guy who has to try coordinate and keep up to date the whole lot ... we have all these people who are meant to help out but trying to get all of them done on a regular basis is just impossible. I had [name deleted] come in and she was going to help develop the [name deleted] protocol and she spent 18 months just getting that one done. 18 months for one protocol, and I am trying to keep all of them updated every year. She didn't last, her position wasn't renewed anyway. Not her fault, but we just operate like that. (Andrew)

Many creators of the documents are aware of the changing role of paramedics within paramedicine and all had firm views on the level of required knowledge and skills. What I found intriguing was that none of the document creators had any formal training or guidance

in guideline/protocol writing. Additionally, their knowledge did not come from attending conferences, reading current literature or discussions with universities or academics, but from their own practice, and was socially constructed and sustained by local practices. I was discovering that protocol/guideline development has its own culture which has been socially constructed and locally sustained for a very long time. This became an interesting point to consider as there are well-known and reputable guidelines for the writing of decision-making tools in health care, which I will discuss in Chapter 7. I felt a little dismayed at this point that we, in paramedicine, were most likely ignoring much of the research already done by others in this area.

1.49 CONCLUSION

This chapter has focused on the themes generated from the interviews with paramedics and the document creators. There was an unusual dichotomy discovered between the interviewees' responses concerning the ideal use of protocols and the way these documents were deployed in practice. In this regard, educational achievement and associated experience appear to determine how paramedics interpret the protocols and translate them into practice. The results revealed that paramedics actively participate in self-driven activities to facilitate professional growth outside in-service training but that this is demonstrably higher in those who have university backgrounds. Moreover, even though rote learning of protocols is viewed as an outdated practice by many of those interviewed, most new paramedics are still expected to learn protocols by rote, with the exception of the pharmacology section.

The themes show that a paramedics' knowledge concerning a drug or disease influences their decision-making regarding whether to stay within or go outside of their scope of practice. However, the paramedics' interpretation of when and if a variation to clinical practice form is required appears not to depend on whether they went outside of practice, but more upon their definition of acceptable risk while performing their duties.

Guidelines or protocols serve as valuable instruments for fostering safe or best practices. Despite the utility of protocols to paramedic practice, many participants felt that they are, or should be, designed for probationers; protocols should be created with trainee paramedics in mind. The emergent themes emphasised that protocols set a minimum expected level of care and that paramedics are free to exceed requirements associated with the protocol. Paramedics often will shape and adjust the protocols to meet their unique needs. The barriers and facilitators of the effective use of protocols include acronyms, abbreviations and mnemonics, terminology and language use, use of algorithms, accessibility and size, proofreading, and level of complexity.

This chapter has summarised the emerging themes from the analysis of the collected data. These themes elucidate the participants' perspectives on different protocols in their paramedic practice. The chapter further explored protocol usage and their perceived value. From this chapter, it has become evident that, despite their importance, there are also variations and discrepancies in protocols and guidelines, as well as other obstacles affecting their implementation in the field. The interviews reveal the need for clarity and alignment of training to the application of the protocols in the field. To the participants, aligning the training and application in practice of the protocols is the best way to eliminate the challenges and discrepancies associated with their implementation.

The knowledge gained from the interviews informed the building of the conceptual framework used in the next chapter. I used these emerging themes to create the three-part method employed for further critical analysis of the selected protocol documents.

CHAPTER 6: ANALYSIS OF THREE PROTOCOLS

1.50 INTRODUCTION

In the previous chapter, I explored and developed an understanding from the participants' viewpoints on the value of the protocols as decision-making tools during their everyday practice. However, more depth and explanation were warranted due to the descriptions of facilitators and barriers in the protocols themselves. This led to further enquiry into both the historical and cultural underpinnings of protocols, and the value of varied implementation methods and concurrent training. During the interviews, I felt compelled both to interview more people outside of the paramedic pool and to complete a more thorough critical document analysis of the protocols to understand and clarify the emerging themes.

In this chapter, a detailed analysis is presented of the protocols' beginnings by understanding how history and culture have been key factors influencing their application by paramedics. The chapter also shows how government policies and the requirements of different agencies have been critical factors in shaping the direction and development of individual protocols used in the field. I also explore how the documents are prepared and who is involved and influences this process. Whether a protocol is monitored by key performance indicators also appears to play a part in its updating and regular review processes. Factors such as staff usage of the protocols, the influence of government bodies, performance standards, and links to outside organisations are part of the discussion in this chapter. The aim is to understand the role of these factors in shaping the outcome of the final protocols that paramedics use in their everyday roles.

Lastly, a content analysis of selected protocols will also be part of this discussion. From the previous chapter I discovered that many paramedics complained of challenges due to terminology, layout, algorithms and acronyms. The use of content analysis aims to

understand how protocols are created and shaped and whether we can identify what elements may create challenges for the paramedics, thus hindering the application of the protocols.

1.50.1 Review of rationale behind protocol selection

As mentioned in Chapter 4, the rationale behind choosing the following three protocols for discussion is that they share common characteristics surrounding the complexities of patient care. They provide an appropriate cross-section to discuss the elements of decision-making that may be considered while utilising the protocols. All three protocols concern care for patient groups that have the potential to:

- not be transported
- be critically unwell
- be combative and require sedation
- cover a wide range of potential complexity and acuity.

The three protocols that are reviewed in this section are:

1. Resuscitation Protocols (see Appendices K–M)
2. Mental Health Emergency Protocol (see Appendices O and P)
3. Seizures Protocol (see Appendices Q and R)

The conceptual framework that provides the foundation for this document analysis uses the following three steps. More detail of the methodological rigour in developing this framework was provided in Chapter 4. For a quick review I have provided the following figure again.

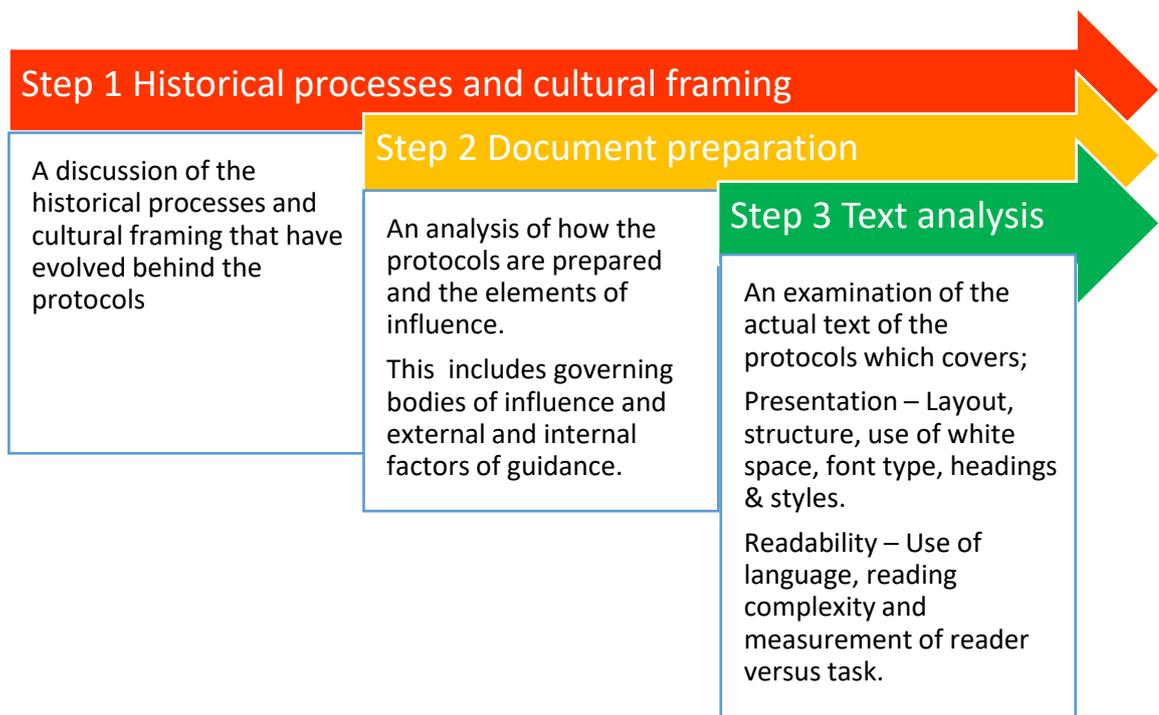


Figure 10. Revisited conceptual framework for paramedic protocol and guideline analysis

1.51 STEP 1: HISTORICAL PROCESSES AND CULTURAL FRAMING

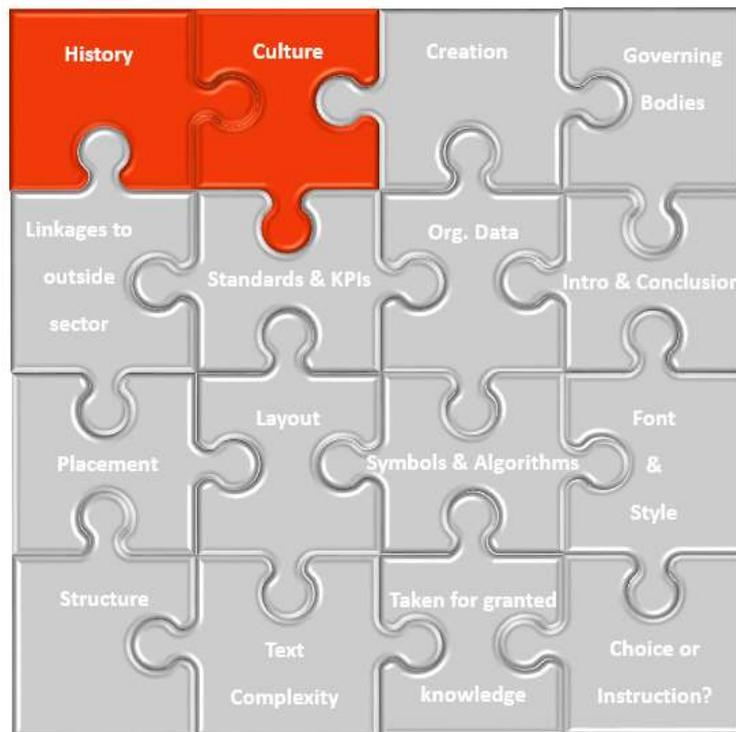


Figure 11. Considerations for step 1 of the conceptual framework

1.51.1 History

Many protocols within paramedicine evolved from original first aid textbooks that were still used up until the 1960s. Both the resuscitation and seizures protocols have older roots and the Mental Health Emergency Protocol (originally labelled either psychotic event or agitated patient) emerged around the late 1990s.

The cardiac arrest protocol has a long history within first aid and paramedicine and it would be safe to assume that every version of the NSW protocols (beginning in 1975) has included resuscitation within its contents. Modern day resuscitation protocols trace their origins to the eighteenth century. In 1740, mouth-to-mouth respiration and compressions of the abdomen for drowning victims pulled from the River Seine was recommended by the Paris Academy of Sciences (Johnson, 1773). Further developments in resuscitation began

when several researchers became aware of each other's work in the late 1950s and early 1960s. It was through a series of serendipitous events that their work combined to become the modern day CPR algorithm (Kouwenhoven et al., 1960).

In Baltimore in 1958 at Johns Hopkins University, researchers inadvertently discovered that external compression to the chest of a dog in the fatal cardiac rhythm of ventricular fibrillation resulted in a pulse in the dog's femoral artery (Flynn, 2011). Bizarrely, at the same time and hospital an employee, William Kouwenhoven, who was an electrical engineer, invented the first defibrillator that worked upon a closed chest (non-exposed heart) which could potentially restart the heart from direct defibrillation (Kouwenhoven et al., 1960). This discovery was refined and later adapted into a portable defibrillator, and during the same period in the same city, but a different hospital, local anaesthesiologist Peter Safar performed extensive experimentation on refining emergency airway maintenance and breathing, which resulted in the triple airway manoeuvre still used today (Queensland Government, 2016).

These three major breakthroughs resulted in the combined method now known as cardiopulmonary resuscitation (CPR) (Lenzer, 2003). The first resuscitation protocol for use outside of the hospital was developed by Wilder, Jude and Safar in 1965 and was utilised by Maryland firefighters who applied the ABC CPR steps for the first time to pulseless patients prehospitally during transport (Safar, 1989). Resuscitation protocols now exist in various forms and in a wide array of locations that include both healthcare and non-healthcare settings. You will find them everywhere including within shopping malls, local swimming pools, doctors' surgeries and childcare centres.

Similarly to resuscitation, seizures (otherwise known as fits or convulsions) have been well described within medical texts, first aid manuals and then as time developed ambulance service protocol literature. The Seizures Protocol has shared an equally long past and has had

a place in every ambulance protocol book. The oldest detailed account of epilepsy is on a Babylonian tablet in the British Museum from 2000 BC. The Babylonian view was that epilepsy was a disease that was sacred and that the human subject was invaded by gods (Epilepsy Canada, 2019). It was not until Hippocrates came along in the fifth century BC that epilepsy was linked to brain disorders, and not until much later in the eighteenth and nineteenth centuries that treatment aimed at the underlying disorder began to take form in modern medicine and the disease was emancipated from religious superstitions (Magiorkinis et al., 2014).

Unlike the two previous protocols, mental illness both acute and chronic was largely ignored until the late 1980 or early 1990s. Mental health ‘emergencies’ have had a chequered recognition, with the disorder frequently being renamed throughout the past 20 years. These ‘emergencies’ were often added on to protocols that were already in place. Some examples of this include ‘the combative patient’, ‘the agitated patient’ or ‘the suicidal patient’, which were specific situations where a skill or drug could be applied. These came into practice during the early 2000s and did not include any holistic approach to patient management or tools such as de-escalation. During the past 10 years, ambulance protocols have progressively become more refined in terms of language/terminology that is nationally or internationally recognised, and with specific protocols being developed solely for mental illness and aligned with a philosophy of care, least restrictive management and a focus on recovery.

1.51.2 Culture

Understanding how culture can influence and co-construct understandings is important as this plays a significant role within paramedicine’s history. Additionally external cultural sources can have a bearing upon the way that a protocol is managed and valued.

There does not appear to be any reference to outside texts in the resuscitation protocols; however the Seizures Protocol uses the terminology SUDEP (Sudden Unexpected Death in Epilepsy) in addition to a well-known classification system for types of seizures, which suggests that these protocols were created using recognised language of the disorder (Shorvon & Tomson, 2011).

Many people would believe that being a paramedic is about saving lives and that the skills of resuscitation are fundamental to performing the functions of the role. However, surprisingly this is often not the case; between 2012–13 and 2016–17, on average fewer than half of all ambulance incidents were priority one emergency responses. Within this cohort, only about 1 per cent were categorised as priority 1A (Auditor-General's Reports to Parliament, 2017), which is where the paramedic would need to perform a lifesaving skill such as resuscitation. The average paramedic will likely see 1.4 resuscitations a year and research suggests that exposure to cardiac arrests is also declining (Dyson, 2017; Dyson et al., 2015).

At the opposite extreme to resuscitation is the presentation of mental illness, where paramedics will attend to a patient with suspected mental health concerns or illness in one in every four cases. Typically presentations of mental illness involve extended scene times in an effort to not only treat the patient appropriately, but to also ensure that they are attended to by an appropriate service provider. This opposes the outdated view that paramedics take patients directly to an emergency department. Changing societal expectations and demands on the acute care setting place paramedics in conflicting positions that challenge their identity and traditions. This additionally includes the importance of their role as emergency clinicians and the high priority placed on risk, safety and caution (Roberts, 2013).

The requirement to mitigate the unpredictable through strategies that promote control tends to endorse actions which focus upon transport to further care and puts pressure on the

patient to comply with the care provided (Roberts, 2013). Additionally, more pharmaceutical agents have been introduced such as sedatives and antipsychotics to assist in achieving a compliant patient (ACT Ambulance Service, 2019; NSW Ambulance, 2018; Queensland Ambulance Service, 2019; St John, 2019a, 2019b; Wellington Free Ambulance, 2018a, 2018b).

Mental health patients do not necessarily benefit from the traditional type of paramedic care, and paramedic practice has been slowly changing to accommodate a more patient-centric approach. This has been hampered somewhat by limited scopes of practice, education and professional development opportunities in this clinical area (Roberts & Henderson, 2009). Current research shows that paramedics do not feel that they are adequately trained or resourced to treat mental health patients, even when they are not acutely ill (Roberts, 2013). As a result, many mental health patients may be still transferred to an emergency department instead of alternative care that could be more appropriate.

A culture of stigma and misconception has surrounded epilepsy since its known origins, from demonic possession and ‘the falling sickness’ described by Temkin (1994) in his history of epilepsy to the modern day segregation and sterilisation of people until the late 1970s (McLin & De Boer). Despite the noteworthy clinical and therapeutic advancements of this and the last century, people with epilepsy still endure unfair discrimination globally (International League Against Epilepsy, 2003). A survey in Kentucky, USA, by Baumann et al. (1995) demonstrated that parents were much more likely to rate epilepsy higher than, for example, chronic asthma as having an adverse effect upon their children learning in the classroom. Additionally they stated that their children’s quality of life as significantly lower if they had epilepsy rather than asthma.

Within Australia, epilepsy affects 3–3.5% of Australians and approximately 250,000 people are currently living with epilepsy (Epilepsy Action Australia, 2019). The concept of

social exclusion first identified by Saunders et al. (2008), which involves disengagement or economic exclusion, is known to influence the health of sufferers and their access to appropriate medical care. A more recent review by Herrmann et al. (2016) found that, even though views have changed since Saunders' article in 2008, misconceptions still reflect socially exclusionary attitudes directed at people with epilepsy, ignorance about treatment, and over-generalisations that are stigmatising when applied to all those who suffer from the disorder (Herrmann et al., 2016).

It is important to note when discussing social inclusiveness and social exclusion that these are compounded by government policies, either as a deliberate action, or as an unintended outcome of a policy or its entire absence (Walker, 2008). These government policies and agreements with health services shape and direct the future of health care, and as we know, ambulance services are reliant upon funding as a consequence of following these agreements.

1.52 STEP 2: DOCUMENT PREPARATION

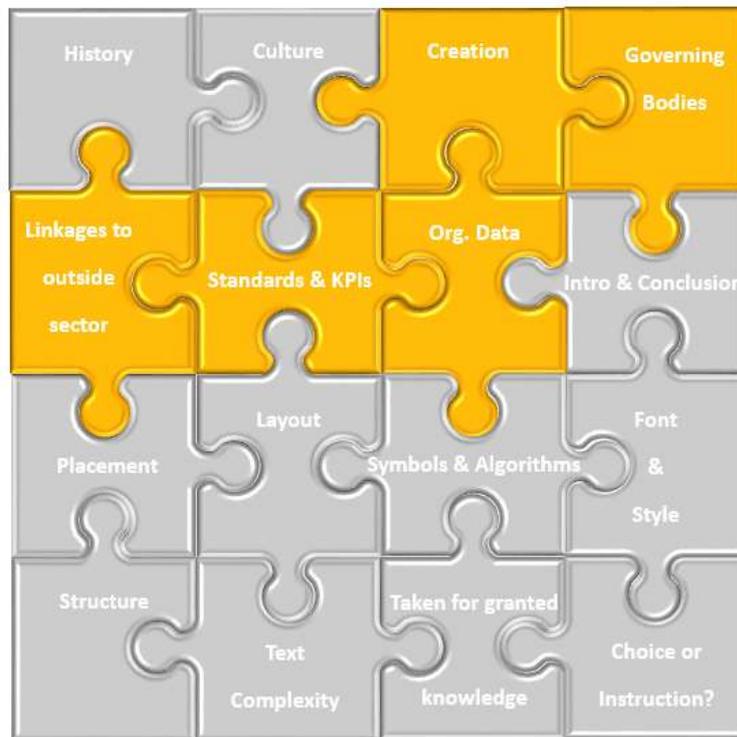


Figure 12. Considerations for step 2 of the conceptual framework

1.52.1 The creation of the protocols

As discussed in Chapter 2, in some ambulance services teams of people will write protocols, depending on the nature of the topic, but in many cases protocol writing may be the sole responsibility of just one person (Herman, personal communication, 20 August 2019). The task of writing a protocol may take up to eighteen months and in some circumstances writing takes so long that the protocol may even be out of date by the time of publishing (Andrew, personal communication, 18 September 2019). Implementation strategies and testing phases are extremely variable and often inconsistent. Only one state at present makes publicly available evidence of how their protocols or guidelines are developed (Smith & Kenneally, 2013), but none release information on implementation. For the majority of new protocols, students and inexperienced paramedics are not invited to participate in the testing processes

as only those in higher ranking positions will be allowed to make suggestions and give initial feedback (Andrew, personal communication, 18 September 2019). The developers and testers of protocols are mostly clinicians with expertise in the given field and the process of endorsing the protocol is guided by an overarching clinical governance or advisory committee.

As an example, within NSW, the resuscitation protocols are written and developed by the cardiac team who are responsible for the portfolio of cardiac protocols. They use a support network of people who are both internal and external to the service. This team has links with the Australian Resuscitation Council and will use guidance from both their network and the council to translate these nationally known standards into paramedic practice protocols. The cardiac team is also aware of, and influenced by, the International Liaison Committee for Resuscitation (ILCOR), which is an international consortium that reviews evidence for the best practice of resuscitation. The cardiac care team is made up of several staff such as the Cardiovascular Manager, Program Manager, Coordinator, Paramedic Cardiovascular Advisor, Clinical Quality Evaluation Analyst, Director of Models of Care and lastly the NSW Medical Advisor (NSW Ambulance, 2017a, 2017b).

1.52.2 Governing bodies of influence

As mentioned previously, there is a significant body of influence both nationally and internationally providing research and best practice surrounding resuscitation in the out-of-hospital care environment. First and foremost is the International Liaison Committee of Resuscitation (ILCOR) which is a large, comprehensive expert panel that digests research and recommends updates to all worldwide resuscitation organisations on a continual basis (International Committee on Resuscitation, 2018). From this panel, information is taken to a national level by the Australian Resuscitation Council who will adapt this for practice within

Australia. Ambulance services then use this information, along with their experts in paramedicine (those mentioned above), to create a locally relevant protocol for paramedic practice (NSW Ambulance, 2017a, 2017b).

Unlike the internationally well researched resuscitation standards, mental health is not so well represented and clinical practice is mostly guided by a state-based system. Within NSW, the Community Mental Health Strategy 2007–2012 provided approaches to integrate services into combined models of care, which was considered helpful by many mental health patients (Mental Health Branch, 2008). This incorporated emergency services into their overarching plan which, in response, began a cascade of changes within NSW, which recognised that it received approximately 100,000 mental health related calls per year (60,000 of which identified as mental health initially) (McLaughlin & Wiseman, 2013). This was approximately 10% of all emergency calls taken during that year in 2013 (NSW Ambulance, 2014)

In collaboration with Western Sydney Local Health District and the Ministry of Health, NSW began an initiative to form the Mental Health Acute Assessment Team in 2013. This team's aims were to provide expert assessment and assistance to mental health patients and provide transportation if required direct to mental health facilities instead of emergency departments (NSW Ambulance, 2013). This is a shift to person-centred and trauma-informed care and ensures that policy is targeted to reducing distress, recognising prior and existing distress as significant, and ensuring support structures are in place. Care is intended not to retraumatise the individual and works on the premise that all persons might have in their present or past been exposed to emotional and/or psychological distress and trauma.

Collaborations with the Hunter/New England Local Health District in 2013 focused upon systems that would enable the patient to access the most appropriate care as quickly as

possible, which would also then optimise resource management of ambulance crews and turnaround times (McLaughlin & Wiseman, 2013). The use of integrated care programs such as these have been steadily increasing with successful partnerships across many related fields such as complex and chronic care, and NSW appears committed to increasing these relationships as they directly improve demand management (McLaughlin & Wiseman, 2013).

Strategy 3 of the NSW Health Strategic Priorities 2018–19 focuses upon the delivery connected care by integrating various health systems departments and services) (NSW Health, 2018). In the attempt to do this, plans that include the reform of mental health will also be monitored. Each health service and support organisation will have KPI processes and milestones which will be held by NSW Health in their details with operational plans developed by the organisations. These KPIs for NSW are mentioned further below.

Lastly, other emergency services may have also influenced the way that NSW has provided care to mental health patients. Memorandums of understanding (MOU) between services such as the NSW Police and NSW Fire have had a direct impact upon the ambulance service provision of staff support at scenes where their services might be required for patient safety or transportation.

The MOU that was signed between NSW Health (including NSW) and NSW Police sought to clarify the responsibilities of staff concerned for the transport and management of patients with signs of mental illness (NSW Ministry of Health, 2018). Since these changes have come into effect, more work between agencies is being completed in the form of training workshops to enhance understanding and cooperation. Sixteen workshops that support the revision of the NSW Health and NSW Police MOU will be held across NSW (O'Flaherty, 2018).

1.52.3 Links to outside sources of influence and referencing within the protocol

The resuscitation protocol does not list links to any outside sources, nor does it cite known literature, even though I am aware that the work has been heavily reliant on evidence from external organisations such as ILCOR. This is not unsurprising as ambulance protocol documents have very rarely listed references in the past. In the recent work completed by Colbeck and Maria (2018) we noted that eight of the ten ambulance services within Australia do not commonly cite references throughout their texts. There is extreme variation among the Australasian ambulance services and their use of reported evidence to support their practice guidelines and protocols. Colbeck and Maria's work encourages the ambulance services to identify these differences and work together to implement a more standardised and transparently evidence-informed process for the creation, presentation and implementation of their clinical practice guidelines within paramedicine (2018, p. 5).

The Seizures Protocol uses the terminology SUDEP (Sudden Unexpected Death in Epilepsy), which comes from a well-known classification system for types of seizures. This suggests that this protocol was created using recognised language of the disorder (Shorvon & Tomson, 2011).

