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**CARDIOPULMONARY RESUSCITATION:
ATTITUDES AND KNOWLEDGE
OF
MEDICAL AND NURSING STAFF**

A thesis presented in partial fulfilment of the requirements for the degree of
Master of Arts in Nursing at Massey University, Palmerston North

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Abstract

End of life issues, in particular the use of cardiopulmonary resuscitation (CPR) with the intention of prolonging life, remain a problem for many doctors and nurses. Research indicates that survival rates have not significantly improved over the last 30 years and that certain predictors prior to the cardiac arrest or during the cardiac arrest point to likely survival chances (Marik & Craft, 1997; Sanders, 1999; van Walraven, Forster & Steill, 1999). The attitudes and knowledge of doctors and nurses may influence CPR decision-making and practice.

Cardiopulmonary resuscitation and the issues that surround CPR are complex, and each context is unique. The role of doctors and nurses in discussion and decision-making concerning CPR is likely to be influenced by many factors. Such decision-making continues to be highlighted by both doctors and nurses as their foremost ethical dilemma, even though their roles in CPR may differ (Oberle & Hughes, 2001). This study explores the attitudes of doctors and nurses, and searches for any relationships between attitudes, knowledge and decision-making in CPR.

The data for the study was collected from 141 doctors and nurses working in a tertiary, teaching hospital. The investigator following a review of the research literature developed a questionnaire aiming to measure the attitudes and knowledge of doctors and nurses. Analysis of the data from the questionnaire was performed using the Statistical Software Package for Social Sciences (SPSS), and included descriptive inferential statistics, using chi-square analysis and logistic regression.

The results of this study showed a general lack of knowledge amongst doctors and nurses about CPR survival outcomes; however doctors did demonstrate a higher level of knowledge than nurses. Discrepancies were evident in the perception of roles in CPR decision-making particularly

amongst nurses. There were also a number of doctors who did not consider decision-making in CPR to be their role. Nurses and doctors differed in their perception of their roles, with nurses primarily viewing initiation of CPR as their role and only some nurses considering their role to be decision-making during CPR. The study also confirmed the differences in attitudes by doctors and nurses towards end of life issues, and confirmed that health professionals would like to discuss resuscitation more with their patients.

Findings are discussed and related to the literature surrounding CPR, in particular, the general patterns of findings from the sample which pointed to a knowledge deficit in some doctors and nurses in relation to CPR and may impact on other areas such as discussion of end of life issues. The implications of these findings for practice, research and education are then outlined with recommendations. The general limitations of the study are also discussed with implications for future research.

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Glossary of Abbreviations

ACLS	Advanced Cardiac Life Support
AHA	American Heart Association
CPR	Cardiopulmonary Resuscitation
CCU	Coronary Care Unit
DNAR	Do Not Attempt Resuscitation
DNR	Do Not Resuscitate
ECG	Electrocardiograph
EMD	Electro-Mechanical Dissociation
ED	Emergency Department
GP	General Practitioner
MOSS	Medical Officer
MI	Myocardial Infarction
NHS	National Health System
NFR	Not For Resuscitation
NZ	New Zealand
ICU	Intensive Care Unit
RN	Registered Nurse
SD	Standard Deviation
SPSS	Statistical Package for Social Sciences
VF	Ventricular Fibrillation
VT	Ventricular Tachycardia

Chapter 1

Introduction

Some hearts are too good to die, some are too sick to live.

-Richard Cummings MD, cited in A.H.A 1997, p.ix.

Cardiopulmonary resuscitation (CPR) can be a lifesaving treatment offered by health professionals following cardiac arrest. The attitudes of doctors and nurses towards CPR, and any relationship between attitudes, knowledge about CPR and decision-making regarding resuscitation is the focus of this research.

Despite poorly defined indications for its use, and possible misconceptions about its results, CPR has been commonly performed since its beginnings in the 1960s. It is now the expected response to an in-hospital cardiac arrest, viewed more as a treatment, and part of hospital policy unless a 'Not for Resuscitation' (NFR) order has been signed. CPR is defined by the American Heart Association's Recommended Guidelines (1991, p.961) as "*...a broad term meaning an attempt to restore spontaneous circulation*".

Having worked for many years in a critical care area where cardiac arrest is common, and having been involved in numerous resuscitation efforts, I have observed the dilemmas faced by medical and nursing staff involved in the decision-making surrounding hospital deaths and CPR, and of staff, patients and relatives when considering NFR orders. Each situation is different, complex, and influenced by many factors. It is these difficult dilemmas which led to my decision to research doctors' and nurses' attitudes towards CPR, and to explore the factors which influence attitudes and decision-making in relation to CPR.

When the heart stops in cardiac arrest often, as in chronic illness, this can be viewed as just the end stage in dying (Dangoor & Atkinson, 2001; Langslow, 1995; Royal United Hospital (NHS) Trust, 2001) rather than a medical emergency requiring immediate treatment. Therefore, discussion and decision-making about whether to perform CPR following cardiac arrest, and who should decide whether or not this should be undertaken is important. This is especially so in situations when undertaking CPR could be deemed to be futile and simply the cause of more suffering. In such circumstances it would be illogical to perform it (American Medical Association Council on Ethical and Judicial Affairs, 1991).

Literature exploring cardiopulmonary resuscitation and related issues is wide-ranging and varied but certain themes emerge. Areas of primary importance in relation to this present research include literature exploring:

- whether to resuscitate a patient or not, and who should be involved in making the decision,
- knowledge, and the impact of knowledge of survival rates (or the lack of it) on decision-making,
- individual beliefs, and how those beliefs about the sanctity and quality of life impact on attitudes and decision-making.

Futility, a concept widely utilised in medical research and acknowledged as a basis for the NFR order, is also considered to be relevant here as it has been found to be problematic and the interpretation of the term continues to be debated (Cogliano, 1999; Young, 2001; Youngner, 1990). These are some of the areas that are presented in the literature review and then explored in the research reported here.

The main research questions for this study were:

- What are the attitudes of doctors and nurses towards their role in CPR, and is there a difference in perception of role between the different professional groups?

- Do doctors and nurses have knowledge about CPR survival outcomes, and is there a difference between professional groups?
- What is the attitude of doctors and nurses towards end of life issues and 'Not for Resuscitation' (NFR) orders?
- Are there any significant demographic factors associated with these?
- Is there any relationship between attitudes towards role, knowledge and end of life issues, and the decision-making in the case studies?

In chapters 2 and 3 a review of the relevant literature is presented. Chapter 2 begins with a definition of CPR followed by a descriptive narrative about CPR from its early beginnings through to the sophisticated procedure it has become today. Chapter 3 provides a general overview of literature exploring decision-making, and in particular decision-making surrounding resuscitation. This literature highlights the complexity of this aspect of health care practice.

The diverse nature of death in hospital accentuates the difficulty of the resuscitation procedure, and of knowing whom it is appropriate to resuscitate. In Chapter 4 three different fictional scenarios generalised from multiple situations within the researcher's experience are outlined to demonstrate some of the complexity of CPR situations and the different influencing characteristics.

Following the literature review in Chapters 2 and 3 and the presentation of the fictional CPR scenarios in chapter 4, the method of data collection using a specifically designed questionnaire is described in Chapter 5. The data was analysed using the Statistical Package for Social Sciences (SPSS). Correlation studies using non-parametric tests (chi-square) and logistic regression analysis were used to explore any relationships between variables. The findings are reported in Chapter 6 and then discussed and related to the research literature in Chapter 7. The limitations of the research are acknowledged, and recommendations for education, practice and further study are also discussed in this final chapter.

Chapter 2

Literature Review

Cardiopulmonary Resuscitation

Everyone desires to live longer, but no one wants to be old.

Jonathan Swift,
Thoughts on Various Subjects.

Cardiopulmonary resuscitation (CPR) has been used in clinical practice and community settings over the last forty years. This intervention has, however, had little significant impact on overall survival results (Ebell, 1992; Laundry, Parker & Phillips, 1992; van Walraven, Forster & Steill, 1999; Von Gunten, 1991). In this chapter, the definition and background of CPR will be examined. This will be followed by a description of the evolution of CPR practice from its introduction until the present day.

Definition of Cardiopulmonary Resuscitation

The permanent cessation of circulation of blood around the body leads to a person's certain death; this is as a result of death of the body's tissues through tissue hypoxia. Studies have shown that normally complete recovery can only occur if full circulation is restored within a short period of time (4-6 minutes), otherwise irreversible brain damage will occur (Mistovich, Benner & Margolis, 1998). Even then, there are factors that may influence survival, such as the patient's underlying chronic illness, the time lapse between cessation and restoration of circulation, and the ability of the resuscitator to perform CPR (Southworth, 1959).

Cardiac arrest is clinically defined by unresponsiveness, apnoea and absence of a pulse (American Heart Association (AHA) Advanced Cardiac Life Support, 1997). The treatment for a cardiac arrest is CPR. This combines closed chest compressions with mouth to mouth breathing and external defibrillation, in order to restore perfusion of oxygenated blood around the body. This is so that irreversible organ damage will be delayed long enough for adequate treatment in an attempt to re-establish life (Cummins, Sanders, Mancini & Hazinski, 1997; New Zealand Resuscitation Council, 2001; Thel & O'Connor, 1999; Torres & White, 1997).

The History of Cardiopulmonary Resuscitation (CPR)

“The restoration of life after apparent death” (Southworth, 1959, p. 946) by restarting the heart has often been used in history as a definition of CPR. Techniques of this type may have been in use for much longer than acknowledged, as the following quote suggests:

And he went up, and lay upon the child and put his mouth upon his mouth, and his eyes upon his eyes, and his hands upon his hands, and he stretched himself upon the child, and the flesh of the child waxed warm. Then he returned, and walked in the house to and fro, and went up and stretched himself upon him, and the child sneezed seven times, and the child opened his eyes.

II Kings 4:34-35,
Holy Bible.

The first accounts of research on the practice of cardiopulmonary resuscitation described in the literature are based on studies which began in the nineteenth century (Barber & Madden, 1945; Southworth, 1959; Wise & Summer, nd). Schiff, the German physiologist, reportedly performed the earliest experimental studies of cardiopulmonary resuscitation through the use of manual cardiac massage in 1874 (Barber & Madden). Up to eleven and one half minutes after

cessation of a heart beat, Schiff was able to restore cardiac and respiratory movements in animals. Fourteen years later similar experiments involving dogs were performed in France by Tuffier and Hallion (Barber & Madden, 1945). Outside the experimental environment, clinical work involving the human heart was also happening (Barber & Madden). Niehaus in 1889 attempted resuscitation on a human heart, as did Tuffier and Hallion in 1898. These attempts however, were unsuccessful and in the case of Niehaus, were never officially recognised. Numerous attempts at cardiac massage were performed in the 1900s; Green (1906, cited in Barber & Madden, 1945) quoted forty cases in which manual massage of the heart occurred, nine of these (22.5%) achieved full recovery, and eight (20%) partial success. Barber and Madden note that partial success meant that a heart beat and spontaneous respirations were able to be established, but unable to be sustained for more than a few hours.

In 1924 ninety nine cases of cardiopulmonary resuscitation had been reported by Lee and Downs (cited in Barber & Madden, 1945), including one a successful case of their own, with complete recovery occurring in twenty five of these cases. By 1945 the total number of cases had risen to one hundred and forty three, 33% of which have been reported as successful (Barber & Madden). A landmark study by Kouwenhoven, Jude and Knickerbocker (1960) followed. This research used the technique of performing closed chest compressions alternating with mouth to mouth breathing successfully in patients. This technique of CPR became widespread in the hospital environment in the 1960s due to its apparent success. Kouwenhoven et al. at the time suggested that: *Anyone, anywhere, can now initiate cardiac resuscitative procedures. All that is needed is two pairs of hands* (p.1064).

The first CPR guidelines were developed in 1966 by the United States National Academy of Sciences' Research Council in order to guide the practice of cardiopulmonary resuscitation (Torres & White, 1997). Since then CPR guidelines have continued to evolve and change in response to clinical research findings (Torres & White).

Current CPR Practices

Over the years the technique of CPR has changed from that used in the study by Kouwenhoven, Jude and Knickerbocker in 1960. The latest guidelines released by the American Heart Association (2000) prescribe the advanced life support techniques of closed-chest compressions, defibrillation and artificial ventilation, coupled with pharmacological algorithms based on clinical studies such as those by Callahan, Madsen, Barton, Saunders and Panter (1992), and Tasch (2000).

Clinically based knowledge has increased, so that it is now realised that in order to prevent a person being left clinically 'alive', by means of a heart beating following a cardiac arrest but with no quality of life due to brain damage, rapid resuscitation is necessary (Cummins, et al., 1997). This realisation has led to the development of team-orientated, time-dependent advanced cardiac life support consisting of CPR, including rapid defibrillation in conjunction with the administration of sophisticated pharmacological agents. These changes have evolved as a result of the new knowledge of survival predictors, such as whether the cardiac arrest is witnessed, the initial cardiac rhythm, and the time to defibrillation (American Heart Association, 1997; Ballew, 1997).

Advanced training of health professionals is now available and frequent research based updates in airway management and cardiac compression techniques continue (Morley, 2000; Torres & White, 1997). The New Zealand Resuscitation Council (NZRC) was set up in 1996 to: "Foster and promote excellence and consistency, in the education and practice of resuscitation and to provide a forum for discussion, and as a resource for people involved in the research and training of resuscitation" (New Zealand Resuscitation Council Inc, 1996). The NZRC is at present developing new CPR guidelines for health professionals, which are evidence based and in line with international guidelines. These guidelines are largely generalised, but specific levels geared towards different health professionals have also been developed. Resuscitation guidelines also cover the use of automated external defibrillators (AEDs), which were developed in the 1970s when it was discovered that early defibrillation in ventricular fibrillation or pulseless ventricular tachycardia is critical for survival

(American Heart Association, 1997). One study, in which AEDs were used, demonstrated that initial survival rates increased from 7% to 19% when rapid defibrillation occurred (Gazmuri & Becker, 1997).

Despite these changes, the overall initial success rate of cardiopulmonary resuscitation and long term survival rate following CPR has not shown any improvement over the last thirty years. Even though one in four people who have a cardiac arrest in hospital where equipment and expertise is available can be initially resuscitated (Hospital Do Not Resuscitate Policy, 1997), little over half of these people survive to return to the community (Ebell, 1992; Laundry et al., 1992; van Walraven, et al., 1999; Von Gunten, 1991). This could be, at least in part accounted for by the fact that in a hospital environment CPR is now expected following a cardiac arrest. Thus it is common today for hospital policy to dictate that CPR must be undertaken unless an order to the contrary has been formally issued in the form of a 'Not for Resuscitation' (NFR) order.

An immense amount of research and consequently clinical progress has occurred since the early discovery and inception of the technique of CPR. The use of rapid defibrillation in conjunction with CPR has provided the means of increasing survival in suitable individuals (Gazmuri & Becker, 1997). This requires well trained health professionals who can not only provide effective resuscitation, but have the knowledge of who is appropriate to offer this 'treatment' to, in order to increase survival rates, not only immediate, but long term. At present initial survival following CPR does not guarantee survival to be discharged from hospital, and again survival to discharge is at present no guarantee to be alive in one year. The difficult dilemma for health professionals in determining futile CPR can also lead to a 'slow code' (also called 'partial', or 'show' codes) in cases for example of terminal illness when CPR is unlikely to succeed. This is when no formal NFR order is written but verbally health professionals might decide to provide ineffective CPR, for example 'limited CPR' or 'defibrillate once' (Gazelle, 1998; Hardin, 1998; Rosen, 1998).

Decision-making regarding CPR is complicated and every scenario is different. There are many factors that may affect decisions made by the health

professional. These may include the health professional's knowledge of factors that influence survival rates during the process of CPR, and post-arrest survival rates. Other factors that may affect decisions are staff attitudes towards resuscitation which, in turn, may be influenced by personal beliefs, values and experience of resuscitation situations. These factors are considered in the following chapter.

Chapter 3

Decision-making

Medicine is a science of uncertainty and an art of probability.

Sir William Osler,
Cited in the Society for Medical Decision-Making, 2001.

The links between attitudes, knowledge and decision-making can be difficult to determine. The basis of medical treatment is centred on achieving a satisfactory result by restoring health. If benefit is unlikely, the decision that is made is likely to be different than if the clinical outcome is seen as being positive. This is particularly relevant to CPR where the treatment can be painful and highly invasive (Lawler, 1999). Every situation is different however, and therefore must be considered within its own context, with relevant information communicated between involved parties, ensuring that decisions made are informed decisions (Joint Statement from the British Medical Association, the Resuscitation Council (UK) and the Royal College of Nursing, 2001).

Overview of Decision-making

Every day people make decisions as a part of life (Schall, 2001). These decisions are made by people choosing to act in one way or another depending on the information that they have, or the circumstances that they are in (Eiser & van der Pligt, 1988). Some decisions are simplified when the available information makes the outcome of the decision evident. However, decisions may be of a very complex nature, and some of the difficult decisions necessary in today's society may have surprised past generations (Raynard, Crozier & Svenson, 1997).

The ability of the individual to process the information and decide may also be influenced by their knowledge, values and beliefs. Each situation is dependent on its context: all are likely to have some unique circumstances (Eiser & van der Pligt). Decision-making is a complex process, and the selection and processing of information is vital in deciding a course of action (O'Reilly, 1993). If deciding is dependent on information which is uncertain or unavailable, decision-making can then become a choice between unknown alternatives (Matlin, 1989). Thus the amount and accuracy of the information we base a decision on is likely to affect the difficulty of the process as well as the level of confidence we feel once a decision has been made.

Sometimes decisions in healthcare are required to be made in acute situations when we have very little knowledge or information available to us (Matlin, 1989). In this context decision-making may require the processing of complex information based on probabilities rather than certainties (Brummell, 1998; University of Minnesota Center for Bioethics, 1997).

Attitudes and beliefs are an integral part of decision-making, behaviour being the outcome. Our thinking, feelings and behaviour appear to be connected; however, other outside factors may also play a part in determining the way in which we act, aside from our inherent beliefs. Outside factors could include the timing of an event and the individual situation (Myers, 1990).

Decision-making in resuscitation has become increasingly complex with expectations for success by both health professionals and patients often outweighing the reality of the patient's condition and prognosis. The situation is often further complicated by a lack of information regarding the patient's medical history and the suddenness of the event. These factors as well as a lack of discussion regarding CPR and consequently no NFR order written, means that health professionals may initiate CPR regardless of their attitude or feelings about the appropriateness of the procedure.

Ethical considerations underpin decision-making. Relevant theory related to a healthcare environment such as this study includes teleological theory, a form

of utilitarianism taught by Jeremy Bentham and John Stuart Mill which was evident during the 19th century. Utilitarianism is based on the theory that decisions are derived from what is considered to be the best possible outcome overall, selected from the choices available (Beauchamp & Childress, 1989). The concept of futility, or not giving a treatment if it is seen as being of no benefit, could be seen as following the moral principle of utilitarianism. This concept is frequently referred to as the basis for decision-making in relation to the issue of NFR orders (Von Gunten, 1991; Young, 2001; Youngner, 1990).

Another type of theory based on the work of Immanuel Kant in the 18th century that is relevant to decision-making in relation to CPR is deontological theory which considers role and obligations to be paramount and decisions would be made on this basis (Beauchamp & Childress, 1989; Rogers & Niven, 1996). A nurse's dilemma of feeling that they must follow a hospital policy to provide CPR unless there is a NFR order, in a case where knowledge and experience may indicate that CPR is inappropriate, would be an example of the impact of this moral principle.

Intuition may be also be a factor in influencing decisions, as may an emotional response during times when difficult healthcare decisions, particularly surrounding end of life issues, are required. Anecdotally, one hears of nurses acting on an intuitive feeling about their patient and as a result improving clinical outcomes. 'Virtue ethics' is founded on such virtues as compassion, integrity and courage, which may become the foundation of a decision for an individual who follows this philosophy (Rogers & Niven, 1996). The idea is based on the work of the philosopher Aristotle who maintained that virtues are developed in life and shape conduct. This theory is seen as underpinning the ethic of care and highlights the differing philosophical perspectives that may come into play in decision-making contexts (Rogers & Niven).

Knowledge and Attitudes in Decision-Making

Decisions are influenced by factors such as attitudes and knowledge (Eiser & van der Pligt, 1988). Attitudes are about feelings and beliefs that form as a result of previous experiences. Knowledge may be acquired through direct

experience or via the shared experiences of others. Knowledge that is acquired today may be gained from literature, television or radio, or through other forms of communication with others (Carlson & Buskist, 1997).

Decisions are about choices; and the difficulty of the decision required is going to influence the ease with which the decision is made, as will any prior knowledge gained as a result of similar experiences in the past. Certainly, the literature indicates that if the likely outcomes of a situation are known due to previous experience, this may influence decision-making if similar (Raynard et al., 1997) circumstances are encountered in the future

Decision-making in healthcare is often difficult and complex, particularly when it is related to end of life issues such as the use of CPR in the event of cardiac arrest. In a healthcare environment decision-making by health professionals such as nurses has long been based on the interplay of moral principles of autonomy, beneficence (to do good), non-maleficence (to do no harm), and justice, as in fairness for all (Nursing Council of New Zealand, 1995). However, due to increasingly sophisticated medical technology and advances in medical treatments extending life expectancy, choices have become even more difficult. Other factors complicating decision-making include a healthcare environment constrained by limited financial and related resources. This often means that making decisions is a difficult balance between the many influencing factors (Komesaroff, 1997).

Decision-Making in Resuscitation

Throughout the literature discussion of issues surrounding resuscitation is mooted to be of primary importance in the facilitation of appropriate decision-making (Bedell & Delbanco, 1984; Schonwetter, Walker, Kramer & Robinson, 1993). This is because discussion about CPR between those involved provides the knowledge that can influence decisions made, such as the choice for CPR in the event of a cardiac arrest. It has been shown that a patient's awareness of poor chances of survival leads to a decrease in the choice for CPR (Schonwetter et al., 1993).

One of the problems in relation to CPR situations is that in a healthcare environment the suddenness of an acute event, and the 'unexpectedness' of a patient having a cardiac arrest often negatively influences decision-making. Sometimes this means that there has not been the opportunity for resuscitation issues to be broached with colleagues, patients or families or that the timing is not appropriate. A study by Jezewski, Scherer, Miller and Battista, (1993) examined the process of patients consenting to a NFR order, and found that timing was important in order for the patient to be prepared to discuss resuscitation issues.

The acuteness of a cardiac arrest may also mean that due to the time of day (or night), only on-call, or junior medical staff are available to make decisions. These people may not know the patient or their medical history. Nursing staff may be more experienced and have some knowledge of the patient's history, but sometimes this is not acknowledged by the medical staff who ultimately feel that they have the onus on them for the resuscitation decision. In a life threatening situation like a cardiac arrest decisions need to be made quickly but may impact hugely on both the quality and quantity of an individual's life. During a cardiac arrest the patient is unable to communicate what they want (American Medical Association Council on Ethical and Judicial Affairs, 1991); therefore, wherever possible discussion prior to the event that would influence decisions is important.

Doctors' and Nurses' Roles in Decision-making

Internationally, research indicates that the attitudes of medical and nursing staff towards CPR may influence both the decision whether to resuscitate a patient or not, and who is involved in making this decision (Hill, MacQuillan, Forsyth & Heath, 1994; Kerridge, Pearson, Rolfe, Lowe & McPhee, 1999; Mello & Jenkinson, 1998; Miller, Jahnigen, Gorbien & Simbartl, 1992; Thorns & Ellershaw, 1999; van Walraven, et al., 1999). Most health professionals are now aware that the patient's view should be integral to decision-making whenever possible, and that discussion between the patient, the patient's healthcare team, and family is the first step in determining the appropriate course of action

in relation to resuscitation (Florin, 1994; Ivy, 1996; Ott & Nieswiadomy, 1991). Communication is the key but the patient must be deemed competent to be able to make resuscitation decisions. Often CPR may not be an appropriate option. Therefore the health professionals' duty may be to communicate likely outcomes, and to advise that the procedure of CPR is invasive and traumatic (Lawler, 1999; Page, 1996).

Research undertaken by Oberle and Hughes (2001) found that both doctors and nurses indicated that they have difficulty dealing with decision-making in relation to end of life issues. Furthermore, they demonstrated in their study that these professional groups do not necessarily think differently but tend to come from differing perceptions related to their different roles as professional health care providers. Each professional group is influenced by their own professional culture and philosophical perspective which is likely to impact on dealing with end of life issues. In some environments multiple cultures, such as medical or nursing (and hence philosophical perspectives) may be evident. One such environment is the modern hospital where several different cultures co-exist (Bristol Royal Infirmary Inquiry Secretariat, 2000).

Decision-making by Medical Staff

The medical profession's culture reflects a highly hierarchical internal and external structure, that may be seen to be based on power and paternalism (Bristol Royal Infirmary Inquiry Secretariat, 2000). Doctors have traditionally been assigned the role of "gatekeeper" in patient care, and other professionals may be cast merely in a support role to carry out the services required (Royle, DiCenso, Baumann, Boblin-Cummings, Blyth & Mallette, 2001). In a medical environment a "*good cure decision*" that is actually related to a good outcome for the patient, is fundamentally dependent upon the clinician's level of knowledge and experience, and having the necessary information available to make the decision (Baumann, Deber, Silverman & Mallette, 1998). However, the challenges inherent in '*good*' decision-making are highlighted in situations involving end of life decisions, and doctors can wait and use the legally recognised concept of medical futility to decide not to initiate CPR, or to discontinue it during a cardiac arrest (Dangoor & Atkinson, 2001; Ebell, 1992;

Faber-Langendoen, 1991). This remains problematic though in that it is against the law to kill but difficult for physicians to determine how far they should go in order to prolong life (Johnson, 1993).

It is often the case that discussion with patients leading to formalised NFR orders being documented, does not occur; this sometimes leads to either ineffective CPR in the form of a 'slow code' or inappropriate CPR with little hope of success. In addition to the 'slow code' not being legally recognised, both situations compound the moral dilemma of the doctors and nurses who are left to deal with the unexpected situation (Gazelle, 1998).

Nurses and Decision-making

Like the culture of medicine, historically nursing culture has been hierarchical, based solidly on the principle of respect for seniority and (at least officially) deference to medical staff (Bristol Royal Infirmary Inquiry Secretariat, 2000). Whereas doctors usually spend a relatively short time with each patient, often concentrating on the person's disease or injury, nurses may spend more time with individuals developing a broader understanding of them and their situation. The strength of the relationship developed due to time spent with the patient by nurses, means that experienced nurses may feel that they are in a better position to have an idea of what the patient would want regarding resuscitation. Even so, nurses require not only the knowledge, skill and confidence to make decisions in complex resuscitation situations, but the professional autonomy to be able to carry them out (Royle et al., 2001). Nurses may also view resuscitation decisions as 'not their responsibility', as they are not legally able to sign a NFR order and often in practice are still not included in the decision-making process (Manais, 1998; Puopolo, et al., 1997). Many nurses at present practice within a bureaucracy that allows considerably less autonomy than doctors, and, as employees of health care institutions, are usually bound to resuscitate a patient according to institutional policy, unless there is a documented NFR order (Hospital Guideline, 2001).

In an acute situation such as a cardiac arrest where it is a very stressful situation, the experienced nurse may end up agreeing with a group decision to continue CPR when in reality she/he may feel that this is ineffective (Kalat, 1990). The inexperienced nurse is likely to be persuaded in the cardiac arrest situation to defer to medical staff who may be seen as more knowledgeable (Carlson & Buskist, 1997).

Doctors are socialised to be, and have been historically acknowledged as being the primary decision-makers in health care, while nurses have been socialised to gather and share information. Both roles however, can lead to moral distress or anguish. Thus doctors are often faced with the dilemma of making difficult decisions which recognised or not, are underpinned by a strong degree of moral conflict, while nurses are often challenged by having to accept these decisions, and to live with them (Oberle & Hughes, 2001). Although doctors and nurses have different roles, both remain accountable for their actions.

The differences between the cultures of doctors and nurses, although gradually changing with the advent of a more multidisciplinary patient care approach, continue to impact on the decision-making process when the inexperienced, junior doctor has difficulty in accepting the advice of the experienced, specialist nurse. In recent research done by Oberle and Hughes (2001) end of life decision-making was identified as the primary ethical problem for both nurses and doctors. All health professionals appear to carry a burden about end of life decision-making. Part of this burden derives from the uncertainty surrounding end of life decisions made by doctors. As one doctor put it:

We're trained to make a decision and do it....But yet if you take the whole thing down the line it might not be the right thing to do. There's always the unknown.

Oberle and Hughes, 2001 p. 710.

So, doctors often question themselves regarding their decisions, and nurses often question doctors, as they may not agree with decisions made, or left unmade. As one nurse describes:

[We're] very frustrated. I think we hurt a lot for the patients. It doesn't matter what we tell most of the physicians, about the pain or suffering, ... about how miserable they are with all the treatments they're getting, etc. It's almost like it's falling on deaf ears.

Oberle and Hughes, 2001 p. 711.

There is some evidence in the literature of discordant views between health professionals and also between health professionals and patients regarding CPR decisions. Such disagreement may relate to questions of who is to be involved in making the decisions about whether to perform CPR or not, in the event of a cardiac arrest, and also how long to continue CPR during a cardiac arrest. This incongruence between viewpoints may impact on decision-making in relation to CPR (Eliasson, Howard, Torrington, Dillard & Phillips, 1997; Jezewski, et al., 1993; Mello & Jenkinson, 1998).

Strong communication and close collaboration between health professionals seems likely to ease the burdens that surround end of life decisions, and having to live with the decisions that are made (Oberle & Hughes, 2001; Willis & Parish, 1997). Research indicates that a multidisciplinary approach including patients and relatives in CPR decision-making prior to an event is generally desirable wherever this is possible. However, in the acute clinical situation obstacles such as a lack of patient information, and the acuteness of the situation may prevent this (Oberle & Hughes).

Patient Involvement in Decision-Making

Research indicates that some health professionals are not comfortable discussing end of life issues (Morrison, Morrison & Glickman, 1994; Stolman, Gregory, Dunn & Levine, 1990; Taylor, Parker, Ramsay & Peart, 1996). It is thought that this may account for the fact that although most health professionals acknowledge that the patient should always be involved in

decision-making, in many instances it is still not happening (Manias, 1998, Loewry, 1991). It is apparent that there is a consensus among health professionals that discussion should occur with the patient. However it is also generally agreed that the patient does not always make the decision, for example, in cases seen as futile (Cumming & Stewart, 1995; Florin, 1993).

It is widely acknowledged that the values and beliefs of the patient must be considered when making decisions about resuscitation. Respect for patient autonomy is understood to be a patient's fundamental right; discussion with the patient about resuscitation issues, when indicated, can therefore be viewed as responsibility of healthcare professionals. For this to occur however account should also be taken of the timing of the discussion so that it occurs prior to the patient becoming impaired and unable to participate in shared decision-making (Ebell, 1994; Mello & Jenkinson, 1998). Recent studies from the perspective of the patient are scarce with most conducted in the United Kingdom and North America (Godkin & Toth, 1994a; Hakim, et al., 1996; Murphy, et al., 1994). Such research may have limited applicability within a different healthcare environment such as New Zealand so future local research could be useful.

One recent New Zealand study that has been undertaken (Watson, Wilkinson, Sainsbury & Kidd, 1997) focused on the changes of attitudes towards CPR in elderly people following a stay in hospital. Watson et al., found that elderly people wish to be involved in decision-making regarding CPR, but are reluctant to have these wishes documented. This is important as on admission patients are often acutely ill and unable to be involved in decision-making, even if they have expressed a prior wish to have such involvement. With interventions based on modern technological developments dying may become a difficult and complex process, even for those who would welcome death. It is certainly acknowledged that wherever possible, patients who do want to be, should be involved in decisions regarding resuscitation, and where it is not possible to obtain the views of the patient, the relatives should be consulted (McIntyre, 1992; Williams, 1993).

Danis, Patrick, Southerland and Green, (1988) found that 70% of patients surveyed wanted intensive treatment to gain just one additional month of survival. These patients' attitudes to CPR may be directly related to their limited knowledge; this information (often inaccurate) may have been gained from media such as television. Miller et al. (1992) found that of 268 elderly people, 66% had gained their knowledge of CPR from television.

While inaccurate knowledge on the part of patients may at times be problematic, it has been found that a patient's 'unreasonable' request for CPR, when CPR was deemed medically futile by the physician, often changed following an explanation and communication of their condition, and predicted survival rate. Miller et al., (1992) found changes in preferences in elderly people after they became aware of their poor survival prospects. The likelihood of survival can therefore be seen as an important indicator of patient preferences (Murphy, et al., 1994; Schonwetter et al., 1993).

The need for further studies in relation to resuscitation decision-making was highlighted by a study conducted by Uhlmann, Pearlman and Cain (1988) in which the prediction of patients' preferences for CPR by their physician and spouse were found to be totally inaccurate. Physicians were found to underestimate patients' preferences for resuscitation in certain situations and overestimate their preferences in other situations. On the other hand, spouses overestimated patients' preferences for resuscitation in all circumstances.

It is clear that whenever possible patients should be included in the decision-making process, and healthcare professionals are now encouraged to discuss resuscitation issues with the patient and family. This is viewed as a moral, legal and ethical role of the health professional (Florin, 1993). It also appears from the literature that clear guidelines are required to assist health professionals in their decision-making in this complex area of practice. Consistent and clear communication is pivotal in providing patients with the information to make informed decisions however, the literature indicates that such discussion does not always occur. However it should also be acknowledged that there are patients who simply do not wish to discuss resuscitation issues; such decisions

must be respected in line with the ethical concept of patient autonomy (Hofmann, et al., 1997).

Issues surrounding the end of life, such as resuscitation, continue to be complicated and of a sensitive nature for those involved (Jezewski, 1996; Morgan, King, Prajapati & Rowe, 1994; Stolman, et al., 1990). However, cardiopulmonary resuscitation is also part of the roles of many medical and nursing staff and advance discussion of resuscitation issues when appropriate, should be part of the patient's care. Many authors indicate that discussion between the healthcare team, patient and/or family prior to the need for CPR in the acute event of cardiac arrest is appropriate, and most studies indicate that patients often want to discuss resuscitation issues and share decision-making. In fact, it may often be the health professional who finds it more difficult to broach end of life issues (Stolman, et al.). Patients may indicate a preference for resuscitation, however, this is often due to a lack of knowledge of their chances of survival and the invasive nature of CPR (Hakim, et al., 1996; Watson, et al., 1997).

The need for guidelines in relation to CPR decision-making is evident; however, guidelines alone do not change practice. Never-the-less education of staff regarding resuscitation along with NFR guidelines may make resuscitation decisions easier for medical and nursing staff (Manais, 1998). Decision-making in CPR issues is complex and even with guidelines in place each situation remains unique and may have many different variables that may influence the process. The context in which the cardiac arrest occurs is one set of variables. These and other influencing factors and issues will be discussed in the next section.

Chapter 4

Issues Relating to CPR

There are many different situations in a hospital environment when CPR is performed. According to institutional policy, CPR must be initiated on a patient in cardiac arrest unless there is a 'Not for Resuscitation' order documented. However, in many situations CPR may be inappropriate, often due to the patient's underlying medical condition which may mean that chances of survival post CPR are unlikely. The following scenarios highlight some of the different resuscitation contexts in which CPR may be undertaken and some of the associated issues which emerge.

Cardiopulmonary Resuscitation Scenarios

Scenario 1

It is 10.30 am on a Tuesday morning when Mrs A, an 80 year old woman, is admitted to the Coronary Care Unit with pain in her chest and abdomen. She is alert and orientated on admission, but has some pain. Blood tests, an electrocardiogram (ECG) and x-rays are taken following admission, and a scan indicates that she has a dissecting aortic aneurysm. A surgical consultation is requested. After assessment by the surgical team, it is documented that she is not suitable for surgery due to the size and position of the aneurysm, her underlying medical history of renal failure and diabetes, and her overall condition.

The patient has mentioned to the nurses that she is "ready to die", and has "had enough", so a meeting between the patient, family and multidisciplinary team is organised. The process of cardiopulmonary resuscitation (CPR) is explained to the family and patient, and the unlikely chance of survival in the event of a

cardiac arrest. A "Not for Resuscitation" order is filled out and documented in the patient's notes.

Mrs A's condition deteriorates with a drop in blood pressure, tachycardia, and she becomes semi-conscious. Her family are told the gravity of her condition and notify friends and family. At the request of the family a priest is called in. Mrs A, surrounded by family and friends passes away half an hour later. The family are sad but very appreciative of the time they have had to prepare themselves, and the painless, peaceful way in which she died.

Scenario 2

A 40 year old male who collapsed while out running is brought into the Emergency Department with severe left sided chest pain. An electrocardiograph (ECG) is taken which shows evidence of an acute inferior myocardial infarction. Blood tests confirm this. Intravenous morphine is given for the chest pain and oxygen is administered. Mr A is prepared for transfer immediately to the Coronary Care Unit (CCU) for thrombolysis. At this stage it is noted by the registered nurse caring for Mr A that he is having frequent ventricular ectopics which are indicative of ventricular irritability.

Mr A complains that his chest pain has come back and is now 10 out of 10 again (according to a pain scale of 0-10, in which 10 out of 10 is considered 'the worst pain that you can imagine'); he is sweaty and his blood pressure is recorded as 90/52. The cardiac monitor is noted to show a rapid ventricular tachycardia, and Mr A has suddenly become unresponsive, and his pulse cannot be felt.

The nurse calls for help and prepares to defibrillate the patient. A shock of 200 joules is administered and the patient immediately reverts to a normal sinus rhythm. He is responsive and his blood pressure, pulse and cardiac rhythm are stable. He is transferred immediately to CCU and intravenous thrombolysis is administered without event. The patient's condition is monitored closely over the next 48 hours. He progresses well and is discharged from hospital six days later without further complications. It is explained to his family that it is not

uncommon to have cardiac rhythm complications following a heart attack and this is why it is necessary to monitor him closely.

Scenario 3

It is a Sunday night shift in a busy medical ward and a newly registered nurse is on duty alone due to a staff shortage. The ward is full, and one of the patients mentioned in the handover report is a sixty seven year old man, Mr B who has developed heart failure following several large myocardial infarctions. His medical notes read that he was admitted acutely ill with pulmonary oedema, and was initially treated aggressively with large amounts of diuretics and morphine. An echocardiogram showed severe ventricular dysfunction with an ejection fraction of 12%, and his prognosis is poor. Underlying metastatic carcinoma of the stomach further complicates his condition

The nurse asks if his resuscitation status has been discussed, but is told that because it is the weekend the medical staff on-call were not prepared to discuss these issues with the patient and family, and had suggested it was 'taken up with the team' on Monday. On the first night round the nurse looked at Mr B, who was awake and uncomfortable, saying he was 'didn't feel right' and was 'fed up'. A set of observations showed that he had a low blood pressure and reduced oxygen saturations. After contacting the on-call doctor (who came and assessed the patient), a further dose of diuretics was given; however, although he acknowledged Mr B's prognosis was poor, the doctor stated it was inappropriate to discuss resuscitation with this patient as "he is young, and he has been this sick before and pulled through".

The junior nurse was busy and it wasn't until she was able to do another round fifteen minutes later that she found Mr B gasping for breath and coughing up pink, frothy sputum. He was very frightened. She placed him on oxygen and sat him up before calling for help. On her return he was unconscious and cool. She could not feel a pulse. She called a cardiac arrest and attempted to revive the patient by performing CPR according to hospital policy. The cardiac arrest team arrived, and it was found that the patient was in asystole. The arrest team doctor insisted that CPR should be continued as there was no NFR order.

Several ribs were broken during the CPR procedure as result of the metastatic bone secondaries, and after twenty minutes the resuscitation attempt was terminated.

By this time the relatives had arrived at the hospital, shortly after Mr B's death. They indicated that they felt very angry stating that "He was fine when we left" and "no-one explained that this could happen". The junior nurse also felt very upset as she had only ever seen one resuscitation attempt previously and this had been successful; she wondered if there was more she could have done for Mr B.

Scenario 1 gives an example of an elderly patient admitted to hospital with a terminal illness. She is aware of her wishes regarding resuscitation and makes it known that she is ready to die. Shared discussion about resuscitation is arranged with the multidisciplinary healthcare team, a NFR order is documented, and a peaceful death takes place with relatives present, and the patient not subjected to an unnecessary and futile procedure.

Scenario 2 is an example of CPR being used as a treatment. Following a myocardial infarction recovery can often be complicated by cardiac rhythm disturbances. This is due to the damage done to the heart muscle affecting conduction, and can be a temporary, but life threatening complication. CPR including defibrillation is part of the treatment in order to prevent a patient's death due to these complications, and is an appropriate use for CPR.

In comparison, Scenario 3 demonstrates the way in which CPR may be used inappropriately when practical and cultural constraints interfere. This situation gives a good example of why CPR should be discussed with patients prior to an acute event. As this example occurs after hours, with on-call medical staff and a junior nurse, who do not know the patient, they are reluctant to discuss sensitive issues such as resuscitation. When the situation occurs the patient is too acutely ill to participate in any shared discussion and decision-making and inappropriate, ineffective CPR is given in accordance with hospital policy, with an unpleasant death and grieving relatives demanding answers being the

outcome. The junior nurse involved is also left with feelings of guilt and responsibility in relation to this unsatisfactory outcome.

Attitude Towards the Initiation of CPR

As previously indicated there is a growing acceptance that decisions regarding attempted resuscitation in the event of a cardiac arrest in a hospital should ideally be made in advance, where possible, by patients after discussion with health professionals (Florin, 1993; Kerridge, Pearson, Rolfe & Lowe, 1998; Morgan, et al., 1994). Often however, the decision whether or not to attempt cardiopulmonary resuscitation (CPR) is still made by the health professional, and in an acute situation this is largely unavoidable (Bedell & Delbanco, 1984; Eliasson, et al., 1997; Florin, 1993; Komesaroff, 1997; Mello & Jenkinson, 1998; Schutz, 1994). The big question of whether to resuscitate or not is seen to be best taken in advance in relatively controlled circumstances (as illustrated in Scenario 1 above). In comparison, Scenario 3 demonstrates how problematic it can be to organise effective advance discussion.