The Mental Health Emergency Protocol specifically mentions several texts which are not contained within the ambulance protocols. These refer to government policy such as the *Mental Health Act 2007* (NSW) s. 20, in particular the use of section 20 to enact mechanical or chemical restraint or sedation procedures upon a patient. This language, which includes phrases such as 'Declared Mental Health Facility' is taken directly from the Act which details appropriate transport of patients who are involuntary recipients of care. The *Mental Health Act 2007* (NSW) extends state coercive powers to NSW paramedics (s. 20) and other accredited NSW Health practitioners (s. 19 and s. 23), authorising them to detain and transport people living with mental illness to a dedicated mental health facility for

assessment. Healthcare practitioners which includes Paramedics are authorised to use ‘reasonable force’ (s. 81(2)(a)) and physical restraint (s. 81(2)(b)), and those who are trained in sedation may administer sedation (s. 81(3)). Paramedics that need additional assistance who have serious concerns for the patient or their own safety are allowed to request police involvement (s. 20(2)), and both paramedics and mental health practitioners can request police assistance, where practicable (s. 21(1)) (Bradbury et al., 2014).

1.52.4 Ambulance service standards and key performance indicators: influence upon protocols and staff usage

Two of the three protocols appear to have clear measures that are used as KPIs for the organisation; these are the resuscitation and mental health protocols. As a part of their service agreement with the Secretary of Health, NSW has KPIs that are agreed upon and are reviewed annually. Service agreements are designed to set out the expected performance of the organisation to the government body. They are designed co-jointly with each party agreeing and recognising their commitment to the KPIs with the aim being to ‘ensure the provision of equitable, safe, high-quality, patient-centred healthcare services’. Hence why funding and other incentive support is often provided to meet these agreement expectations. Direction, responsibility and accountability are articulated within these agreement documents which specify the type of NSW Health system and NSW Government priorities that are to be managed. The organisation's performance is monitored in line with the NSW Health Performance Framework. Through execution of the agreement, the Secretary agrees to provide the funding and other support to NSW outlined in their service agreement (NSW Government., 2018b) and any performance concerns are dealt with by the health ministry at performance review meetings in line with the NSW Health Performance Framework (NSW Health Secretary, 2018).

Resuscitation is a 1A emergency, that is, it sits at the top of the pyramid when scaling from most to least critical and will be a ‘lights and sirens’ type of emergency. 1A emergencies encompass life-threatening cases such as cardiac or respiratory arrests, unconscious patients, or ineffective breathing. As such, one KPI that is currently measured is ‘response time’ which is the time taken from the point of call to the arrival on scene by the ambulance crew. The NSW Ministry of Health monitors this KPI as part of their framework strategy under Strategy 2: Provide World-Class Clinical Care Where Patient Safety is First 2.4 (Ensure timely access to care). In the previous service performance agreement of 2017–2018 NSW were meeting their target of 50th percentile.

Response times within NSW are assessed in terms of whether they meet targets by the following criteria:

- Performing: Performance at, or better than, target – equal to or less than 10 minutes
- Underperforming: Performance within a tolerance range – between 10 and 12 minutes
- Not performing: Performance outside the tolerance threshold – greater than 12 minutes (NSW Government., 2018b)

In addition to the data collected for the service agreement, NSW also collects cardiac arrest data for their own research purposes that are collated in the NSW Cardiac Arrest Registry. This registry began to collect data in 2015.

Another target in the NSW service agreement is that every mental health patient is given a mental state assessment. This KPI fits under Strategy 2: Provide World-Class Clinical Care Where Patient Safety is First, Point 2.1 KPI. Mental Health patients are required to have a mental health assessment completed (NSW Government., 2018b). As per many of the KPI requirements, these are also available and reported upon to the public sector.

The goal of this KPI is to encourage paramedics to perform a mental health assessment on every recognised mental health patient and to identify risks to the safety of the patient, paramedics and allied staff. This includes the risk of suicide for the patient. The target is stated as a minimum of 50%, with not performing as under 40% and underperforming between 40 and 50%. Further to the above, the agreement mentions that a trend in non-performance will initiate a review of training needs in relation to mental health assessment skills (NSW Government., 2018a).

1.52.5 Organisational data that is given to other agencies

NSWA collects other information about cardiac arrest management that is distributed to external agencies. The annual Report on Government Services provides information on the equity, effectiveness and efficiency of government services in Australia, including ambulance services. This report provides data relating to the performance indicator framework, which reflects federal and state governments' common objectives for ambulance services. Key statistics are included, such as survival after cardiac arrest event rates (Australian Government Productivity Department, 2019).

Table 8. Adult cardiac arrest survival rates

	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	Aust
%	42.2	53.6	43	40.4	43.6	45.3	64.5	23.5	45.6

N.B. Where resuscitation attempted (excluding paramedic witnessed), 2017–18. Source: Productivity Commission (2019).

The Bureau of Health Information, whose function is to provide support for the accountability of the healthcare system in NSW, publishes and prepares regular reports on the performance of various healthcare services which include NSW. These reports are freely available for the public to view on their website (<http://www.bhi.nsw.gov.au/search->

ambulance-performance). Information regarding response times for the 1A category patients is available to download and benchmark against other services (Bureau of Health Information, 2018).

Another organisation that NSW provides information to is the Australian Resuscitation Outcomes Consortium (Aus-ROC) Epistry. Established in 2011, the Aus-ROC Epistry began collecting data in 2014 with the aim to understand treatment factors associated with improved out-of-hospital cardiac arrest (OHCA) survival and outcomes. The Epistry enables benchmarking using known predictors and indicators collected across ambulance providers and identifies system-wide strategies associated with survival for OHCA patients in Australia and New Zealand. By combining OHCA data the Epistry is able to monitor trends and outcomes which will build towards a greater understanding of the causes of cardiac arrest and modifiable actions that paramedics may be able to make to achieve better patient outcomes. Additionally, the Epistry will provide a research infrastructure so that there can be coordination of clinical trials and increased collaboration between ambulance services, this then increases their capacity to improve patient outcomes in OHCA within Australia and New Zealand (Beck et al., 2016).

Similar to the protocol on resuscitation, data regarding mental health assessment performance by staff is reported on a monthly basis to the Manager of Clinical Performance, Clinical Services within NSW, and then yearly for KPI purposes to the NSW Ministry of Health. Through the execution of the NSW Health service agreement, the Secretary of NSW Health provides funding and other support to NSW for health delivery. The *Health Services Act 1997* (the Act) provides a legislative framework that may attach conditions to the subsidies given if these conditions and performances are not abided by. Agreements need to be adhered to and annually reported upon between NSW and the NSW Health Secretary.

NSWA provides data freely to the public regarding response times online at <http://www.ambulance.nsw.gov.au/Our-Performance/response-times.html>. Additionally, NSW provides data to other agencies that collectively report on NSW's data. This is then open to review, scrutiny and comparison with other states and territories. The Report on Government Services publishes data on their website that include all ambulance services for comparisons (<https://www.pc.gov.au/research/ongoing/report-on-government-services/2018/health/ambulance-services>).

The Bureau of Health Information has an open access site to view response time data for both regional and metropolitan areas (<http://www.bhi.nsw.gov.au/search-ambulance-performance>). It is possible that the service invests more time and energy into training and monitoring this protocol than others as it is important to show that they are demonstrating a serious commitment to enforcing quality. These protocols are directly talking about the saving of a life, so therefore are extremely important. However, not only that, the information is disclosable to the public and the government, and it is a highly researched field within emergency medicine.

1.53 STEP 3: TEXT ANALYSIS

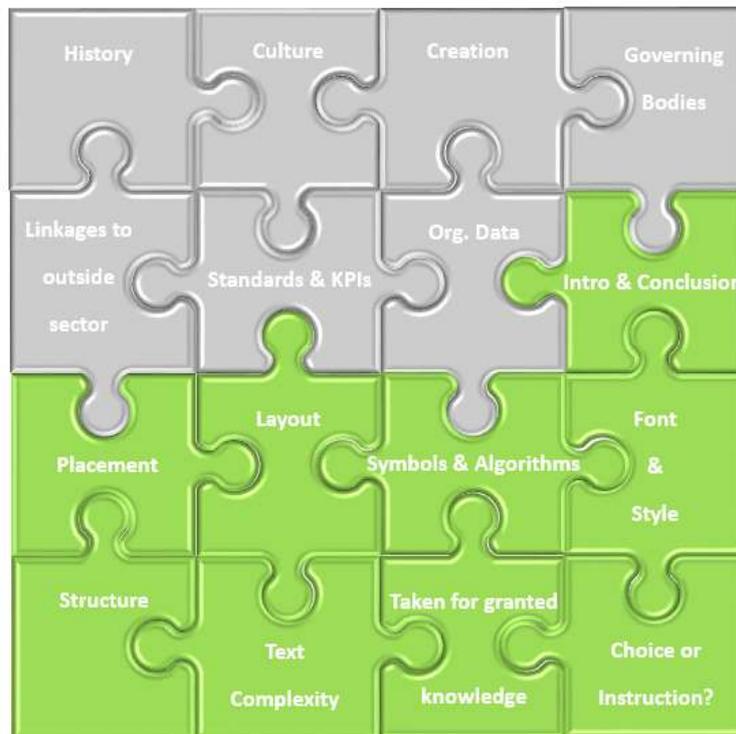


Figure 13. Considerations for step 3 of the conceptual framework

1.53.1 What role does the introduction and conclusion (if there is any) play in guiding clinicians' choices?

All the protocols jump straight to the point and have no formal introduction but rather a clear punchline and opening statement. An example is the resuscitation protocol, which begins with one sentence which states the intention of the protocol is to 'assist paramedics with clinical decision-making and to provide direction in cardiac arrest situations'. This clear aim of the protocol is then followed with the direct instruction which tells the paramedics to transport *all* patients with reversible causes of cardiac arrest to hospital, and that they should have minimal scene time. It is interesting to note the language is directive, and does not lead to any ambiguity.

There are no formal concluding statements throughout any protocols that would cover ‘what ifs’. By this I mean if treatment X does not work, then perform Y, or seek further advice from Z. This is interesting, as it is well known that many patients present atypically, such as women or the elderly with chest pain, or who may respond to treatment in a random manner that is not as described.

1.53.2 Protocol placement within the document and comparisons to other protocols

Compared to other protocols within the book, the three protocols do not appear to have major differences in presentation, although there are some minor ones that could be commented upon. All use a visual display of writing and algorithms to aid in decision-making.

The cardiac arrest protocols sit within the Cardiac/Cardiovascular section of the protocol book and follow the cardiac protocol called Acute Coronary Syndrome. There are three pages in total, two titled Cardiac Arrest Decision Algorithm C2 and one simply called Cardiac Arrest C3 (see Appendices K–M). They appear to relate well to the other protocols within the section as they are all cardiac-related conditions. Although this appears a logical placement for the protocols for reference if a paramedic needs them to manage a cardiac arrest, there are other relevant protocols and reference material related to cardiac arrests which are scattered elsewhere within the manual. For instance the cardiac arrest checklist is right at the back of the book in the reference section.

The cardiac arrest protocol C2 does have quite a considerable amount of writing (greater than half a page) on the first page of the protocol. Much of this information is repeated again on the second and third pages but is visually displayed (word for word) within boxes. It is the longest protocol within this section, as most are only one page. There are links to other protocols within the text. As an example, when assessing for reversible causes of

cardiac arrest, the paramedic needs to consider hypoxia, hypovolaemia, hyperkalaemia, hypo/hyperthermia, tension pneumothorax, toxins/poisons/drugs, thrombosis and acute myocardial infarction (AMI). These potential clinical presentations are additionally covered as protocols within the book: the code is listed as a reference for the paramedic to look up. AMI, for example, is designated as protocols C1, C12 and C13; therefore the paramedic should consider these protocols if the patient has a suspected AMI that has resulted in cardiac arrest. There are also links to reference information contained in the back of the manual; this includes checklists and pharmacology.

In total, there are links to 11 other protocols, three pharmacology, and two reference checklists. This is quite a considerable number to factor into decision-making when we think that during an event such as cardiac arrest, the paramedic may be under significant emotional, physical or time pressures. This highlights that education and the paramedic's level of confidence in their foundational knowledge affect how protocols are accessed, translated and implemented in practice.

Similar to the resuscitation protocols, mental health and related protocols have their own, standalone section within the book. In total there are six protocols relating to mental health grouped into mental health sections, comprising a total of eleven pages. Other examples of protocol grouping include maternal emergencies and environmental emergencies. Grouping protocols together like this is common throughout all Australasian protocol and guidelines books. Grouping is thought to speed up browsing and protocol locating (Andrew, personal communication, September 2016).

The epilepsy protocol sits under the medical section of the manual. The medical section encompasses a group of protocols that detail medical causes of seizures, for example presentations of seizures that do not result from trauma or environmental causes. The epilepsy protocol fits within this section well and the group of protocols all relate to medical

reasons for seizures such as diabetes, abdominal pain and asthma. Like the two other protocols, it also has some links, albeit considerably fewer, to other protocols as reference points for consideration.

1.53.3 Layout

The use of white space within the pages of the protocols book is a key element of the composition of the document that can directly affect the readability of the protocol and indirectly the decision-making of the end user. The space does not actually need to be coloured white; perhaps it makes sense to use the term ‘negative space’ instead to discuss this phenomenon within the documents. The term originates from traditional art where someone might draw or paint the negative space around an object to capture the shape more accurately (Cao & Rocheleau, 2015, p. 8).

The significant thing about negative space is that it is not directly noticed. A reader can point out paragraphs on a page, but it is unlikely that they will notice the space between those paragraphs or between words or lines unless they are pointed out to them. Negative space is a critical aspect used within the graphic design of any reading material, whether it is a newspaper, webpage, brochure or textbook.

Negative space assists the user’s ability to do the following:

- **Eye scanning and comprehension:** The space between bigger elements (called macro white space) affects how the user scans the page, and when used properly can guide the user’s sight to specific parts of the document and its elements. This could be helpful for creating a sense of hierarchy of elements, or an order of urgency within patient clinical assessments. In a study by Lin (2004), the effective use of this type of space increased readers’ comprehension by up to 20%.

- **Legibility and utility:** The space between smaller elements of a document, called micro space, for example letter spacing, line height between rows of text, use and size of headings, and sometimes icons, will affect how clearly and quickly each can be read and possibly utilised. This is useful when considering a protocol document that needs to be efficiently read in a short amount of time. Many paramedics commented during the interviews that they felt they make decisions in a hurry.
- **Aesthetics and organisation:** When looking at the big picture, negative space plays a big part in the visual organisation and therefore aesthetics of the page. For example, random clustering of content rarely looks good. Effective page organisation will increase both speed and utility.
- **Luxury and safety:** Generous negative space infuses the page with an air of elegance and sophistication (Cao & Rocheleau, 2015). This may seem a little unrelated or meaningless when speaking of clinical protocols, but if we compare the selected protocols to other ambulance service guidelines, we can see how this can directly affect the visual sense of amenity. Luxury can assist to make the reader feel more comfortable and ‘safer’ with the document. The balance of leaving space upon a page is vital, as it leads the reader through strategic points of interaction. We construct our understanding of what is ‘something’ by the ‘nothing’ that surrounds it. Macro and micro-relationships are developed via space, whether intentionally or not. This implied association is well-defined by how much space occurs amongst two objects compared to the other objects on the page.

Negative space is rated as wasted space by most businesses since they feel the space can be utilised to show more content (Hegde, 2017). More use of white spaces means less use of material/text/information per page, which means more pages need to be printed to cover

the content. This can affect cost, especially if there is a large number of pictures or diagrams added to the text. Therefore, it becomes even more imperative to focus upon what is critical content and what message, or information, needs to be translated to the end user.

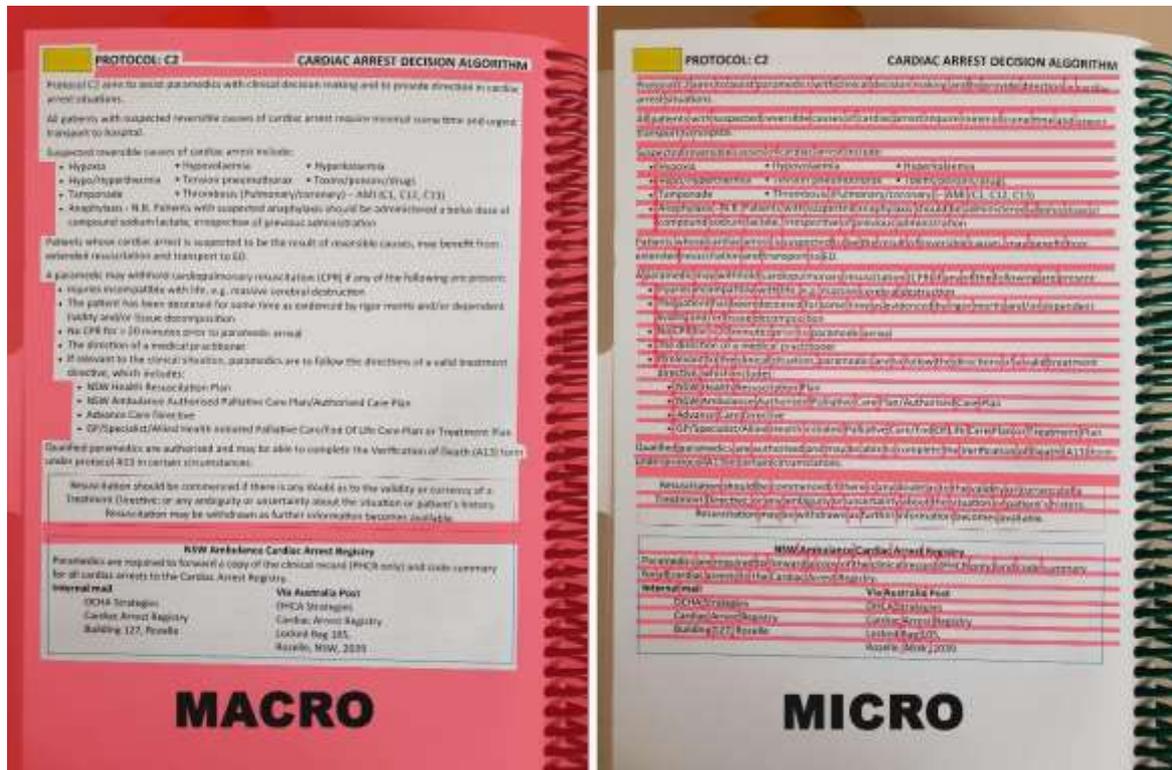


Figure 14. Examples of macro and micro white space used in NSW protocols

When analysing the NSW cardiac arrest C2 protocol, what is quickly noticeable is the lack of both micro and macro white space. Much of the page is made available for the use of text or graphics, and very little is ‘wasted’. This would seem an economical use of resources for the ambulance service, but what becomes clear after reading through this protocol and others, is the difficulty of prioritising elements on the page that are text driven. Having all text looking very similar, with few gaps, headings or patterns in rhythm (discussed further below), naturally creates challenges for the reader with legibility and effective eye scanning.

1.53.4 Symbols and algorithms

The NSWA protocol book provides a key for the interpretation of the algorithms on page three. The key gives the reader information on how to interpret the various types of boxes that are used within the treatment algorithms (see Appendix S). The symbols used are taken from the universal language of flowcharts, which have their theoretical basis in process mapping within computer science (New World Encyclopaedia contributors, 2017). Some examples used in clinical protocols are the following symbols:

- An oval represents the start or end of a process.
- Diamonds involve questions that need Yes/No answers to guide decision-making.
- A rectangle represents a process step (or an action).
- Arrows represent the flow of actions or decisions.

There were no pictures or images used in the display of the selected protocols. I noted that there are very few pictures used within the NSWA protocols, with just a couple illustrating electrocardiograms or maternal emergencies.

Colours are used in the algorithms to provide a quick visual reference to indicate potential risk relating to that part of the procedure. Green is low risk, orange medium, and red high. These colours are well recognised in medical triaging and emergency management for patient severity and meet international ISO (International Organization for Standardization) standards. The ISO 22324:2015 provides guidelines for the use of colour codes to inform people of risk as well as first response personnel about danger and to express the severity of a situation. It is applicable to all types of hazards in any location (International Organization for Standardization., 2015).

Other symbols such as the warning red triangle or flag alert the reader that additional decision-making is required or to caution against a higher risk activity. They may also encourage the reader to consider warnings and pause points. Lastly, there are symbols used to direct the reader to information found elsewhere, such as the reference section at the back of the protocol book.

1.53.5 Font and style

The protocols use a plain text font called Calibri (Andrew, personal communication, September 2016) with even word spacing and line spacing throughout the paragraphs. The protocol developers stated that Calibri is an easy font to read. There is additional line spacing between paragraphs (an increase of micro white space) to assist with identification of new paragraph information and there is occasional use of bold letters to define the level of importance within a few sections.

Headings alternate between centre alignment and left aligned, dependent on where they are situated upon the page. All headings use bold text which draws our eye and we naturally assume that the underlying text will be of significance. Within the text, bold font is also used for multiple reasons including information on when to commence resuscitation, and when to use morphine and midazolam together. These items are not related but will ultimately affect decision-making during treatment. In addition to the consideration of negative space and font readability, the use of bold text was considered and what this actually means about the type of information provided. This improves the rhythm (and ultimately the comprehension) of the page, which is discussed below.

1.53.6 Structure

The concept of metre in music denotes the rhythmic structure. Metre is created by accented sounds that repeat or recur in a similar fashion. Within graphic design, the creation of a document relies on similar principles of rhythm and metre (Cao & Rocheleau, 2015).

White space can also assist to express this rhythm, especially when we look at the macro space on a page. When inspecting a full-page layout, white space will make the sections of content separate and appear apart. When this occurs, this rhythm generates structure and a reliable pattern for reader engagement and content consumption. For instance, with each protocol, you may come to expect a pattern (rhythm) as follows: pathophysiology of the problem, clinical features, risk assessments and treatment algorithms. This logical process provides background information on the clinical problem, how to identify it within the paramedics' field of practice, issues related to risk and its assessment and treatment within paramedicine, and then optimally an evidence-based treatment plan or guideline that can be tailored to suit the patient.

Content structure and space and are used to define a rhythmic pattern. As a clinician turns the pages of their protocol book, they may then subconsciously learn to expect content in a certain format. As Cao and Robertson (2015) say, 'great compositions are both overt and subtly intuitive' (2015).

After reviewing the protocols with consideration to their incorporation of white space, there does not appear to be any particular rhythm to the selected documents. Each is unique to itself and follows its own structure and rhythm. There are some similarities relating to repetition of information, such as within the resuscitation protocols. There is considerable overlap of information, as you can see illustrated below in Figure 15. If this text were not replicated, the three-page document would be two. Primarily, the two pages of the protocol

C2 would become one page, and C3 would remain as one page. One could speculate that this is because each of these protocols are treated as standalone documents.

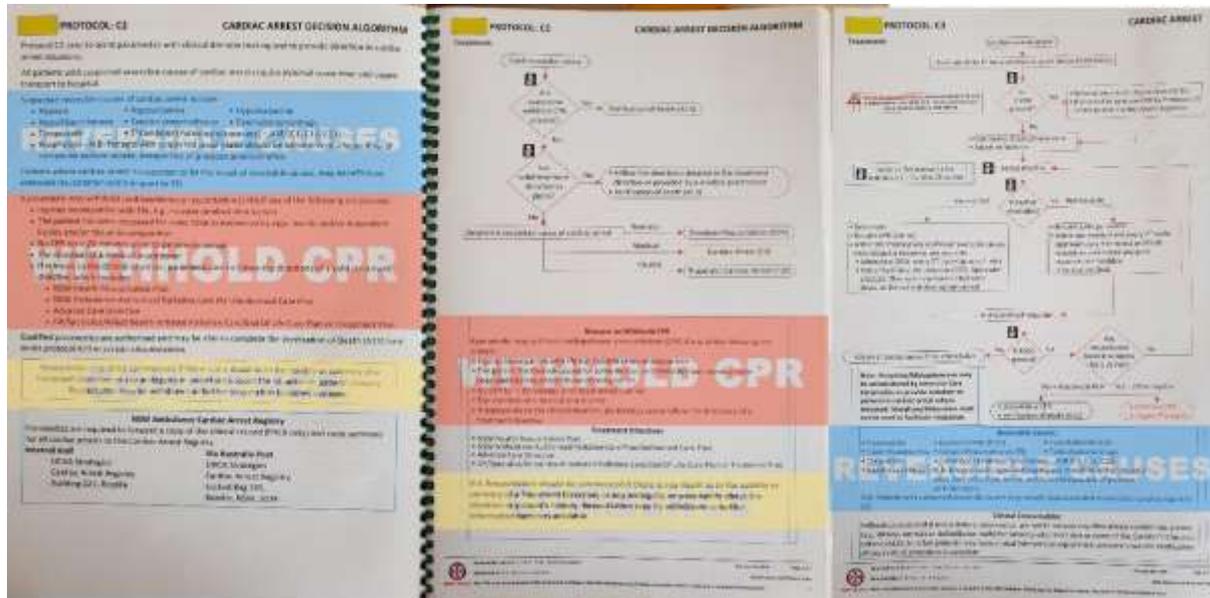


Figure 15. Protocols C2 and C3: Repeated information

1.5.3.7 Text complexity

The following section analyses text complexity within the protocols. The method used is based upon the Common Core State Standards (CCSS), and the work of Fang (2016), which was explained in Chapter 4. Text complexity refers to the *level of challenge* a text provides based on a variety of considerations that include its quantitative features, its qualitative features and reader/text factors (Lapp et al., 2015). Each of these three elements is explored below with relation to the three selected NSW protocols.

Quantitative features of text complexity are the features that are quantifiable such as number of syllables, sentence length, word frequency, and word length. Readability indices often use these quantifiable elements to measure the difficulty of reading a selected document.

DuBay (2004) notes that over 200 readability formulas have been developed, with over 1000 published studies applying them. Many of these are well researched and validated, with the most widespread being the Flesch Reading Ease score (Flesch, 1949, as cited in Stone and Parker, 2013), the Fog Index (Gunning, 1952), and SMOG grading (McLaughlin, 1969). While these use differing algorithms and variables, I selected them primarily because of their correlation to the relative complexity of the protocols.

I describe the three protocols below and then discuss the results of applying the readability formulas to the non-algorithmic component of the protocols. The pages of the three protocols were carefully transcribed into a word document that preserved sentence and paragraph structure and then analysed them with the selected readability formulas. Only page one of the cardiac resuscitation and seizures protocols were used as other pages either repeated information from the first page or were an algorithm (I could not run a text analysis on text that is not in structured sentences). Each bullet point counted as a single sentence. Gaps were placed between words where there were only slashes to separate words. All text used for clinical decision-making was included. Information such as the address for the cardiac arrest registry was omitted because this information is not used for clinical decision-making, although this does contribute to white space use, which has been previously discussed. To view the exact text that was analysed, please see Appendices T to V.

1. The Flesch Reading Ease score is obtained by the following formula (Kincaid et al., 1975):

$$\text{Score} = 206.835 - (1.015 \times \text{ASL}) - (84.6 \times \text{ASW})$$

ASL stands for the average sentence length and ASW is average syllables per word.

This formula returns a number between 1 and 100. Documents with a Flesch Reading

Ease score of 30 are considered ‘very difficult’ while those with a score of 70 or above are ‘easy’ to read.

2. The Fog Index (Gunning, 1952) exploits two variables: average sentence length and the number of words containing more than two syllables (‘hard words’) for each 100 words of a document. This index returns the US Grade Level (GL) of the input document, according to the formula:

$$\text{GL} = 0.4 \times (\text{average sentence length} + \text{hard words})$$

A Fog score of 5 is considered ‘readable’, 10 is considered ‘hard’, 15 ‘difficult’, and 20 is ‘very difficult’.

3. The SMOG grading (Mc Laughlin, 1969) is computed by considering the polysyllable count, equivalent to the number of words that contain more than two syllables in 30 sentences, and applying the following formula:

$$\text{SMOG grading} = 3 + \sqrt{\text{polysyllable count}}$$

It should be noted that the SMOG formula is quite widely used, particularly in the preparation of US healthcare documents intended for general audience viewing.

Table 9. Results of text complexity analysis

Protocol	Flesch Reading Score	Gunning Score	SMOG Index
C2 – Cardiac Arrest	22.1 – Very difficult to read	15 – Hard to read	12.3 – Twelfth grade
MH1 – Mental Health Emergency	41.7 – Difficult to read	13.1 – Hard to read	10 – Tenth grade
M9 – Seizures	40.7 – Difficult to read	11.8 – Hard to read	9.5 – Tenth grade

All of the quantitative methods used above produced a similar result that correlated with the level of difficulty of the text. The text complexity of the resuscitation protocol was found to be greatest followed by the mental health then seizures protocols. However, as you can imagine, quantitative measures alone may not tell the whole story. Even though a text may be reported as high or low within a reading range, a quantitative analysis does not investigate the complexity of the themes portrayed. For example, consider the reversible causes section within the resuscitation protocol: each one of these factors must be evaluated and reflected upon within the context of the whole picture of the patient presentation. Each element has its own protocol and patient management strategy that is then carried out concurrently alongside the resuscitation of the patient. Similarly, both the mental health and seizures protocols also have confounding or concurrent health emergencies that may overlap and influence decision-making. These other themes within the protocol document can often point to necessary treatment that is not contained within the protocol but must also be considered by the paramedic.

Therefore, even though a text may or may not contain complex language, it may still have complicated themes that might be beyond the comprehension of a reader. This difference explains the significant limitation of readability formulas: they cannot evaluate the *content* of a text. This is why quantitative instruments and formula indices are the *least* trustworthy or reliable indicator of text complexity. 'Readability' that is measured via quantitative methodology will only account for around 50 per cent of all text difficulty (Shanahan, 2009). Within this study I also needed to measure the protocols and guidelines qualitative features and consider how the previous education, culture and language of the paramedics who would be reading them in order to achieve a more accurate perspective about text complexity

The rubric in Table 10 analyses the qualitative dimensions of a text. This rubric has been adapted from the Common Core State Standards (Common Core Standards Initiative, 2021). Qualitative dimensions of text complexity can be assessed in any type of text, whether it be a narrative text (such as a romance novel) or an informational text (such as an encyclopaedia. I regard the protocols and guidelines as informational texts that have very little narrative function and therefore have used the table below for analysis which relates to informational texts. This has slightly different criteria to narrative as generally they are used for different purposes.

The results of the qualitative analysis are presented in Appendix W as they are quite in depth and too large to present in this section. However, in summary it is safe to say that all protocols primarily sit within the moderate to challenging category.

Table 10. Qualitative rubric for text analysis

Dimension & consideration	Questions	Scoring = 1 easy or comfortable	Scoring = 2 moderate	Scoring = 3 challenging
Text structure: Organisation	<ul style="list-style-type: none"> • Is the pattern of the text clearly identifiable as descriptive, sequential, problem/solution, compare/contrast, or cause/effect? • Are signal words used to alert readers to these structures? • Are multiple structures used in combination? 	The text adheres primarily to a single expository text structure and focuses on facts.	The text employs multiple expository text structures, includes facts and/or a thesis, and demonstrates characteristics common to a particular discipline.	The text organisation is intricate, may combine multiple structures or genres, is highly abstract, includes multiple theses, and demonstrates sophisticated organisation appropriate to a particular discipline.
Text structure: Visual support and layout	<ul style="list-style-type: none"> • Is the text placement consistent, or is there variability in placement with multiple columns? • Are visuals essential to understanding the 	The text placement is consistent throughout the text and uses a large, readable font. Simple charts, graphs, photos,	The text placement may include columns, text interrupted by illustrations or other variations, and a smaller font size.	The text placement includes columns and many inconsistencies, as well as very small font size. Intricate charts, graphs, photos,

	<p>text without explanation?</p> <ul style="list-style-type: none"> • Are visuals accompanying the text simple or complex? Do they require literal understanding or synthesis and analysis? 	<p>tables and diagrams directly support the text and are easy to understand.</p>	<p>Complex charts, graphs, photos, tables and diagrams support the text but require interpretation.</p>	<p>tables and diagrams are not supported by the text and require inference and synthesis of information.</p>
<p>Text structure: Relationships among ideas</p>	<ul style="list-style-type: none"> • Are relationships among ideas simple or challenging? 	<p>Relationships among concepts, processes or events are clear and explicitly stated.</p>	<p>Relationships among some concepts, processes or events may be implicit and subtle.</p>	<p>Relationships among concepts, processes and events are intricate, deep and subtle.</p>
<p>Language features: Author's style</p>	<ul style="list-style-type: none"> • What point of view does the author take toward the material? • Is the author's style conversational or academic and formal? 	<p>The style is simple and conversational, and it may incorporate narrative elements, with simple sentences containing a few concepts.</p>	<p>Style is objective, contains passive constructions with highly factual content, and features some nominalisation and some compound or complex sentences.</p>	<p>Style is specialised to a discipline, contains dense concepts and high nominalisation, and features compound and complex sentences.</p>
<p>Language features: Vocabulary</p>	<ul style="list-style-type: none"> • How extensive is the author's use of technical vocabulary? • Can students determine word meanings through context clues? 	<p>Some vocabulary is subject-specific, but the text includes many terms familiar to students that are supported by context clues.</p>	<p>The vocabulary is subject-specific, includes many unfamiliar terms and provides limited support through context clues.</p>	<p>The vocabulary is highly academic, subject-specific, demanding, nuanced and very context dependent.</p>
<p>Meaning</p>	<ul style="list-style-type: none"> • Is the amount and complexity of information conveyed through data sophisticated or not? 	<p>The information is clear, and concepts are concretely explained.</p>	<p>The information includes complex, abstract ideas and extensive details.</p>	<p>The information is abstract, intricate and may be highly theoretical.</p>
<p>Author's purpose</p>	<ul style="list-style-type: none"> • Is the author's purpose evident or implied/ambiguous? 	<p>The purpose of the text is simple, clear, concrete and easy to identify.</p>	<p>The purpose of the text is somewhat subtle or abstract and requires interpretation.</p>	<p>The purpose of the text is abstract, implicit or ambiguous, and is revealed through the</p>

				totality of the text.
Knowledge demands	• How much and what kinds of background knowledge are required to comprehend this text?	The content addresses common information familiar to students.	The content addresses somewhat technical information that requires some background knowledge to understand fully.	The content is highly technical and contains specific information that requires deep background knowledge to understand fully.

Source: adapted from Lapp et al. (2015).

After the quantitative and qualitative analyses of text complexity, the final element of the protocols to discuss is reader/text factors. This requires considering the motivation, knowledge and background of the intended reader. I will also consider the taken-for-granted knowledge of the reader.

The interviews revealed that paramedics carry their protocol book upon them at all times, and a copy may be brought out and read while on the way to the case, while attending to the patient, or even at the hospital while writing up the case sheet. The interviews also suggested that paramedics may also use the protocol book for revision and training purposes during their down time at the station.

The examples listed above highlight that paramedics might have several sources of motivation to read a protocol. On the way to the job, a paramedic may want to review drug doses, or protocol information that they would consider pertinent to the case to follow. Whilst on scene, they may need to review a particular process or decision-making tool, which assists them to decide how to problem solve ongoing treatment. After the case and when at the hospital, a paramedic may pull out their protocols to review what should have been done for the patient, or even to manipulate (‘massage’ was the word used during the interviews) their Patient Care Report to match their intention during the patient management. Lastly, during training, the protocol book can be used in several ways, as an aide-memoire to remember

algorithmic instructions, or as a learning guide to pathophysiology which informs patient management strategies.

There are two key education pathways for paramedics with differing scopes of practice and educational content, as mentioned in Chapter 2, which makes it difficult to clearly determine which level of practice this book targets. If the intention were to be a training guide, then all levels up to and including the base level would be catered for, but if the book is aimed at qualified paramedics only, then we would assume that a proportion of the audience would not be fully qualified yet to be able to read it in its entirety.

As mentioned in Chapter 2, NSW has several pathways to employment as a paramedic. These primarily include the two options of vocational or university graduate based entry. The vocational pathway trains the graduate to a diploma level over a period of around three years whilst they are concurrently employed by the ambulance service and working as a trainee paramedic alongside a fully qualified officer. The tertiary pathway requires three years of full-time study at university to achieve a bachelor's degree and the graduates are employed in the ambulance service to complete a mentoring period with a fully qualified paramedic for a period of around 14 months (total 50 months). The diploma pathway is much shorter but both levels have the same end point – a qualified paramedic who is expected to operate at the same level and scope of practice (and use the same guidelines for clinical practice). NSW is the last state within Australia to use a vocational pathway to employ paramedics and this led to significant discussions at a professional level when registration of the profession was heatedly discussed (Eburn, 2018; Moritz, 2017). NSW has a grandfather clause to allow diploma-level paramedics to be registered but they will be unable to move to other states to work as this is not considered an appropriate level of training for the industry in the future. The grandfather clause will allow those who are already

qualified to continue to work and call themselves a paramedic within NSW (Paramedicine Board of Australia, 2018b, 2018e).

Until now, the impact of having both diploma and university-trained paramedics in clinical practice and their understanding of following guidelines and protocols has not been researched. As a researcher and educator, I had not fully comprehended the divisions in levels of ability or difficulties of clinical practice expectations.

1.53.8 Taken-for-granted knowledge

As demonstrated in the qualitative analysis of the protocols using the rubric, there is a significant level of assumed knowledge which is expected to be learned before using the protocols. The terminology is extremely discipline specific, which requires an extensive understanding. The knowledge of disease processes and the associated pathophysiology appears to be the most commonly assumed underpinning education before the use the protocols. A paramedic must be able to combine this pathophysiology knowledge with other confounding factors on the scene and in the patient's presentation in order to appropriately apply treatment strategies and manage the risk of patient deterioration accordingly.

In order to use the protocols a paramedic must understand how the protocol book works in its entirety. This creates risk for newer or less experienced paramedics resulting in many potential areas of concern such as:

- misunderstanding of symbols that provide plans of clinical decision-making
- inability to understand highly complex words or phrases that explain patient presentations or pathophysiology
- misunderstanding or misinterpreting the shortcut phrases or aide-memoires such as acronyms or mnemonics designed to assist clinical decision-making

- not having enough time (or patience) to explore other relevant and important material kept in other sections of the book (such as clinical examinations, checklists, drug information) before deciding on a patient management pathway.

Grouping and linking protocols together, a common practice and encouraged throughout all the protocols reviewed, adds to the complexity of their implementation and use. The grouping aims to reduce duplication of information throughout the book but, as demonstrated with the resuscitation protocols, these duplications still occur. Often these additional protocols contain critical information, such as the P5 protocol, which explains referral decisions for patients who may not need to travel to hospital immediately and must be considered carefully before the original protocol can be followed.

To demonstrate some of the taken-for-granted knowledge or implicit knowledge expectations, I completed a summary of all the abbreviations, acronyms and mnemonics used within the document. This is reproduced in Appendix X. In total I found 180 abbreviations, acronyms and mnemonics used within the document and no index or glossary is provided for the reader.

1.53.9 Choices or instructions?

The protocols are written as a set of instructions rather than instruments to guide decision-making. The ‘decision trees’ that are algorithms are also instructions that request the user to answer yes or no questions that then point to a set of further instructions. Specific medications are listed for treatments of specific patient conditions but no medication doses are specifically mentioned within the protocols themselves. When exploring the pharmacology descriptions in the protocols further I found a small number that included the recommended dosage range (pain relief is the general exception), whilst more have a

recommended amount with no variances. This limits decision-making to a degree where care cannot be tailored but instead is heavily standardised.

There is no further information or guidance given to the paramedic if the protocol does not work or is not suitable for the patient, nor what to do if there are unexpected outcomes. There are no options to provide any alternative forms of care. The closest information I can find relating to these concerns is the discussion in the Mental Health Emergency Protocol where it mentions what to do if the patient is not cooperative. In this instance, it suggests that the *Mental Health Act* can be brought into action and the patient can be managed involuntarily.

In the other two protocols, nothing is mentioned about management that does not go as planned with regards to the associated condition the patient is suffering from, although there is a general section in the beginning of the book which discusses managing patients using treatments outside the protocols. In this case the paramedic is required to fill in a variation to clinical practice form.

1.54 CONCLUSIONS

This chapter has interrogated the three protocols concerning seizure, resuscitation and cardiac arrest, and centred on exploring factors that affect their creation, maintenance and ongoing daily translation into practice by paramedics. Two of the three protocols share a long history, but all three have a well-developed culture surrounding the care that is expected from using the specific protocol.

Two of the three protocols demonstrate the influential role government policy plays in their creation and ongoing maintenance. We saw how KPIs can influence the structure of a protocol and how paramedics may be required to focus on following particular protocols at a high standard to ensure that the organisation is working towards KPIs to secure government funding. The resuscitation and mental health protocols have clear measures that serve as

KPIs, including responsibility, direction and accountability across the NSW Health structure to facilitate the delivery of NSW Health priorities.

We saw that not only are there governmental influences at play, but that outside organisations which provide publically available data for distribution may also influence an organisation's ability to keep a protocol well maintained, evidence-based and relevant to everyday paramedic practice.

Text analysis clearly demonstrated that the complexity of the texts is challenging, with the use of over 180 abbreviations, acronyms and menomincs, as well as high expectations of implicit knowledge in both literacy and underpinning healthcare knowledge. The protocols are dissimilar and unique in their layout, design, use of headings and graphic design.

In the following chapter I will detail how combining these elements of analysis together with the emerging themes from the interviews builds a holistic picture to understand how protocols and guidelines are used for clinical decision-making in paramedicine.

CHAPTER 7: A SUBSTANTIVE THEORY ON BUILDING TRUST AND MANAGING RISK: USING PROTOCOLS AND GUIDELINES TO GUIDE CLINICAL DECISION-MAKING

1.55 OVERVIEW

This chapter brings together the theoretical considerations and the results presented in the previous two chapters and triangulates these to create a model to visually represent the key areas that influence clinical practice guideline (CPG) use and development. Through a consideration of my findings in the context of earlier theoretical works, I have additionally looked to risk theory, constructivism and decision-making theory to further underpin the theoretical construction of the relationships between paramedics, the documents and clinical decision-making (CDM).

By applying the methodological framework described in Chapter 4, and using the process of triangulation, I combined multiple emerging themes from the interviews described in Chapter 5 with the findings from the document analysis in Chapter 6. In this chapter I further explicate and abstract these emerging themes into my three final themes, which integrate to become the final substantive theory.

The Model of Purposes for Paramedic CPGs is introduced to detail the relationships between the organisation, clinical decision-making and education within the foundations of managing risk and building trust, and to visually present the substantive theory for this dissertation of *Building trust and managing risk: using protocols and guidelines to guide clinical decision-making*.

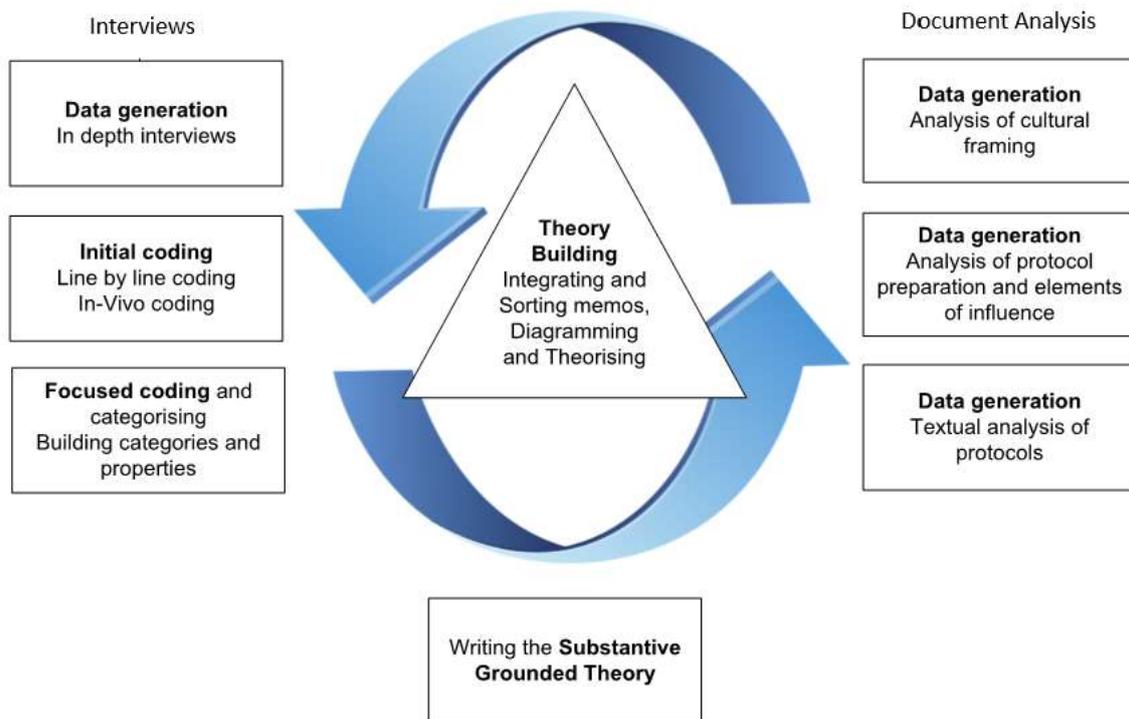


Figure 16. Process of triangulation of data

Consistent with CGTM, the following conceptual renderings are built from the data gathered during interviews and the conceptual framework applied to the protocols. The conceptual rendering allows the data to be constructed and presented as an overarching (substantive) theory which is built from the data and maintains its origins in the data in a manner that reaches up to construct abstractions and simultaneously ties these abstractions to data (Charmaz, 2006, p. 181).

1.56 THE SUBSTANTIVE THEORY ON BUILDING TRUST AND MANAGING RISK: USING PROTOCOLS AND GUIDELINES TO GUIDE CLINICAL DECISION-MAKING

The initial problem statement informing this dissertation was posed as: ‘Protocols and guidelines may be considered fundamental to supporting best practice and providing the latest evidence to support critical decision-making for paramedics. The possibility that paramedic preferences in using protocols and guidelines may, or may not, have a considerable impact on clinical reasoning and decision-making practices warrants further investigation in order to examine how to understand, develop and implement these proficiently within paramedicine.’ The purpose of the study is to generate a substantive grounded theory about how paramedics use guidelines and protocols for reasoning and clinical decision-making. More specifically, the aim of this research is to explore factors and barriers that impact decision-making and consider these with regards to the future development and implementation of clinical practice guidelines (CPGs) within paramedicine.

Lempert (2007) states that a substantive theory is usually specific to time and place, and Bryant and Charmaz (2007b) further add definition by stating that this is a ‘theoretical interpretation or explanation of a delimited problem in a particular area’ (p. 610). What is common to many who use this methodology is that grounded theory should always make sense to the reader. Stern (2007) remarks that this should be written in a way that strikes an immediate sense of recognition and understanding by the reader and that the theory is about people and meanings of things in which they can relate to. Stern also adds that it must be clear how this theory has been generated from the data to there is no mistaking of its authenticity (p.114). In consideration of these principles I have aimed to present a substantive theory that:

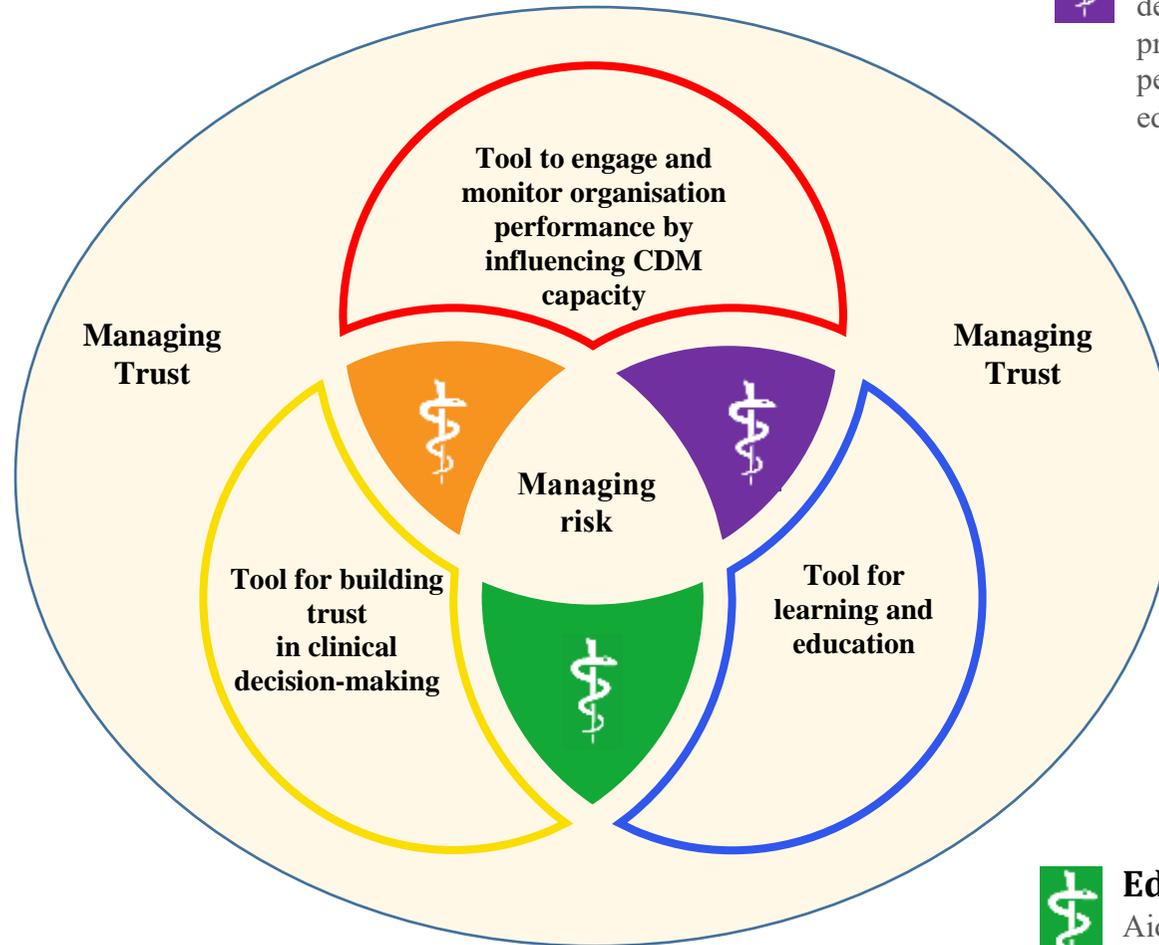
- clearly illustrates that it has been generated from the data gained in the interviews and document analysis;
- is situated within a specific context (paramedicine); and
- identifies and considers the most important issues of clinical decision making within the phenomenon under study.

The substantive theory generated from the data (the interviews and document analysis) in this study, *Building trust and managing risk: using protocols and guidelines to guide clinical decision-making*, provides an explanation of how CPGs are used to engage and monitor organisational performance through a clinical decision-making tool which is influenced by its role in education. The following Model of Purposes for Paramedic CPGs provides a visualisation of the substantive theory.



CDM and org. nexus

Variation to practice documents, technology and application tools, KPI monitoring, incident management reporting, standards, national and international expectations, funding subsidies



Org. and Education nexus

Continuing professional development, evidence based practice, standardisation of performance, risk avoidance education.