Decisions regarding resuscitation are also influenced by knowledge of CPR outcomes, as demonstrated in Scenario 2 where CPR was used as a form of treatment following a complication of myocardial infarction (MI). However, the literature relating to doctors' and nurses' knowledge of survival rates indicates that there continues to be an overestimation of survival rates following CPR by both these health professionals, and patients. The apparent lack of knowledge of CPR outcomes amongst many health professionals is likely to impact on attitudes and consequently decision-making in relation to CPR practice (Dangoor & Atkinson, 2001; Von Gunten, 1991). This may lead to inappropriate use of CPR techniques as in the previously mentioned 'slow code'.

While lack of knowledge of survival rates is a concern, it should also be acknowledged that classifying patients for whom CPR would be of no benefit can be difficult. The concept of 'futility' has been debated in medicine for some time, and it remains difficult to get a consensus on its meaning (Cogliano, 1999; Young, 2001).

The medical profession is founded on the philosophy that provision of futile therapy is to be discouraged. This is given clear expression in medical profession's central creed, the Hippocratic Oath (Hurwitz & Richardson, 1997). However, the outcomes of medical interventions are often uncertain, and discussing and making decisions regarding end of life issues remains difficult for many physicians (Doty & Walker, 2000). Never-the-less, knowledge of survival rates for interventions such as CPR may impact on determining the right action in individual circumstances.

CPR Survival Rates

Approximately 13% of patients who have CPR in hospital survive to discharge. The setting influences the numbers of people surviving, with lower survival rates in the ward setting than in acute units such as an Intensive Care or Coronary Care Unit (Premachandran, Redmond, Liddle & Jones, 1997). Over 100 CPR survival studies published in the last thirty years maintain that CPR performed in hospital has a success rate immediately following CPR of around 38%. Of these survivors however, 25% die prior to discharge from hospital. This indicates that approximately 15% of patients receiving CPR in hospital (who are 75% of the initial survivors) live to be discharged from hospital. (Bedell, Debanco, Cook & Epstein, 1983; Burns, Graney & Nichols, 1989; Gazmuri & Becker, 1997; Kerridge et al., 1998; Lawler, 1999; Marik & Craft, 1997; Mello & Jenkinson, 1998; Rubertsson, 1999; Schneider, Nelson & Brown, 1993; Tunstall-Pedoe et al., 1992; Von Gunten, 1991).

A typical result is a study of 294 patients who were resuscitated following a cardiac arrest in hospital carried out by Bedell, et al., (1983). This study demonstrated that 14% of those patients who had CPR survived to be discharged from hospital, but only 11% of those discharged were alive at six months. Subsequent studies have found similar survival rates (Burns, et al., 1989; Gazmuri & Becker, 1997; Kerridge, et al., 1999; Lawler, 1999; Rubertsson, 1999; Schneider, et al., 1993; Thel & O'Connor, 1999).

A study by Zoch, Desbeins, DeStefano, Stueland and Layde (2000) found slightly improved initial survival statistics compared to previous studies, with

equal or higher long term survival rates. Out of 948 admissions, 61.2% of the resuscitated patients in this study survived initial CPR, and 298 patients, (32.2%) of these patients were discharged from hospital. Of the 298 patients discharged, 24.5% had died within a year. However, the authors acknowledge that the selection of patients for CPR based on likelihood of survival may have influenced these findings.

Health Professionals' Knowledge about Rates and Predictors of Survival

Health professionals' knowledge of these survival rates is important as it is likely to impact on patients' *informed* choices when discussing resuscitation issues (Schonwetter et al., 1993). In a study by Miller, et al., (1992) healthcare professionals along with patients overestimated CPR success by up to 300%. Another still more recent study found health professionals overestimated the success rate of CPR by 65% (Kerridge, et al., 1999). Wagg, Kinirons and Stewart (1995) asked medical and nursing staff of two British hospitals and one American University hospital to estimate survival to discharge after CPR in acute, general hospitals, and found that 53% estimated the survival rate as being above 17%. Most of the doctors and nurses surveyed overestimated survival chances after CPR. Using clinical scenarios, Thorns and Ellershaw (1999) also found that even when the success rate was likely to be less than 10%, one third of health professionals gave patients unrealistic survival chances following CPR. Other studies have demonstrated a similar pattern (Roberts, Hirschman & Scheltema, 2000).

In contrast, a study by Hill, et al., (1994) showed 29% of senior doctors would not resuscitate patients over 70 years old yet studies (Kim, Becker & Eisenberg, 2000; Bedell, et al., 1983; Burns, et al., 1989; Tresch & Thakur, 1998; Varon & Fromm, 1996), have demonstrated that age alone is not an outcome indicator. Such studies support the observation that there may be a widespread lack of knowledge of the predictors of survival amongst health professionals which influence attitudes towards CPR decision-making.

Predictors of Survival

Current statistics continue to demonstrate poor survival rates for cardiopulmonary resuscitation although some predictors of survival have become evident. Recent research (for example, Schneider, et al., 1993) indicates that there is an increasing awareness of such predictors amongst health professionals, possibly due to the advent of CPR policies including 'Not for Resuscitation' guidelines and the accompanying education. Never-the-less, lack of consistency of knowledge of survival rates remains an issue.

Research now widely acknowledges the factors that may affect patient outcome during the arrest as being: whether the arrest is witnessed or not, the initial cardiac rhythm, and the length of time that CPR is performed. Other factors influencing patients' chances for survival include the presence of underlying co-morbidities such as renal failure, sepsis and metastatic cancer (Dangoor & Atkinson, 2001; de Vos, de Haes, Koster & de Haan, 1999; Faber-Langendoen, 1991; Ghush, Teasdale & Boyer, 1997; Goodlin, et al., 1999; Kerridge, et al., 1998; Lawler, 1999; Sanders, 1999; Schneider, et al., 1993; Tresch & Thakur, 1998; van Walraven, et al., 1999; van Walraven, et al., 2001; Vrtis, 1992; Williams, 1993).

The awareness by researchers of clinical predictors influencing success rates in CPR have led to the development of clinical decision-making tools (van Walraven, et al., 1999; van Walraven et al., 2001; Zimmerman, Wagner, Draper, Wright, Alzola & Knaus; 1998). Work was done in this area in a study by Rosenburg, Wang, Hoffman-Wilde and Hickam (1993) however, the study was unable to isolate "predictors", *per se*, for individual patients (McIntyre, 1992). Using a pre-arrest morbidity (PAM) score, Ghush, et al., (1997) found a distinct correlation of certain factors influencing CPR outcome. The PAM scores of those in the "Not for Resuscitation" (NFR) group were found to be markedly higher (> 7). In the CPR group, of the 37.2% of patients who had PAM scores above eight, not one survived to discharge.

The attitudes of health professionals towards CPR decision-making are influenced by their knowledge of survival rates. If this knowledge does not

reflect the research based literature, decision-making and communicating resuscitation issues including survival chances to patients will continue to be problematic. As a result inappropriate treatment in the form of CPR may continue to occur. This is illustrated by the following statement made by a junior doctor:

Oh, if they're of sound mind, they might have every cancer under the sun and they might be about to drop dead next week. If they said to me "I want you to resuscitate me", then I'm sorry, but that's what I'm going to do, really.

Mello and Jenkinson, 1998 p. 419.

A growing proportion of society in the future will consist of older adults, resulting in an increase in the long-term care population, thus placing increasing pressure on healthcare facilities (Godkin & Toth, 1994b; Jones, 1994). Difficult CPR decisions are becoming more common as medical technology advances. The economic consequences of inadequate decision-making become more significant as pressure is placed on resources, and the allocation of those resources (Vrtis, 1992). It is health professionals who have been primarily involved in decision-making and initiation of resuscitation, and who appear to influence patients in their choices (Kerridge, et al., 1999; Schonwetter, et al., 1993).

As previously discussed a lack of knowledge of survival rates has been identified as leading to unrealistic expectations on the part of staff and patients regarding the effectiveness of resuscitation. This may affect the choices made regarding resuscitation (Goodlin, et al., 1999; Kerridge et al., 1999). It is contended that not only is knowledge about resuscitation important in assisting health professionals to make judgements, but also in aiding patients to make informed decisions about end of life issues. Health professionals have a vital role to play in assisting patients in this manner, and therefore, their knowledge or lack of knowledge about survival rates is likely to have a profound impact.

'Not for Resuscitation' (NFR) Orders

They may need a hand to hold rather than a hand to pump their chest.

-Richard Cummings MD,
cited in AHA, 1997, p. ix.

Background

Before the availability and use of the sophisticated medical technology of today, people whose heart had ceased pumping effectively died. This was accepted by health care professionals and patients, as it was assumed that any further efforts to prolong life would be in vain. Death was accepted as a part of life and this enabled the comfort and dignity of patients to be focused on at the end of life (Basta & McIntosh, 2000; Doty & Walker, 2000). As medical technology has advanced, prolonging life has become both a possibility and (in many instances) a priority. Concurrently, medical futility seems to have become more difficult to recognise and accept.

It has been argued that rather than reviving the living following an unexpected event which culminates in a cardiac arrest, in many situations cardiopulmonary resuscitation could be characterised as an attempt to raise the dead (Bains, 1998, Dangoor & Atkinson, 2001; Faber-Langendoen, 1991; Florin, 1993; Von Gunten, 1991). The recognition of this as a problem has led to the advent of 'Not for Resuscitation' (NFR) orders, also known as 'Do Not Resuscitate' (DNR) and 'Do Not Attempt Resuscitation' (DNAR) orders. The NFR order came about in the 1970s in response to the perceived '*inappropriate*' use of CPR; this was defined as CPR which may have been successful initially, but was unlikely to result in the patient surviving to be discharged from hospital (Kerridge, et al., 1999; Lawler, 1999).

Current policy in many health care institutions dictates that CPR is at present performed on patients whatever the circumstances, and despite any underlying medical conditions, except when there is a 'Not for Resuscitation' (NFR) order documented (Dangoor & Atkinson, 2001; Marik & Craft, 1997). However, the

literature indicates that if chronic underlying illness is present, even initially successful CPR may in fact be prolonging the process of dying, rather than preventing death (Laundry, et al., 1992; Lo, 1991; Morgan, et al., 1994).

Most survivors of CPR (to discharge) are otherwise healthy people, with the cause of cardiac arrest being an acute event such as an arrhythmia following myocardial infarction. Patients with underlying co-morbidities (such as chronic renal failure or metastatic cancer) who have survived initial resuscitation attempts almost always do not survive to be discharged from hospital (Dangoor & Atkinson, 2001; Evans & Brody, 1985; Kerridge et al., 1998; Thorns & Ellershaw, 1999).

In-hospital death is of a diverse nature, as highlighted by the scenarios earlier in this chapter. In certain situations CPR seems obviously inappropriate, and in other situations is clearly indicated as a treatment following unexpected cessation of effective circulation. However, clarity regarding the appropriateness or otherwise of CPR in many cardiac arrest situations is not often immediately apparent (Bains, 1998; Dangoor & Atkinson, 2001). Discussion between the multidisciplinary healthcare team and patient prior to the event, with all the relevant information shared, would allow moral issues and values to be considered, which means more informed, rational decision-making is likely. However, it is still the case that NFR orders are often not documented until a time that the patient is acutely ill and unable to participate (Bedell, Pelle, Maher & Cleary, 1986).

As previously noted, the present survival rate to discharge of patients who have undergone CPR remains around 15%. This indicates that clear criteria for NFR orders may be lacking, and demonstrates that there may be a place for more widespread use of NFR orders (Bedell et al., 1986; Mello & Jenkinson, 1998; Von Gunten, 1991).

NFR orders continue to be used infrequently although their use is increasing as health professionals become more aware of survival statistics, and as more policies are developed in order to guide practice. In a study conducted by

Maksoud, Jahnigen and Skibinski (1993) it was found that the extent to which NFR orders were used was often related to the type of specialty area. For example, they found that in the oncology service NFR orders were issued for 98% of the patients, while the lowest use was in cardiology where NFR orders had been issued for 43% of the patients. Differences in rates of NFR orders between areas were evident, irrespective of the underlying co-morbidities of the patients.

It may be that the NFR order represents the acknowledgement of the patient's impending death by the physician, but this does not eliminate the ethical dilemmas experienced as a result of placing such a marker on a patient (Sulmasy, 1999). The classification of patients as 'Not for Resuscitation' because of clinical factors making successful resuscitation unlikely, may even place greater sense of responsibility on staff to prevent a cardiac arrest occurring, since resuscitation will not be attempted (Lawler, 1999). Conversely, where no formal NFR order has been documented even though the patient is dying, the use of a 'slow code' in the event of a cardiac arrest, may unofficially be acknowledged between health care professionals (Hardin, 1998).

Placing NFR Orders

The issue of when to resuscitate remains contentious as does the question of who is to be involved in the decision-making process. According to the American Heart Association (1997), the issues that surround the NFR order are based on the concept of futility since CPR has been noted to be unsuccessful under certain circumstances. However, this demands knowledge of those circumstances which affect CPR outcomes, and a shared understanding of futility. While placing a NFR order appears simple when CPR is seen as pointless, it becomes complex if the definition of futility cannot be agreed (Alpers & Lo, 1995; Cogliano, 1999; Curtis, Park, Krone & Pearlman, 1995; Lo, 1991; Von Gunten, 1991).

The earlier paternalistic view that the medical consultant would unilaterally make the decision about resuscitation has gradually given way to a respect for patient autonomy and recognition that others may have relevant input. This

means that a team approach with medical and nursing staff providing information and guidance and the patient and/or family making the ultimate decision based on this information may be appropriate (Eliasson, et al., 1997; Morgan, et al., 1994).

Respect for the patient's rights by providing sufficient information for the patient to make an informed choice is part of providing patient autonomy; this concept is acknowledged in the literature as playing a part in decision-making (Eckburg, 1998; Young, 2001). The rights of the patient are increasingly seen as paramount and this is reflected currently in the legal system at the expense of medical paternalism (Jull, 1997; Young). It is acknowledged that the patient must be provided with sufficient information to make an informed decision as CPR can be invasive and traumatic (Florin, 1993; Lawler, 1999). The right of the competent patient to refuse CPR is also a part of the New Zealand Bill of Rights Act (1990), that must be respected (Dimond, 1992; Hospital Legislative Compliance Handbook, 1995).

One study conducted by Maksoud et al. (1993) examined physicians' beliefs and practices regarding resuscitation. They found that physicians acknowledged patient preference followed by medical opinion of futility as primary determinants of whether or not CPR was appropriate. However, Bedell et al. (1986) found that of 75% of patients with NFR orders only 22% were involved in the decision-making process. The basis for a NFR order, and ultimately decisions about who should be involved in the decision-making process remains contentious (Jull, 1997).

The context of these decisions is no less problematic. Clearly CPR to prevent a sudden, unexpected and reversible cessation of effective circulation is very different to CPR being used merely to postpone death (Mello & Jenkinson, 1998). Never-the-less some doctors continue to resuscitate patients with an incurable malignancy (Florin, 1993) even though 'The Hippocratic Oath' urges them not to go on treating those overpowered by their disease (Hurwitz & Richardson, 1997). The overestimation of survival rates following CPR by health care professionals, as Miller et al. (1992) found, and the apparent unwillingness

of some of these health professionals to admit 'defeat' must inevitably impact on some of the choices made by patients.

Discussion about NFR Orders

It is now widely acknowledged in the literature that patients should be involved in decisions regarding their own resuscitation status (Florin, 1993; Morgan, et al., 1994). Anecdotal and research evidence however, indicates that patient involvement in the decision-making process is often lacking (Florin; Komesaroff, 1997; Mello & Jenkinson, 1998; Schutz, 1994; Taylor, 1996). For example, Bedell & Delbanco (1984) demonstrated that only a small proportion (19%) of patients who had suffered cardiac arrest had discussed resuscitation prior to the arrest.

Changing attitudes regarding the involvement of individuals in decision-making in relation to their own health care have occurred (Kerridge, et al., 1998); however, there are physicians who believe that involving a patient when CPR is considered futile, is cruel (Komesaroff, 1997). Some authors argue that discussions and subsequent sharing of information about the futility of treatment will often enable patients and families to cope better with an inevitable death (Youngner, 1990). However, some physicians assert that if CPR would be medically futile (in that resuscitation is unlikely to be successful), patients should not be consulted (Alpers & Lo, 1995; Cumming & Stewart, 1995; Doyal & Wilsher, 1993; Hackler & Hiller, 1990; Tomlinson & Brody, 1990).

Discussion prior to the issue of NFR orders has now been formally recognised as essential. For example, the British Medical Association along with the United Kingdom Resuscitation Council and College of Nursing jointly stated in 1999 that there must be discussion prior to an NFR order being made (Ebrahim, 2000). The appropriateness of discussion with patients regarding NFR orders is dependent on the competence of the patient to make a decision and the timing of the discussion is important (Jezewski, 1996). A critically ill or mentally incompetent patient is usually in no condition to participate in decision-making about resuscitation issues. This means that at times health professionals have

to make the ultimate decision (if possible) after consultation with family members (Dimond, 1992).

While the appropriate timing of discussion is important it seems that this is not always achieved. For example, a study by Hakim et al. (1996) found that the majority of patients had NFR orders written within three days of their death. It can be observed that, in many instances, decisions made so close to the time of death would have been too late for important discussion with the patient about their preference for treatment.

Conflict Surrounding NFR Orders

NFR orders can be problematic if inconsistency occurs between the views of physician and of the patient. For example, some patients may want an attempt to prolong life no matter what the survival statistics (Alpers & Lo, 1995). It has been argued that if patients want to be resuscitated then CPR must be provided, otherwise legal action could result (Doyal & Wilsher, 1993). Shared discussion about the process of CPR and likely outcome is likely to influence decision-making by the patient by providing an environment in which informed choices can be made (Watson, et al., 1997). Poor communication on the part of health professionals in regard to resuscitation remains the most often cited reason for complaints about providers of healthcare (Victorian Government Department of Human Services, 2001). This may lead to the use of a 'slow code' or limited CPR, because the health professional is obliged to provide a pointless treatment (Gazelle, 1998; Hardin, 1998).

Hill, et al., (1994) found that a large proportion of patients, particularly women over the age of 60, did not want to be resuscitated in spite of the fact that few had a malignant disease or were expected to die imminently. There was in fact disagreement between the women and their doctors regarding resuscitation and in 21 of the 47 cases the women did not want to be resuscitated, while their doctors wanted to perform CPR if required.

The boundaries in relation to the potentially moral conflicting principle of respect for patient autonomy versus the injunction to do no harm (non-maleficence) and

to confer benefit (beneficence) remain unclear. Not providing CPR, when we have the knowledge and skills to resuscitate, could be construed morally as an act of killing (Brummell, 1998). However, outpatients and the general public were surveyed in a Boston study and 70% did not want CPR if permanently unconscious, demented or terminally ill (Emanuel, Barry, Stoeckle, Ettelson, & Emanuel, 1991), indicating that opinion as to what might constitute harm or benefit is varied.

According to the literature, the views of medical and nursing staff may also differ, which can lead to conflict. It has been suggested that nurses' attitudes tend to be founded primarily on the caring inherent in the nurse/patient relationship, which is based on honesty and trust (Jezewski, et al., 1993). Thus, nurses may give primary consideration to issues of respect for patients' wishes, patient autonomy (i.e. involvement in decision-making) comfort and dignity (Eliasson, et al., 1997; Mason, 1997). On the other hand, it is argued that medical staff are more likely to give primacy to a scientific approach, by focusing primarily on the disease and its cure (Mason). While differences may or may not exist in the perspectives of doctors and nurses, the important ethical factors considered in relation to the NFR order were found to be similar in medical and nursing staff in the study by Eliasson et al. In any case, interdisciplinary communication can be seen as extremely important in order to establish shared understandings (Jezewski & Finnell, 1998).

NFR Policy

Many authors recognise the increased use of the NFR order, but are aware that patient selection and implementation remains complex, with each situation being individual (Ebrahim, 2000; Williams, 1993). The need for NFR policy is emphasized throughout the literature. While recent articles acknowledge the existence of hospital NFR policies to guide practice, as well as an increased awareness of the need to discuss NFR orders with patients, in reality placing NFR orders continues to be problematic (Evans & Brody, 1985; Ebrahim, 2000).

It is widely agreed that NFR orders need to be consistent in their use, clearly documented and signed in both nursing and medical notes in order to avoid any

confusion. This should contain a clear indication that shared discussion which includes the patient, has taken place prior to implementation of the order (Ebrahim, 2000; Johnstone, 1999; Wagg & Stewart, 1993). Komesaroff, (1997) argues that the discussion initiated as a result of the NFR policy is often of more value than the policy itself. Regular review of NFR policy according to the patient's condition should occur, and NFR policy guidelines should be regularly reviewed in line with the latest research guidelines. It is generally agreed that all hospitals should have a comprehensive NFR policy which has ongoing review processes and undergoes regular audit (Florin, 1993; Langslow, 1995).