Education and CDM nexus

Aide-memoires, mnemonics, abbreviated terms, pathophysiology of conditions, pharmacology guides and dosing charts, skills descriptors, reference guides

Figure 17. The Model of Purposes for Paramedic CPGs

1.57 CLINICAL PRACTICE GUIDELINES AS TOOLS AND MANAGERS OF RISK

As represented diagrammatically in the Model of Purposes for Paramedic CPGs, we see that these documents have clear functions as tools for both building trust and managing risk. The three major purposes of the tools are education, clinical decision-making, and the monitoring and engaging of performance within the organisation. Each of these will be discussed as major themes from the research. Firstly, I need to bridge a gap by defining and understanding how risk and trust became a part of this research. In common usage, risk has far-reaching connotations: fear of specific hazards, concerns over finances, fear of the malevolent forces of nature, or even concern about those who manage risk for both their competence and trustworthiness (Jaeger et al., 2013). All understandings of how risk is portrayed presuppose a distinction between predetermination and possibility, for if the future was already known, then the concept of risk would not make sense. The possibility of an adverse outcome to an event is the essence of the idea of risk (Jaeger et al., 2013).

Two leading social theorists, Anthony Giddens and Ulrich Beck, both developed theoretical frames that place risk at the core of the world's transitions. Risk is theorised as a fundamental element of the emergent social order (Beck, 1992). For Giddens and Beck, the essence of existing within this age is surrounded by the perceptions of concerns over hazards in our environment, and the human species itself (Jaeger et al., 2013).

Because of its centrality to modern decision-making, risk has developed an analytical infrastructure consisting of scientists, engineers, economists, decision theorists and many other agencies in charge of managing risk. The roots of this infrastructure are grounded in the idea of rational action, from which a variety of approaches have emerged to study risk. Rationality relies on the premise that decisions are made based on or in accordance with reason or logic (Schumpeter et al., 2018). According to some sociologists examining risk, for example, Freudenburg (1993) and Clarke (1992), the story of risk is also the story of

organisations. These scholars suggest that organisations constrain individuals' decisions about risk by limiting the range of choices available. These two core concepts of 'rationality' and 'limited choice (decision-making)' are fundamental to how risk mitigation occurs within paramedic practice in ambulance service organisations.

Rationality and reasoning go hand in hand and are principles of logic formation for decision-making. A paramedic's capacity to make sense of challenging environments by using rationality and reasoning is influenced by the level of trust given to that individual by the organisation and the amount of risk allowed in the given situation. But trust is not a one-way street; it is also created by the paramedic towards their sense of self and constructed within their environment towards their colleagues and their organisation (Chatzopoulou & Santouridis, 2018). Just like smoke and fire, risk and trust must go together.

1.58 RISK AND TRUST ARE KEY INFLUENCES ON THE USE OF CLINICAL PRACTICE GUIDELINES

Within healthcare and inclusively the paramedic setting, trust is particularly important as there are significant consequences of failing to manage risk appropriately and, as Giddens (1991) points out, trust is a way of managing the risk generated by ignorance and uncertainty. Both ignorance and uncertainty are key players within the paramedic's work environment. Ignorance can take the form of a lack of knowledge or a lack of information and both forms are relevant to my example. For instance, a paramedic may be ignorant because of (a) taken-for-granted knowledge assumed by the organisation when writing a CPG, or (b) an inability to gain information due to the case presentation (i.e. patient unconscious, unknown situation). Uncertainty is also a daily companion to a paramedic and can manifest in various forms, from uncertainty about the stability of a car on the side of the road to uncertainty about the demeanour of a crowded nightclub full of drunken patronage. Trust in one's ability to analyse

these situations using rational, reasonable and logical decision-making is essential and creates a perception of mitigating the risks involved.

Trust can be defined as ‘confident expectations about another’s motives with respect to oneself in situations entailing risk’ (p.194) (Boon & Holmes, 1991). Das and Teng (2004) further discuss the relationship between trust and risk, and they developed a framework of trust based upon the role of risk.

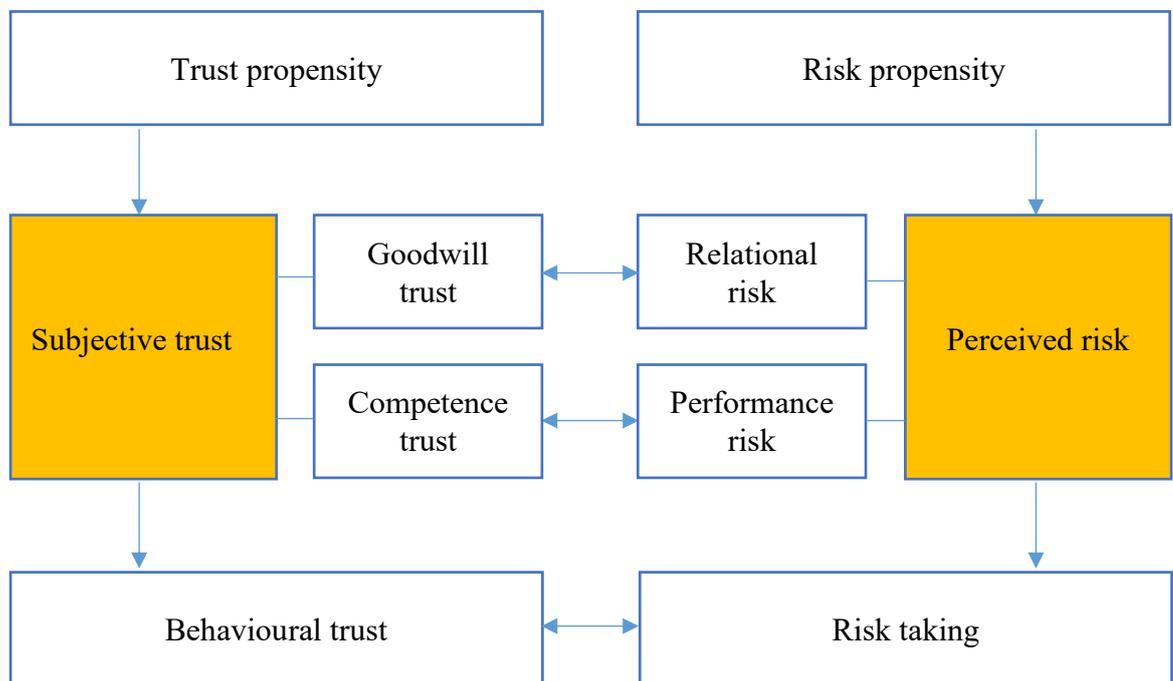


Figure 18. Framework of trust and risk

In Das and Teng’s (2004) framework, it explains how subjective trust and perceived risk can reflect off each other; ‘subjective trust is a belief, attitude, or expectation concerning the likelihood that the actions or outcomes of another individual, group or organization will be acceptable or will serve the actor’s interests’ (p. 95). Within this study, subjective trust is relevant as it can explain the way the ambulance organisation will use clinical practice guidelines as a means to measure key performance indicators and in the way they are interpreted as the ‘bible’ or the tool. The organisation assumes the protocols contain enough

information to enable paramedics to make clinical decisions and work through the parameters defined by the protocols.

The organisation will estimate and plan the risk involved when allowing a paramedic to use certain skills or drugs, or to follow clinical assessment and treatment pathways. A level of trust is assumed that reflects the protocols' role as a risk mitigation tool that is sufficient and forms a structure to manage their clinical workforce. Personal characteristics, such as the individual's propensity to trust and their propensity to engage in risk-taking behaviour, and the situated circumstances influence the degree to which risk and trust outweigh each other and determine the action and response taken by the individual.

In paramedicine, these competing concepts of trust and risk are heavily influenced by the socially constructed definition of the paramedic's role. Arguably, the paramedic's role has been glorified as risk-taking behaviour within social media, television and newspapers, with the paramedic cast as the 'hero' and the 'life saver' who comes into the situation to save the day (Tangherlini, 2000). However this picture is not truly representative of normal daily work, how the paramedic interacts with, assesses and treats their patients, and their relationships with protocols that guide their actions. Unfortunately, the divergence between the glorified portrayal and the reality of paramedics' work creates a complex dynamic between trust and risk as seen from the organisation's point of view. The increasingly diverse and complex patient presentations that paramedics attend and the balance between life-saving crisis management and primary management of patients creates a desire and health system imperative to control and mitigate risk.

In Das and Tang's (2004) framework, behavioural trust can be viewed as risk taking, so that the causal relationship between subjective trust and behavioural trust is likened to that of perceived risk and risk taking (p. 85). Within this framework we can appreciate the balance of risk within paramedicine and the use of CPGs as a mitigation tool. The trust works

in two ways. For example, the organisation trusts paramedics to perform within the specified scope of practice and paramedics trust that the organisation will provide the appropriate support and training to perform their role. One of the tools to communicate this trust is the protocols (good will and competence trust) – they define expectations and provide the framework for practice – leading to the associated behaviour of trust from both parties. The organisation expects paramedics to behave professionally in a clinically competent way – paramedics expect the competent behaviour of the organisation to create and maintain updated CPGs, clear and accurate functional guides, and additionally to provide training and support to maintain practice (and support if circumstances are out of their control). If the trust is broken (i.e. the paramedic’s faith in the CPGs) then it influences how the organisation and paramedics perceive risk and how risk is performed. For example, more oversight measures may be implemented by the organisation such as the variation to clinical practice documents and less or more willingness from the paramedic to go ‘outside’ the CPGs or manipulate the patient case reporting.

By using the Model of Purposes for Paramedic CPGs I will now explain the relationships of trust and risk between all three elements: (1) the organisation; (2) the clinical decision-making of the paramedic; and (3) the use of the documents as tools for education. Trust and risk are balanced within each theme and various layers of risk mitigation are constructed by both paramedics and the organisation to manage perceptions. These constructions form the important nexus points between each element.

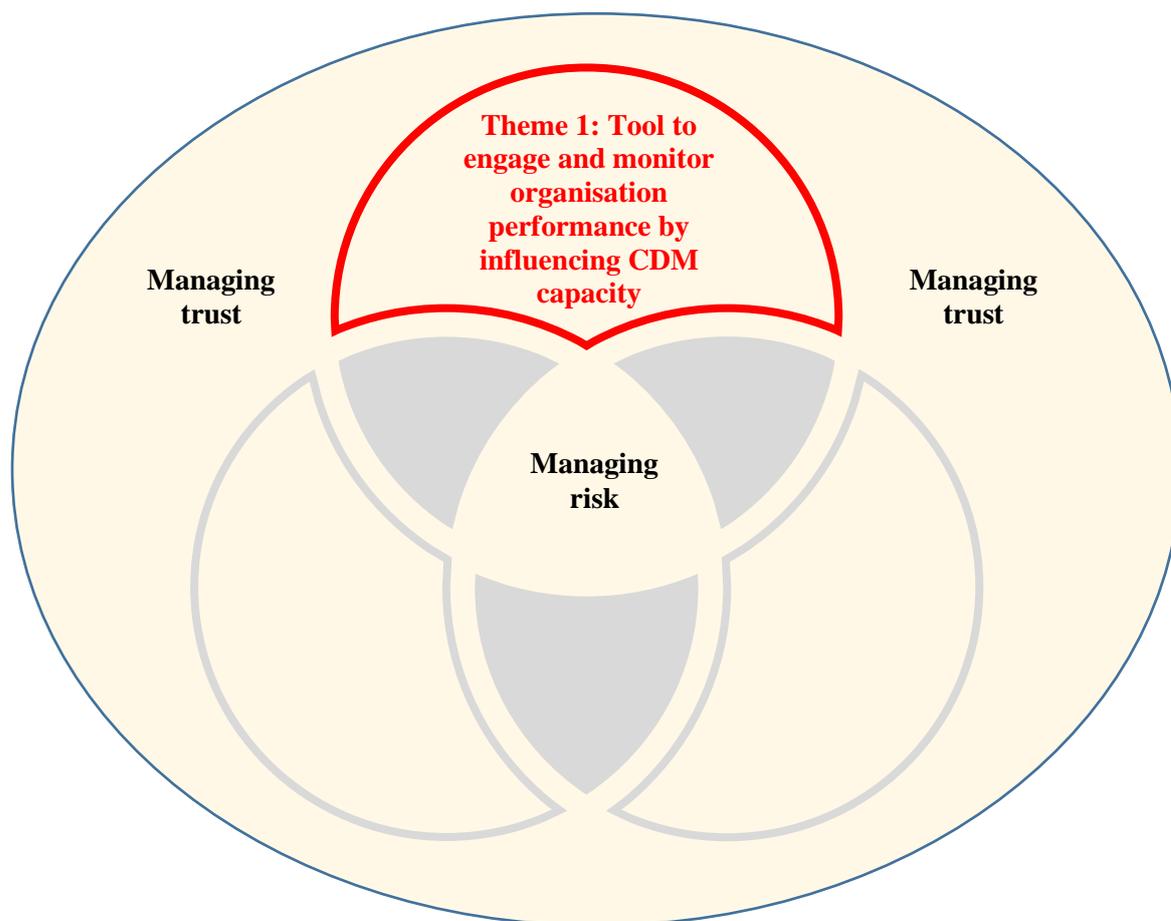


Figure 19. Theme 1

1.59 THEME 1: THE USE OF THE TOOL TO ENGAGE AND MONITOR ORGANISATIONAL PERFORMANCE BY INFLUENCING CLINICAL DECISION-MAKING CAPACITY

This theme integrates the emerging themes from Chapter 5 of the role of the protocols and guidelines in paramedicine, their content and functionality, and the organisation’s perceived responsibilities to regulate and control practices.

Table 11. Elements of Theme 1

Emerging theme 1	Emerging theme 8	Emerging theme 9	Document analysis related content
Protocols/guidelines face an identity crisis that challenges the interpretation of their role within paramedicine.	Text content, layout and complexity play an important role in protocol and guideline functionality.	There is uncertainty about organisations' expectations of the reality of practice.	Governing bodies Linkages to outside sector Standards and KPI Organisational data History & culture Creation of the documents

The increased general knowledge base and higher levels of training required by ambulance organisations in the early 2000s created a movement towards developing guidelines instead of protocols. This change in the documents' label reflected a shift in the philosophy of paramedic practice, one that was socially constructed at the time by a perceived cultural change towards increased autonomy within practice and ability to perform patient-centric care. This perception of change never became a reality. I say perception for a reason, namely because to many paramedics (and the organisation) the documents are still considered protocols at the heart of practice. Even though paramedics may believe that the documents have changed greatly, when we compare current protocols to those from the late 1980s, their descriptions and terms of use have minimally varied. What has changed is the implicit level of knowledge to understand them and the variety of treatable conditions and range of medications on offer. The type of care a paramedic can provide within the protocols has expanded and become more complex but fundamentally the way they are used, as instructed by the organisation, has hardly differed.

Paramedicine has yet to move onto the medical mainstream concept of what a clinical guideline should/could look like, and the practice it reflects, and this is driven in part by the organisation's need to mitigate risk and control paramedic behaviour in their clinical

decision-making. If paramedicine adopted the more common style of guideline within health care today there would be much greater autonomy and a broader sense of patient-centric care. For instance if a guideline were to be developed using the AGREE II or NICE guidelines it would allow for far broader flexibility to decide when or when not to implement particular patient management strategies. The document would provide more detail about treatments and alternatives which allow for more creative decision-making.

Having rigid instruction-like protocols does reduce professional autonomy and the ability to modify patient management if required, producing a standardisation of care. These standardisations of the expectations of care required from the organisation's perspective and require balancing for the creators of the documents. Uncertainty about what is required of the clinician (the paramedic in our case) creates confusion about minimum or maximum standards of care and additionally about the level of trust allowed for autonomous decision-making. Minimum standards of care that meet the organisation's requirements for internal and external bodies of influence (such as KPIs and funding) are key drivers towards standardised practice and again provide mechanisms to monitor the organisational performance in wider or more broader structures such as governing body requirements.

There is a conflict between organisational expectations and the movement of paramedicine towards being a profession, which will not be resolving anytime soon. Paramedics are now trained at university within a system that heavily values evidence-based practice, and then they transition to work for an ambulance provider where historical and cultural preferences primarily take precedence and influence the way that patient care is tailored and provided. This research has certainly revealed existing and future tensions, especially the tension between what is learnt academically and the transition to practice 'on the road'. Paramedicine students, whilst receiving their education through a university system, are encouraged to think holistically about broader health care, to investigate, discover

and delve deeply into the 'latest evidence' and to strive towards 'patient-centred care'. In many cases, patient treatment strategies are taught not to a set of protocols or guidelines, but instead focus on patient assessment techniques, pathologies of diseases, and evidence-based medication knowledge and administration. To transition from this system to one of a set of protocols which direct or instruct decision-making tasks seems to effectively negate much that was learnt at university. This study suggests that primarily this disconnect between university and organisational learning and expectations stems from a perceived requirement to mitigate risk and to cater for the 'lowest common denominator', a term used frequently by educators during the interviews. At the heart of this theme rests the ongoing need for the organisation to balance its inherent requirements and expectations with the ongoing evolution and trust in the professional autonomy of paramedics. As this relationship further develops and trust grows, a change to guidelines and the practice they represent may be possible.

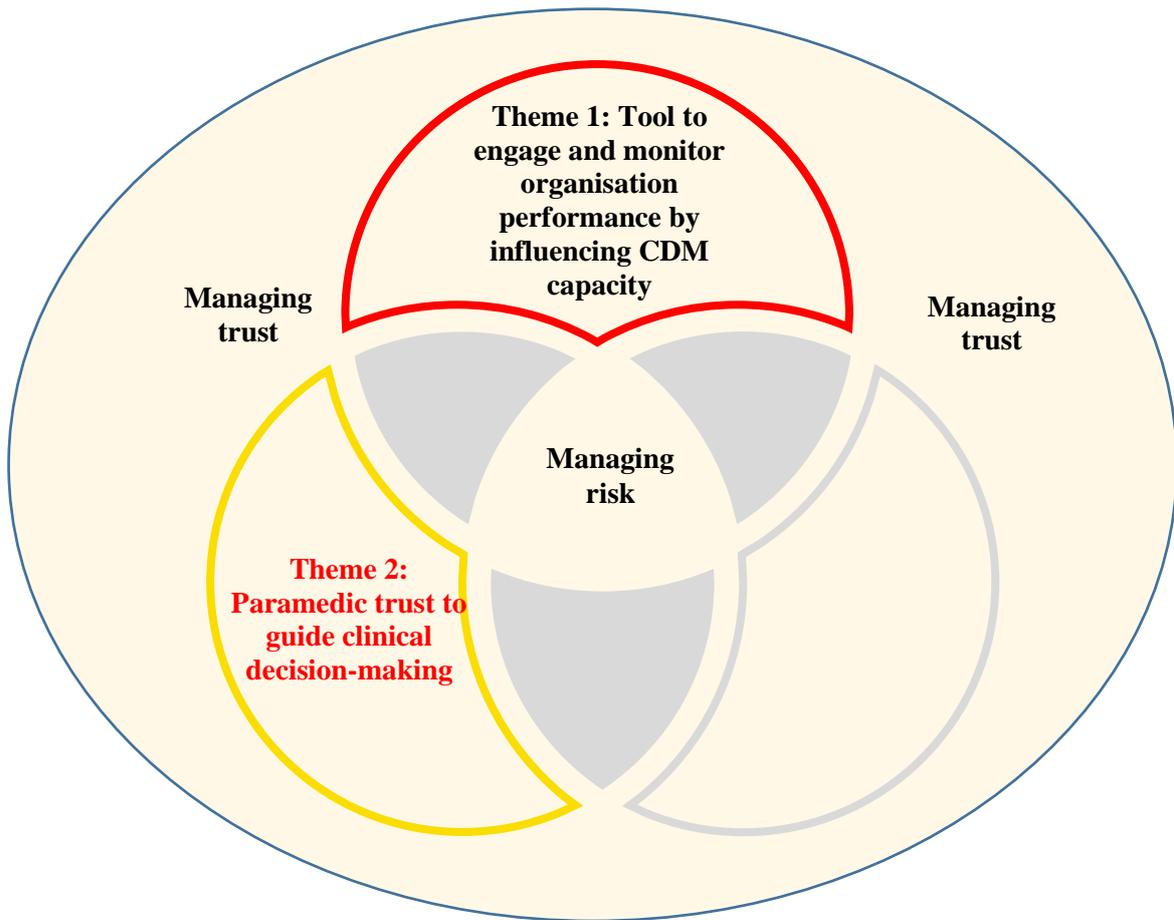


Figure 20. Theme 2

1.60 THEME 2: PARAMEDIC TRUST IN THE PROTOCOLS AND GUIDELINES TO GUIDE CLINICAL DECISION-MAKING

This theme integrates the emergent themes from Chapter 5 relating to the data of minimum standards of care, variations to practice, including safe practice, and the concept of risk in using the protocols and guidelines in clinical decision-making.

Table 11. Elements of Theme 2

Emerging theme 7	Emerging theme 5	Emerging theme 4	Document analysis related content
Paramedics believe that the protocols and	Paramedics believe protocols and	Paramedics are very hesitant to admit to	History & culture

guidelines prescribe the minimal level of care required	guidelines can (and do) promote safe clinical practice.	any variations of practice, even though they face challenging and dynamic work environments.	Text complexity Intro and conclusion Placement within the document Layout Symbols and algorithms Font and style Structure
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Paramedicine is an environment where systems are often fluid, patients never similar, and the setting is constantly changing. Risky decision-making occurs in paramedicine in a myriad of ways from the environment and patient, to the patient care provided and transport decisions. As mentioned previously during the interviews, the term ‘CYA’ (cover your arse) even became its own category in NVivo as it was so commonly discussed and heavily influenced decision-making. When linking themes together and abstracting them, trust and risk mitigation was at the root of the discussions.

Trust in the documents provided is often aligned to the management of risk and is significant in particular in health care. There is an evident friction and potential conflict raised in this theme which is caused by a paramedic’s trust in the document to provide the fundamentals of good care pitted against the circumstances where a paramedic may need to go beyond the range of the protocols to provide the required care.

A question that came to me very early on in this study was whether paramedics believed that protocols were a minimum or a maximum guide to care, with each having implications for the way they used the protocols in practice. The interviews strongly pointed to the paramedics using protocols as a guide to minimum levels of care and this was crucial to answering the research question and aims. A paramedic will use the protocols to achieve the minimum required by the organisation, and then they make decisions on how far they will go personally to treat the patient further given the patient’s presentation and circumstances.

These decisions were dependent on the amount of risk they were willing to accept, which varied due to their scope of practice, and their educational background, with those at the higher end of practice quite often going well beyond the stated tasks set out in their protocols.

Even though risks were taken often and were quite expected in their practice, the historical and cultural processes within the organisation make paramedics almost embarrassed or fearful of punishment if they admit to varying their practice. From early on as a trainee, the paramilitary mindset of following commands is still present within their workplaces. This is supported by the perception of the participants who were newer to the profession that to practise outside of a protocol would be almost like disobeying an order, and to vary practice could be seen as instigating a punitive action that has been socially constructed between paramedics and the organisation.

Often variations to practice were understated – ‘It wasn’t much’ or ‘It’s a really safe drug’ – or were related to a sense of necessity, for example ‘I know that drug can be used for something else and if the patient needed it, I would do it’, the latter being an interesting point for consideration as it does illustrate the risk that a paramedic may take when deciding an appropriate treatment plan for the patient. The wide variations between practice levels have created a conundrum within the protocol books used in ambulance services. The document is considered a one size fits all, but as evidenced here does not fit anyone well. Due to the styling of the document, factors such as text complexity and its instructive use of language, it misses a large part of the audience. In particular, the document is not used by higher-level paramedics, which then creates a potential acceptance of risk-taking conduct for that cohort. Even though they believe that the protocols promote ‘safe practice’, they do not necessarily believe they promote ‘best practice’. This friction drives behaviour that hides clinical decision-making behind the curtain of the protocols.

1.61 THE NEXUS BETWEEN THE ORGANISATION AND CLINICAL DECISION-MAKING (THEME 1 AND 2)

The nexus that lies between the organisation and CDM has complicated friction points that stem from a perceived need to regulate and control clinical practice. This is primarily because of the historical and cultural precedence of medical dominance and lack of professional autonomy in paramedicine. The phrase ‘medical dominance’ is commonly used within the literature and is frequently used synonymously with the term ‘professional dominance’ (Willis, 1983, 2006). Both refer and point to the medical profession’s dominance over other health occupations for their own division of labour and conditions of their own work environment. We know from the background in Chapter 2 that paramedicine has struggled to move beyond this model and that it is only since December 2018 that the profession is now registered independently through the Australian Health Practitioner Regulation Agency (AHPRA). Previously, paramedics acted with ‘deputised authority’, a term coined to suggest that they enacted their skills and decision-making as agents of the medical director of the ambulance service. We know that, with the advent of registration, paramedics will be required to be covered by personal liability insurance; however, employers are *still vicariously liable* for the negligence of their employees ("Armes v Nottinghamshire County Council [2017] UKSC 60.," ; "Hollis v Vabu [2001] HCA 44,"). This means that the employer should take reasonable steps to prevent negligence such as providing quality protocols and guidelines alongside of support and training. When paramedicine became a nationally regulated profession under the Health Practitioner Regulation National Law Act (National Law),⁵ the titles ‘paramedic’ and ‘paramedicine’ became protected by law; however, the scope of practice and standards relating to the profession are still yet to be

⁵ Health Practitioner Regulation National Law, as in force in each state and territory (the National Law).

defined. This means that without standardised clinical decision-making tools paramedics have great practice variability.

In order to further regulate and manage risk, organisations add additional layers to paramedic practice in the form of incident management reporting, KPI monitoring and variation to clinical practice documents. Incident management reporting and KPI reporting both seem to have important functions in notifying the organisation of risk. Variation to clinical practice documents appear to have limited efficacy to affect change in organisational performance because they are not used by paramedics primarily due to fear. There is a lack of trust, and a fear that the ambulance service may consider punitive action against the paramedic if information is disclosed about varying practice. This may change in the future but the consensus during the interviews was that the variations to clinical practice documents were not seen in a positive light.

CDM ability within the CPGs is also regulated by the organisation in relation to following national and international standards. Examples of this are the resuscitation protocols which are based upon the International Liaison Committee of Resuscitation (ILCOR) Guidelines. Another example is the monitoring of patients with mental health concerns and their treatment within ambulance services. As a part of the NSW Health Strategic Priorities 2018–19, strategy 3 focuses upon integrating systems to deliver truly connected care (NSW Health, 2018). Mental health reform will also be monitored, noting that process KPIs and milestones are set out in the detailed operational plans developed by each health service and support organisation. These KPIs for NSW are gathered as data that reflect the use of CPGs by paramedics. By setting out its minimum expectations within the protocols, the service is attempting to regulate and meet the KPIs required. From a functional and pragmatic perspective, it is essential that the organisation meets these governmental requirements in order to continue its funding and subsidy arrangements. This means that the

conflict between reporting and using protocols as guides and to set expectations within practice has both clinical ramifications for patient outcomes and financial implications for the ambulance service. This imbues the document with the character of a monitoring, limit setting and reporting tool that paramedics have to navigate.

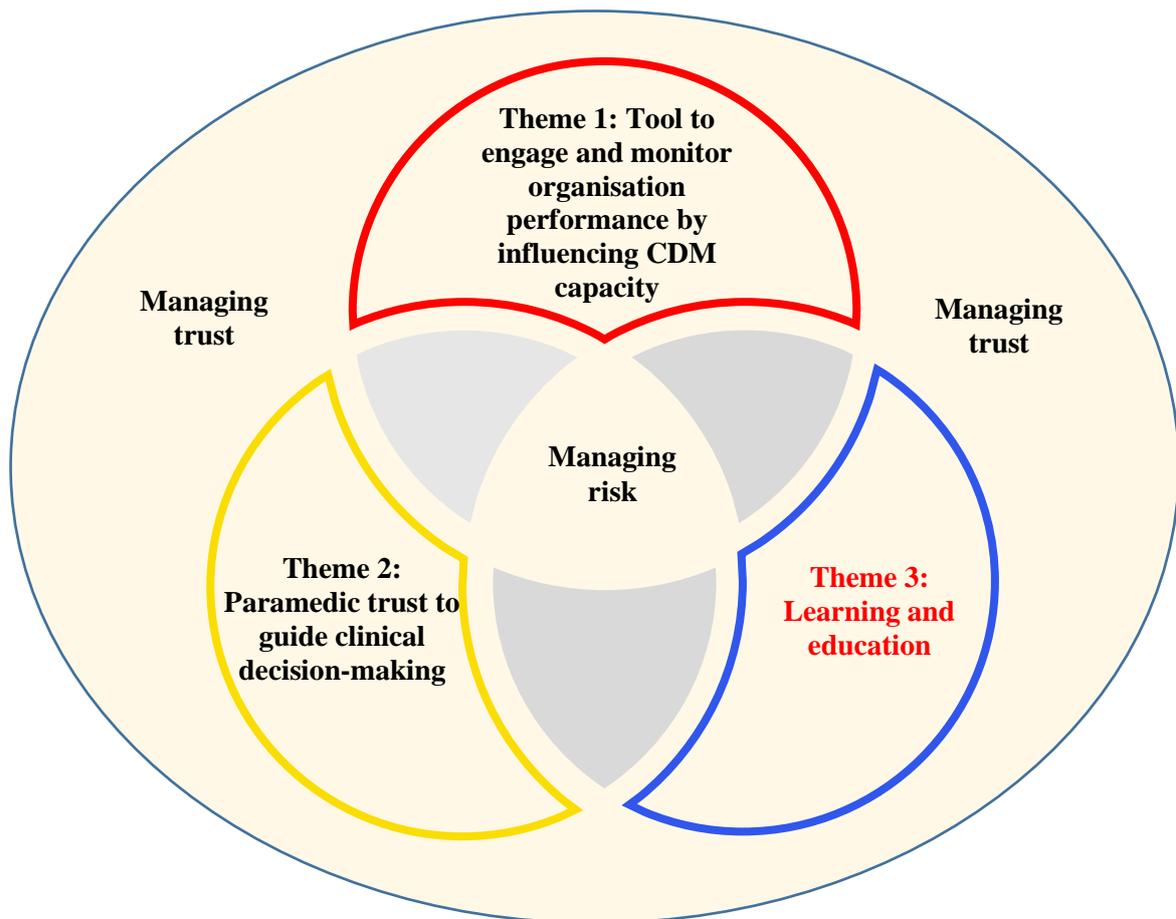


Figure 21. Theme 3

1.62 THEME 3: TOOLS FOR LEARNING: THE INFLUENCE OF EDUCATION, LEVEL OF EXPERIENCE AND SCOPE OF PRACTICE

This theme integrates the themes from Chapter 5 regarding the concepts of education, scope of practice and level of experience from the interviews with the findings from the document

analysis. There is a correspondence between how a paramedic is trained, whether vocationally or at university, and how they use protocols and guidelines.

Table 13. Elements of Theme 3

Emerging theme 2	Emerging theme 3	Emerging theme 6	Document analysis related content
Paramedics who are university trained are more inclined to pursue CPD activities and self-directed learning.	Protocols/guidelines are used for a wide variety of activities and reasons in practice.	The level of daily usage relates to paramedics' experience and scope of practice.	Choice or instruction? Taken-for-granted knowledge Text complexity History & culture Layout Symbols and algorithms Font and style Structure

If the protocols are aimed at a higher requirement of knowledge than the entrance-level education of the trainee paramedic, the participants outlined they will attempt to use them as a training tool to bring their base knowledge up to the recognised standard. Historically this tiered level of education is due to the vocational system whereby the paramedic learnt 'on the job', which currently runs alongside the university education system. Whilst ambulance services aim to cater for each group individually, there is a friction and tension that arises between the two when the aims are to achieve complete competency during their internship. Educators face a difficult task of continuously tailoring education to suit individual needs with a group that is growing more dissimilar as knowledge and professional expectations are expanding. Vocational students also feel underwhelmed by the support they receive and during the interviews often wanted more time with educators. This creates pressure for the documents to be more than just protocols, as they need to double as a

training aid for those who need it. The results showed that those who used them most as teaching tools, the vocational paramedics, demonstrated less self-driven capability to finding evidence or learning tools outside of the ambulance service's manuals and were less likely to be involved in other CPD activities. These skills appeared to be less developed when compared to those who had gone through a university system, who were less inclined to use protocols as teaching tools, and more as aide-memoires of instructions for patient care.

Using the protocols as a tool for training is a way for trainee paramedics to mitigate risk to ensure that they know the correct information to provide patient care. They are seen as instructions which are at times quite challenging to understand due to the complexity of the text and the way that it is structured. Even the terminology, language, symbols and use of algorithms appear very confusing for the learner and this 'taken-for-granted knowledge' takes considerable time to achieve, with some paramedics never achieving full comprehension of the documents within this system. So whilst the trainee may be seen to be attempting to mitigate risk by using them as a teaching tool, they are an insufficient education tool in isolation.

1.63 THE NEXUS BETWEEN THE ORGANISATION AND EDUCATIONAL TOOLS (THEME 1 AND 3)

By allowing more freedom for paramedics to make autonomous choices, the organisation faces growing challenges to maintain standardisation, minimum practice standards and reporting of patient outcomes. Reporting to external agencies, transparency of data and key performance indicators are often at the centre of government funding arrangements.

Managing organisational risk is a considerable task for an ambulance service and furthermore extremely complex.

Whilst university paramedicine programs have been regulated and accredited since at the latest 2007 (AHPRA, 2020), the organisation needs to have sufficient trust in the

educational systems to be assured that the graduates they receive will be suitable for employment and service. Historically, there appears to be a tension which stems from the cultural transition from the vocational to the university educational system. The ‘home-grown’ vocational system is still seen as a necessary and trustworthy pathway to enter the profession within NSW; however, it is also perceived as the last known remnant within Australia of an older system. Williams et al. (2010) compared paramedicine to the nursing and physiotherapy professions, which were able to ‘control their own scope of practice and own body of knowledge’ after becoming registered and having university degrees. They questioned why paramedicine has not been able to achieve this. Again in 2014, O’Brien et al. (2014) optimistically discussed the transition of university graduates in paramedicine to being ‘work ready’ after leaving their education provider and entering the workforce. Nevertheless, there still appears to be a gap between what the organisation believes is the knowledge set of paramedics and what they are willing to risk them not knowing.

Confounding the issue of risk management and what the organisation believes that paramedics do and should know is the additional layer of complexity that is the vocational paramedic. These paramedics enter the service significantly less prepared than those that come through the graduate system, and yet they are still required to follow the exact same set of documents to provide patient care, albeit limited by their scope of practice to use them. Vocational paramedics have demonstrated a willingness to attempt to use the protocols and guidelines as training documents; however there is a lack of trust in what has been provided to them. The participants in this study expressed frustration about the level of taken-for-granted knowledge and the text complexity that was, fundamentally in many cases, very much above the ‘stretch text’⁶ or the appropriate level of complexity.

⁶ The term ‘stretch text’ is used within educational theory. It means a text designed to be at the level above a reader’s level, which would challenge the reader appropriately to progress to the next stage of literacy and competency. See Lapp et al. (2015).

In the nexus of these challenges lies the roles of continuing professional development (CPD), evidence-based practice, standardisation of performance and risk-avoidance education, all of which were reported upon during the interviews as being used within the service that was under observation (obviously some more than others). These instances give both parties (paramedics and the organisation) opportunities to come together to discuss and mitigate risk and address perceived performances issues proactively. CPD is offered on a regular basis, evidence-informed practice is attempted within protocol production and the standardisation of performance (alongside of risk avoidance), and is often combined with training revalidation that has to be completed on an annual or 18-month basis.

The difficulties felt by vocational paramedics within this system are apparent as the organisation moves towards a graduate-only workforce. Unfortunately, it seems that they are being left behind. I can only imagine that this trust will continue to diminish and the risk that they face in practice will only become greater if further steps are not taken to address the gaps. Additionally if the vocational pathway were to be phased out, there are implications for the organisation to consider in terms of managing the education and ‘upskilling’ of the vocational paramedics who make up a significant part of the workforce. The protocols have a role in mitigating some of these issues by managing clinical decision-making and role expectations throughout this period.

1.64 THE NEXUS BETWEEN EDUCATIONAL TOOLS AND CLINICAL DECISION-MAKING (THEME 2 AND 3)

CPGs can assist to manage risk in clinical decision-making by providing the user with educational tools that may assist with knowledge retention and recall. By creating the content to include aide-memoires, mnemonics, abbreviated terms, pathophysiology of conditions, pharmacology guides and dosing charts, skills descriptors and reference guides, CPGs can become compendiums of care that potentially address the risks of inadequate knowledge or

memory recall. Interestingly, when we look at the recommended guides that have been researched extensively to create clinical guidelines (such as AGREE II, NHMRC and NICE guidelines), none mention the learner or novice, and instead all assume the reader is a fully qualified and competent practitioner (Brouwers et al., 2010; National Health Medical Research Council, 2016; National Institute for Health and Care Excellence (NICE), 2014). Within paramedicine, due to the complex heterogeneity of the paramedic cohort, one-size-fits-all CPGs do not meet the needs of both the ambulance organisation and paramedics. However, steps can be taken to manage the risk and additionally assist the user to build trust in the documents by addressing their need for knowledge.

There is a friction in creating the right type of document for the right type of paramedic to be used at the right time. This study suggests that CPGs need to be developed that can be used for various environments and in different versions, adaptable to the need at that time. For instance, a paramedic may require an aide-memoire if they need a quick recall for a treatment pathway for a type of case they have not seen in a while. This need is very different to a paramedic trying to learn and understand when to give salbutamol⁷ to a patient with breathing difficulty and the difference between presentations of chest infections versus asthma.

Electronic versions of CPGs are becoming increasingly common and the interviewees described them as useful additions to practice. After completing this research I now have concerns that if only e-versions were available this would fall short of the need to address risk in all elements of the purpose of CPGs. From the versions that I have reviewed in my research that belong to NSW and other ambulance services within Australia, the e-versions have been constructed to be very short, instructive algorithmic statements with little

⁷ Salbutamol is a drug used to treat bronchospasm in asthma. It would be ineffective in a chest infection without wheezes present.

reasoning processes, explanations or statements to assist clinical decision-making. Instead they are condensed versions of decision trees which provide instructions for care, rather than giving the user the ability to tailor care to complex conditions. Care should be taken in future when designing e-versions that they accomplish their role as education tools that assist decision-making.

1.65 CONCLUSION

In this chapter we have demonstrated how the emerging themes created from all data gathering triangulated to become three core themes. This process of drawing together the themes and identifying how both trust and risk are managed attributed to the creation of the substantive theory *building trust and managing risk: using protocols and guidelines to guide clinical decision-making*. The Model of Purposes for Paramedic CPGs illustrates the substantive theory and provides a useful diagrammatic visual aid to make meaning from the theory. This concludes this chapter and the following chapter now provides closure to the dissertation.

CHAPTER 8: CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS OF THE RESEARCH

1.66 OVERVIEW

This chapter concludes the dissertation by drawing together a final summary and making recommendations for the future use of CPGs in paramedicine as decision-making tools. The chapter also evaluates the effectiveness of CGTM as the means to conduct this research and address the research problem. The substantive theory and model generated from the results of this study identified the key areas of trust and risk, and how these are balanced by the organisation's and paramedics' use of the CPGs as tools for education and clinical decision-making. Lastly, I discuss ideas for future research and limitations of this research.

1.67 THE VALUE OF USING CONSTRUCTIVIST GROUNDED THEORY IN THIS RESEARCH

Starks and Trinidad suggest that researchers who use grounded theory principles should aim to develop 'explanatory theories of basic social processes studied in context' (2007, p. 1372), which was my intention within this research. This is also suggested by Reed and Runquist (2007) who state that grounded theory (which is philosophically underpinned by the lens of symbolic interactionism) should give attention to identifying and explaining the social processes that occur within specific contexts. They also go on to promote that this should focus upon people, and how they interpret their respective roles and social realities. As particularly previously stated within the methods and methodology sections of this dissertation, the constructivist grounded theory methods in this research are based upon the principles that are described by Charmaz's work and is informed by a symbolic interactionist theoretical perspective. Constructivism and symbolic interactionism are both

about the study of how meaning and actions are constructed (Charmaz, 2003). According to Charmaz, an objective of grounded theory (and additionally constructive grounded theory), is aim for an understanding during the research which can then develop into an abstract theoretical framework that explains the studied process (Charmaz, 2006).

Hallberg (2006) also recommends that in constructivist grounded theory, the researcher presents the research as more of a story or narrative than as a theory. I have strived to present a narrative approach to this dissertation as it describes my journey through the process of enquiry, while additionally building a theoretical understanding of the experiences of paramedics using protocols and guidelines for decision-making as well as the voices of the documents' creators and historians.

1.68 EVALUATING GROUNDED THEORY

It is suggested that grounded theory needs its own set of criteria for evaluating and discriminating quality due to its unique features (Berthelsen et al., 2018; Chiovitti & Piran, 2003; Hutchison et al., 2011; Lazenbatt & Elliott, 2005), however grounded theory researchers are still recommended to follow general guidelines to ensure the quality of their data-gathering methods such as interviews, fieldwork and so on. Any critique of GT research should also refer to the type of GT methodology used: as discussed in the methodology section, there are many forms of GT that have various differing philosophical underpinnings. In the pursuit of quality in grounded theory, I have used criterion proposed by Charmaz (2006, 2014) to address whether this study has met its aims. These criteria are credibility, originality, resonance and usefulness and will be addressed below.

1.68.1 Credibility

The credibility of a grounded theory study can be evidenced using three themes: how well it details the presentation of the material so that readers feel that they have been in the field

with the researcher, and literally can see and hear the participants; how well the readers understand how the researcher came to their understandings (how the data was managed and analysed); and lastly, the extent to which comparison groups are used to increase the depth and generality of the emerging theory, and to provide scope which may be used to correct and adjust the emerging theory to alternative conditions. Credibility additionally also requires the researcher to be reflexive in their involvement with the research process to explore their own views and actions. Charmaz (2016) advises researchers to be mindful of this and further explicate their taken-for-granted assumptions. This process involves gaining ‘methodological self-consciousness’ about how hidden values and beliefs can enter the research process.

Using these points for consideration in this research, I have made clear the position of the researcher in relation to the how the study was conducted and I have used the narrative voice clearly throughout the study. Reflexivity has been clearly articulated and this tells a story which invites the reader on an insightful journey through the sections to culminate in the final substantive theory. This voice provides continual reassurance to the reader and details the processes and thinking that rationalise the approach of the methods. Providing the Model of Purposes for Paramedic CPGs further illustrates how protocols and guidelines are used and assists the reader to understand the theory and to be able to translate it into practice.

1.68.2 Originality

This research is original in both its topic and its methodology. There is no other research currently in existence that details to such a level the understanding of protocols and guidelines and their purpose in guiding decision-making. At this time of the final editing of this dissertation in December 2020, there is still no other research conducted in this area nor using these types of investigative tools to delve deep into the workings of paramedic minds when using their protocols or guidelines. No published study nor even a magazine article has

sought to discover the linkages between CDM and the history, culture, implementation or text complexity of paramedic protocols and guidelines.

1.68.3 Resonance

The third criteria, resonance, questions whether the research and the end product make sense to the participants. It asks whether the researchers have constructed concepts that not only represent their research participants' experience, but also provide insight to others (Charmaz & Thornberg, 2020). Resonance is important to me in this study as I have a deep commitment to the profession, including to improve the strategies for protocol and guideline development in the future, and I need the 'creators' to be able to make sense of this study. Where possible, I have ensured that 'things make sense' to the average reader, keeping my tone and my language in a range that will be useful to the people who need to read this creative work. For what good would this all be if no one found it useful?

I made sure that I used methods that captured more than one point of view and data from various angles (triangulation) to increase the ability of those reading to relate my findings to their own situations. I engaged with the paramedics, the historians and the creators to ensure their voices were heard and that they were able to tell their stories.

Lastly, resonance values that the researcher has uncovered the 'taken-for-granted meanings', something which I feel that I have achieved. By recognising and acknowledging my own beliefs, values and cultural knowledge and realising how they affect my judgement I am able to instead add valuable insight but also maintain the authenticity of the meanings.

1.68.4 Usefulness

This study demonstrates that protocols and guidelines are used in many more ways than the creators (and paramedics) probably realise. This in itself is an important acknowledgment as any changes in the future may have unintended impact without having knowledge of their

unseen value. Making known how paramedics use them not only as aide-memoires, but also as study guides has tremendous impact upon future updates that may reduce this functionality; in particular I am thinking of the move to electronic versions and online tools.

There is also a need to acknowledge their role in building trust and managing risk; this area can be further explored and more work put into improving the collaboration between the organisation and the paramedic. As we move towards an exponential growth in paramedic professionalism with increased opportunities to develop new roles and responsibilities, there is a growing need for more autonomy. With this comes the need to manage risk and build the organisation's trust in the knowledge and abilities of paramedics, and paramedics' trust in the organisation and the resources it provides. We know that protocols and guidelines have a big role to play, and developing and implementing guidelines that paramedics find valuable will go a long way to driving the transition to professionalism.

The following sections on recommendations seek to drive the profession forward through the development, implementation and monitoring of clinical practice guidelines. These recommendations are based upon the categories from the Model of Purposes for Paramedic CPGs.

1.69 RECOMMENDATIONS AND CONSIDERATIONS FOR ORGANISATIONS

The following points list ways that organisations may mitigate risk and build trust in the development and implementation of their CPGs.

- Use modern technology tools for managing content, evidence-based (or evidence-informed) practice and guidelines maintenance.
- Test guidelines on all levels of staff to validate the text complexity, readability and relevance.

- Have a standardised implementation method that is quality assured and that incorporates feedback mechanisms. Use a transparent approach and have this procedure well known by all (including on-road staff).
- Look to other fields such as nursing, medicine and physiotherapy to find national standards for implementation and have these tailored to paramedicine.
- Have a ‘protocol hub’ and encourage staff to report on potential useful updates. Staff should not have to have a near miss, or perform procedures out of scope or against the guidelines to propose change.
- Introduce proactive methods with modern online tools to allow draft CPGs to be previewed for wider comment before implementation. Follow a consultative and collaborative process which is seen to be inclusive. Many paramedics now are experts in their field, which could be valuable for practice. Harness these abilities and value employee diversity.
- The end user has a great potential to be both the litmus tester and beta tester for implementation. More open channels between the paramedics testing (and using) the protocols and guidelines are needed to invoke positive change.
- Encourage internal responsibility, accountability and professionalism, which is the way of the future for paramedicine. Encourage staff to take ownership of the CPGs and work with them as a professional body to do research in all areas.
- Collect data on all CPGs, not just those used for KPIs. Use this data to identify areas of potential research for paramedics which may help improve the body of evidence needed for paramedic professional practice.
- CPGs need to shift to better performance measurements of patient-centred care that are not singularly focused upon KPIs used for financial revalidation. Increasing

resources for the development and implementation of better CPGs will drive quality assurance indicators in other areas.

- If CPGs are to be used as decision-making tools then the way they are written needs to be more inclusive of decision-making language. There is a need to shift away from decision tree logic (unless useful and needed) and more towards a deeper level of understanding of the *effects* of decision-making. The creators of the documents should look to validated instruments such as the AGREE II tool and modify them to suit paramedicine's needs. Incorrectly labelling the protocols as guidelines creates an identity crisis and inhibits a clear understanding for the end user of how they are intended to assist in everyday practice. Call them what they are and avoid ambiguity. Use language such as 'aide-memoire', 'decision tree algorithm to decide care', and 'instructions for leaving people at home'.

1.70 RECOMMENDATIONS AND CONSIDERATIONS FOR PARAMEDICS

The following points list ways that the CPGs affect paramedics in everyday practice and should be considered when developing and implementing guidelines.

- It is very important to remember that paramedics are a heterogeneous group with widely varying backgrounds in education and experience. Protocols and guidelines should be made available to all at levels that are practical, useful and valued. Currently the modern protocols seem to fit the needs of no one due to a one-size-fits-all approach by many creators.
- Underpinning knowledge requirements are the elephant in the room and need to be addressed. Efficiencies that try to ameliorate this issue are not currently being addressed adequately and clinical training staff are not able to keep up with

organisational expectations. If the divide between vocational and graduate paramedics continues to grow, there are major risks of compromising clinical care due to the inability of vocational staff to get the support they need to achieve competency in the occupation.

- Vocational staff need to be given more opportunity to catch up to new graduates' educational level and systems need to be put in place that address the variation in ability that this diversity has introduced. Another option is to consider an alternative level of practice, which would be common sense. Vocational staff now do not have the underpinning knowledge required to work to the capabilities of the protocols within NSW, with some staff never achieving complete competency. The protocol book, whilst it is being used as a teaching aid, is most likely underachieving in this area and more could be done to bridge the gaps in implicit knowledge.
- CDM in the scope of practice for ICPs needs further exploration and understanding. There is significant risk if a paramedic considers that their level of competency is above the level of the CPGs. This could be mitigated by the introduction of an ICP CPG guide. A compendium that discusses more complicated patient care with diagnosis differentials, interventions, pharmacology and interactions would be advisable to mitigate further unintentional risk that has been introduced by not catering to this group. Thought should be given to creating this advanced text for the higher practice levels to remove inconsistencies between practice levels due to a difference in perceived need for the CPG manual. For instance, more advanced clinical diagnostic testing and reasoning could be offered to add to their practice. Think of this as the 'extended version' of the text. This would not be an everyday CPG manual, but instead a tool for further review and revision in ICP practice, keeping skills and knowledge up to date and even potentially tracking competency.

- Formal, in-depth and holistic organisational (and cultural) changes are required to increase paramedics' appetite for other professional activities such as the pursuit of ongoing clinical education opportunities, reflection and self-driven ongoing lifelong learning.

1.71 RECOMENDATIONS AND CONSIDERATIONS FOR THE TEXTS

The following points list ways that the CPGs may be improved when considering their graphic design, text complexity and use of terms.

- Consideration should be given to always including a glossary of terms or set of abbreviations for the CPGs. There is evidence that some abbreviations should be removed and complete phrases used, especially in specialist areas such as maternity and mental health.
- The popularity of electronic versions of CPGs needs to be further researched with consideration of their future versatility. There are unique opportunities now to *increase* the complexity of guidelines and move away from abbreviated and abridged versions. E-versions have formidable storage capacity which could enable more far-reaching opportunities for teaching and CDM tools for learners. Paramedicine needs to look further afield to other industries when it considers these additional decision aid tools. A brief scan of the tools available shows incredible potential for further innovations which have yet to be harnessed.
- If ambulance services move to e-versions, there still needs to be accountability and sufficient resource management to control the product. After reviewing the feedback of several ambulance organisation CPGs available through Google Play, the biggest

criticism is that they fail to update correctly. This is an area that should be managed as a priority for risk and quality assurance.