NFR orders *are* complex and problematic; however, progress has been made in that hospital NFR policies are more commonplace now than previously. It is encouraging to see that health professionals now accept that the patient should be included in discussion regarding placement of an NFR order, and that patient autonomy is respected. Health professionals have a duty to provide the patient with the relevant information about the process of CPR and likely outcome allowing for informed decision-making in consultation with the multidisciplinary healthcare team. However particular characteristics of individual health care professionals may influence their attitudes and decisions.

Individual Characteristics which may Influence Attitude

The literature indicates that there are many factors that may impact on a health professional's attitude towards CPR (Maksoud, et al., 1993; Mello & Jenkinson, 1998). These factors include an individual's values and beliefs. The area in which a health professional works may also influence discussion and decision-making regarding resuscitation; as may the health professional's age and education.

One of the problems surrounding resuscitation, in particular in discussion and placement of NFR orders is the inconsistency. For example, a physician working within a medical ward is more likely to place a NFR order earlier rather than later on a patient with severe chronic illness, when compared to a surgeon, even though the patient has the same underlying condition that makes survival post-cardiac arrest unlikely (Maksoud, et al., 1993). This inconsistency amongst

doctors is problematic, particularly when the concept of futility is used as the foundation for the NFR order. If one physician writes an NFR order without discussion with the family when there is only a 1% chance of survival, and yet another physician writes NFR orders when the likelihood of survival is 5-10% the concept of fairness is in doubt (Alpers & Lo, 1995).

Some literature implies that the age of the doctor, or the speciality area that the doctor works in, may influence the decision-making (Maksoud, et al., 1993; Mello & Jenkinson, 1998). Mello and Jenkinson, found that junior doctors would give futile CPR because they felt an obligation, whereas the senior doctors would not. It was also found in their study that doctors in the Intensive Care Unit were comfortable not providing CPR based on their knowledge of futility; however, doctors working in other areas were more likely to provide futile CPR. Never-the-less the personal views of health professionals towards CPR may not impact significantly on their discussions with patients. This is supported by evidence from one study in which patients were interviewed about their views on CPR where it was found that the results did not differ whether they were interviewed by a clinician with strong opinions about the use of CPR, a nurse practitioner or medical resident (Murphy, et al., 1994).

Conclusion

Recent New Zealand based literature exploring issues related to cardiopulmonary resuscitation (CPR) is scarce. International literature however, links health professionals' attitudes and knowledge of CPR to decision-making regarding the initiation and continuation of CPR. Issues regarding resuscitation are becoming increasingly important as the population ages, and healthcare resources become limited. So by exploring knowledge and attitudes towards CPR, problematic areas can be identified and the needs of health professionals ascertained.

Improved education of health professionals regarding CPR procedures and survival rates may be of benefit to them in their guidance of patients and their own decision-making (Palker & Nettles-Carlson, 1995; Wagg, et al., 1993). Thus, this present research has the potential to improve the ability of medical

and nursing staff to deal with the complex issues surrounding resuscitation. The following chapter describes how the respondents for the study were gathered, and outlines the method used to collect data, including the reference to the background articles that gave idea for the development of the questionnaire used in the study.

The aim of the study as previously mentioned was to explore the attitudes and knowledge of doctors and nurses regarding CPR with particular emphasis on the following questions:

- What are the attitudes of doctors and nurses towards their role in CPR, and is there a difference in perception of role between the different professional groups?
- Do doctors and nurses have knowledge about CPR survival outcomes, and is there a difference between professional groups?
- What is the attitude of doctors and nurses towards end of life issues and 'Not for Resuscitation' (NFR) orders?
- Are there any significant demographic factors associated with these?
- Is there any relationship between attitudes towards role, knowledge and end of life issues and the decision-making in the case studies?

Chapter 5

Method

This study was designed to explore the relationships between attitude, knowledge and decision-making of doctors and nurses concerning cardiopulmonary resuscitation (CPR). The study follows a quantitative research methodology. This chapter describes how the respondents were selected, and outlines the method used to collect data with reference to the background articles that gave ideas for the development of the questionnaire.

Sample

Six hundred health professionals employed by a medium sized health care provider were invited to participate in the study. Four hundred registered nurses and two hundred doctors were randomly selected by the hospital information systems department from the staff data base. This proved to be somewhat problematic in that it became evident that the staff data base utilised had not been recently updated since hospital renovations had occurred. As a result staff who had been temporarily decanted from their area of work while upgrading was done, had not had their records updated since their return to the upgraded wards. This meant that some potential participants may not have received a questionnaire. Several participants were also sent more than one copy of the questionnaire as they worked in several areas and the selection process did not exclude duplication of names. These problems with the database may partially explain the response rate of 24.0%.

The 143 respondents were comprised of 62 doctors (43.0%) and 81 registered nurses (57.0%). Two returned questionnaires were excluded as they were completed by enrolled nurses and therefore met the exclusion criteria. The questionnaire and information letter was sent out to each potential participant via internal mail and they were invited to respond within a specified time period. A self-addressed envelope accompanied the posting to encourage return. The

researcher was not involved in the selection process in order to protect the identity of participants. Follow up E-mails to departments and posters (Appendix A) were circulated to encourage return. The final sample consisted of 62 doctors and 79 registered nurses.

Materials and Procedure

A questionnaire (Appendix B) specifically designed to measure health professionals' knowledge of, and attitudes towards, cardiopulmonary resuscitation (CPR) was developed. This questionnaire consisted of three parts: 1) Three vignettes each accompanied by six questions designed to determine decision-making in hypothetical CPR situations; 2) 33 questions about CPR knowledge and attitudes, and 3) a demographic section.

Part One, consisted of vignettes describing three different cardiac arrest situations and asking the participant to indicate decisions that they would make about CPR for each. For example: in the third case, a thirty five year old woman with breast cancer and bone metastases who is having pain is found unconscious and pulseless. Respondents were firstly asked whether or not they would resuscitate the patient in this situation. If the answer was 'yes' to this initial question they were then asked to make decisions taking into account the patient's cardiac rhythm (asystole or ventricular fibrillation), and also to indicate the length of time that they would continue to resuscitate in these circumstances. For example they are asked to respond to the statement "If after ten minutes the cardiac rhythm remains asystole I would continue CPR". The final question in relation to each of the cases asks the participant whether they feel comfortable making decisions regarding CPR in this case. "Yes/no" responses to the questions were indicated by participants ticking the appropriate box. The idea to use vignettes came from reviewing the literature on CPR and the individual cases were based on actual vignettes in the study of Thorns and Ellershaw (1999) and the researcher's own personal experiences.

Part Two concerned knowledge and attitudes towards CPR and consisted of thirty three statements. Examples are: "CPR is more likely to be successful in acute myocardial infarction than in chronic conditions" and "Only medical staff

should decide whether to continue resuscitation or not in a cardiac arrest". The participants were required to indicate their level of agreement with each statement on a five point Likert Scale ranging from 1 = strongly disagree to 5 = strongly agree.

Part Three consisted of demographic questions collecting information about age, sex, ethnicity, religious inclination, area of work, educational qualifications and work experience in order to define sample characteristics. Questions were also included in this section about the experience that the participant had in relation to cardiopulmonary resuscitation, knowledge about the hospital "Not For Resuscitation" (NFR) Policy and whether the participant had attended any information sessions on resuscitation other than the required annual hospital 'core skills' update in the last three months.

Items in the questionnaire were derived from a review of published articles, and through consultation with clinicians. Kerridge et al., (1998, 1999) researched decision-making in CPR by measuring the attitudes of patients and health care professionals, and the effect that knowledge and attitudes have on decision-making. Mello and Jenkinson (1998) also studied decision-making by comparing the knowledge and attitudes of physicians and nurses in a British and American hospital. Several of the questions in Part Two of the questionnaire were either inspired by or taken from these studies. These included Question 4 ("I would never override a 'Not for Resuscitation' (NFR) order"), Question 21 ("Talking about CPR is upsetting to patients") and Question 22 ("Patients can refuse to have CPR").

Kerridge et al., (1998) and Mello and Jenkinson (1998) also discussed who should be involved in the decision-making process and this led to the inclusion of questions concerning the process of decision-making, and who should be included in this process. For example; Questions 13, 16 and 24 asked for responses to the following statements respectively: "Relatives should not be involved in decision-making in whether to resuscitate a patient or not", "Decision-making regarding NFR orders should be multidisciplinary", and "Most patients want to be included in NFR decision-making". The English study by

Thorns and Ellershaw (1999) gave an interesting insight into the views of medical and nursing staff on the use of CPR in a hospice and generated the inclusion of Question 8 (“Terminally ill patients should not be offered CPR”), and Question 12 (“CPR should not be performed in a hospice”).

Thorns and Ellershaw (1999) also discussed some of the factors influencing survival rates. Out of the nine papers they reviewed, which together included 1,268 CPR attempts, not one patient with metastatic cancer was found to be discharged from hospital alive. Survival factors that were discussed were the initial cardiac rhythm, the amount of time until CPR was begun, and the presence of underlying disease, such as metastatic cancer. Low survival rates were found to be associated with the initial cardiac rhythm being asystole, unwitnessed cardiac arrests and the presence of chronic underlying disease or metastatic cancer. These findings led to the inclusion of questions such as 25 (“CPR is more likely to be successful when the cardiac rhythm is ventricular fibrillation than asystole”) and Question 31 (“Immediate survival following CPR remains likely even if there is no pulse, and the arrest is unwitnessed”). These questions were included in order to examine the participants’ knowledge of significant factors influencing survival rates in relation to CPR.

Validity and Reliability

A small pilot study of the questionnaire was conducted with six colleagues to provide feedback to strengthen validity and reliability. These colleagues who were familiar with the subject of cardiopulmonary resuscitation were asked to read and assess the questionnaire, and make comments. The colleagues included registered nurses, registrars and consultants. These individuals were either not employed by the hospital where the study was carried out, were about to leave, or were excluded from the random selection. Questions were identified as either knowledge or attitude questions for future analysis, and were checked for relevance, repetition and relatedness to ensure that appropriate questions were being asked about the phenomenon under investigation.

All questions were based on a current review of literature about CPR. The items in the questionnaire were checked for wording and clarity so that any ambiguity

that may confuse participants could be eliminated. Care was taken to ensure there were no leading or biased questions, which would have jeopardised the results. The piloting process thus allowed changes to be made to questions as required, and provided data for a trial of data analysis as recommended by Borg and Gall (1989).

By piloting the questionnaire it was possible to strengthen reliability by demonstrating consistency and accuracy in the answers of pilot participants. Data from the pilot testing were not included in the study. The core knowledge questions were based on the literature about survival outcomes and the multidisciplinary Hospital Resuscitation Committee were consulted to verify the correct answers.

Ethical Considerations

This study followed the guidelines of the Nursing Council of New Zealand's Code of Conduct (1995) and was based on the principles that the nurse "acts ethically and maintains standards of practice, respects the rights of patients/clients and justifies public trust and confidence. The nurse must be guided by a recognised code of ethics" (p.4). Approval from the Massey University Human Ethics Committee and the Manawatu/Whanganui Area Health Ethics Committee was obtained prior to data collection.

Informed Consent

The issue of informed consent involves the ethical principles of respect for autonomy, non-maleficence (to do no harm), beneficence (to do good), and the principle of justice (Holloway & Wheeler, 1996). As part of the Code of Health and Disability Consumers' Rights (1996), it is stated that informed consent must be obtained unless there are reasons to the contrary (Hospital Legislative Compliance Handbook, 1995).

This research invited participants to answer a questionnaire about cardiopulmonary resuscitation (CPR). An information sheet (Appendix C) accompanied the questionnaire and explained the research aims and benefits, and the contact details of the researcher and supervisors. Potential participants

could therefore obtain further information or express concerns allowing an informed decision as to whether or not they wished to participate. Via the information sheet, potential participants were informed that participation was entirely voluntary and they could choose not to take part without consequence. Return of the questionnaire was considered to imply consent and a statement to this effect was included on both the questionnaire and the information sheet.

Confidentiality

Protecting the human right of privacy and dignity, anonymity and confidentiality is pivotal in studies involving individuals. Maintaining the individual's right to privacy includes the respect of the rights of an individual to withhold or share information with others. Questionnaires in this study were anonymous making it possible for the participant to share information freely. Data were aggregated and analysed as a complete data set making identification impossible, and participants were informed that the data would remain confidential and be used for research purposes only, in line with the Massey University Human Ethics Committee regulations.

In this study the information sheet (Appendix C) explained that the research was for a 100 point thesis to complete a Master of Arts degree and that the information in this study was purely for research purposes. Every precaution was taken to respect the privacy of the participant as governed by the Privacy Act, 1993. If guarantees of confidentiality are given, the researcher must be able to honour this undertaking as the relationship is one based on trust (New Zealand Nurses Organisation, 1996). In this study, confidentiality was maintained by the use of anonymous questionnaires which included no names or any other identifying characteristics.

The information sheet that accompanied the questionnaire explained that participation was voluntary and answers were anonymous. It was indicated that those who wished to participate should fill out the questionnaire and return it in the enclosed return addressed envelope via the hospital's internal mail system. To safeguard confidentiality, the researcher undertook responsibility to destroy the raw data when it is no longer required to validate the study. Until then the

data will be kept safely for up to ten years in a locked filing cabinet at the researcher's place of residence. The only person who will have access to this material will be the principal researcher.

This study was carried out in a way that acknowledged the fundamental bicultural principles of the Treaty of Waitangi. Consultation was carried out with the Maori Health Unit, Te Whare Rauora, in order to address any bicultural concerns about the study (Appendix D).

As the content of the questionnaire was regarding end of life issues it was acknowledged that there was a possibility that the questions could generate anxiety for participants, particularly those who may have had previous traumatic experiences in relation to CPR. While the likelihood of this occurring was not considered to be high, participants were offered the opportunity for support via the hospitals "Employee Assistance Programme" if they felt that this was required (See Information Sheet, Appendix C).

This chapter outlined the methodological processes used in this study to explore the attitude of doctors and nurses towards CPR. The study setting has been described as well as the selection of participants. Data collection and methods of analysis of data have been presented, including a description of the ethical issues in relation to this study.

The findings of this study are now presented in the following chapter beginning with demographic data, followed by analysis of the three vignettes, and then the attitude and knowledge questions. Statistical relationships between attitude, knowledge and decision-making in CPR are then explored.

Chapter 6

Results

This study explored the attitudes of the respondent doctors and nurses towards cardiopulmonary resuscitation (CPR), looking for relationships between knowledge levels, attitudes and decision-making in CPR. In this chapter the results are presented, beginning with an overview of the demographic characteristics of the doctors and nurses who participated. A questionnaire was used to collect demographic data on personal attributes such as professional group, age and sex. Area of work, experience, professional education and religious inclination were also included. Demographic information is presented in Tables 1 and 2. Following that, results from Part One of the questionnaire, the three vignettes (Case A, B and C) are presented. Results from the attitude and knowledge questions are then outlined.

Using the Statistical Package for Social Sciences (SPSS), chi-square analyses were performed to identify those responses where there was a significant difference found between the doctors' responses and the nurses' responses. Logistic regression analyses were also performed to see if any individual variables could be combined to significantly predict the initial resuscitation decision for each vignette.

Characteristics of the Sample

The respondents consisted of 141 doctors and nurses. Of the respondents 90 were female (63.8%) and 51 male (36.2%). Medical staff made up 62 (44.0%) of the respondents, 70.9% being male, and 29.0% female. Registered nurses constituted the other 79 (56.0%) of the respondents. Of the nurses, 72 (91.0%) were female, and 7 (9.0%) were male. Ages of the health professionals ranged between 22 and 62 years, with 28.6% being between 22-35 years, 51.9% between 36-49 years, and 19.5% between 50-62 years old (n = 133). The

number of doctors aged less than 40 years was 22, and there were 30 nurses below the age of 40. The mean age of nurses was 41 (SD 9.21) and of doctors was 42 (SD 10.49). Respondents' ethnicity was made up of; 66.2% NZ European, 17.3% other European, 5.0% NZ Maori, 1.4% Canadian, and 9.0% comprised of other groups (n = 139).

Religiosity

A greater number of nurses than doctors indicated that they were religious as shown in Table 1.

Professional Group

Medical staff consisted of 25.9% consultant, 10.0% registrar, 5.0% house surgeon, 3.6% Medical Officer Special Scale and 0.7% General Practitioners. Nurses consisted of 25.9% RN hospital trained, and 23.7% RN polytechnic trained, 3.6% RN university degree, 0.7% RN polytechnic/university trained and 0.7% RN hospital/polytechnic/university trained. Twenty-eight percent of respondents had been qualified for ten years or less (10.6% had two or less years of experience), 34.1% had been qualified for 11-20 years, and 37.9% for over 20 years (n=132). Eighteen percent of nurses had a bachelor degree, 21.0% had a diploma, and 15.9% a certificate (n=76). Demographic characteristics are summarised in Table 1.

Table 1: Characteristics of participants (Ns =132 -141).

Characteristic		Total	Doctors	Nurses
Sex	Male	36.2%	70.9%	9.0%
	Female	63.8%	29.0%	91.0%
Age	Range (yr)	22-62	24-62	22-62
	Mean		42	41
	SD		10.49	9.21
Years in practice	Range (yr)	1-49	1-49	1-40
	Mean		18	16
	SD		11.60	10.06
Professional designation	Consultant		25.0%	N/A
	Other doctor		19.0%	N/A
	RN	56.0%	NA	56
Religious		57.0%	49.1%	62.3%

The respondents age and years qualified were found to be very strongly correlated, $r(132) = .85, p < .001$ so years qualified was chosen for subsequent analyses.

Area of Work

The sample of doctors and nurses covered a wide area of work. The highest single percentage of doctors and nurses indicating one area worked in a surgical area (24.6%), with 15.2% working in a medical area. Other areas worked in were mental health (11.6%), Intensive Care Unit/Coronary Care Unit/neonates (8.0%), Emergency Department (5.1%), Outpatients/community (9.4%), Operating Theatre (4.3%), oncology (4.3%), medical/surgical (4.3%), midwifery (2.2%), and multiple areas (10.7%). Due to the small number of respondents working in any particular area it was of no value to divide the sample according to these categories so the sample was treated as a whole.

CPR Experience

In the demographic section of the questionnaire doctors and nurses were asked about their experience in performing CPR. The questions ranged from whether they had observed CPR, participated in CPR, actually performed CPR, and then whether they had performed CPR more than ten times. A chi-square analysis discovered that doctors indicated greater CPR experience than nurses in all four situations. The percentage of doctors and nurses giving positive responses and the chi-square values appear in Table 2.

Table 2: Doctors' and nurses' experience of cardiopulmonary resuscitation expressed as percentages (Ns = 136-141)

CPR experience	Doctors	Nurses	χ^2
Observed CPR	100.0	86.0	9.36***
Participated in CPR	98.3	73.4	16.44***
Performed CPR	95.1	67.0	16.75***
Performed CPR > 10 times	75.0	27.8	31.17***

***p < .001 **p < .01 *p < .05

Read NFR Policy

Doctors and nurses were asked whether they had read the NFR Policy which had been recently promoted within the institution and 48.2% indicated that they had. They were also asked if they had attended any form of CPR education session recently (excluding the required annual core skills programme) and 18.6% indicated that they had. The results are displayed in Table 3.

Table 3: Doctors and nurses who had read the NFR policy or had attended recent CPR education expressed as percentages. (Ns = 140-141)

	Doctors	Nurses	Total
Read NFR Policy	40.3	54.4	48.2
Attended education session in last three months	6.4	28.2	18.6

Vignettes

Using hypothetical examples of three different contexts (Case A, B and C) respondents were asked in Part One of the questionnaire to make decisions at a cardiac arrest. Firstly they were asked about whether they would initiate CPR and then, depending on the cardiac rhythm and the length of time, whether they would continue with CPR. At the end of each case respondents were asked whether they felt comfortable with their decisions. In presenting the findings the number of respondents who responded to each question has been put in brackets following the response percentage. The case and associated results are presented below:

Case A

An 80 year old woman from a nursing home is admitted with pneumonia and after 24 hours is not responding to treatment. She has a history of ischaemic heart disease and diabetes. You discover the patient unresponsive and pulseless.

This first case uses the example of an elderly patient who has been living in a nursing home. Her condition is complicated by the presence of multiple other medical problems, and a lack of response to treatment during the 24 hours

since her admission. Respondents were asked to make decisions regarding CPR and the results are presented in Table 4.

Table 4: Comparisons of doctors' and nurses' decision-making in Case A expressed as percentages

	Total n = 137	Doctors n = 61	Nurses n = 76
Would initiate CPR	75.1	57.3	89.4
Continue CPR if asystole	63.3	44.2	80.0
Continue CPR if VF	64.8	54.0	74.2
Continue after 10 mins if asystole	30.1	13.5	44.7
Continue after 10 mins if VF	46.0	33.3	57.3
Comfortable with decisions	62.8	72.1	54.9

The majority of respondents agreed that they would initiate CPR in this case; however, a far higher proportion of nurses than doctors indicated that they would initiate CPR. The respondents who indicated that they would not initiate CPR (24.9%) were not included in the next sets of responses as they relate to continued decision-making during the CPR process, apart from the comfort question in the vignettes. In this case it means that from the second question onwards the sample size drops to 97, made up of 35 doctors and 62 nurses.

For those health professionals who opted to continue CPR, the initial cardiac rhythm appeared to make little difference, although a much higher number of nurses opted to continue in asystole. However, after ten minutes of CPR higher numbers of both doctors and nurses continued CPR if the rhythm was VF rather than asystole. Nurses again however, demonstrated a less obvious distinction between the cardiac rhythm in comparison to doctors, who showed a distinct drop in numbers continuing CPR in asystole. In order to look at whether the length of time the health professional had been qualified impacted on decision-making in this case, doctors were divided into two groups. The groups consisted of consultants and registrars/house surgeons. A chi-square analysis was performed to look at the difference between the two groups. Consultants who had been qualified longer were found to be less likely to initiate CPR in Case A. This is shown in Table 5 on the following page. Since we did not have this information for nurses, a correlation was done and found that nurses who were

qualified longer were also less likely to initiate CPR in this case, $r(70) = .31, p = .008$.

Table 5: Doctors' professional designation and decision to initiate CPR in Case A expressed as percentages

Professional designation	Initiate CPR	Do not initiate CPR	χ^2
Consultant (n = 36)	41.7	58.3	12.41***
Registrar/House Surgeon (n = 20)	90.0	10.0	

***p < .001 **p < .01 *p < .05

Whether health professionals indicated that they were comfortable with their decisions in Case A was then explored. It was interesting to note that of the health professionals who initiated CPR in Case A, a high number indicated that they were uncomfortable with their decision. Analysis was then performed to look at the discomfort of those health professionals who initiated CPR in comparison to those who indicated that they would not initiate CPR in Case A. As Table 6 shows, a high number of health professionals who chose to initiate CPR in Case A were uncomfortable with their decision, in comparison with those who made the decision not to initiate CPR. More doctors than nurses were comfortable with their decisions. There was however no relationship found between the years that health professionals had been qualified and whether or not they were comfortable with the decisions made in the first case.

Table 6: Comparison of health professionals initiating CPR and comfort with decision in Case A expressed in percentages (n = 129)

	Comfortable with decision	Uncomfortable with decision	χ^2
Do not initiate CPR	22.5	3.0	10.71***
Initiate CPR	42.0	32.4	

***p < .001 **p < .01 *p < .05

Case B

A 45 year old is admitted with crushing chest pain to the Coronary Care Unit. ECG shows an acute myocardial infarction (MI); he has no other significant medical history. During administration of the thrombolytic drug streptokinase, the patient suddenly complains of feeling 'funny' and loses consciousness.

The second case is a young, fit person who has a heart attack and then suffers a cardiac arrest as a complication of his heart attack and the treatment with a thrombolytic agent. Respondents were again asked to make decisions regarding CPR and the results appear in Table 7.

Table 7: Comparisons of doctors' and nurses' decision-making in Case B expressed as percentages.

	Total n = 138	Doctors n = 62	Nurses n = 76
Would initiate CPR	98.5	100.0	97.3
Continue CPR if asystole	96.9	100.0	94.3
Continue CPR if VF	91.4	96.6	86.9
Continue after 10 mins if asystole	76.3	80.8	71.1
Continue after 10 mins if VF	85.8	91.5	80.8
Comfortable with decisions	77.4	81.9	73.6

As can be seen from the results, the respondents were overwhelmingly in favour of initiating CPR, and of continuing under the various conditions outlined. Throughout however, nurses were slightly less likely than doctors to indicate their support for continuing CPR, and in fact 2.6% of nurses indicated that they would not initiate CPR in this case.

Nurses were also less comfortable with their decisions. The respondents who indicated that they would not initiate CPR in this situation only numbered 2, but were not included in the next four questions, meaning the sample size dropped to 136, 62 doctors and 74 nurses.

Case C

A 35 year old woman who has breast cancer with metastatic, boney, secondaries is suffering significant pain. She has been receiving chemotherapy and has developed a pleural effusion. She is found unconscious and pulseless.

In this final case respondents were asked to make CPR decisions about a young woman who is terminally ill with metastatic breast cancer complicated by ongoing pain. The results are presented in Table 8 on the following page.

Table 8: Comparisons of doctors' and nurses' decision-making in Case C expressed as percentages.

	Total n = 131	Doctors n = 60	Nurses n = 71
Would initiate CPR	68.3	52.4	81.3
Continue CPR if asystole	58.4	44.2	71.0
Continue CPR if VF	56.5	52.4	60.2
Continue after 10 mins if asystole	34.4	22.0	45.4
Continue after 10 mins if VF	40.1	30.0	49.2
Comfortable with decisions	62.5	71.6	54.9

In the last example, slightly fewer respondents than in the previous case indicated that they would initiate CPR; however, the number of nurses who would initiate and then continue CPR seemingly irrespective of cardiac rhythm, were higher than doctors. Correlation was then performed to explore any relationship between length of time qualified and the decision to initiate CPR. It was found that the longer a nurse was qualified the less likely it was that they would initiate CPR, $r(69) = .31, p = .008$. Although a lower percentage of doctors initiate and continue CPR in this case, the initial cardiac rhythm and the cardiac rhythm after ten minutes does not appear to have a major impact on their decision-making either, however the time lapsed appears to be a factor. As with the previous cases the answers to questions 2-4 were not included in the final analysis if the person had indicated that they would not initiate CPR. Respondent numbers in questions 2-4 therefore dropped to 93, 32 doctors and 61 nurses. Nurses' comfort with their decisions was again lower than doctors.

A chi-square analysis was performed to explore comfort with decisions made and to determine whether there was a difference in comfort between those health professionals who opted to initiate CPR with those who did not in the final case. As in Case A, a higher number of the health professionals who opted to initiate CPR felt uncomfortable with their decision as shown in Table 9 on the next page. However, no relationship was found between the health professionals' years qualified and whether they were comfortable with the decision to initiate CPR or not.

Table 9: Comparison of health professionals initiating CPR and comfort with decision in Case C expressed in percentages (n = 129)

	Comfortable with decision	Uncomfortable with decision	χ^2
Do not initiate CPR	24.9	6.9	5.44*
Initiate CPR	38.8	29.4	

***p < .001 **p < .01 *p < .05

Overall, in all cases, the initial cardiac rhythm appeared to make little difference to the decision to continue with CPR. However after 10 minutes had elapsed, the proportion of participants indicating they would be prepared to continue had dropped quite markedly for Cases A and C but less so for Case B, particularly when the cardiac rhythm was asystole. A high number of health professionals who opted to initiate CPR in Cases A and C felt uncomfortable with that decision in comparison with those who opted not to initiate CPR.

Attitude and Knowledge Questions

Following the vignettes respondents were asked to answer thirty-three knowledge and attitude questions based on the research related to CPR. Participants indicated their response using a 5-point Likert Scale ranging from 'strongly disagree' to 'strongly agree'. Respondents could choose 'uncertain' as an option. Because of the small numbers of respondents (141) for data analysis, 'disagree' and 'strongly disagree' responses were grouped together and recoded as 'disagree', and 'agree' and 'strongly agree' were recoded as agree. The results in this section are presented under six main headings relating to competence and confidence with CPR, professional role, knowledge about CPR, age, NFR orders and discussion surrounding resuscitation. The responses to all the attitude and knowledge questions can be found in Appendix E.

Competence and Confidence in CPR

The majority of doctors and nurses (75.0%) agreed that they were competently trained in CPR but their perceived competence in performing CPR was much lower. The majority of nurses felt confident about the decision to initiate CPR as did doctors. However, twice as many doctors felt confident about making

decisions during CPR, in comparison to nurses. These results are outlined in Table 10 and chi-square analysis determined that nurses were significantly less confident making decisions during CPR, $\chi^2(2, N = 138) = 11.91, p < .01$.

Table 10: Confidence and competence in performing CPR expressed as a percentage

	NURSE				DOCTOR			
	Disagree	Uncertain	Agree	N	Disagree	Uncertain	Agreed	N
I am competently trained in CPR	11.5	10.2	78.2	78	14.5	14.5	70.9	62
I am very competent at performing CPR	12.9	28.5	58.4	77	27.4	25.8	46.7	62
I feel confident making decisions about the initiation of CPR	15.3	14.1	70.5	78	9.6	19.3	70.9	62
I feel confident making decisions during CPR	27.6	32.8	39.4	76	19.3	12.9	67.7	62

Roles of Doctors and Nurses in Relation to Decision-making in CPR

Decision-making during CPR was considered by 70.1% of respondents to be a part of their job, with 86.9% of doctors and 56.6% of nurses agreeing that this was the case. However, there remained a high proportion of nurses (43.4%) who disagreed or were uncertain.

A chi-square analysis found that doctors were more likely to consider decision-making during CPR to be a part of their job; however some doctors (13.1%) did not consider that decision-making in CPR was part of their job, $\chi^2(2, N = 140) = 18.10, p < .001$. Confidence in CPR decision-making as outlined in Table 10 showed that although doctors and nurses have similar confidence in making decisions regarding initiating CPR a far lower number of nurses than doctors feel confident decision-making during CPR.

When asked about when to carry out CPR, 82.0% of nurses acknowledged that CPR must be performed unless there is an NFR order, whereas only 32.2% of doctors agreed. A chi-square analysis discovered that nurses would be more likely to carry out CPR unless there is an NFR order, $\chi^2(2, N = 140) = 36.56, p < .001$.

A significantly greater proportion of nurses (26.9%) also indicated that CPR should be attempted under all circumstances, whereas only 3.3% of doctors agreed, $\chi^2(2, N = 139) = 22.47, p < .001$. More than half of the respondent nurses (53%) did not feel that doctors should be the only decision-makers in discontinuing CPR during a cardiac arrest, but 59.7% of medical staff indicated that they should, $\chi^2(2, N = 141) = 11.01, p = .004$.

Knowledge about CPR

Decisions made at a cardiac arrest, or regarding CPR, are likely to be based on knowledge of certain factors which may predict the probable outcomes of the procedure. Knowledge or a lack of knowledge of these factors will influence the decisions made.

Survival predictors are those factors such as whether the cardiac arrest has been witnessed, the initial cardiac rhythm monitored, and the length of time the cardiac arrest continues. Survival indicators are those which determine survival outcome following cardiac arrest, both immediately and later.

In the questionnaire (Appendix B) the participants were asked to answer eight core knowledge questions regarding survival predictors and indicators, and the results are presented in Figure 1 on the following page. The eight knowledge questions were based on the CPR literature and, as described in Chapter 5, the correct answers were validated by the Hospital Resuscitation Committee.

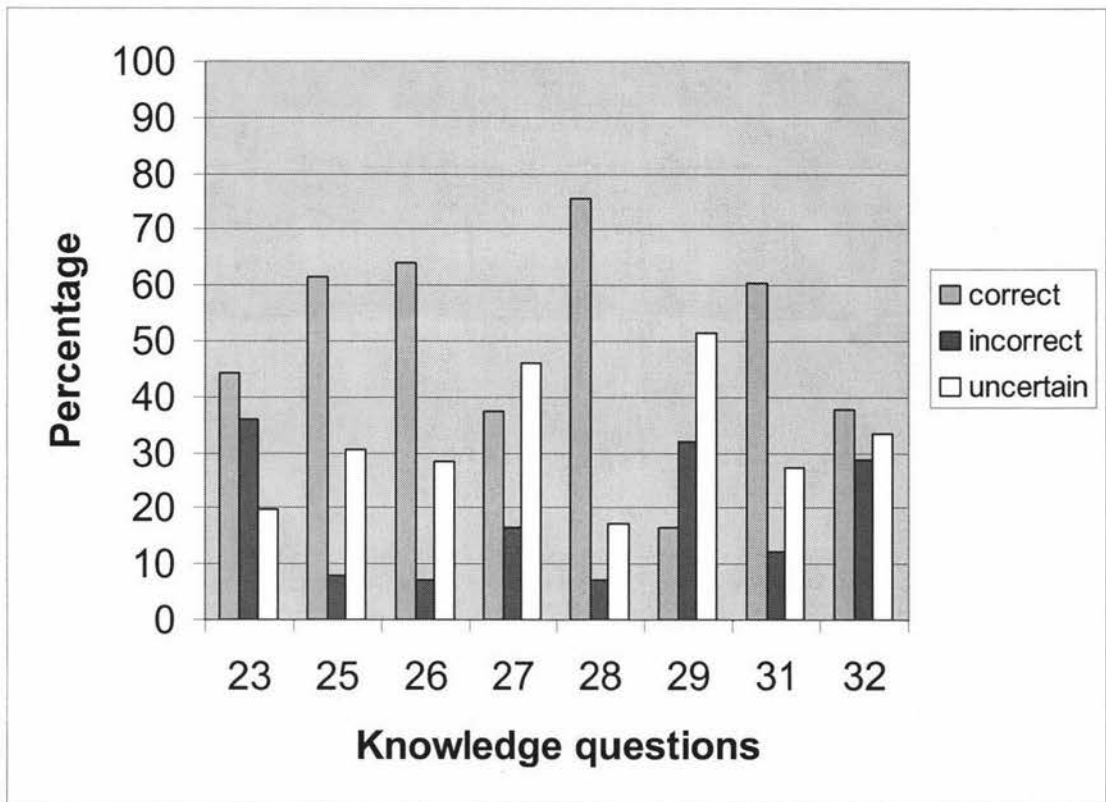


Figure 1: Doctors' and nurses' knowledge about CPR survival rates

As shown in Figure 1 there are large differences in the number of correct answers to different questions. In fact only four out of the eight knowledge questions have been answered correctly by over 50% of participants. These are questions 25, 26 and 28, and 31, two of which are related to likely outcome following CPR in the presence of chronic conditions, the third regarding the immediate outcome in a cardiac arrest and the final question regarding the cardiac rhythm at a cardiac arrest. The least number of correct answers (and most uncertain answers) were evident in question 29 regarding one year survival outcome. The knowledge questions appear in Table 11 on the following page.

There is a wide range of knowledge levels pertaining to different questions. When the number of knowledge questions answered correctly was calculated, it was found to range from 0-7 out of a possible score of 8. The mean was 3.76 and the standard deviation 1.85. When the knowledge score was compared across the two professional groups an independent *t*-test demonstrated that on average, doctors ($M = 4.71$) were shown to score significantly higher than the

nurses ($M = 2.99$), $t(138) = 6.14$, $p = .001$, $df = 136$. Chi-square analyses were then performed to determine any significant differences in the numbers of correct answers to the knowledge questions from doctors and nurses and the results are outlined in Table 11.

Table 11: Chi-square analysis demonstrating significant differences in responses of doctors (D) and nurses (N) to knowledge questions expressed in percentages

Knowledge Question	Prof. Gp.	Agree	Disagree	Uncertain	χ^2
Q23 Age alone is an important factor in a successful outcome following CPR	D 60 N 76	46.7 27.6	33.3 52.6	20.0 19.7	6.20*
Q25 CPR is more likely to be successful in acute MI than in chronic conditions	D 62 N 78	77.4 48.7	6.4 8.9	16.1 42.3	12.62**
Q26 CPR is more likely to be successful when the cardiac rhythm is VF than asystole	D 62 N 78	85.4 47.4	3.2 10.2	11.2 42.3	21.80***
Q27 CPR is less likely to be successful when the cardiac rhythm is VT than EMD	D 62 N 77	21.0 13.0	54.8 23.4	24.2 63.6	22.02***
Q28 The outcome of CPR is dependent on the presence of underlying medical diseases	D 62 N 78	82.2 70.5	4.8 8.9	12.9 20.5	ns
Q29 At least 25% of successfully resuscitated patients will be alive at one year	D 62 N 78	25.8 37.2	32.3 3.8	41.9 59.0	20.31***
Q31 Immediate survival following CPR remains likely even if there is no pulse, and the arrest is unwitnessed	D 62 N 77	9.7 14.3	82.3 42.9	8.1 42.9	24.63***
Q32 If initial CPR is successful patients are likely to be discharged from hospital	D 62 N 76	14.5 40.7	58.0 21.0	27.4 38.1	21.73***

Note. Correct answers in bold

*** $p < .001$ ** $p < .01$ * $p < .05$, ns - not significant

The first knowledge question suggested that “Age alone is an important factor in a successful outcome following CPR” and almost half of the respondent doctors answered incorrectly by agreeing with the statement. In comparison 52.6% of nurses correctly disagreed. Almost 20% of respondents were uncertain. A chi-square analysis confirmed that more nurses than doctors were aware that age alone is not an important CPR outcome predictor. Responses to the eight knowledge questions by doctors and nurses including significant differences between the professional groups are demonstrated in Table 11.

In the remaining seven knowledge questions there is a clear difference showing a higher level of knowledge of CPR survival outcomes in the number of correct answers by doctors in comparison to nurses. More doctors answered correctly in each instance. However, in many of the knowledge questions accuracy was low for both professional groups. The difference in the percentage of correct answers to the knowledge questions between the two professional groups is outlined in Figure 2.

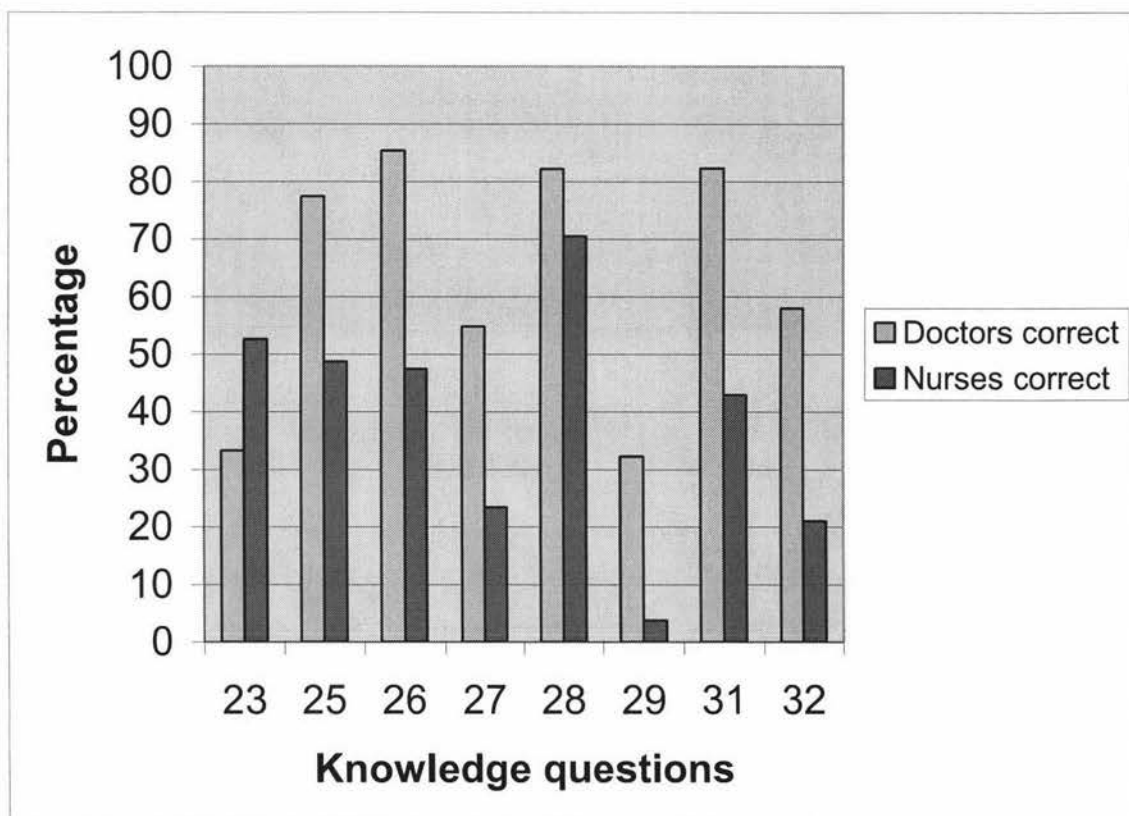


Figure 2: Comparison between doctors’ and nurses’ knowledge of CPR survival rates

The highest percentage of correct answers in the knowledge questions was in relation to Question 28 which concerned CPR outcomes being dependent on underlying medical conditions. Accuracy was also high in Question 26 which related to whether the initial cardiac rhythm being VF was likely to be more successful than asystole at a cardiac arrest, and Question 25 regarding the success of CPR in acute MI being higher than in chronic conditions than for other knowledge questions. The lowest level of accuracy shown by health professionals was in Question 29 which concerned long term survival following CPR. Health professionals’ accuracy about CPR survival to discharge in

Question 32 was also low. So there was a large contrast of health professionals' knowledge about CPR as demonstrated in Figure 2. Knowledge of CPR survival outcomes was notably different between doctors and nurses. A *t*-test was performed to see if there was a difference in the mean knowledge between consultants and more junior medical staff. To see if knowledge was associated with experience the average score of consultants was compared with more junior medical staff and there was found to be no difference.