- As mentioned during the interviews, even though paramedics really like the e-versions, these are not good for learning or staff training, which is a concern. A training aid compendium should be considered. There is a risk that the e-version becomes a watered-down and over-simplified version of the manual. This would be insufficient for naught but an aide-memoire.
- The CPGs are inconsistent in their approach and vary considerably across the manual. More attention could be given to finding the right 'recipe' for each group of readers (each scope/level of practice) and then a tailored practice manual created. This reflects a multitude of considerations, but primarily comes down to:
 - The CPGs are updated or revised at different times.
 - Differences in the team involved for each protocol that is developed create differing philosophical standpoints towards standards/level of care.
 - Priorities within CPGs are shaped by the data required to collect evidence against KPI management. This creates inconsistencies in the focus on patient-centred care.
 - Consideration should be given to the development and implementation of an educational tool that co-exists with the CPG manual. This would reduce the issue of the implicit knowledge required to understand the protocols, which is a considerable concern and risk for vocational staff.
 - More resourcing (time and money) needs to go into the creation and implementation stages to get the ball rolling and set up processes that will actually take less time in the long run to maintain. There is knowledge out there that needs to flow into paramedicine. There are tools that support

collaborative authoring processes, user access control, guideline repository management and electronic publishing. Some software additionally has built-in systems that offer GRADE methodology for analysing research articles and evidence. With supplementary software to monitor and manage version control and tracking, the maintenance of future clinical practice guidelines should become streamlined and more efficient.

1.72 LIMITATIONS AND OPPORTUNITIES FOR FUTURE RESEARCH

I believe that there is always a potential to attract a certain type of people when the group is self-selected. Due to the nature of this research I was expecting the participants to have strong pre-existing views or definite feelings towards certain aspects of the ways that the protocols are used or implemented. Surprisingly the bulletin that went out attracted a wide variety of paramedics and it was refreshing to see such diversity in the responses. However I do worry that there may be people whom I missed or views that did not get covered, as that is the nature of the sampling process. Additionally I could have broadened this research to also sample paramedics in other states, but in some ways I think that the diversity represented within NSW is probably the highest for any ambulance service within Australia (in so far as educational backgrounds and the use of vocational training) so therefore increasing the sample size of participants wasn't necessarily going to increase the type of data that I found. NSW is perhaps quite different to other states in that it is still using vocational education as an option for entry level paramedics and this does create an additional layer of complexity for both the creators of the documents and the end users which has been examined within this research. This additional layer would not be found in all other ambulance services however NSW shares other commonalities such as the paramilitary style hierarchy which may influence the culture surrounding protocol and guideline use. This level and depth of ingrained culture is difficult to measure but could be explored further. As is true to qualitative

research (and this methodology), these views and final culminating substantive theory are grounded in a reflection of these people and we should be cautious about generalising the findings to situations that may not be appropriate. NSWA may or may not be comparable to other ambulance services but they do ultimately share similar educational pathways, roles and responsibilities. This study focuses on an Australian ambulance service and even though there may be similarities to other countries, culture plays a formidable role in the way that guidelines are utilised.

I would have liked to analyse more of the protocols as this was a fascinating part of the research, and I think much more could be gained by understanding each in its complexity. To review only three protocols felt limiting, but was necessary to define (and confine) the findings. Having strict parameters about what I was analysing and why was beneficial for the study as it kept the data ‘clean’ and manageable, but so much more could be done in this area. Research into CPG layout and graphical design is considerably lacking and this knowledge would be extremely useful for future developers of CPGs (not just in paramedicine either).

Lastly, I only scraped the surface of what could be done to navigate the subject of text complexity. This is a fascinating field of study that I am sure could fill an entire PhD. There are more opportunities to go further into this topic area with looking into the levels of education and the best ideas for text use.

1.73 CONCLUSION

I now draw to a close the dissertation journey. I feel that using grounded theory was a bit like the quotation from the movie *Forrest Gump*: ‘Life is like a box of chocolates. You never know what you’re gonna get.’ As is the way with this type of methodology, it begins with knowing that you are going into a room with the light off and trying to find your way in the dark. You find a spark of light and seek it out, which turns into something brighter and you

feel it like the sun on your face. The light spreads through the room slowly and knowledge is revealed through new doors and rooms that are alluring and beckon to you.

Due to your own limitations you can only choose certain paths but the room becomes revealed in all its delicate and intricate glory. It feels painful to only be able to explore so much, but you know you only have a certain amount of time before you need to leave the room. Knowing that there is always more to explore is a tempting way to procrastinate about final submission dates but I now look forward to continuing the journey with a torch turned on.

Thank you for reading to the last page of this dissertation. The references and appendices follow.

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APPENDICES

APPENDIX A: LITERATURE SEARCH OF ARTICLES RELATING TO CLINICAL DECISION-MAKING AND PROTOCOL/GUIDELINE USE IN PARAMEDICINE

Multiple database and grey literature searches were completed to compile articles relevant to paramedic decision-making. EBSCOhost and CINAHL Plus with Full Text were used along with Google Scholar searches. Thirteen items of grey literature were found through Google Scholar and were included in the final review. ‘Paramedic’, ‘decision-making’ and ‘protocols’ and ‘guidelines’, plus synonyms, were used to find articles pertaining to decision-making and protocol/guideline use in paramedicine. The date ranges for the searches used were ‘1990–2020’, which allowed for the discovery of all articles including any seminal data on SCOPUS. Records were excluded based on lack of availability to the CSU or Flinders library, irrelevance to the topic and, in one case, no English version available. A PRISMA diagram was generated to display the records identified, excluded and utilised for the enquiry (see Appendix B).

Data was then grouped into three categories (see Appendix C).

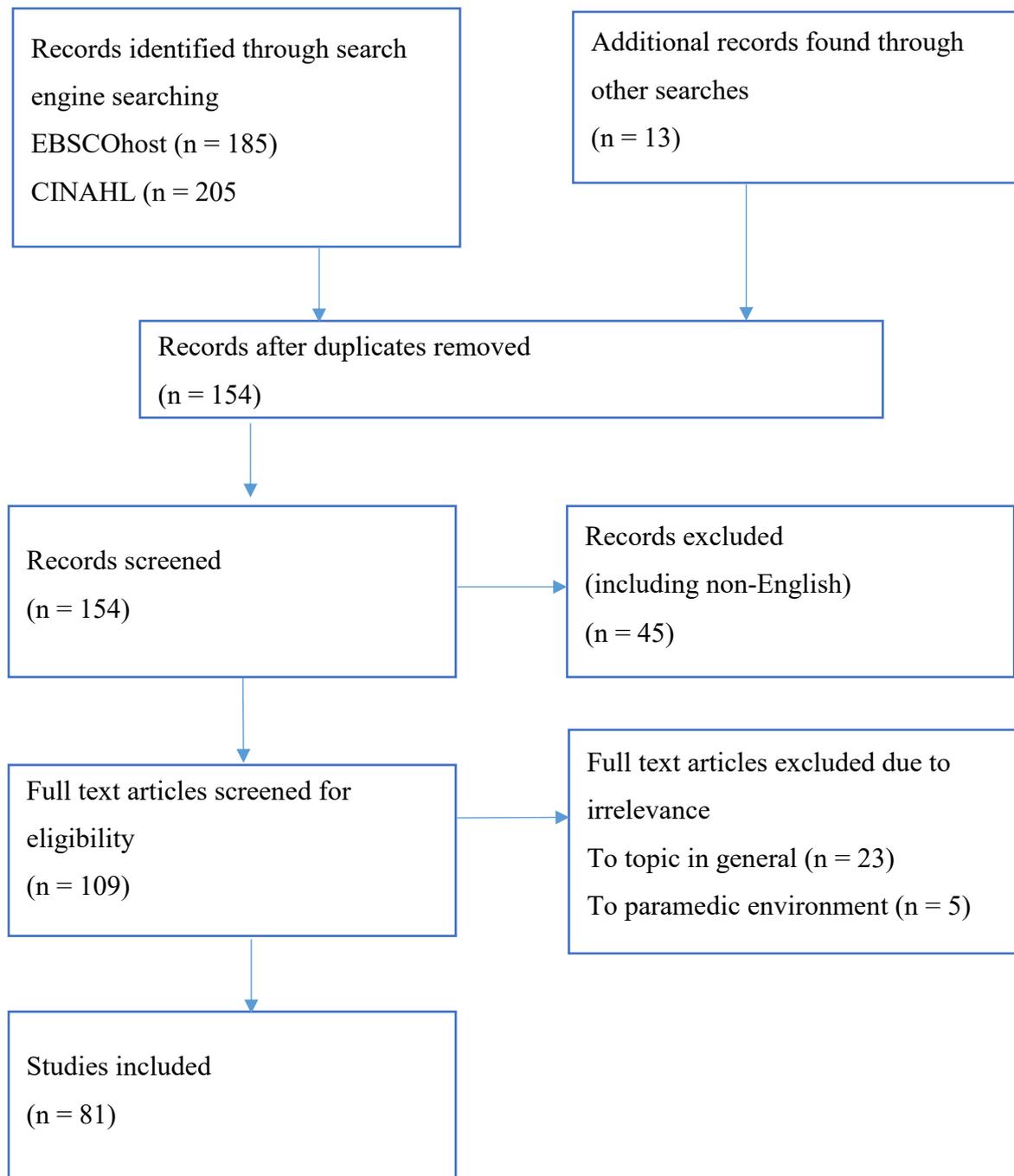
1. That which related to the generation and creation of protocols and guidelines in paramedicine.
2. That which concerned paramedics’ use of protocols and guidelines.
3. That which concerned clinical decision-making in paramedicine.

Exclusions: Abstract only or non-English.

SEARCH TERM	SYNONYM
-------------	---------

Paramedic	paramedic or ems or 'emergency medical service' or prehospital or pre-hospital or ambulance or emergency medical technician or EMT
Decision-making	guidelines or protocols or practice guideline or clinical practice guideline
Protocols	decision-making or decision-making or decision- making process or decision-making process

APPENDIX B: PRISMA DIAGRAM OF PARAMEDIC CLINICAL DECISION-MAKING AND USE OF GUIDELINES/PROTOCOLS ARTICLES RETRIEVED



APPENDIX C: RESEARCH RETRIEVED FROM SEARCH

Topic	Results
That which related to the generation and creation of protocols and guidelines in paramedicine (8 research articles in total)	(Agrawal & Kosowsky, 2009; Brown et al., 1999; Cantwell et al., 2014; Colbeck & Maria, 2018; Francke et al., 2008; Losiouk et al., 2016; Martineau & Romand, 2011; Morris, 2003)
That which concerned the specific paramedic use of protocols and guidelines (19 research articles in total)	(Anantharaman, 2004; Brown et al., 2014; Brown et al., 1999; Charest, 2015; Clawson et al., 1994; Ebben et al., 2018; Remco HA Ebben et al., 2013; Eckstein, 2001; Groth et al., 2015; Hagiwara, B. A. Sjoqvist, et al., 2013; Hoffman et al., 1990; Jan L Jensen et al., 2009; Komaroff et al., 1973; Losiouk et al., 2016; MacDonald, 2007; Morris, 2003; Ouimet et al., 2006; Palmer & Gonsoulin, 1990; Snooks et al., 2005; Westfal, 1997)
That which concerned clinical decision-making in paramedicine (53 research articles in total)	(Alexander, 2009; Anderson et al., 2018; Anderson et al., 2019; Aprahamian et al., 1986; Betts, 2020; Braithwaite, 2014; Brandling et al., 2016; Burrell et al., 2013; Bury et al., 2019; Eaton, 2019; Gunnarsson & Stomberg, 2009; Guriňáková & Harenčárová, 2013; M. A. Hagiwara et al., 2013; Harenčárová, 2017; J. Jensen et al., 2016; Jensen, 2009; Jensen, 2010; J. L. Jensen et al., 2016; J. L. Jensen et al., 2009; Jensen et al., 2011; Johnson & Maggiore, 1993; Johnson et al., 2017; Jones & Woollard, 2003; Jurišová & Sarmány-Schuller, 2013; Leibold et al., 2018; Lubor, 2011; Luck et al., 2012; McLean et al., 2008; Muecke et al., 2013; Murdoch, 2019a, 2019b; O'Hara et al., 2015; Pace et al., 1999; Parsons, 2011; Perona et al., 2019; Pilárik & Sarmany-Schuller, 2011; Pillay, 2008; Reay et al., 2018; Regehr & LeBlanc, 2017; Roberts et al., 2009; Ryan, 2012; Shaban, 2004; Shaban, 2005, 2011; Shaban et al., 2004; Sheffield et al., 2016; Simpson et al., 2017; Smith et al., 2011; Van Dyk et al., 2004; Voss et al., 2020; Weyman & O'Hara, 2019; Wiese et al., 2012; Woodford, 2015)

APPENDIX D: INFORMATION SHEET



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INFORMATION SHEET AND CONSENT FORM

Title: Paramedics' Clinical Reasoning and Decision-Making in Using Clinical Protocols and Guidelines

Researcher: Ms. Sonja Maria
School of Biomedical Sciences
Charles Sturt University
Ph.: 02 6338 4090
smaria@csu.edu.au

Invitation: You are invited to participate in a research study that seeks to better appreciate how paramedics make decisions regarding patient care in the field. This will build a deeper and more accurate understanding of the paramedics' clinical decision-making skills and how their use of protocols and guidelines influences them.

This project is supported by Flinders University, Charles Sturt University and NSW Ambulance.

Before you decide whether or not you wish to participate in this study, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish.

1. What is the purpose of the study?

The purpose of the study is to investigate the use of protocols and guidelines by paramedics. The researcher would like to know more about when they are used, their value, and whether there is anything else significant about them that could potentially be incorporated when new protocols are devised.

2. Why have I been invited to participate in this study?

All paramedics who work on road and use protocols are invited to take part in this study. We are interested to hear a wide variety of views.

3. What if I don't want to take part in this study, or if I want to withdraw

later?

Participation in this study is voluntary. Your decision about participation will not impact on your employment or day to day working environment. If you choose to participate, but later change your mind, you may withdraw from the study without penalty and any data that you have provided will be withdrawn and not used in the research. You can choose to withdraw from the study at any time.

4. What does this study involve?

If you consent to participate in this study, you will be invited to attend a one-on-one interview with the principal researcher. The interview will focus on what influences your use of protocols and circumstances in which protocols are beneficial or can be unhelpful, or even impractical. The interview can be conducted either in person or over the phone and will take about 30 - 45 minutes. The interviews will be recorded using a digital voice recorder for later transcription. The researcher will provide you with a copy of the transcript to allow for clarifications and corrections before analysis. **Pseudonyms will be used for names and locations and references to the times and dates of events will not be included in the transcript.**

5. How is this study being paid for?

The Researcher is a post graduate student at Flinders University, South Australia. There is no funding required.

6. Are there any risks to me taking part in this study?

The Researcher anticipates few risks from your involvement in this study. A potential exists that behaviour or actions which are not considered current best practice may be disclosed and we should also be mindful that inquiring about clinical practice (whether good or bad) may elicit emotional responses from participants. Also, there is the possibility that there may be sensitivity around information revealed during the interviews. If a situation described above arises, the interviewer will do all that is possible to support and assist the participant. NSW Ambulance offers peer support, Employee Assistance and Chaplaincy services which provide counselling, pastoral care and work-related support for employees and their families. Employees are able to refer themselves to any of these services or they may be referred by a manager, work colleague, peer support officer or NSW Ambulance Chaplain.

As stated previously, each participant will be given a copy of their transcript for verification to ensure that their comments were clearly understood and have not been misconstrued. If you have any concerns regarding anticipated or actual risks or discomforts, please raise them with the Researcher. Please note that information that discloses an offence that is punishable by imprisonment for life, or for a term of 5 years or more, may not be able to be kept confidential having regard to s316 of the Crimes Act 1900 (NSW).

7. What are the benefits from this study?

It is expected that the results of this study can be used to further the evidence base for the use of paramedic guidelines and protocols and help to increase the understanding of how or why paramedics make decisions about the utilisation of protocols. The process may create a supportive environment for you to talk about your concerns and choices. The knowledge gained may shape the future development of guidelines and protocols within NSW Ambulance.

8. What happens if I suffer injury or complications as a result of this study?

If you suffer any injuries or complications as a result of this study, you should contact the Researcher, your manager or a colleague as soon as possible, who will assist you in arranging appropriate medical treatment.

You may have a right to take legal action to obtain compensation for any injuries or complications resulting from the study. Compensation may be available if your injury or complication is caused by the study procedure, or by the negligence of any of the parties involved in the study. If you receive compensation that includes an amount for medical expenses, you will be required to pay for your medical treatment from those monies.

If you are not eligible for compensation for your injury or complication under the law, but are eligible for Medicare, then you can receive any medical treatment required for your injury or complication free of charge as a public patient in any Australian public hospital.

9. Will taking part in this study cost me anything, and will I be paid?

Participation in this study will not cost you anything, nor will you be paid.

10. How will my confidentiality be protected?

The identifiable information that you provide will not be reported upon and will not be attributed personally to you. Once the interview has been completed, any identifiable information will be removed and the file saved. This file will be kept in a password-protected computer that only the Researcher will be able to access. The study results may be presented at a conference or in a scientific publication, but individual participants will not be identifiable in such a presentation. Your comments will not be linked directly to you.

11. What should I do if I want to discuss this study further before I decide?

When you have read this information, the Researcher will discuss it with you and any queries you may have. If you would like to know more at any stage, please do not hesitate to contact her on 02 63384090 or via email smaria@csu.edu.au

12. Who should I contact if I have concerns about the conduct of this study?

This study has been approved by the South Eastern Sydney Local Health District Human Research Ethics Committee. Any person with concerns or complaints about the conduct of this study should contact the Research Support Office which is nominated to receive complaints from research participants. You should contact them on 02 9382 3587, or email RSOseslhd@sesiahs.health.nsw.gov.au and quote HREC ref no: 15/282 (HREC/15/POWH/614).

The conduct of this study at NSW Ambulance has been authorised. Any person with concerns or complaints about the conduct of this study may also contact the Research Governance Officer on 9779 3851 or email research@ambulance.nsw.gov.au and quote protocol number SSA/16/ASNSW/5.

Thank you for taking the time to consider this study. If you wish to take part, please sign the attached consent form and return to smaria@csu.edu.au.

This information sheet is for you to keep.

APPENDIX E: CONSENT FORM



CONSENT FORM

Title: Paramedics' Clinical Reasoning and Decision-Making in Using Clinical Protocols and Guidelines

1. I,.....
of.....
agree to participate in the study described in the participant information statement set out above.
2. I acknowledge that I have read the participant information statement, which explains why I have been selected, the aims of the study and the nature and the possible risks of the investigation, and the statement has been explained to me to my satisfaction.
3. Before signing this consent form, I have been given the opportunity of asking any questions relating to any possible physical and mental harm I might suffer as a result of my participation and I have received satisfactory answers.
4. I understand that I can withdraw from the study at any time without prejudice to my relationship to NSW Ambulance, Flinders University or Charles Sturt University.
5. I agree that research data gathered from the results of the study may be published, provided that I cannot be identified.
6. I understand that if I have any questions relating to my participation in this research, I may contact Ms. Sonja Maria on telephone 02 63384090, who will be happy to answer them.
1. I acknowledge receipt of a copy of this Consent Form and the Participant Information Statement.

Complaints may be directed to the Research Ethics Secretariat, South Eastern Sydney Local Health District, Prince of Wales Hospital, Randwick NSW 2031 Australia (phone 02-9382 3587, fax 02-9382 2813, email RSOseslhd@sesiahs.health.nsw.gov.au).

Signature of participant	Please PRINT name	Date
_____	_____	_____
Signature of witness	Please PRINT name	Date
_____	_____	_____
Signature of investigator	Please PRINT name	Date
_____	_____	_____

APPENDIX F: WITHDRAWAL OF CONSENT



WITHDRAWAL OF CONSENT

Title: Paramedics' Clinical Reasoning and Decision-Making in Using Clinical Protocols and Guidelines

I hereby wish to **WITHDRAW** my consent to participate in the study described above and understand that such withdrawal **WILL NOT** jeopardise any treatment or my relationship with the NSW Ambulance Service, Flinders University or Charles Sturt University.

Signature of participant

Please PRINT name

Date

The section for Revocation of Consent should be forwarded to

Researcher: Ms. Sonja Maria
School of Biomedical Sciences
Charles Sturt University
Ph.: 02 6338 4090
smaria@csu.edu.au

APPENDIX G: PARTICIPANT CHARACTERISTICS (PARAMEDICS)

Pseudonym	Length of service	Scope of practice	Vocational or university trained	Age	Gender
Leo	2.5 years	Paramedic P1	Vocational	30	Male
Andy	2.5 years	Paramedic P1	Vocational	34	Male
Pete	7.5 years	Paramedic P1	Vocational	40	Male
Ned	15 years	Paramedic P1	Vocational	50	Male
Susan	8 years	Intensive care paramedic	Both. Started at university, finished with vocational.	30	Female
Carol	13 years	Intensive care paramedic	Vocational (has nursing degree)	35	Female
Ann	13 years	Intensive care paramedic	University (2 degrees)	36	Female
Abe	14 years	Intensive care paramedic	Vocational (also has nursing degree)	48	Male
Sally	20 years	Intensive care paramedic	Both. Started vocational, finished with university	48	Female
Leon	29 years	Intensive care paramedic	Both. Started vocational, finished with university	47	Male

APPENDIX H: PARTICIPANT CHARACTERISTICS (DOCUMENT CREATORS AND HISTORIANS)

Pseudonym	Role
Herman	Clinical manager/education manager/operational manager/historian/protocol developer
Albert	Clinical manager/education manager
Andrew	Paramedic/protocol developer
Mike	Paramedic/education manager/historian
Henry	Medical director/protocol developer/historian
Norman	Paramedic/historian
Gail	Paramedic/historian
Penny	Paramedic/academic/clinical governance officer
Miles	Paramedic/academic/protocol developer
Justin	Paramedic/protocol developer

APPENDIX I: TOPIC GUIDE FOR INTERVIEWS

Topic guide for interviews and building theory

Subject = Paramedic's clinical rationale and decision-making processes in using clinical protocols and guidelines – what do we know about it?

Topics

1. Demographics of participants
2. View of protocols
3. How incorporated into practice
4. Barriers/ Facilitators
5. Conclusions

Demographics

This topic includes questions about age, gender, skills levels, training and expertise.

Explicitly –

Paramedics;

Age

Gender

Qualification

Years of service

Involvement in online or clinical training provided by industry

Outside professional development

Paramedic's perceptions of current operating protocols

This area is about how paramedics view their protocols and if they consider them clinical decision-making tools or documents that define scopes of practice, or both. It will discuss the value added benefit of having and using them in practice and how/if this influences care and management of patients in practice. It will also look at using the protocols as learning tools.

This is how I might phrase the questions:

How would you describe the role of these particular reference materials within paramedic practice? [Prompt - e.g. decision-making tools or are they more prescriptive in that they tell you how to provide care? Or both, neither?]

Prompt questions include;

- Are protocols used as a learning tool within paramedic practice? If so in what way?
- What values do you think are placed on protocols within paramedic practice?
- How effective or valuable are protocols in clinical management of patients? Are they significant to planning patient care?

How protocols and guidelines have been incorporated into practice

This section will discuss the routine use and translation of protocols in paramedic practice. The discussion will focus on the paramedic use before, during or after the case they have attended, and also at any other times. It will also look at use over time and history or evolution of the use as the paramedic has become more experienced or roles have changed.

I would broaden on these questions e.g.

How do you translate and use protocols in your daily work?

Prompt questions may include;

- In what circumstances would you be more likely to use your protocols? Can you explain why you would use them?
- In what circumstances, if any, would you not refer to your protocols? Can you explain the reasons why you might not use them?
- At what times would you refer to protocols, pharmacology information or medication calculator? E.g. before arriving at a case, during a case, after a case as part of your own learning.
- Are protocols referred to and used differently by those with less or more training and experience? If so, what do you consider are the differences?

Barriers/facilitators to their use and translation into practice

This area will discuss what the paramedic feels are barriers for use. Factors that create difficult decisions such as difficult patients, environments and other issues identified may be drawn out from the conversations. The concept of patient safety may also be discussed.

What do you think makes it hard to use this material?

Prompt questions may include some of the following

- In what way do these factors make it hard?
- Conversely, what makes them easy to use or promote their use? Examples?
- Considering the barriers and facilitators, do you think that these protocols promote safe, clinical practice?

Conclusion questions

Is there anything you would like to add?

What would assist in the use, translation and value of protocols in the future?

APPENDIX J: CONCEPTUAL FRAME FOR DOCUMENT ANALYSIS OF PROTOCOLS

This framework is built upon critical constructivist grounded theory principles.

Step 1 – Historical processes and culturing framing

1. Historical context of the protocol – if there is a history that can provide a social or political context that needs discussion preceding the analysis.
 - a. If this protocol has a long-established history within paramedicine or is it new – Is it the result of some other significant societal consequence?
2. Cultural framing
 - a. Are there cultural references?
 - b. How does the context inform the argument?
 - c. Does the material contain references to other sources, or imply knowledge of other subject matter?
 - d. What meaning does the text attribute to such other sources?
Exploring these questions will help to figure out what function intertextuality serves in light of the overall argument

Step 2 – Document preparation and distribution

1. The creation of the protocol
 - a. Who is involved in writing this protocol, if known?
2. Is there a governing body of influence?
 - a. Are there links to referencing outside sources?
 - b. Is this a protocol that is only found within paramedicine? Is it unique in some way?
3. Does this protocol have significance to ambulance service KPIs, industry standards or other measures that affect it?
 - a. Are staff measured (somehow) on how well they will perform the tasks?
 - b. Does the organisation give data to other agencies that will use this data?
4. If data is collected about the protocol, where does it go?
 - a. Is the data available freely on the internet?
 - b. Does the government use this data for providing funding or limitations on funding?

Step 3 – Text analysis

1. Layout – How is the protocol presented?
 - a. Use of white space, colours, pictures (hand-drawn or real – resolution?), flow charts, algorithms, arrows, lines etc.
 - b. Font type, use of headings & subheading
2. Structure of the text
 - a. Number of pages or sections.