Uncertainty

The high levels of uncertainty expressed by the health professionals involved in the study is worthy of note. Levels of uncertain responses ranged from just under 20% in one question regarding outcomes of CPR being dependent on underlying medical diseases (Question 28), to above 50% in another about one year survival outcomes (Question 29). In all eight of the knowledge questions there are high levels of uncertain responses, with over 30% of respondents being uncertain in half of the eight knowledge questions. These knowledge questions were related to both survival predictors and outcomes of CPR. The level of uncertainty in the eight knowledge questions compared to levels of correct and incorrect responses is presented in Figure 3.

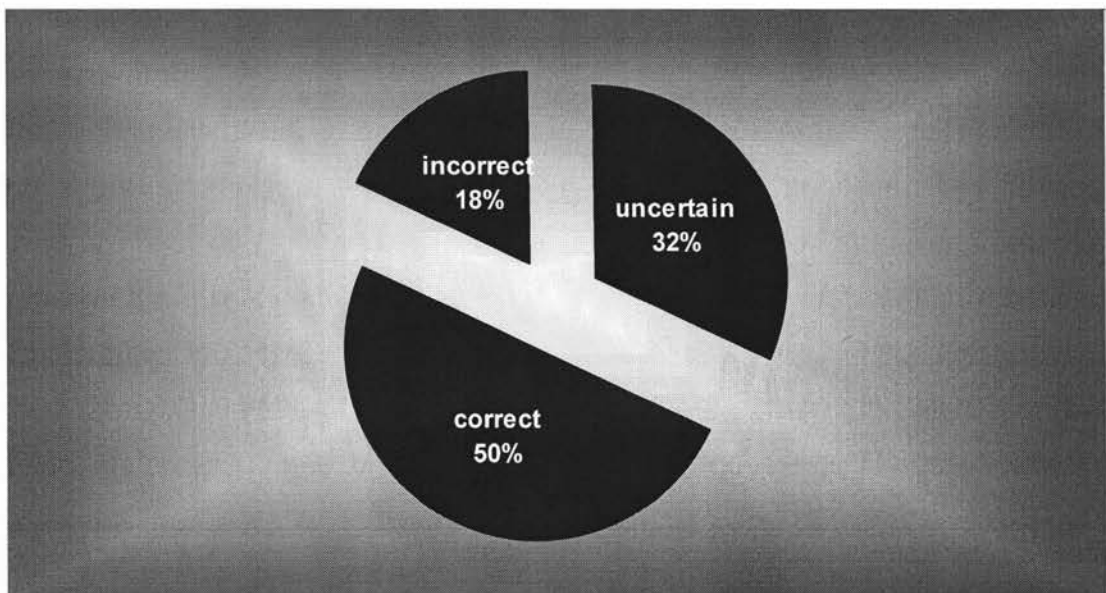


Figure 3: The comparison of uncertain and incorrect knowledge answers to correct knowledge answers amongst doctors and nurses

Age and CPR

With respect to the suggestion that patients over 70 years old have a poor quality of life following CPR, similar numbers of doctors (41.9%) and nurses (39.7%) disagreed. Once again there were high levels of uncertain responses (40%). Never-the-less, the majority of doctors (73%) and nurses (68%) did not agree that CPR should not be used on patients over 80 years old.

Discussion with Patients about Resuscitation

It is widely acknowledged that discussion about CPR is often difficult and that each situation can be different. The attitude and knowledge section of the questionnaire included questions related to discussion regarding resuscitation in order to determine doctors' and nurses' attitudes towards these. Only 18.1% of doctors and nurses in the study acknowledged that they feel uncomfortable discussing resuscitation which was surprising; however, few doctors (20.9%) felt that resuscitation should be discussed with all patients on admission. Half of the doctors agreed that resuscitation should only be discussed with patients who were seriously ill or at risk of cardiac arrest. More nurses than doctors felt that resuscitation should be discussed with all patients on admission. A chi-square analysis revealed this difference to be significant, as outlined in Table 12. Interestingly almost half the respondents in the study agreed that they would like to discuss CPR issues with patients more often.

More nurses than doctors agreed that most patients want to be included in NFR decision-making. Uncertain responses in relation to this question were above 20% for both groups. A chi-square analysis found that a significantly greater number of nurses than doctors felt that patients want to be included in NFR decision-making. Many doctors and nurses (41.9% and 39.7% respectively) indicated that they believed talking about CPR is upsetting to patients. Eighty three percent of all health professionals agreed that relatives should not be included in the decision-making regarding resuscitation. Responses to the discussion of resuscitation are outlined in Table 12 on the following page.

Table 12: Doctors' and Nurses' attitudes towards discussion with patients about resuscitation expressed in percentages (Ns = 139-141)

Question	Prof Gp	Agree	Disagree	Uncertain	χ^2
Q5 I think CPR should be discussed with all patients on admission.	D N	20.9 47.4	67.7 34.6	11.3 17.9	15.49***
Q6 I feel resus issues should only be discussed with pts who are seriously ill or at risk of cardiac arrest.	D N	56.5 39.2	33.9 50.6	9.6 10.1	ns
Q7 I feel uncomfortable discussing resus issues with patients.	D N	19.7 16.9	72.1 66.2	8.1 16.9	ns
Q10 I would like to discuss CPR issues with patients more often.	D N	39.3 52.6	34.4 26.3	26.2 21.0	ns
Q13 Relatives should not be involved in decision-making in whether to resus a pt or not.	D N	79.0 85.9	4.8 6.4	16.1 7.7	ns
Q21 Talking about CPR is upsetting to patients.	D N	41.9 39.7	35.4 25.6	25.6 34.7	ns
Q24 Most patients want to be included in NFR decision-making.	D N	54.8 74.3	16.1 5.1	29.0 20.5	7.22*

***p < .001 **p < .01 *p < .05, ns - not significant

NFR orders

To consider the issues surrounding NFR orders a chi-square analyses were performed. As shown over the page in Table 13, a significantly greater number of doctors than nurses would override an NFR order. Never-the-less, over 20% of doctors remained uncertain. A chi-square analysis found the difference between the number of doctors prepared to override an NFR order in comparison to nurses to be significant. Two thirds of health professionals maintained that decisions regarding NFR orders should be multidisciplinary.

More than half of all health professionals agreed that the NFR order should be used more often, with the majority of health professionals agreeing that CPR can cause more suffering. Surprisingly, a large percentage of nurses were in favour of offering CPR to terminally ill patients. Significantly more nurses were in favour of offering CPR to the terminally ill than doctors. In regards to CPR being offered in a hospice, doctors again were less likely to offer CPR, whereas an equal number of nurses agreed as disagreed with offering CPR in a hospice.

Uncertain responses remained high in both questions regarding NFR orders as outlined in Table 13.

Table 13: Doctors' and nurses' attitudes towards resuscitation and NFR orders expressed in percentages (Ns = 139-141)

Questions	Prof Gp	Agree	Disagree	Uncertain	χ^2
Q3 CPR should be attempted under all circumstances.	D	3.3	95.1	1.6	ns
	N	26.9	60.3	12.8	
Q4 I would never override an NFR order.	D	49.2	24.5	26.2	9.55**
	N	74.4	14.1	11.5	
Q8. Terminally ill patients should not be offered CPR.	D	58.1	11.3	30.6	19.7***
	N	17.9	61.5	20.5	
Q9 The NFR order should be used more often.	D	58.1	11.3	30.6	ns
	N	60.3	17.9	21.8	
Q11 Only medical staff should decide whether to continue resuscitation or not in a cardiac arrest.	D	59.7	25.8	14.5	ns
	N	35.5	53.2	11.4	
Q12 CPR should not be performed in a hospice	D	52.5	22.9	24.6	ns
	N	37.2	38.5	24.3	

***p < .001 **p < .01 *p < .05 ns -not significant

Logistic Regression

The questionnaire for this study consisted of three different sections. In Section A, three vignettes were portrayed which simulated CPR events. Section B comprised 33 knowledge and attitude questions, and Section C contained demographic variables. Logistic regression analysis was used to see whether the decision to initiate resuscitation in each of the vignettes could be predicted by attitude, knowledge and demographic variables. Questions which were considered relevant to specific characteristics of the vignettes, plus certain demographic variables such as religiosity, professional group, age, CPR experience and sex were included.

Case A outlined a case which contained a set of characteristics including advanced age and chronic illness. Related questions from the questionnaire were then selected and tested in a logistic regression model to see if the model could classify respondents as answering 'yes' or 'no' to the CPR initiation question.

A logistic regression analysis found five variables to be significantly associated with the initial decision about resuscitating the person described in Case A. With respect to the demographic variables, the results presented in Table 14 suggest that nurses were 84% more likely to opt for resuscitation (do not resuscitate was coded as 1), and every one year increase in age was associated with a 13% increase in the likelihood of saying do not resuscitate. Three attitudinal statements were also included in the model; greater agreement with the ideas that “CPR should be attempted under all circumstances” and “CPR is worthwhile if there is a 25% chance of survival” was associated with an increase in likelihood to resuscitate (71% and 59% respectively) and stronger agreement with the statement that “CPR is more likely to be successful in acute MI than chronic conditions” was linked to a 118% increase in the chance of opting not to resuscitate the woman in Case A. The overall model was able to correctly classify 89.3% of the participants and explained between 40 and 58% of the variance.

Table 14: Logistic regression results for Case A

Independent Variable	B	Wald	Exp(B)	χ^2
Professional group (1)	-1.82	7.15**	0.16	61.17**
Age	0.12	12.78***	1.13	
CPR should be attempted under all circumstances	- 1.23	6.53*	0.29	
CPR is worthwhile if patient has 25% chance of survival to discharge	- 0.89	4.81*	0.41	
CPR is more likely to be successful in acute myocardial infarction than in chronic conditions	0.78	3.94*	2.18	

* p < .05 ** p < .01 *** p < .001

Case B was excluded due to the overwhelming consensus in agreeing to initiate CPR by all respondents in this case of a young heart attack patient who suffers a cardiac arrest.

Case C described a young person with a terminal illness who was suffering pain. A logistic regression analysis of potentially related variables found only two to be significantly associated with the initial resuscitation decision, both of which were attitudinal. As can be seen from Table 15, each increase in agreement with the statement that “terminally ill patients should not be offered CPR” was associated with a 90% increase in the likelihood of saying do not resuscitate. In addition, each step increase in agreement that “CPR must be performed unless there is an NFR order written” was associated with an increased likelihood of resuscitating the woman in Case C. The overall model which was significant as indicated by the chi-square statistic, was able to correctly classify 78.4% of participants, and explained between 24 and 34% of the variance.

Table 15: Logistic regression results for Case C

Independent Variable	B	Wald	Exp(B)	χ^2
Terminally ill patients should not be offered CPR	0.64	13.43***	1.90	36.80**
CPR must be performed unless there is an NFR order written	- 0.72	13.95***	0.49	

* p < .05 ** p < .01 *** p < .001

The relationship between the variables and the decision to initiate CPR will be explored in Chapter 7 along with the discussion concerning the other results of this study.

Chapter 7

Discussion

The aim of this study was to explore the attitudes and knowledge of medical and nursing staff towards cardiopulmonary resuscitation using a specifically developed questionnaire. The results of this study will be discussed in this chapter. The results will be discussed in relation to the findings of other studies and their relevance to clinical practice. The limitations of the research study will also be acknowledged and discussed in relation to sample size, context and the research tool. Recommendations for further studies and the implications of the results on clinical practice and education are also examined.

The research questions that are addressed in the ensuing discussion are:

- What are the attitudes of doctors and nurses towards their role in CPR, and is there a difference in perception of role between the different professional groups?
- Do doctors and nurses have knowledge about CPR survival outcomes, and, is there a difference between professional groups?
- What is the attitude of doctors and nurses towards end of life issues and 'Not for Resuscitation' (NFR) orders?
- Are there any significant demographic factors that influence these?
- Is there any relationship between attitudes towards role, knowledge and end of life issues to the decision-making in the vignettes?

The discussion will address the aim of the study which was to explore the attitudes and knowledge of medical and nursing staff towards CPR, in relationship to the research questions outlined above.

Vignettes

The attitudes and knowledge of the medical and nursing staff in the study were firstly explored in relation to the respondents' decision-making in the three vignettes (Case A, B and C). Each of the cases contained different hypothetical variables in simulated situations and the findings are discussed below.

In Case A the example used was an elderly woman of 80 and the age of the patient may have influenced decisions about CPR. In particular the age of this patient may have influenced the decisions of the high number of doctors who indicated that age alone is a factor in the successful outcome of CPR in the knowledge questions. Those doctors who indicated their agreement with this statement may not have initiated CPR based on the patient's age in this case. However such assumptions are erroneous as age alone as an outcome predictor does not appear to be supported in the literature (Bedell et al., 1983; Burns, et al., 1989; Kim et al., 2000; Varon & Fromm, 1996). Other independent variables that may have influenced decisions in this hypothetical situation included the presence of chronic underlying disease, pneumonia unresponsiveness to treatment, and being a nursing home resident.

The attitudes and decisions of the doctors and nurses who responded when asked to answer "yes" or "no" to the statement "I would initiate an arrest call and start CPR" may have been influenced by knowledge of poor survival outcomes in the presence of underlying co-morbidities. This means that doctors may be less likely than nurses to resuscitate this patient based on their higher knowledge of the survival outcomes of CPR in chronic illness (as reflected in their answers to the knowledge questions). The results of this study reflected this, with more doctors opting not to initiate CPR in this case.

Analysis of the results of questions in relation to the first vignette (Case A) is not however as simple as saying that nurses are more likely to have initiated CPR because their knowledge about CPR survival is lower. In fact a greater number of nurses indicated that age alone is not an indicator of CPR survival than their medical colleagues. Also, in all the vignettes nurses may have indicated that

they would initiate CPR because they are bound by hospital policy to resuscitate a patient unless there is an NFR order (Hospital NFR Policy, 2001).

The assumption that nurses were more likely to advocate the initiation of CPR as they are bound by institutional policy to do so is supported by the corresponding answers nurses gave to the questions regarding the initiation of CPR in the attitude and knowledge section of the questionnaire. In contrast doctors can apparently choose not to initiate CPR using the recognised concept of medical futility (Dangoor & Atkinson, 2001; Ebell, 1992; Faber-Langendoen, 1991; Young, 2001) which may explain why a higher percentage of doctors chose not to initiate CPR in this instance.

It was not surprising to find that consultants and nurses who had been qualified for longer were less likely to initiate CPR in this example. A large number of junior doctors opted to initiate CPR, even though they had similar knowledge about CPR survival than the more senior consultants. This supports some of the literature surrounding resuscitation (Mello & Jenkinson, 1998), and means that it is likely that the health professional's experience has an impact on decision-making in CPR. It should also be acknowledged that doctors are not present as often as nurses to find the patient in cardiac arrest, which means that they are less likely to be the initiators of CPR.

Overall the higher knowledge of doctors of CPR survival predictors may also explain why in Case A a slightly higher number of doctors initiated and continued CPR after ten minutes with a rhythm of VF rather than asystole. The literature acknowledges that success following CPR is influenced by the initial cardiac rhythm and time that has lapsed (NZRC, 2001). Nurses on the other hand continued CPR, seemingly irrespectively of the initial cardiac rhythm and had a corresponding drop off of CPR after ten minutes, again apparently unrelated to the cardiac rhythm. It is interesting to note that although three quarters of all the respondents agreed that CPR outcome is dependent on underlying medical conditions in the knowledge questions, three quarters of the respondents indicated that they would initiate CPR in Case A.

There was a high level of discomfort with decisions made in Case A. Nurses were more uncomfortable with their decision about the initiation of CPR than doctors. However, there remained a substantial proportion of doctors who did not feel comfortable with their decisions. Discomfort with decisions made in this case was not found to be related to the respondents' years qualified. Overall this study supports the fact that end of life issues continue to be difficult and uncomfortable for doctors and nurses.

It is also of note that a far greater number of respondents who initiated CPR in this case were uncomfortable with their decision, than those who chose not to initiate CPR. In fact only 3% of those who opted not to initiate CPR in this case felt uncomfortable with their decision. As a far higher proportion of nurses indicated that they were uncomfortable with their decision in Case A, and a far higher number of nurses initiated CPR, one can surmise that nurses may be put in situations in which there is an onus on them to provide what they consider to be inappropriate CPR, because of a lack of prior discussion and decision-making regarding CPR. It appears that in certain situations such as this example (Case A) most health professionals have an awareness that CPR may not be appropriate but many never-the-less feel bound for one reason or another to provide CPR; and subsequently feel uncomfortable with the decision they make.

In light of current literature the question is whether CPR should have been initiated in this situation. If CPR is a treatment, was it appropriate for it to be offered when survival is unlikely in the presence of chronic illness (Dangoor & Atkinson, 2001; Ghusen et al., 1997; Kerridge et al., 1998; Schneider et al., 1993)? What other variables may have influenced the decision to resuscitate in these cases? Logistic regression analysis was performed to see if any demographic variables were related to the decision-making.

Logistic regression analysis did reveal some interesting relationships in Case A. It was found that nurses were much more likely to resuscitate the patient, and in view of current hospital policy this finding is not surprising. The other demographic factor which influenced the decision to resuscitate was the

respondent being younger. In this instance lower age may be related to the person being less experienced (for example, in the case of registered nurses, meaning less than five years experience), and/or having less knowledge leading to higher survival expectations and therefore the decision to resuscitate.

Other factors influencing the decision to resuscitate were agreement with the statements "CPR should be attempted under all circumstances" and "CPR is worthwhile if the patient has a 25% chance of survival to discharge". Once again it appears that institutional policy dictates behaviour in the first instance, and in the second it appears that if the respondent believes that survival to discharge is a reasonable possibility they are likely to initiate CPR. Agreement to resuscitate in this instance may indicate a lack of knowledge of survival outcomes which leads to an overestimation of initial and longer term survival rates. Observation in practice that chronic illness reduces survival outcomes (for example, Ebell, 1992) may have influenced the respondents who agreed that "CPR is more likely to be successful in acute myocardial infarction than in chronic conditions" not to initiate CPR in this instance.

In Case B a young heart attack victim, who may have had a reaction to the treatment with thrombolytic therapy, the majority of health professionals in the study initiated and continued CPR no matter what cardiac rhythm. Even after ten minutes of asystole, most continued CPR. There was far more consensus in this case between doctors' and nurses' decision-making indicating that the age of the patient, or the knowledge of survival outcomes in acute MI in comparison to chronic illness, may have influenced decision-making in this case. According to the literature, CPR (which includes rapid defibrillation) may be seen as a treatment for cardiac rhythm complications in response to an MI (NZRC, 2001). This seems likely to influence health professionals to continue resuscitation for longer in such circumstances. Respondents were also far more comfortable with their decision-making in this case with 77% of health professionals expressing comfort with their decision.

The final case concerned the young woman with metastatic cancer. In this instance over half of the health professionals initiated CPR and continued no

matter which cardiac rhythm. After ten minutes, regardless of the cardiac rhythm, over 35% of health professionals continued CPR, seemingly unaware that the chance of survival for patients with metastatic cancer following CPR are remote (Faber-Langendoen, 1991). Once again the age of the patient may have been a factor which influenced initiation and continuation of CPR under all circumstances in this case. A noticeably higher proportion of nurses than doctors indicated they would initiate and continue CPR in this instance. Thirty eight percent of health professionals did not feel comfortable with the decisions they made and again more nurses felt uncomfortable with their decision. This is a difficult example due to the age of the patient, and it is likely that in a real situation, discussion and decision-making regarding CPR may have occurred prior to an arrest situation. One study indicated that in an oncology area there tends to be a higher number of NFR orders written, which supports this interpretation (Maksoud et al., 1993). Never-the-less, the differences in the decisions made in this case, and the levels of discomfort reported in relation to those decisions highlight the need for discussion and written NFR orders where appropriate. Again nurses who had been qualified for longer were less likely to initiate CPR in this final case than those who were more junior. This supports the notion that job experience may impact on resuscitation decisions for nurses.

As found in Case A, there were a significantly higher proportion of health professionals who indicated that they felt uncomfortable with the decision to initiate CPR in comparison to those who opted not to initiate CPR. Again a higher proportion of nurses were uncomfortable with their decisions, (unrelated to age) and this finding supports the earlier suggestion that nurses may feel obligated to provide futile CPR under institutional policy. Discomfort with decisions made by health professionals may also be motivated by a lack of knowledge of survival predictors and outcomes on which to base decisions at a cardiac arrest.

Logistic regression analysis found that those respondents who agreed with the statement that "CPR must be performed unless there is an NFR order written" were twice as likely to initiate CPR in the final in Case C. In response to this statement 82% of nurses agreed which further supports the theory that there is

an onus placed on nurses to provide CPR which may not be appropriate. However there was a strong relationship between health professionals agreeing with the statement that “terminally ill patients should not be offered CPR” and not initiating CPR in this case. A higher proportion of doctors agreed with this statement, although there were a significant proportion of the sample group who were uncertain.

It appears that a strong belief in adherence to institutional policy may at times override professional judgement. These three cases gave a small example of decision-making in CPR but due to the limited sample size and response (n = 131-137) further larger studies would be required to demonstrate statistical significance.