- b. Links to other sections – how well are these identified?
 - c. Is there a systematic layout? Does it lead from one clear path to the next? Are there overlapping points of discussion?
 - d. What role does the introduction and conclusion (if there is any) play in guiding the overall clinician’s choices?
3. Language & Terminology
- a. At what level of English are they written?
 - b. Word groups, grammar features, rhetorical links. Direct & indirect speech, modalities and evidentialities
 - c. Medical language – Is this consistently used? Are there phrases that are given explanatory meaning?
 - d. Phrasing – First, second, third person. Conversational? Directional? Brief? Overly long and explanatory compared to others?
 - e. Context if discussions
4. Taken for granted knowledge
- a. What is assumed (a priori)? Are there expectations that are not well explained?
 - b. What should be there? What is missing or specific to context (paramedicine)? Can we comment on other contexts here to shape – e.g. same topic from nursing or medicine?
5. Are there choices or are there instructions?
- a. Are there ranges of doses?
 - b. Are there options of providing alternative types of care?
 - c. Are there considerations about when or when not to use the protocol?
 - d. Anything written about what to do if things don’t go as expected?

APPENDIX K: RESUSCITATION PROTOCOLS C2 PAGE 1

PROTOCOL: C2

CARDIAC ARREST DECISION ALGORITHM

Protocol C2 aims to assist paramedics with clinical decision making and to provide direction in cardiac arrest situations.

All patients with suspected reversible causes of cardiac arrest require minimal scene time and urgent transport to hospital.

Suspected reversible causes of cardiac arrest include:

- Hypoxia
- Hypovolaemia
- Hyperkalaemia
- Hypo/Hyperthermia
- Tension pneumothorax
- Toxins/poisons/drugs
- Tamponade
- Thrombosis (Pulmonary/coronary) – AMI (C1, C12, C13)
- Anaphylaxis - N.B. Patients with suspected anaphylaxis should be administered a bolus dose of compound sodium lactate, irrespective of previous administration

Patients whose cardiac arrest is suspected to be the result of reversible causes, may benefit from extended resuscitation and transport to ED.

A paramedic may withhold cardiopulmonary resuscitation (CPR) if any of the following are present:

- Injuries incompatible with life, e.g. massive cerebral destruction
- The patient has been deceased for some time as evidenced by rigor mortis and/or dependent lividity and/or tissue decomposition
- No CPR for > 20 minutes prior to paramedic arrival
- The direction of a medical practitioner
- If relevant to the clinical situation, paramedics are to follow the directions of a valid treatment directive, which includes:
 - NSW Health Resuscitation Plan
 - NSW Ambulance Authorised Palliative Care Plan/Authorised Care Plan
 - Advance Care Directive
 - GP/Specialist/Allied Health initiated Palliative Care/End Of Life Care Plan or Treatment Plan

Qualified paramedics are authorised and may be able to complete the Verification of Death (A13) form under protocol A13 in certain circumstances.

Resuscitation should be commenced if there is any doubt as to the validity or currency of a Treatment Directive; or any ambiguity or uncertainty about the situation or patient's history. Resuscitation may be withdrawn as further information becomes available.

NSW Ambulance Cardiac Arrest Registry

Paramedics are required to forward a copy of the clinical record (PHCR only) and code summary for all cardiac arrests to the Cardiac Arrest Registry.

Internal mail

OCHA Strategies
Cardiac Arrest Registry
Building 127, Rozelle

Via Australia Post

OHCA Strategies
Cardiac Arrest Registry
Locked Bag 105,
Rozelle, NSW, 2039



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Revised: July 2018

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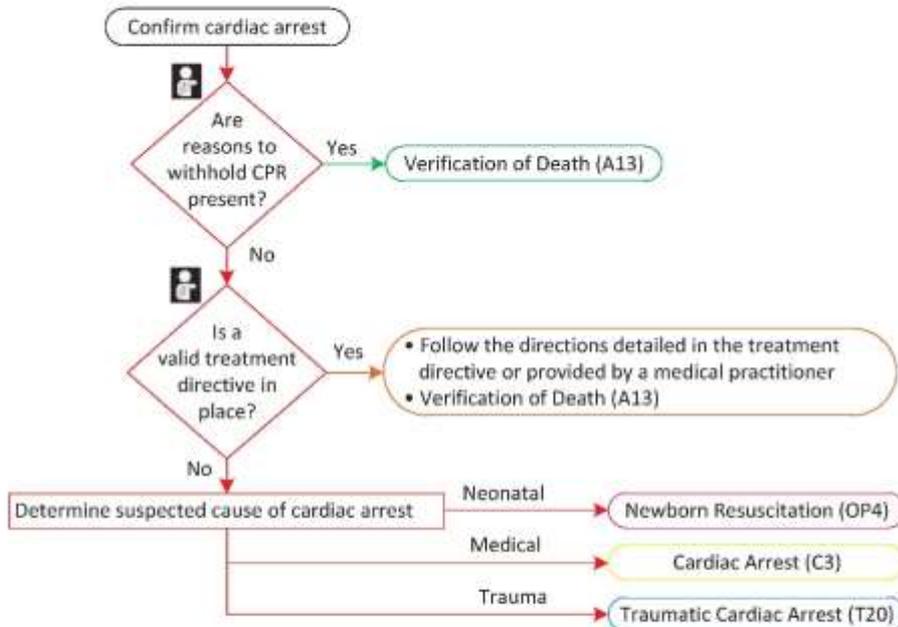
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APPENDIX L: RESUSCITATION PROTOCOLS C2 PAGE 2

PROTOCOL: C2 **CARDIAC ARREST DECISION ALGORITHM**

Treatment:



Reasons to Withhold CPR

A paramedic may withhold cardiopulmonary resuscitation (CPR) if any of the following are present:

- Injuries incompatible with life e.g. massive cerebral destruction
- The patient has been deceased for some time as evidenced by rigor mortis and/or dependent lividity and/or tissue decomposition
- No CPR for > 20 minutes prior to paramedic arrival
- The direction of a medical practitioner
- If appropriate to the clinical situation, paramedics are to follow the directions of a treatment directive

Treatment Directives

- NSW Health Resuscitation Plan
- NSW Ambulance Authorised Palliative Care Plan/Authorised Care Plan
- Advance Care Directive
- GP/Specialist/Allied Health initiated Palliative Care/End Of Life Care Plan or Treatment Plan

N.B. Resuscitation should be commenced if there is any doubt as to the validity or currency of a Treatment Directive; or any ambiguity or uncertainty about the situation or patient's history. Resuscitation may be withdrawn as further information becomes available.



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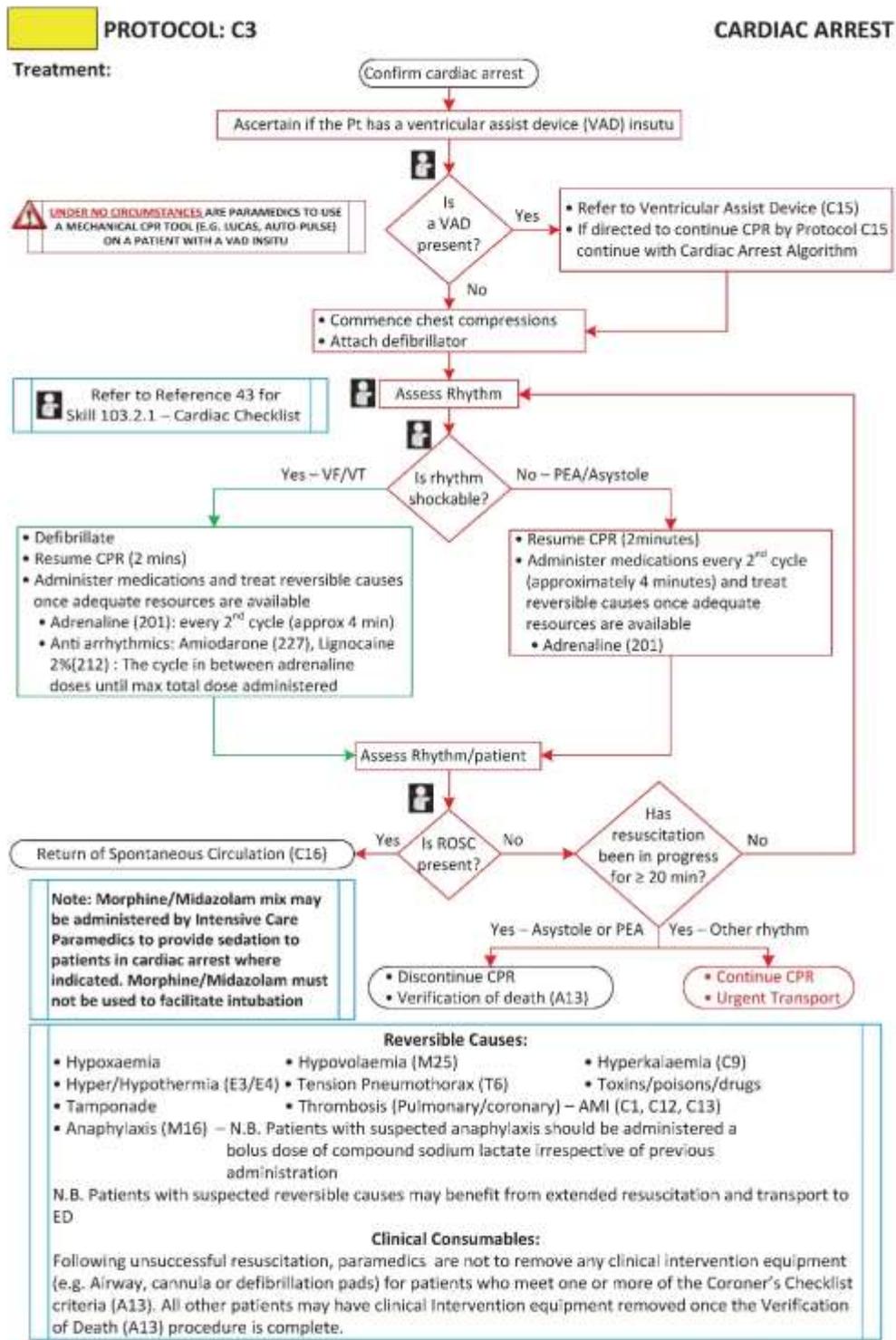
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APPENDIX M: RESUSCITATION PROTOCOLS C3



APPENDIX N: CARDIAC ARREST CHECKLIST – SKILL 103.2.1

REFERENCE: R43		CARDIAC ARREST CHECKLIST - SKILL 103.2.1	
Resuscitation Checklist - work cardiac arrest on scene for 20 min unless urgent transport indicated			
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Designate TEAM LEADER - team members introduce themselves <input checked="" type="checkbox"/> Monitor on, easily visible and in PADDLES Mode <input checked="" type="checkbox"/> BACKUP with higher clinical level/resources <input checked="" type="checkbox"/> Consider METRONOME on ensuring chest compressions 100-120 <input checked="" type="checkbox"/> Compression ratio: <ul style="list-style-type: none"> - 30:2 (≥ 9yrs) - 15:2 (infant, child < 9 years) - 3:1 (newborn) <input checked="" type="checkbox"/> COUNT ALOUD @20 then from 25-30 <input checked="" type="checkbox"/> SWAP COMPRESSIONS every 2 min 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> PAUSE POINT. "What have we got?" "What do we need?" - Encourage/allow input from others <input checked="" type="checkbox"/> O₂ cylinder with adequate oxygen is attached <input checked="" type="checkbox"/> SUCTION ready & next to head <input checked="" type="checkbox"/> ETCO₂ is attached (where available) and is monitored <input checked="" type="checkbox"/> Assess for GASTRIC DISTENTION <input checked="" type="checkbox"/> Keep MASK next to BVM even if LMA/ETT in situ <input checked="" type="checkbox"/> FAMILY is receiving care and is at patient's side where appropriate 		
Resuscitation Checklist - Reversible Causes			
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Hypoxia <input checked="" type="checkbox"/> Hypovolaemia <input checked="" type="checkbox"/> Hyper/Hypothermia <input checked="" type="checkbox"/> Hyperkalaemia 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Tension pneumothorax <input checked="" type="checkbox"/> Toxins/Drugs/Poisons <input checked="" type="checkbox"/> Thrombosis <input checked="" type="checkbox"/> Anaphylaxis 		
ROSC Checklist - Initial Management		ROSC Checklist - Prior to Departure	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Paramedic assigned to continually MONITOR CENTRAL PULSE and ECG <input checked="" type="checkbox"/> Turn off metronome - consider turning on QRS volume <input checked="" type="checkbox"/> PAUSE POINT. "What have we got?" "What do we need?" - Encourage/allow input from others <input checked="" type="checkbox"/> Full primary survey (ABCDE) prior to any movement <input checked="" type="checkbox"/> Avoid hyperventilation <input checked="" type="checkbox"/> Ventilate 6-10/min & monitor ETCO₂ targeting 35-45mmHg <input checked="" type="checkbox"/> O₂ @ minimum flow to target SPO₂ of 94-98% <input checked="" type="checkbox"/> Obtain 12 LEAD ECG & transmit - if confirmed STEMI follow protocol C12 (PAPA), C13 (PHT) <input checked="" type="checkbox"/> Target systolic BP≥100mmHg - fluids/adrenaline <input checked="" type="checkbox"/> CONSIDER ADVANCED AIRWAY if indicated & not already in place. Consider intra-gastric tube <input checked="" type="checkbox"/> Reassess for REVERSIBLE CAUSES 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> CONTINUOUS CENTRAL PULSE CHECK and monitor ECG during patient movement <input checked="" type="checkbox"/> PAUSE POINT. "What have we got?" "What do we need?" - Encourage/allow input from others <input checked="" type="checkbox"/> POST INTUBATION SEDATION medication prepared <input checked="" type="checkbox"/> Keep mask next to BVM even if LMA/ETT in situ during transport <input checked="" type="checkbox"/> O₂ CYLINDER with adequate oxygen is attached & suction next to head <input checked="" type="checkbox"/> Maintain NORMOTHERMIA avoiding hyperthermia <input checked="" type="checkbox"/> Reassess full primary survey (ABCDE) after loading into ambulance <input checked="" type="checkbox"/> Medications & ID. Family support <input checked="" type="checkbox"/> CODE 3 to receiving hospital 		



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APPENDIX O: MENTAL HEALTH EMERGENCY PROTOCOL PAGE 1

PROTOCOL: MH1

MENTAL HEALTH EMERGENCY

Procedure:

1. Safety of the paramedics, patient and bystanders is the key priority.
 - Always consider organic causes for the patient's presentation (e.g. hypoxia, hypoglycaemia etc.)
2. Scene assessment commences as soon as visual contact is made with the scene (Skill 104.13)



If the scene appears to be a safety risk or you suspect weapons may be present, stand off and call for immediate police assistance

3. Establish rapport:
 - Calmly identify yourself to the patient
 - Ask the patient's name and main concerns
 - Reassure the patient
 - Effectively communicate with simple words and sentences

Communication and verbal de-escalation is the first line management of people with behavioural disturbance

4. Perform a **MENTAL HEALTH ASSESSMENT (using the STATE acronym)** of the patient's current **STATE** of mental health and document on the clinical record

- **Mandatory** for all MH 1 Patients refer to skill 104.13

- **Signs and symptoms that indicate an abnormal state of mental health including agitated behaviour**
- **Thoughts that indicate delusions, hallucinations, suicidal ideas or illogical thinking**
- **Appearance of the patient**
- **Threats or acts by the patient that are potentially harmful to self or others**
- **Emotions of the patient that indicate feelings of sadness, distress, anger or hopelessness**
- **Consult family and friends to establish if the current behaviour is out of character, how long it has been evident and what coping mechanisms are usually deployed**
- **Document completion of the assessment and findings on the clinical record**

5. Assess for clozapine toxicity. Clozapine is an effective antipsychotic for the management of treatment resistant schizophrenia. It has a narrow therapeutic index and significant toxic side effects. In patients taking clozapine, cessation of smoking can cause toxicity. Ask the patient if:
 - They are currently taking clozapine
 - They have recently stopped smoking or reduced the number of cigarettes smoked

If yes to both questions, assess patient for signs of toxicity

- **If toxicity is suspected or a patient taking clozapine has recently ceased smoking it is vital that this information is included in the clinical handover**

Signs of clozapine toxicity:

- Sedation
- Hypotension
- Hypersalivation
- Akathisia (Restless Leg Syndrome)
- Neurological adverse effects including seizures



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APPENDIX P: MENTAL HEALTH EMERGENCY PROTOCOL PAGE 2

PROTOCOL: MH1

MENTAL HEALTH EMERGENCY

6. If at patient is at risk of suicide – Refer Protocol MH2
7. Patient management if indicated (Protocol MH6 and Skill 104.13)
8. Determine patient disposition
 - Transport principles – As per Urgent Transport Protocol A8 and the Memorandum of Understanding for Mental Health
 - If the patient is co-operative, ensure that a minimum of 2 sets of ABCD physical examinations and physiological observations are made and recorded on the Clinical Record. If the patient objects to observations being taken, record the reason on the Clinical Record and observe the patient
 - Section 20 (S20) of the Mental Health Act 2007 – if the mental health assessment indicates the need for the patient to be taken to hospital for further assessment and the patient refuses to come voluntarily, S20 may be used to take the patient to hospital against their will. S20 must also be enacted if the patient is going to be restrained, sedated or searched. Patients being transported under S20 of the Act must be taken to a Declared Mental Health Facility - Refer to Protocol MH3
 - Document on the clinical record that a mental health assessment has been conducted (including if powers under the Mental Health Act 2007 have been enacted)

The Mental Health Line (**1800 011 511**) is available 24/7 for the community (including paramedics) to call for advice on mental health related issues.



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APPENDIX Q: SEIZURES PROTOCOL PAGE 1

PROTOCOL: M9

SEIZURES

A seizure may be defined as a sudden attack of altered behaviour, consciousness, sensation or autonomic function produced by a transient disruption of brain function. The result of this altered brain function is most commonly a tonic (stiffening) or tonic-clonic (stiffening-jerking) seizures. When the seizure has motor accompaniments, it is also known as a convulsion.

Seizures can be divided into three major groups:

1) Focal (Focal onset seizures may progress to tonic-clonic seizures):

- Classified as either:
 - Aware^a or impaired awareness and
 - Motor^b onset or non-motor^b onset

2) Generalised onset:

- Classified as:
 - Motor - Tonic clonic or
 - Other motor or
 - Non-Motor - Absence seizures

3) Unknown onset:

- Classified as:
 - Motor - Tonic clonic or
 - Other motor or
 - Non-Motor or
 - Unclassified^b

It is important to attempt to control the seizure without delay because the longer the seizure continues, the more difficult it becomes to control.

A Non-Epileptic Seizure (NES)/event was previously referred to as “pseudoseizures”. Some patients may have both epileptic seizures and NES. Patients with a history of both epileptic seizures and NES, or where paramedics are unsure of the cause, should be administered midazolam as the cause of the seizure activity is unknown.

Sudden Unexpected Death in Epilepsy (SUDEP)

SUDEP is the sudden, unexpected death of someone with epilepsy, who was otherwise healthy. No other cause of death is found during an autopsy. These sudden deaths are rare in children, but are the leading cause of death in young adults with poorly controlled seizures, particularly tonic clonic seizures.

^a Aware - Awareness during the seizure, knowledge of self and environment, consciousness is intact

^b Motor - Movement or motion

^b Unclassified - Seizures with patterns that do not fit into the other categories or there is insufficient information to classify the seizure



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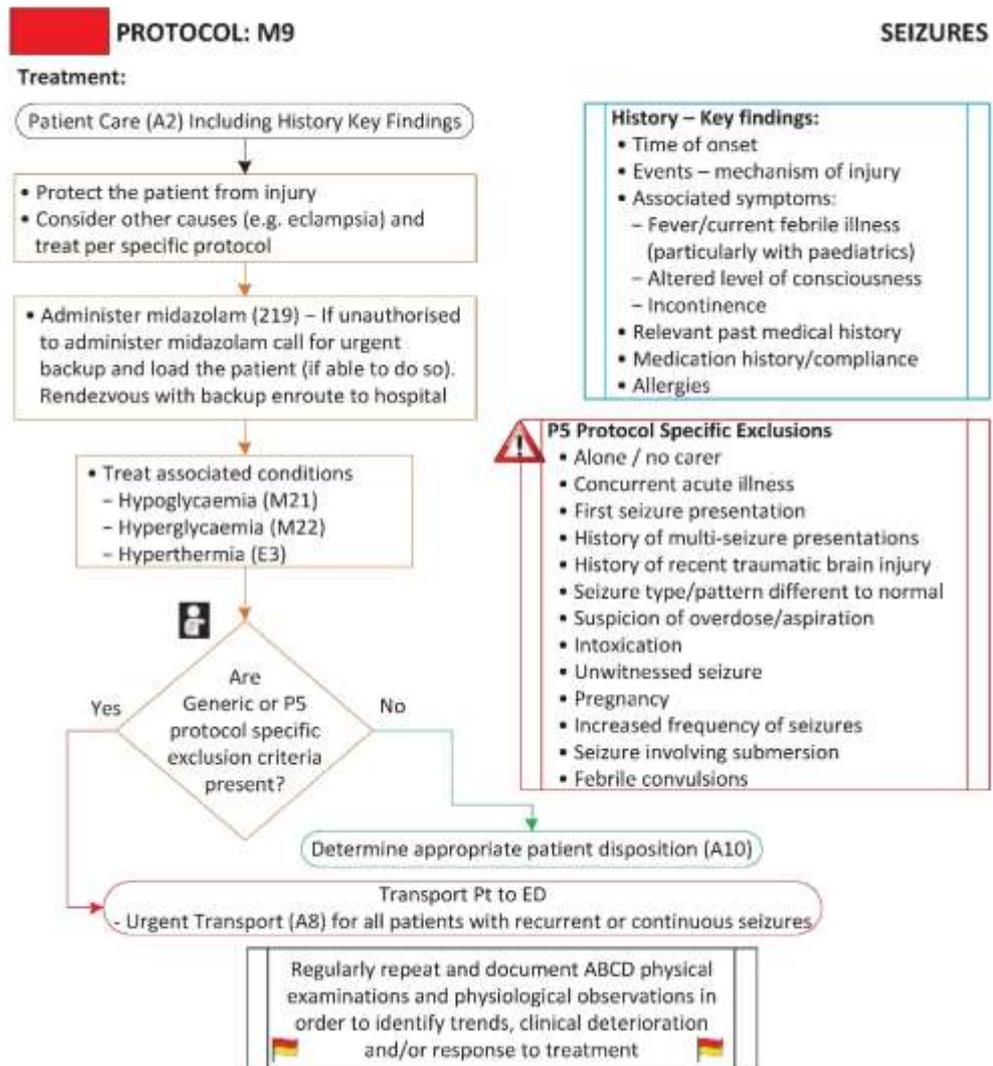
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APPENDIX R: SEIZURES PROTOCOL PAGE 2



APPENDIX S: PROTOCOL KEY TO ALGORITHMS FROM PAGE 3

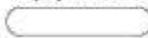


PROTOCOL KEY

NSW Ambulance Protocol Key:

Algorithms: NSW Ambulance Algorithms use special shapes to represent different types of actions or steps in a protocol or guideline.

Key symbols include:



Start/End Symbol (AKA Terminator Symbol)

The terminator symbol marks the starting or ending point of the algorithm. An algorithm will have one starting point but may have several terminators throughout the process.



Lines and Arrows

Lines and arrows show the sequence of the steps, and the relationships among them.



Action

A box can represent a single step ("add two cups of flour"), or an entire sub-process ("make bread") within a larger process.



Decision Symbol

A decision or branching point. Lines representing different decisions emerge from different points of the diamond.



Information

Specific protocol or guideline related information is contained within this symbol.



Document Symbol

A separate related document (e.g. skill, work instruction, operating procedure).



Connector Symbol

Indicates that the flow continues where a matching symbol (containing the same letter) has been placed.



Off Page

Indicates that the process continues off page.

Shapes and Line Colour:

- Black – Normal process, Green – Low risk/priority, Orange – Medium risk/priority, Red – High risk/priority



Warning – Time Critical

A visual indicator to highlight time critical or important steps in the algorithm.



Red Flags

Indicates high risk patient groups/signs or symptoms where paramedics need to maintain a high index of suspicion.



Between the Flags

A visual indicator to point paramedics to the Adult and Paediatric observation range tables as part of the Between the Flags program.



"Time out" or "Pause point"

This symbol indicates a point in a protocol/guideline where paramedics should pause and consider the decision to be made, outcome of an intervention or intervention to be performed.



Cold chain storage – Strive for 5

This symbol indicates medications that are to be kept within a specific temperature range.

APPENDIX T: TEXT USED FOR READABILITY – PROTOCOL C2 (FIRST PAGE, NON-ALGORITHMIC)

Protocol C2 aims to assist paramedics with clinical decision-making and to provide direction in cardiac arrest situations. All patients with suspected reversible causes of cardiac arrest require minimal scene time and urgent transport to hospital. Suspected reversible causes of cardiac arrest include: Hypoxia, Hypovolaemia, Hyperkalaemia, Hypo hyperthermia, Tension pneumothorax, Toxins poisons drugs, Tamponade, Thrombosis pulmonary coronary AMI (C1, C2, and C13). Patients whose cardiac arrest is suspected to be the result of reversible causes, may benefit from extended resuscitation and transport to ED. A paramedic may withhold cardiopulmonary resuscitation (CPR) if any of the following are present: Injuries incompatible with life, e.g. massive cerebral destruction. The patient has been dead for some time as evidenced by rigor mortis and or dependent lividity and/or tissue decomposition. No CPR > 20 minutes prior to the paramedic arrival. The direction of a medical practitioner. If relevant to the clinical situation, paramedics are to follow the directions of a valid treatment directive, which includes: NSW Health Resuscitation Plan. NSW Ambulance Authorised Palliative Care Plan Authorised Car Plan. Advance Care Directive. GP Specialist Allied Health initiated Palliative Care End of Life Care Plan or Treatment Plan. Qualified paramedics are authorised and may be able to complete the Verification of Death (A13) form under protocol A13 in certain circumstances. Resuscitation should be commenced if there is any doubt as to the validity or currency of a Treatment Directive; or there is any ambiguity or uncertainty about the situation or patient's history. Resuscitation may be withdrawn as further information becomes available. NSW Ambulance Cardiac Arrest Registry. Paramedics are required to forward a copy of the clinical record (PHCR only) and code summary for all cardiac arrests to the Cardiac Arrest Registry.