Health professionals who are aware of the low chance of survival based on the research about underlying co-morbidities and sepsis (Kerridge, et al., 1998,1999; Marik & Craft, 1997; Thorns & Ellershaw, 1999; van Walraven, et al., 1999; Wagg et al., 1995) would be more likely to initiate discussion with the patient outlining prognosis and explaining the invasive nature of CPR in the first and last cases. An NFR order may have been appropriate in these examples in the event of a cardiac arrest, and discussion between the patient and health care team would have allowed for informed decision-making.

Confidence, Competence and Experience in CPR

In the results of this study it was shown that the vast majority of questionnaire respondents have observed, participated in, and performed CPR. However, the amount of experience in performing CPR differs greatly between doctors and nurses. Most nurses in the study lacked CPR experience with few having performed CPR more than ten times. Unless nurses are working in a highly specialised area such as an Intensive Care Unit (ICU), Coronary Care Unit (CCU) or the Emergency Department (ED) where a high proportion of cardiac arrests occur (Hospital Cardiac Arrest Audit, 2002) it seems unlikely that they will gain experience by regularly performing CPR. A higher number of doctors in the study maintained that they were confident in making decisions during a cardiac arrest, and demonstrated that they felt comfortable with the decisions

they made in the vignettes. This may be related to their greater experience in performing CPR. However there remains a proportion of health professionals (particularly nurses) who remain uncomfortable with the decisions they are required to make at a cardiac arrest. It would be valuable to further explore the reasons for this discomfort more in future studies.

Three quarters of doctors and nurses indicated that they felt competently trained in CPR. This was very surprising as at the time of the study very little CPR training was being offered except in specialised areas, other than the annual core skills programme which was not included. The reason for that being that core skills was more of a basic assessment and included minimal CPR training. There were very few respondents who indicated that they had attended any other recent CPR education which made it more surprising that they felt competently trained. However when asked about competence in performing CPR approximately half the respondents indicated that they did not feel competent. Perhaps this was due to a lack of experience of cardiac arrest, particularly for nurses. It may also be that while they feel that their education and training was adequate, this was not translated into feelings of competence in relation to an actual CPR situation.

It was interesting to note that more nurses than doctors considered themselves to be very competent at performing CPR, however this result is difficult to interpret. One possible interpretation is that some nurses may feel more competent to undertake a more limited range of decisions than may be expected of doctors. For others confidence may have been related to the area they worked in as working in a specialised area (ICU, CCU, ED) may have exposed them regularly to cardiac arrests (Hospital Cardiac Arrest Audit, 2002). Unfortunately it was difficult to isolate primary area of work due to a large percentage of health professionals indicating that they worked in multiple areas. Further larger studies exploring relationships between CPR decision-making, knowledge, attitudes, primary area of work, and other relevant demographics would be valuable to research, as for example, the study of Maksoud, et al., (1993) indicated that the area in which the health professional worked was

directly related to the frequency of NFR orders placed, regardless of the patient's underlying condition.

Roles of Doctors and Nurses and Decision-making in CPR

Decision-making is an integral part of performing CPR at a cardiac arrest, and the role the doctor or nurse has, or perceives that they have, is an important part of cardiac arrest management. Roles within a hospital environment do differ at a cardiac arrest (Bristol Royal Infirmary Inquiry, 2000; Hospital NFR Policy, 2001). Due to the nature of their job nurses are often the first on the scene, and are directed by hospital policy to initiate CPR unless there is an NFR order. In contrast doctors, who may be present less often at the time of a cardiac arrest do have the autonomy to decide not to initiate, or to discontinue CPR when it is pointless (Dangoor & Atkinson, 2001; Ebell, 1992). Ideally, decisions should be made as a team prior to a cardiac arrest, but this does not always occur. Therefore perception of role in CPR decision-making is important.

One of the aims of the study was to assess the attitudes of doctors and nurses towards their role in CPR, and to determine whether there was a difference in perceptions between the professional groups. Although the doctors and nurses in the study generally viewed decision-making in CPR as a part of their role, they considered their roles in CPR to be different. Most doctors in the study considered decision-making regarding the initiation of CPR, and during CPR, to be their role. In contrast, many nurses more often viewed decision-making regarding CPR initiation only to be part of their role. Almost half of the nurses did not agree that decision-making during CPR was a part of their role. However, the decision-making choices of nurses in relation to the initiation of CPR seems limited by hospital policy. Thus it was not surprising that although most nurses consider initiation of CPR to be a part of their role most also indicated that they would initiate CPR unless there was an NFR order. This concurs with some of the current literature, which found that nurses and doctors do not necessarily think differently about important issues such as resuscitation, but have different views about what their role is. These differences are related to their work environment (Bristol Royal Infirmary Inquiry, 2000; Oberle & Hughes, 2001).

The environment in which the doctor and nurse work at least to some extent regulates their practice. In the hospital in which this study was conducted hospital policy dictates that a patient receives CPR unless there is an NFR order (Hospital NFR Policy, 2001). It is widely recognised that doctors can choose not to initiate CPR or to discontinue it based on the medically recognised concept of 'futility', whereas nurses do not have the same autonomy in their practice (Bristol Royal Infirmary Inquiry, 2002; Oberle & Hughes, 2001).

The results of this study support this observation since nurses were less likely to define decision-making during CPR as part of their role and were less likely to override an NFR order. Although they indicated that decisions regarding the initiation of CPR were part of their role this may largely reflect the fact that they are more likely than doctors to be 'first on the scene' at an arrest, and their decision-making is clearly highly confined by the hospital NFR Policy. Some nurses in the study did indicate that decision-making during CPR was part of their role; and it was disturbing to find that a small number of doctors did not consider such decision-making in CPR to be a part of their role. It would be interesting to determine whether these findings were related to the area of work, but this could not be determined because primary areas of work were not well defined in this study. There were never-the-less some interesting inconsistencies.

When it came to deciding when to discontinue CPR at a cardiac arrest only half the doctors agreed that they should be the only team members to decide. The difficulty for medical staff in making decisions in CPR is identified in the literature (Dangoor, et al., 2001; Oberle & Hughes, 2001) and discontinuing CPR as a team decision is recommended.

It was interesting that on two of the returned questionnaires the respondents (both nurses) had written on the vignettes "*Decision-making is not part of my job*", but had then had gone on to agree that "*...decision-making is a part of my job*", in the attitude and knowledge questions in Section Two. It is argued then that there remains some role overlap which may be creating some confusion amongst the doctors and nurses in this study in regards to their roles in CPR

decision-making. This was particularly evident amongst nurses, and may be related to specialist nurses having more knowledge and experience than the junior doctor. In this case the nurse may consider their role in CPR to be quite different to that of a junior nurse.

The difficulty in decision-making in relation to resuscitation may be related to knowledge, particularly a lack of knowledge of CPR survival outcomes. A lack of knowledge of CPR survival statistics is well documented in the literature surrounding resuscitation (Dangoor & Atkinson, 2001; Kerridge et al., 1999; Marik & Craft, 1997; Thorns & Ellershaw, 1999; Von Gunten, 1991; Wagg et al., 1993). Knowledge or the impact of a lack of knowledge about survival following CPR is the next issue to be discussed.

Knowledge about CPR

This study revealed some interesting attitudes towards CPR, but exposed a general lack of knowledge amongst the sample of health professionals of survival predictors and outcomes following CPR. Eight core knowledge questions about survival predictors and outcomes based on the literature were used to assess the knowledge of doctors and nurses in the study. The difference between the doctors' and nurses' knowledge was found to be significant, with doctors being more knowledgeable on average than nurses. There was however, a general lack of knowledge of CPR survival outcomes, and also a high level of uncertainty amongst both professions. These findings indicate that there may be a pattern of unrealistic expectations of doctors and nurses regarding CPR outcomes, and this corresponds with the literature (Kerridge et al., 1998; Kerridge, et al., 1999; Mello & Jenkinson, 1998; Miller et al., 1992; Roberts, Hirschman & Scheltema, 2000; Thorns & Elleshaw, 1999; Wagg et al., 1993).

Currently the onus is generally on doctors to make decisions about the initiation and continuation of CPR. Surely, it is vital that they are aware of up to date research based survival outcomes and predictors of CPR, in order to make appropriate decisions about when to resuscitate, and with whom to discuss resuscitation? Experienced specialist nurses are often put in situations where

they may need to guide doctors' decision-making, and therefore it is equally as important that nurses have the knowledge of survival outcomes.

All health professionals need to be aware of survival outcomes following CPR, as they may be involved in discussion and decision-making regarding NFR orders. Seventy three percent of health professionals in the study indicated that there should be multidisciplinary input into decision-making regarding NFR orders. Nurses, who tend to spend more time with the patient, may be asked questions about resuscitation by the patient. It is imperative that patients are given the correct information on which to base their decisions regarding resuscitation.

Having knowledge of the importance of particular survival indicators at a cardiac arrest such as whether the arrest was witnessed and initial cardiac rhythm, and predictors of likely outcome of CPR such as the presence of other co-morbidities (metastatic cancer, renal failure) based on the latest research may also be the key to communication when it comes to discussion and decision-making with patients. Well informed doctors and nurses can influence patients in their choice for CPR and prevent an invasive, futile procedure (Kerridge et al., 1999).

Age and CPR

In this study, knowledge about the relationship between patient age and CPR outcome was also found to be limited and inconsistent amongst doctors and nurses. In the attitude and knowledge questions doctors and nurses maintained that CPR should be used on patients over 80 years old. This view may have been related to the fact that under the New Zealand Human Rights Act 1990, age cannot be used as the basis for discrimination (Hospital Legislative Compliance Handbook, 1995). However, a large proportion of doctors went on to agree that age alone impacts on survival which the literature generally disputes (Kim et al., 2000; Varon & Fromm, 1996). Although there does remain some inconsistency in the literature regarding the impact of age, with one study indicating that CPR on those over 70 years may impact on long term survival and functional status (de Vos, de Haes, Koster & de Haan, 1999), it is of

concern that some doctors may indeed use age alone as a basis for CPR decision-making. Once again a great many doctors and nurses remained uncertain regarding the effect of age on survival. This supports the assumption that a high proportion of medical and nursing staff in the study are unaware of age related CPR outcomes.

Discussion about Resuscitation and NFR Orders

Surprisingly three quarters of doctors and nurses in this study did not indicate that they felt uncomfortable discussing resuscitation issues with patients, which contrasts with the literature addressing CPR issues (Morrison, Morrison & Glickman, 1994; Stoleman, et al., 1990; Taylor et al., 1996). In future studies it would be of value to ask respondents more questions regarding this important area, such as how often do they discuss resuscitation with their patients, and in what context.

One previous study stated that nurses felt more strongly about the importance of discussing resuscitation issues, and this may be due to their close relationship to the patient, and their having close contact with distressed relatives (Kerridge et al., 1998; Morgan et al., 1994; Oberle and Hughes, 2001). The present study discovered a similar pattern, although doctors also indicated that they would like to discuss resuscitation more often with patients, which supports other literature (Hofmann, Wenger, et al., 1997).

Over half of the nurses and doctors in the study agreed that the NFR order should be used more often. One reason that it is not used as often as health professionals may wish could be that discussion with patients is more difficult than the doctors and nurses in the study acknowledged. Doctors and nurses may be aware that in many cases discussion with patients regarding resuscitation should occur but is difficult and can be time consuming. This assumption is further supported by the overwhelming opposition of doctors and nurses in this study to the inclusion of relatives in decision-making in CPR in the attitude question, (Question 13). Most complaints by patients or relatives regarding resuscitation issues are related to poor communication, or lack of communication from health professionals (Annual Report of Government of

Victoria, Australia, 2000). This lack of communication about resuscitation issues is likely to compound their unrealistic expectations (often gained from television) of CPR. Under these circumstances it is not surprising that unsuccessful CPR of their 'loved one' may lead to distress for those concerned.

It would be interesting to explore in greater depth current barriers that prevent health care professionals from discussing resuscitation with patients as often as they would wish. Many respondents indicated that they believed that talking to patients about resuscitation may be upsetting, and some of the literature maintains that that discussion of futile CPR would be cruel (Komesaroff, 1997); however, much of the literature does not support this as a legitimate barrier to such discussion (Watson et al., 1997; Williams, 1993). One study found that the greatest barrier for medical staff in discussing resuscitation with patients, was not knowing how to go about it (Morrison et al., 1994), and it would be interesting to explore this further. This certainly provides some insight into why NFR orders are often left until late when the patient is seriously ill, and unable to participate (Maksoud, et al., 1993).

Attempting CPR in situations when survival chances are slim, is likely to lead to moral distress for health professionals. This particularly concerns nurses, who are usually the one to find the patient in cardiac arrest and have the onus on them to initiate CPR under institutional policy. Another concern is that these situations lead to the use of a non aggressive form of resuscitation, or 'slow code' which is not recognised legally or ethically (Gazelle, 1998; Hardin, 1998).

Although this study did not find that doctors and nurses are uncomfortable discussing resuscitation, anecdotally one hears of situations that resuscitation is not discussed, or is discussed at an inappropriately late stage. Discomfort of health professionals may still be a barrier to actual communication, along with the belief that discussion is upsetting to patients. This may also shed some light on why discussion with patients does not always occur (Manias, 1998).

It is also of concern that a high number of respondents indicated that they are comfortable discussing resuscitation with patients, yet demonstrate limited

knowledge of CPR survival outcomes on which to base these discussions. Patients have a right to be provided with accurate information so that they can contribute to *'informed'* decision-making regarding whether CPR is appropriate for them or not.

The results regarding the doctors' and nurses' views as to which patients were the ones with whom CPR should be discussed were difficult to interpret. Doctors reported that they were less likely to discuss resuscitation with patients unless the person was seriously ill. This reluctance to discuss resuscitation supports the study by Morrison et al., 1994 in which it was found that doctors' beliefs that discussion was unnecessary unless patients were seriously ill, coupled with their lack of knowledge about directives in resuscitation was a huge barrier to discussion occurring.

In this study nurses were more likely to support resuscitation being discussed with all patients as well as being more open to CPR being undertaken with patients who have terminal conditions. On the other hand over 50% of medical staff would not offer CPR in a hospice and this may be due to a lack of awareness on their part of the widening function of the hospice service. The attitudes of medical and nursing staff towards the changing role of the hospice service from a primary focus on being terminal care to short and longer term symptom management is important in patient management, along with the realisation that a blanket rule of no-CPR in these contexts may not be appropriate (Thorns & Elleshaw, 1999).

It should be acknowledged, as it is in much of the literature related to resuscitation, that end of life issues and the placing of NFR orders is complex and can be a sensitive issue; however, as previously noted the most frequent complaint about health care providers when dealing with resuscitation is poor communication (Victorian Government Department of Human Services, 2001). Some of the literature also maintains that CPR should not necessarily be discussed with all patients, for example; the young, healthy individual in whom cardiac arrest is unlikely and there is no doubt that CPR would be given in a cardiac arrest. Also in cases when CPR would be of no benefit such as in

metastatic cancer (Ebrahim, 2000; Faber-Langendoen, 1991; Joint Statement from the British Medical Association, the Resuscitation Council (UK) and the Royal College of Nursing; Royal United Hospital (NHS) Trust, 1998; Joint Statement from the British Medical Association, the Resuscitation Council (UK) and the Royal College of Nursing; Royal United Hospital (NHS) Trust, 2001).

The biggest barrier to discussion of resuscitation found in the study by Morrison et al., (1994) was the physician's belief that discussion of resuscitation issues was not appropriate in young healthy patients, coupled with a lack of knowledge about how to approach the subject with patients. This study is supported by the finding in this study that doctors feel that resuscitation should only be discussed with seriously ill patients.

It has become increasingly evident that there are many patients who do not benefit from CPR, and the duty of health professionals is to enable patients to make informed decisions. The literature generally supports discussion with patients and acknowledges that most patients wish to be a part of the decision-making process (Joint Statement from the British Medical Association, the Resuscitation Council (UK) and the Royal College of Nursing, 2001). However, this is not always possible or appropriate, and health professionals need to be aware of survival predictors and outcomes in order to decide for whom is appropriate to have an NFR order, and whether discussion is suitable. Until there is more open discussion of resuscitation issues, whether CPR is discussed as 'a given' in the young and healthy in the unlikely event of a cardiac arrest, there will continue to be a lack of discussion and decision-making in appropriate patients.

The majority of both doctors and nurses in the study (over 80%), acknowledged that CPR can prolong suffering, which explains why only a small proportion of respondents agreed that CPR should be attempted under all circumstances. Nurses were more likely to perform CPR according to hospital policy unless there is an NFR order documented which may be expected, since doctors have the professional freedom to make the decision not to initiate CPR (Dangoor & Atkinson, 2001; DiCenso et al., 2001;). Although it was thought that religious

beliefs of respondents in the study may influence the decision that everyone should receive CPR this was found not to be the case.

On the whole, nurses in the study stated that they would not override an NFR order possibly since normally NFR orders are made only after careful consideration, and the institutional policy prohibits nurses from overriding such decisions. In the light of the policy it may seem surprisingly that some nurses indicated that they would override an 'NFR' order. However, it may be that expert nurses would follow the written NFR order if a doctor was present to confirm this decision, but in an emergency situation when a doctor may not be available immediately, may choose to override it if the nurse is aware that the patient's condition has changed.

Half of the doctors in this study stated that they would override an NFR order. Mello and Jenkinson's study (1998) also found that physicians would override an NFR order and this was related to a change in the patient's condition for the better before the NFR order has been rescinded. Another example was if the physician felt the patient's cardiac arrest was secondary to an acute episode which could be rectified. This might be for example an electrolyte imbalance leading to VT. It would be interesting to investigate further those factors which would influence health professionals to override an NFR order.

In light of the finding that some health professionals would override NFR orders it is interesting to note that many doctors and some nurses felt that the NFR order should be used more often. It would be worth repeating the survey now, as the institution's NFR policy has been in use longer and is more widely acknowledged in the study setting. Anecdotally, it appears that now NFR orders are being documented more often.

Discussion and decision-making in determining NFR orders can be difficult and complex. Having better knowledge of likely outcomes following cardiac arrest would enable health professionals to make well-founded decisions regarding the suitability of patients to be offered the treatment of CPR. Nurses and doctors in the study advocated multidisciplinary input when discussing and

deciding on NFR orders. Guidelines and education on CPR outcomes and how to communicate with patients regarding CPR would also benefit those involved.

Limitations of the Study

There are a number of limitations to this study which must be acknowledged in order to be able to correctly appraise the results. The first limitation of this study was the return rate of questionnaires. Questionnaires were randomly sent out to 600 health professionals, 400 nurses and 200 doctors. The overall return rate was 24%. There was a 31% return rate by doctors and 21% return rate by nurses. The return rate, in part would have been due to the confusion when initial questionnaires were sent out to people twice as the random selection chose individuals on the basis of area of work, however some health professionals were working in many areas and got selected more than once. Some questionnaires did not reach the intended individual due to recanting of wards while renovations were being carried out. While the relatively low return does limit the extent to which results can be generalised, the findings do provide an important indication of knowledge and attitudes within this institution, and may inform policy in relation to CPR practice.

A second limitation to the study was related to the research questionnaire (a tool specifically developed by the researcher) content which contained the term 'cardiopulmonary resuscitation' which may have been ambiguous. Some participants assumed that this excluded defibrillation and this may have affected their responses. During the pilot study amongst a small group of colleagues this problem with terminology was not evident; however in the returned questionnaires there was some indication of differing perceptions. The use of a wider concept such as resuscitation instead of using the term cardiopulmonary resuscitation, and detailing what this included (such as defibrillation) may have prevented confusion.

In addition, in Part One, Case B of the questionnaire the explanation of a cardiac arrest in a MI patient did not mention that he was in cardiac arrest. As it is possible to have a pulse in VT, and not be in cardiac arrest, this may have

been confusing to some respondents. However, as a hundred percent of doctors indicated that they would have initiated CPR as did a similarly high number of nurses, it does not appear to have been misinterpreted.

Furthermore, this research study was carried out in a tertiary hospital in a provincial city and therefore cannot be directly generalised to other New Zealand hospitals. Further studies would need to be carried out in other hospitals in order to be able to generalise the findings to a larger population. Never-the-less, findings of this study may provide some direction in policy development in other institutions.

Finally, as the 'Not for Resuscitation' (NFR) policy of the institution was newly developed at the time of the research study and not as widely utilised as it is now, the influence of this variable on knowledge levels may have been limited. However, the data accumulated will provide base level data to compare in the future. A survey in eighteen months' time may see improvement in the knowledge of the NFR policy, and of CPR survival statistics.

Future Directions: Recommendations for Practice

The results of this study show patterns of findings which point to specific recommendations that may help in improving both knowledge of CPR survival outcomes and roles of doctors and nurses in CPR. Ultimately these may impact on decision-making and discussion of resuscitation issues.

In general the findings in this study concur with the literature describing attitudes and knowledge of health professionals in regard to resuscitation, although many of the studies (Dangoor & Atkinson, 2001; Mello & Jenkinson, 1998; Uhlmann, Pearlman and Cain, 1998; von Gunten, 1991) were small and were not carried out in a New Zealand context.