Lexile® Measure: 1100L - 1200L

Flesch Reading Ease score: 22.1 (text scale) Flesch Reading Ease scored your text: very difficult to read.

Gunning Fog: 15 (text scale) Gunning Fog scored your text: hard to read.

Flesch-Kincaid Grade Level: 13.9 Grade level: College.

The Coleman-Liau Index: 15 Grade level: college

The SMOG Index: 12.3 Grade level: Twelfth Grade

Automated Readability Index: 12.4 Grade level: 17-18 yrs. old (Twelfth graders)

Linsear Write Formula : 12 Grade level: Twelfth Grade.

Readability Consensus Based on 8 readability formulas, scored the text as follows:

Grade Level: 13

Reading Level: very difficult to read. Reader's Age: 18-19 yrs. old (college level entry)

APPENDIX U: TEXT USED FOR READABILITY – PROCOTOL MH1

Safety of the paramedic, patient and bystanders is the key priority. Always consider organic causes for the patient's presentation (e.g. hypoxia, hypoglycaemia etc.). Scene assessment commences as soon as visual contact is made with the scene (Skill 104.13). If the scene appears to be a safety risk or you suspect weapons may be present, stand off and call for immediate police assistance. Establish rapport: Calmly identify yourself to the patient. Ask the patient's name and main concerns. Reassure the patient. Effectively communicate with simple words and sentences. Communication and verbal de-escalation is the first line management of people with behavioural disturbance. Perform a MENTAL HEALTH ASSESSMENT (using the STATE acronym) of the patient's current STATE of mental health and document on the clinical record. Mandatory for all MH 1 Patients refer to skill 104.13. Signs and symptoms that indicate an abnormal state of mental health including agitated behaviour. Thoughts that indicate delusions, hallucinations, suicidal ideas or illogical thinking. Appearance of the patient. Threats or acts by the patient that are potentially harmful to self or others. Emotions of the patient that indicate feelings of sadness, distress, anger or hopelessness. Consult family and friends to establish if the current behaviour is out of character, how long it has been evident and what coping mechanisms are usually deployed. Document completion of the assessment and findings on the clinical record. Assess for clozapine toxicity. Clozapine is an effective antipsychotic for the management of treatment resistant schizophrenia. It has a narrow therapeutic index and significant toxic side effects. In patients taking clozapine, cessation of smoking can cause toxicity. Ask the patient if: They are currently taking clozapine. They have recently stopped smoking or reduced the number of cigarettes smoked. If yes to both questions, assess patient for signs of toxicity. If toxicity is suspected or a patient taking clozapine has recently ceased smoking it is vital that this information is included in the clinical handover. Signs of clozapine toxicity: Sedation, Hypotension, Hypersalivation, Akathisia (Restless Leg Syndrome), Neurological adverse effects including seizures. If at patient is at risk of suicide – Refer Protocol MH2. Patient management if indicated (Protocol MH6 and Skill 104.13). Determine patient disposition. Transport principles – As per Urgent Transport Protocol A8 and the Memorandum of Understanding for Mental Health. If the patient is co-operative, ensure that a minimum of 2 sets of ABCD physical examinations and physiological observations are made and recorded on the Clinical Record. If the patient objects to observations being taken, record the reason on the Clinical Record and observe the patient. Section 20 (S20) of the Mental Health Act 2007 – if the mental health assessment indicates the need for the patient to be taken to hospital for further assessment and the patient refuses to come voluntarily, S20 may be used to take the patient to hospital against their will. S20 must also be enacted if the patient is going to be restrained, sedated or searched. Patients being transported under S20 of the Act must be taken to a Declared Mental Health Facility - Refer to Protocol MH3. Document on the clinical record that a mental health assessment has been conducted (including if powers under the Mental Health Act 2007 have been enacted). The Mental Health Line (1800 011 511) is available 24/7 for the community (including paramedics) to call for advice on mental health related issues.

Lexile® Measure: 1100L - 1200L

Flesch Reading Ease score: 41.7 (text scale) Flesch Reading Ease scored your text: difficult to read

Gunning Fog: 13.1 (text scale) Gunning Fog scored your text: hard to read.

Flesch-Kincaid Grade Level: 10.7 Grade level: Eleventh Grade.

The Coleman-Liau Index: 13 Grade level: college

The SMOG Index: 10 Grade level: Tenth Grade

Automated Readability Index: 9.5 Grade level: 14-15 yrs. old (Ninth to Tenth graders)

Linsear Write Formula : 8.5 Grade level: Ninth Grade.

Readability Consensus Based on 8 readability formulas, scored the text as follows:

Grade Level: 11. Reading Level: difficult to read.

Reader's Age: 15-17 yrs. old (Tenth to Eleventh graders)

APPENDIX V: TEXT USED FOR READABILITY – PROCOTOL M9 (PAGE 1, PAGE 2 IS AN ALGORITHM)

A seizure may be defined as a sudden attack of altered behaviour, consciousness, sensation or autonomic function produced by a transient disruption of brain function. The result of this altered brain function is most commonly a tonic (stiffening) or tonic-clonic (stiffening-jerking) seizures. When the seizure has motor accompaniments, it is also known as a convulsion. Seizures can be divided into three major groups: Focal (Focal onset seizures may progress to tonic-clonic seizures): Classified as either: Aware* or impaired awareness and, Motor onset or non-motor onset. Generalised onset: Classified as: Motor - Tonic clonic or, Other motor or, Non-Motor - Absence seizures. Unknown onset: Classified as: Motor - Tonic clonic or, Other motor or, Non-Motor or, Unclassified. It is important to attempt to control the seizure without delay because the longer the seizure continues, the more difficult it becomes to control. A Non-Epileptic Seizure (NES)/event was previously referred to as “pseudoseizures”. Some patients may have both epileptic seizures and NES. Patients with a history of both epileptic seizures and NES, or where paramedics are unsure of the cause, should be administered midazolam as the cause of the seizure activity is unknown. Sudden Unexpected Death in Epilepsy (SUDEP). SUDEP is the sudden, unexpected death of someone with epilepsy, who was otherwise healthy. No other cause of death is found during an autopsy. These sudden deaths are rare in children, but are the leading cause of death in young adults with poorly controlled seizures, particularly tonic clonic seizures.

Lexile® Measure: 900L - 1000L

Flesch Reading Ease score: 40.7 (text scale) Flesch Reading Ease scored the text: difficult to read.

Gunning Fog: 11.8 (text scale) Gunning Fog scored your text: hard to read.

Flesch-Kincaid Grade Level: 12 Grade level: Twelfth Grade.

The Coleman-Liau Index: 13 Grade level: college

The SMOG Index: 9.5 Grade level: Tenth Grade

Automated Readability Index: 11.9 Grade level: 17-18 yrs. old (Twelfth graders)

Linsear Write Formula : 11.6 Grade level: Twelfth Grade.

Readability Consensus Based on 8 readability formulas, scored your text as follows:

Grade Level: 12. Reading Level: difficult to read.

Reader's Age: 17-18 yrs. old (Twelfth graders)

APPENDIX W: QUALITATIVE ANALYSIS OF TEXT COMPLEXITY

I have applied this rubric to each protocol and collated them as follows. All pages of the protocols are used for this process.

Abbreviations: MH1 = Mental Health Emergency, C2/C3 = Cardiac Arrest Decision Algorithm and Cardiac Arrest, M9 = Seizures

Dimension & Consideration	Questions used to analyse text	Easy	Moderate	Challenging
Text structure: Organisation	<ul style="list-style-type: none"> • Is the pattern of the text clearly identifiable as descriptive, sequential, problem/solution, compare/contrast, or cause/effect? • Are signal words used to alert readers to these structures? • Are multiple structures used in combination? 	The text adheres primarily to a single expository text structure and focuses on facts.	The text employs multiple expository text structures, includes facts and/or a thesis, and demonstrates characteristics common to a particular discipline.	The text organisation is intricate, may combine multiple structures or genres, is highly abstract, includes multiple theses, and demonstrates sophisticated organisation appropriate to a particular discipline.

Dimension & Consideration	Questions used to analyse text	Easy	Moderate	Challenging
Notes on organisation			M9 – The text on page one is informative about the disease process of epilepsy and several observable conditions are explained. The organisation of the text is common to the paramedic discipline in observable literature.	C2/C3 – The text combines multiple discussions on differing aetiologies for cardiac arrest. Information is fragmented with multiple topics on each page. The text is sophisticated and unique to the paramedic discipline MH1 – The text combines multiple brief discussions on additional skill sets, patient assessments, and policies concerning mental health.
Text structure: Visual support and layout	<ul style="list-style-type: none"> • Is the text placement consistent, or is there variability in placement with multiple columns? • Are visuals essential to understanding the text without explanation? • Are visuals accompanying the text simple or complex? Do they require literal understanding or synthesis and analysis? 	<p>The text placement is consistent throughout the text and uses a large readable font.</p> <p>Simple charts, graphs, photos, tables, and diagrams directly support the text and are easy to understand.</p>	<p>The text placement may include columns, text interrupted by illustrations or other variations, and a smaller font size.</p> <p>Complex charts, graphs, photos, tables and diagrams support the text but require interpretation.</p>	<p>The text placement includes columns and many inconsistencies, as well as very small font size.</p> <p>Intricate charts, graphs, photos, tables, and diagrams are not supported by the text and require inference and synthesis of information.</p>

Dimension & Consideration	Questions used to analyse text	Easy	Moderate	Challenging
Notes on visual support and layout		M9 – Page One is simple in its configuration with numbering and bullet points. The use of space across the page makes for easy reading alongside of bold type headings.	MH1 – The text is numbered which assists in the rhythm of reading. It includes columns and 5 additional text boxes that are designed to highlight points. Some of these are used for additional acronyms or abbreviations that require further interpretation. M9 – Page 2 is an algorithm and uses multiple text boxes and flowchart symbols. These also point to many other protocols.	C2/C3 – The text includes columns and various other text boxes. There are sections that are standalone and many others that are used alongside of others. Additionally two decision tree algorithms support the text and direct the reader to further protocols for concurrent treatment decisions.
Text structure: Relationships among ideas	• Are relationships among ideas simple or challenging?	Relationships among concepts, processes, or events are clear and explicitly stated.	Relationships among some concepts, processes, or events may be implicit and subtle.	Relationships among concepts, processes, and events are intricate, deep, and subtle.
Notes on relationships among ideas			M9 – Knowledge regarding specific use of midazolam is implicit and subtle. Paramedics would need to use the pharmacology protocols alongside of this to work within stated practice. Detail is lacking around how to manage concurrent conditions but this is	

Dimension & Consideration	Questions used to analyse text	Easy	Moderate	Challenging
			<p>assumed to be related. The term P5 Protocol is used, which relies on implicit knowledge to paramedicine.</p> <p>MH1 – Protocol MH1 is designed to be an overall strategy protocol that points to other MH protocols for specific treatments such as restraint or chemical sedation. Some information appears fragmented and could have its own related protocol, such as the information on Clozapine toxicity which seems out of place.</p> <p>C2/C3 – Protocols C2 and C3 are aimed to assist the reader with decisions about reversible causes of cardiac arrest, and commencing and withholding resuscitation. These concepts are related although there is limited detail as to how/why or what to do about them.</p>	
Language features: Author's style	<ul style="list-style-type: none"> • Is the author's style conversational or academic and formal? • What point of view does the author take toward the material? 	The style is simple and conversational, and it may incorporate narrative elements, with simple sentences containing a few concepts.	Style is objective, contains passive constructions with highly factual content, and features some nominalisation and some compound or complex sentences.	Style is specialised to a discipline, contains dense concepts and high nominalisation, and features compound and complex sentences.

Dimension & Consideration	Questions used to analyse text	Easy	Moderate	Challenging
Notes on author's style				<p>C2/C3 – The author's style is highly factual and specific to the paramedic discipline. It features complex sentences with specialised language and nomenclature.</p> <p>M9 – The text combines multiple discussions on possible confounding factors. Information is fragmented with multiple topics. The text is sophisticated and unique to the paramedic discipline</p> <p>MH1 – The style is objective and highly factual. As with M9, multiple confounding factors of aetiologies are expected to be considered but these are not completely explained and are left to the paramedic to appreciate in their entirety. Sentences are simple, but contain complex themes.</p>
Language features: Vocabulary	<ul style="list-style-type: none"> • How extensive is the author's use of technical vocabulary? • Can students determine word meanings through context clues? 	Some vocabulary is subject-specific, but the text includes many terms familiar to students that are supported by context clues.	The vocabulary is subject-specific, includes many unfamiliar terms, and provides limited support through context clues.	The vocabulary is highly academic, subject-specific, demanding, nuanced, and very context dependent.

Dimension & Consideration	Questions used to analyse text	Easy	Moderate	Challenging
Notes on vocabulary				<p>C2/C3 – The vocabulary is highly academic and subject specific. The readers would require understanding of many unexplained concepts such as ‘withholding’ and what this actually means in practice.</p> <p>MH1 – As above, the vocabulary is highly academic and subject specific. The readers would require understanding of concepts such as ‘verbal de-escalation’ and how this is performed.</p> <p>M9 – As above, very subject and discipline specific. Many items are not explained such as ‘P5’ and the implications of this and how it is performed in practice. Context of the information delivered within all three protocols does assist to improve comprehension.</p>
Meaning	<ul style="list-style-type: none"> • Is the amount and complexity of information conveyed through data sophisticated or not? 	The information is clear, and concepts are concretely explained.	The information includes complex, abstract ideas and extensive details.	The information is abstract, intricate, and may be highly theoretical.

Dimension & Consideration	Questions used to analyse text	Easy	Moderate	Challenging
Notes on meaning		<p>M9 – Page one is clear and the vocabulary mostly easy to understand. It describes what a seizure is, how it may present, and names of the categories and types of seizures. It also then describes two further complications which may influence decision-making: ‘pseudoseizures’ and ‘Sudden Unexpected Death in Epilepsy’. These are described with enough detail to understand the concepts without looking elsewhere.</p>	<p>C2/C3 – The text is complex but does not go into detail to elaborate on meanings. This knowledge is expected to be intrinsically known by the paramedic while reading the document.</p> <p>MH1 – Again, the text is complex and does not go into details or elaborate on meanings. This intrinsic knowledge should already be known by the paramedic while reading the document. For example, the paramedic is to take two sets of ABCD physical examinations <i>and</i> physiological observations. It is not stated what these are anywhere within the book or what the limitations of each are.</p> <p>M9 – Page two has complex and abstract ideas and their associations. The paramedic must have knowledge of these disorders and their underlying influences upon the patient to understand how these relate to the epilepsy protocol.</p>	

Dimension & Consideration	Questions used to analyse text	Easy	Moderate	Challenging
Author's purpose	<ul style="list-style-type: none"> Is the author's purpose evident or implied/ambiguous? 	The purpose of the text is simple, clear, concrete, and easy to identify.	The purpose of the text is somewhat subtle or abstract and requires interpretation.	The purpose of the text is abstract, implicit, or ambiguous, and is revealed through the totality of the text.
Notes on author's purpose		M9 – Page one is simply an informative statement describing the epilepsy disorder and a couple of complications/. This is relatively easy to understand.	<p>C2/C3 – Although the purpose is simply stated, which is to assist in cardiac arrest decision-making, the actual decision-making is quite abstract and requires further consideration.</p> <p>M9 – Page two requires an understanding of the algorithmic concept and flowchart design. It also relies heavily on implicit knowledge that may or may not be mentioned elsewhere.</p>	MH1 – The text is somewhat ambiguous as an overarching guide to 'assist a patient with a mental health problem'. There is no purpose stated in the document but I have interpreted the protocol as being thus.
Knowledge demands	<ul style="list-style-type: none"> How much and what kinds of background knowledge are required to comprehend this text? 	The content addresses common information familiar to students.	The content addresses somewhat technical information that requires some background knowledge to understand fully.	The content is highly technical and contains specific information that requires deep background knowledge to understand fully.
Notes on knowledge demands			M9 – Page one contains minimal information pertaining to actual clinical decision-making. The	C2/C3 – The content requires further knowledge than what is stated in the document and also refers to several

Dimension & Consideration	Questions used to analyse text	Easy	Moderate	Challenging
			<p>content is aimed to inform about what a seizure is and how it may be identified. It states that identification is a critical element of the treatment protocol as time delays can make management of the patient more difficult.</p>	<p>other sources to gain a full understanding. The concepts of commencing, withholding and ceasing resuscitation are complex, highly technical and require careful consideration.</p> <p>MH1 – Again, as above, the content is highly technical and requires further knowledge than what is stated in the document. It requires additional skill sets such as ‘verbal de-escalation’ which are not described within the section.</p> <p>M9 – The information on page two is highly technical and requires specific background knowledge to be able to perform the functions of the protocol. The term P5 is introduced and lists criteria in which a patient can be specifically excluded from transport to hospital. These are brief with little explanation and may be translated into practice quite differently between paramedics. This leaves much open to interpretation.</p>

APPENDIX X: LIST OF ABBREVIATIONS, ACRONYMS AND MNEMONICS USED WITHIN NSWA PROTOCOLS

Vital signs & intervention recording

ABCDE - physical examinations of airway, breathing, circulation, disability, exposure
SpO2 - Saturation of oxygen in peripheral capillaries
PaCO2 - Partial pressure of Carbon dioxide
eTCO2 - end Tidal Carbon dioxide
CO - Carbon monoxide
LOC - Level of Consciousness
BP - Blood Pressure
HR/PR - Heart Rate/Pulse Rate
RR - Respiratory Rate
SBP - Systolic Blood Pressure
BGL - Blood Glucose Level
IPPV - Intermittent Positive pressure ventilation
PEEP - Positive End Expiratory Pressure
BVM - Bag Valve Mask
LMA - Laryngeal Mask Airway
ETT - Endotracheal Tube
MRD - Mechanical Restraint Device
PHCR - Patient Health Care Record
eMR - electronic Medical Record
Hx - History
PMHx - Previous Medical history
PP - Presenting problem
HxPP - History of Presenting Problem
PHx - Past History
FHx - Family History
SHx - Social History
O/E - On Examination
DDx - Differential Diagnosis
Dx - Diagnosis
Imp - Impression
Rx - Treatment
CALD - Culturally and Linguistically Diverse
NESB - Non-English Speaking Background
CEW - Conducted Electrical Weapons
ETA - Estimated Time of Arrival
ADL - Activities of Daily Living

Anatomy & physiology

CVS - Cardiovascular System
Resp - Respiratory system
Neuro - Neurological system
GIT - Gastrointestinal system
GU - Genitourinary system
MS - Musculoskeletal system
CNS - Central Nervous System
ECG - Electrocardiogram
QT - QT segment in an ECG
QRS - QRS Segment in an ECG
SVT - Supraventricular Tachycardia (Narrow Complex Tachycardia)
VT - Ventricular Tachycardia (Wide Complex Tachycardia)
VF - Ventricular Fibrillation
AF - Atrial Fibrillation
PV - Per Vagina
INR - international Normalised Ratio

Medication and medication administration

5 rights - Patient, medication, dose, time and route
RIPE - Removal, Integrity, Penetration and Effervescence
GTN - Glyceryl Trinitrate
IV - Intravenous
IM - Intramuscular
SC - Subcutaneous
IN - Intranasal
IO - Intraosseous
NEB - Nebulised
TCAs - Tricyclic Antidepressants
MDMA - Methylenedioxymethamphetamine
GHB - Gamma-hydroxybutyrate
SSRI - Selective Serotonin Reuptake Inhibitors
TFMPP - Trifluoromethylphenylpiperazine

Assessment tools, risk tools

PEFR - Peak Expiratory Flow Rate
ABBEY - pain scale for dementia patients
STATE - Signs and symptoms, Thoughts, Appearance, Threats, Emotions.
EASI - Elder Abuse Suspicion Index

FAST - Face, arms, speech test
EAR Protocol - Elder At risk
THREAT - Thinking of suicide, History of previous suicide attempts, Reasons and circumstances, Emotionally depressed, Access to lethal means, Tactics and plans.
BSA - Burn Surface Area
HISSCA - Hoarse Voice, Inspiratory Stridor, Singed Facial Hair, See-saw Breathing, Carbonaceous material around the mouth, nose and/or in the sputum, Anterior Neck Burns
FROP-Com - Falls Risk for Older People in the Community

HASM - Hyper Acute Stroke Mandatory criteria
NIPS - Neonatal/Infant Pain Scale
APGAR - appearance, pulse rate, Grimace, Activity, respirations
AVPU - Alert, voice, pain unresponsive
GSC - Glasgow Coma Scale
TBSA - Total Burn Surface Area
MOI - Mechanism of Injury
ROSH - Risk of Significant Harm
FLACC Pain Scale - Face Legs Activity, cry, consolability

Places/people/services/vehicles

MPV - Multipurpose Vehicle
ICU - Intensive Care Unit
RLTC - Rapid Launch Trauma Coordinator
ED - Emergency Department
GP - General Practitioner
ICP - Intensive Care Paramedic

BZP - Benzylpiperazine

SIADH - Syndrome of Inappropriate Antidiuretic Hormone secretion

NSAIDs - Nonsteroidal Anti-Inflammatory Drugs

ARB - Angiotensin II Receptor Blocker

Pathophysiology

COPD - Chronic Obstructive Pulmonary Disease

FBAO - Foreign Body Airway Obstruction

NES - Non-Epileptic Seizure

SUDEP - Sudden Unexpected Death in Epilepsy

TIA - Transient Ischaemic Attack

ARF - Acute Rheumatic Fever

SCI - Spinal Cord Injury

ACS - Acute Coronary Syndrome

STEMI/NSTEMI - ST segment Elevation Myocardial Infarction/non ST segment ...

PAPA - cardiac reperfusion primary Angioplasty

AMI - Acute Myocardial Infarction

VAD - Ventricular Assist Device

DKA - Diabetic Ketoacidosis

HONC - Hyperosmolar Non-ketotic Coma

HHS - Hyperosmolar Hyperglycaemic States

ACTH - ACTH deficiency

VHFs - Viral Haemorrhagic Fevers

UTI - Urinary Tract Infection

VBAC - Vaginal Birth After Caesarean Section

LSCS - Lower Segment Caesarean Section

ERCS - Elective Repeat Caesarean Section

NBAC - Next Birth After Caesarean Section

PPH - Primary Postpartum Haemorrhage

FGM/C - Female genital mutilation/Cutting

SIDS - Sudden Infant Death Syndrome

SUDI - Sudden Unexplained Death in Infancy

NAI - Non-Accidental Injury

AGE - Arterial Gas Embolism

ALS - Advanced Life support
P1 - Paramedic at level 1
DOM - District Operations Manager
Pt - Patient
AMS - Aboriginal Medical Services
PHT - Prehospital Thrombolysis
MTS - Major Trauma Service
RTS - Regional Trauma Service
EAP - Employee Assistance Program
EAHRU - Elder Abuse Helpline and Resource Unit
ACC - Aeromedical Control Centre
WHO - World Health Organization
CWU - Child Wellbeing Unit
MVC - Motor Vehicle accident/Collision
MBC - Motor Bike Crash
MDT - Mobile Data Terminal
FACS - Family and Community Services
NGO - Non-Government Organisation

DCS - Decompression Sickness
NMS - Neuroleptic Malignant Syndrome
SROM - Spontaneous Rupture of Membranes
HIE - Hypoxic Ischemic Encephalopathy
ACEI - Angiotensin Converting Enzyme Inhibitor

Procedural or policy

VCP - Variation to Clinical Practice
MCCD - Medical Certificate of Cause of Death
VOD - Verification of Death
CCS - Casualty Clearing Station
DVR - Disaster Victim Registration
ACP - Advance Care Plans
ADD - Advance Care Directives
CPR - Cardiopulmonary Resuscitation
PPE - Personal Protective Equipment
MASBD - Management of Acute Severe Behavioural Disturbance
MHA - Mental Health Act
MPAC - Mandatory Police Attendance Criteria
MRG - Mandatory Reporter Guide
CSN - Clinical Safety Notice

Management tools

MSV - Modified Mauriceau-Smellie-Veit
ROSC - Return of Spontaneous Circulation
SCBA - Self-Contained Breathing Apparatus
 DISAB TOOL - Disability handover tool
MIST - Mechanism, Injuries, Signs and Symptoms and Transport
AMPLAN - Ambulance Services Supporting Plan
ISBAR - Introduction, Situation, Background, Assessment and Recommendations
METHANE - Major incident declaration, Exact Location, Type of incident, Hazards, Access, Number of pts and Emergency services required.
IMISTAMBO - Introduction, Medical complaint or Mechanism of injury, Information or injuries, Signs, Treatment/Trends, Allergies, Medications, Background medical history and Other information.
TOP 5 - Talk to the carer, Obtain Information, Personalise the care, 5 strategies developed.
A2D - Admission to Discharge
GHS - Globally Harmonised System
HAZMAT - Hazardous Materials
CBRN - Chemical, Biological, Radiological and Nuclear
 GA - Tabu
 GB - Sarin
 GD - Soman
 GF - Cyclo sarin
 VX - nerve agent