It became apparent during the study that some health professionals experienced difficulty in their decision-making in CPR, particularly in cases where CPR may be seen as inappropriate. Institutional policy places an onus on health professionals to initiate CPR unless there is an NFR order; however in

certain situations this appears to lead to discomfort and possibly moral distress. The problem with decision-making for health professionals is compounded by an apparently common knowledge deficiency in relation to understanding of the factors that are related to survival following a cardiac arrest. This is leading to unrealistic expectations of survival outcomes and may well impact on decision-making and discussion about CPR by these health professionals.

Although health professionals in the study do not acknowledge having difficulty discussing resuscitation with patients, it is likely that discussion only occurs at a late stage when a patient is seriously ill and death expected. Increased knowledge of survival outcomes following cardiac arrest would make discussion about resuscitation less difficult. Education and guidelines outlining ways of communicating about CPR, and multidisciplinary team input into discussions and decision-making with patients would also be useful.

It is time that resuscitation became a focus of discussion rather than the onus being primarily on NFR orders. For example, talking about resuscitation on admission could become standard practice, even for those such as the young and healthy who would obviously receive CPR in the unlikely event of a complication causing cardiac arrest. Until resuscitation issues are discussed with those patients who do not need it, it is unlikely to be dealt with properly for those that do. Clarifying resuscitation would demystify CPR which is significant in health care, both now and in the future. There is likely to be more emphasis on managing the increasingly limited health resources, and increasing demand on service provision, particularly with a steadily growing elderly population making this issue a priority. It is likely that at some stage in all our lives we will be required to deal with end of life issues, either for ourselves or our relatives. It is important that doctors and nurses who initiate discussion, and influence decision-making around these end of life issues, are fully informed of the factors that may influence the process and outcome of cardiopulmonary resuscitation.

This study has implications for the future education and training of doctors and nurses in resuscitation, including the need to provide clear support for further education of health professionals about survival predictors and outcomes so

that they can make informed decisions about CPR, and provide relevant information to patients and relatives. Further development of communication skills in relation to this area is clearly indicated. After all, death is an inevitable part of life, and it is time that we started acknowledging this, and started talking more freely about it in order to deal with the issues surrounding it (Victorian Government Department of Human Services, 2001).

If CPR is a treatment which is inappropriate when of no benefit to the patient, then doctors and nurses are required to know which patients are not suitable to have it. Guidelines which are updated regularly and ongoing education on how to implement these guidelines should become part of hospital orientation and continuing CPR education of both nurses and doctors, within the hospital environment.

Further New Zealand studies with a larger sample group, which would be able to isolate individual influencing factors and be generalised to other similar hospitals nationally is also recommended. Such studies would benefit future planning of resuscitation as a part of our health care services.

The main recommendations for clinical practice are therefore summarised as follows:

- Promotion of, and education about, resuscitation policies. This should include current research-based education about CPR survival predictors and outcomes.
- Education including communication skills training and guidelines outlining how to discuss resuscitation issues with patients and relatives.
- Multidisciplinary CPR education and training to promote role clarification and enhance a team approach to resuscitation issues.
- Multidisciplinary team input into discussion with patients regarding resuscitation and NFR orders.

- Debriefing following cardiac arrests with appropriate support networks in place to avoid moral distress of doctors and nurses dealing with resuscitation issues.

Further Research

The results from this assessment of the attitudes to and knowledge of a small sample of New Zealand doctors and nurses in relation to CPR emphasised areas in which further research would be beneficial. Further larger New Zealand studies assessing factors that influence such attitudes and knowledge would be valuable.

As previously discussed due to the sample size the influence of the area of work of health professionals could not be isolated and therefore any impact that this may have on attitude and knowledge of CPR could not be measured. It could be surmised that doctors and nurses who work in specialised areas such as an Intensive Care Unit, Coronary Care Unit, Neonatal Unit or Emergency Department may have more exposure to cardiac arrests and consequently more knowledge about CPR and its outcomes. There are other demographic factors which may have also impacted on the attitude and knowledge of the respondents such as ethnicity and religious inclination. These invite further research.

It became evident in this study that there is a need for education and guidelines about resuscitation issues including discussion with patients. Further studies to evaluate the impact of such guidelines and education about resuscitation on attitude and knowledge of doctors and nurses in New Zealand would be valuable for future planning of CPR education and training.

Conclusion

This study set out to explore the attitudes and knowledge of doctors and nurses towards CPR, and came about as a result of my years of working in a critical care area where I observed first hand the dilemmas that doctors and nurses face on an almost daily basis when dealing with resuscitation issues. This aim

for the study has been broadly met as evidenced in the results that have been discussed in previous sections. It is hoped that the results and subsequent discussion have helped to highlight areas that could be improved in relation to resuscitation policy and practice, and that this may lead to increased education and training in CPR, and more discussion and decision-making prior to cardiac arrest.

This study has demonstrated patterns indicating a lack of knowledge about CPR survival rates amongst the respondents which may impact on discussion about resuscitation with patients, and decision-making in CPR. This study has also highlighted some dilemmas in the initiation of and decision-making during CPR amongst the doctors and nurses in the study. Although some of the results were somewhat contradictory, it also seems likely that health professionals continue to find difficulty in discussing resuscitation issues and further studies could explore this area.

Subsequent to the gathering of data in this study, CPR training in the study setting has been reviewed. Advanced Cardiac Life Support Programmes following the New Zealand Resuscitation Council Guidelines (NZRC, 2001) have been developed and are being implemented, facilitated by a resuscitation training officer and provided by a multidisciplinary group of Level 6-7 NZRC instructors. The next step indicated by the results of this study would be to provide educational sessions to doctors and nurses on CPR survival outcomes, and then implementation of strategies to ensure that the guidelines which have already been developed that do include information on how to discuss resuscitation with patients are promoted. These guidelines which have been developed as a part of the NFR Policy will assist staff with communicating about resuscitation issues with patients.

The effectiveness of education programmes should be evaluated at every stage. Hopefully once these education programmes have been established and implemented, evaluation will show an increase in the knowledge levels of staff and increased clarity of specific roles in CPR for all concerned. This may lead to

greater competence in CPR, and increased confidence and comfort in discussion and decision-making, which will ultimately benefit patients.

Resuscitation issues will always be of a complex nature and each situation will be different. Due to the increasingly aging population CPR issues will become more topical, particularly in light of our current health care environment which places an ever increasing demand on limited resources. The ongoing development of research based guidelines along with discussion and debate of resuscitation issues can only assist health care professionals and patients to deal with the difficult decision-making required. After all since we know that CPR is a treatment that in some instances is not only pointless, but can be invasive and painful, we should use it wisely paying due consideration to all who are involved.

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QUESTIONNAIRE ON CARDIOPULMONARY RESUSCITATION



Thanks to all those medical and nursing staff who have returned the questionnaires on CPR. Unfortunately the return rate has so far been low (23%).

It is not too late to fill out and return your questionnaire.

Any further returns would be greatly appreciated, and help to provide information to guide resuscitation practice in the future at [Institution name].

[Contact name and number].

QUESTIONNAIRE:
Attitudes Towards Cardiopulmonary Resuscitation
(Completing this questionnaire implies consent)

PART ONE

In this section you are presented with three small case vignettes which relate to situations surrounding cardiopulmonary resuscitation. **Please read each vignette and then answer each of the following six questions by ticking the box for yes or no.**

CASE A: An 80 year old woman from a nursing home is admitted with pneumonia and after 24 hours is not responding to treatment. She has a history of ischaemic heart disease and diabetes. You discover the patient unresponsive and pulseless.

- | | | | | | |
|--|--------------------------|-----|--|--------------------------|----|
| 1/ I would initiate an arrest call and start CPR | <input type="checkbox"/> | Yes | | <input type="checkbox"/> | No |
| 2/ If the initial cardiac rhythm is asystole I would continue CPR | <input type="checkbox"/> | Yes | | <input type="checkbox"/> | No |
| 3/ If after ten minutes the cardiac rhythm remains asystole I would continue CPR | <input type="checkbox"/> | Yes | | <input type="checkbox"/> | No |
| 4/ If the initial cardiac rhythm is ventricular fibrillation I would perform CPR | <input type="checkbox"/> | Yes | | <input type="checkbox"/> | No |
| 5/ If after ten minutes the cardiac rhythm remains ventricular fibrillation I would continue CPR | <input type="checkbox"/> | Yes | | <input type="checkbox"/> | No |
| 6/ I feel comfortable making these decisions regarding CPR in this scenario | <input type="checkbox"/> | Yes | | <input type="checkbox"/> | No |

CASE B: A 45 year old is admitted with crushing chest pain to the Coronary Care Unit. ECG shows an acute myocardial infarction (MI); he has no other significant medical history. During administration of the thrombolytic drug Streptokinase, the patient suddenly complains of 'feeling funny' and loses consciousness.

- 1/ I would initiate an arrest call and start CPR Yes No
- 2/ If the initial cardiac rhythm is asystole I would continue CPR Yes No
- 3/ If after ten minutes the cardiac rhythm remains asystole I would continue CPR Yes No
- 4/ If the initial cardiac rhythm is ventricular fibrillation I would perform CPR Yes No
- 5/ If after ten minutes the cardiac rhythm remains ventricular fibrillation I would continue CPR Yes No
- 6/ I feel comfortable making these decisions regarding CPR in this scenario Yes No

CASE C: A 35 year old woman who has breast cancer with metastatic bony secondaries is suffering significant pain. She has been receiving chemotherapy and has developed a pleural effusion. She is found unconscious and pulseless.

- 1/ I would initiate an arrest call and start CPR Yes No
- 2/ If the initial cardiac rhythm is asystole I would continue CPR Yes No
- 3/ If after ten minutes the cardiac rhythm remains asystole I would continue CPR Yes No
- 4/ If the initial cardiac rhythm is ventricular fibrillation I would perform CPR Yes No
- 5/ If after ten minutes the cardiac rhythm remains ventricular fibrillation I would continue CPR Yes No
- 6/ I feel comfortable making these decisions regarding CPR in this scenario Yes No

PART TWO

This section presents you with 33 statements related to CPR. Please respond to each statement by rating your level of agreement on the five point scale provided:

1 = strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree, 5 = strongly agree.

	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
1. Decision-making during cardiopulmonary resuscitation (CPR) is a part of my job	1	2	3	4	5
2. I am competently trained in CPR	1	2	3	4	5
3. CPR should be attempted under all circumstances in a cardiac arrest	1	2	3	4	5
4. I would never override a 'Not-for-Resuscitation' (NFR) order	1	2	3	4	5
5. I think CPR should be discussed with all patients on admission	1	2	3	4	5
6. I feel that resuscitation issues should only be discussed with patients who are seriously ill or at risk of cardiac arrest	1	2	3	4	5
7. I feel uncomfortable discussing resuscitation issues with patients	1	2	3	4	5
8. Terminally ill patients should not be offered CPR	1	2	3	4	5
9. The 'Not for Resuscitation'(NFR) order should be used more often	1	2	3	4	5
10. I would like to discuss CPR issues with patients more often	1	2	3	4	5
11. Only medical staff should decide whether to continue resuscitation or not in a cardiac arrest	1	2	3	4	5
12. CPR should not be performed in a hospice	1	2	3	4	5
13. Relatives should not be involved in decision making in whether to resuscitate a patient or not	1	2	3	4	5
14. I feel confident making decisions about the initiation of CPR	1	2	3	4	5
15. I feel confident making decisions during CPR	1	2	3	4	5
16. Decision-making regarding NFR orders should be multidisciplinary	1	2	3	4	5

		Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
17	CPR can prolong suffering	1	2	3	4	5
18	CPR should not be used on patients over 80 years old	1	2	3	4	5
19	I am very competent at performing CPR.	1	2	3	4	5
20	CPR is worthwhile if the patient has a 25% chance of survival to be discharged from hospital	1	2	3	4	5
21	Talking about CPR is upsetting to patients	1	2	3	4	5
22	A patient can refuse to have CPR	1	2	3	4	5
23	Age alone is an important factor in a successful outcome following CPR	1	2	3	4	5
24	Most patients want to be included in NFR decision making	1	2	3	4	5
25	CPR is more likely to be successful in acute myocardial infarction than in chronic conditions	1	2	3	4	5
26	CPR is more likely to be successful when the cardiac rhythm is ventricular fibrillation than asystole	1	2	3	4	5
27	CPR is less likely to be successful when the cardiac rhythm is ventricular tachycardia than electro-mechanical dissociation	1	2	3	4	5
28	The outcome of CPR is dependent on the Presence of underlying medical diseases	1	2	3	4	5
29	At least 25% of successfully resuscitated patients will be alive at one year	1	2	3	4	5
30	CPR must be performed unless there is a 'Not for Resuscitation' order written	1	2	3	4	5
31	Immediate survival following CPR remains likely even if there is no pulse, and the arrest is unwitnessed	1	2	3	4	5
32	If initial CPR is successful patients are likely to be discharged from hospital	1	2	3	4	5
33	Patients over 70 years old have a poor quality of life following CPR	1	2	3	4	5

PART THREE

Please answer the following questions by filling in responses or ticking boxes as appropriate.

1. What year were you born? 19
2. Please indicate your sex Male Female
3. Please indicate your ethnicity NZ non-Maori
 NZ Maori
 Other European
 Other Polynesian
 Other, please specify
4. Do you consider yourself religious? Yes No
5. To what professional group do you belong? Nursing Medical
6. Which of the following best describes you? Consultant
 Registrar
 House Surgeon
 Registered Nurse (Hospital trained)
 Registered Nurse (Polytech trained)
 Registered Nurse (University degree)
7. What year did you qualify/register? 19
8. **Nurses only:**
What is your highest nursing qualification? Certificate
 Diploma
 Bachelor Degree
 Masters
 Doctorate

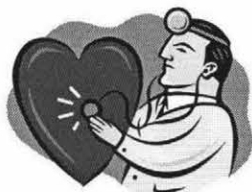
9. **All participants:**

Which of the following describe/s your main area of work?

(Tick all boxes that apply).

- Medical
- Surgical
- Mental Health
- ICU/CCU/Neonates
- Emergency Department
- Outpatients/Community
- Theatre
- Oncology

10. Do you know where to find the hospital policy on NFR? Yes No
11. Have you read the hospital policy on NFR? Yes No
12. Have you ever observed CPR being performed? Yes No
13. Have you ever been actively part of a CPR team at a cardiac arrest? Yes No
14. Have you performed CPR at a cardiac arrest? Yes No
15. Have you performed CPR more than ten times? Yes No
16. Have you ever refused to perform CPR when there is no NFR order? Yes No
17. Have you attended any information sessions on resuscitation (not core skills) in the last 3 months? Yes No



Many thanks for your participation in this project, a summary of findings will be available in the Clinical Library later in the year.

“This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 01/47” and the “Manawatu/Whanganui Ethics Committee 5/01”.

Massey University
College of Humanities & Social Sciences

School of Health Sciences
Private Bag 11 222,
Palmerston North,
New Zealand.
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Attitudes towards Cardiopulmonary Resuscitation

Information Sheet

My name is Claire O'Sullivan and I am enrolled as a masters student at Massey University School of Health Sciences, Palmerston North. I am employed as a Clinical Nurse Specialist for Cardiology which is a full-time position involving clinical practice, education and research.

I would like to invite you to take part in a study I am carrying out for my Masters thesis. The study explores the attitudes and knowledge of medical and nursing staff to cardiopulmonary resuscitation (CPR). The questionnaire consists of 33 knowledge and attitude questions three vignettes, and a demographics section.

This questionnaire takes approximately 20 minutes to read and complete. If you decide to participate, please **do not** put your name on the questionnaire. Completing and returning the anonymous questionnaire implies that you consent to participate. The results of the research will be published and a summary of the results will be circulated after completion of the study. A copy of the completed thesis will be placed at all campus libraries of Massey University in Auckland, Palmerston North and Wellington. A copy of the thesis will also be held at the clinical library of [Institution name].

Participant Rights

- ◆ Participation in the study is purely voluntary.
- ◆ You may decline to participate.
- ◆ You can withdraw from the study at any time; however, you should be aware that once completed and returned, the questionnaire cannot be withdrawn from the study.
- ◆ As a participant you have the right to refuse to answer any questions.
- ◆ Completing and returning the questionnaire will imply your consent to take part in the study.
- ◆ You have the right to receive information about the study and its results by contacting the researcher or her supervisor.

Benefits and Risks

- ◆ Feedback on study findings in summary form.
- ◆ This study may stimulate useful reflection on clinical practice, and has the potential to improve patient care.
- ◆ Completion or non-completion of the questionnaire has no bearing whatsoever on your status and rights as a Registered Nurse or Doctor at [Institution name].

- ◆ To the best of my knowledge, there are no risks if you decide to take part in this research project however, if the content of the study causes anxiety or concern the Employee Assistance Programme [Contact number] provides a professional counselling service for hospital staff.

Questionnaire Distribution, Collection and Data Analysis

You have been randomly selected to participate in this research. The questionnaires can be returned anonymously in the freepost envelope provided.

Replies returned after the end of June 2001 cannot be included in the analysis. A reminder letter will be sent out to participants after two weeks. Questionnaires should not be filled out during work hours.

Data from the returned questionnaires will be collated by the lead researcher and entered by a data analyst at Massey University and then stored in a secure place. Data will be accessible **only** to myself and research supervisors. Please feel free to contact me or my research supervisors with any questions or concerns you might have relating to the research.

Kind Regards,

Claire O'Sullivan.

E-Mail: claire.o'sullivan@midcentral.co.nz

Ph: 35-69169 ext. 7265.

Research Supervisors

Pat Hickson, Senior Lecturer,
School of Health Sciences,
Massey University,
Palmerston North.
Ph: 350-5799 ext. 7784.

Claire Budge,
Research Assistant,
Department of Nursing and Midwifery,
[Institution name].
Ph: 35069169 ext.9144.

This project has been reviewed and approved by the Massey University Human Ethics Committee:, PN Protocol 01/47 and the Manawatu/Whanganui Ethics Committee: 5/01.

Appendix D

Patricia Keelan-Ponini
48 Rhodes Drive
Palmerston North

5 December 2000

Tena koe

To Whom It May Concern:

My name is Patricia Keelan-Ponini, I am employed as the Maori Health Service Improvement Co-ordinator for Acute - Medical and Surgical Services, MidCentral Health. This letter is in support of Claire in undertaking her research work as part of her masters programme measuring the attitudes of medical and nursing staff to cardiopulmonary resuscitation. I have had the questionnaire reviewed and it is culturally appropriate. The information derived from the study should be beneficial to all at MidCentral medical and nursing staff.

Heoi anō



Patricia Keelan-Ponini

Acute - Medical and Surgical Services

MidCentral Health

Note : Dub Fielding the Kaitiaki/Whareora in The Maori Health Unit also reviewed the document

Attitude and Knowledge questionnaire expressed in percentages						
	N	disagree	agree	uncertain	Nurse agree	Dr agree
1 Decision-making during CPR is a part of my job	137	19.7	70.1	10.2	56.6	86.9
2 I am competently trained in CPR	140	12.9	75	12.1	78.2	71.0
3 CPR should be attempted under all circumstances in a cardiac arrest	139	75.5	16.5	7.9	26.9	3.3
4 I would never override a 'NFR' order	139	18.5	63.3	18.0	74.3	49.1
5 I think CPR should be discussed with all patients on admission	140	49.3	35.7	15.0	47.4	20.9
6 I feel resus issues should only be discussed with patients who are seriously ill or at risk of cardiac arrest	141	43.3	46.8	9.9	39.2	56.5
7 I feel uncomfortable discussing resus issues with patients	138	68.8	18.1	13.0	16.9	19.7
8 Terminally ill patients should not be offered CPR	139	46.7	32.3	20.9	17.9	50.8
9 The 'NFR' order should be used more often	140	15.0	59.3	25.7	60.3	58.1
10 I would like to discuss CPR issues with patients more often	137	29.9	46.7	23.4	52.6	39.3
11 Only medical staff should decide whether to continue resus or not in a cardiac arrest	141	41.1	46.1	12.8	35.5	59.7
12 CPR should not be performed in a hospice	139	32.4	43.9	23.7	37.2	52.5
13 Relatives should not be involved in decision making in whether to resus a patient or not	140	82.9	11.4	5.7	7.7	16.1
14 I feel confident making decisions about the initiation of CPR	140	12.9	70.7	16.4	70.5	71.0
15 I feel confident making decisions during CPR	138	23.9	52.2	23.9	39.4	67.7
16 Decision making regarding NFR orders should be multidisciplinary	138	12.3	73.9	13.8	77.9	68.8
17 CPR can prolong suffering.	138	7.2	84.4	8.7	81.8	86.8
18 CPR should not be used on patients over 80 years old	138	70.3	11.6	18.1	10.2	13.3
19 I am very competent at performing CPR	139	19.4	53.3	27.3	58.4	46.7

Attitude and Knowledge questionnaire expressed in percentages

	N	disagree	agree	uncertain	Nurse agree	Dr agree
20 CPR is worthwhile if the patient has a 25% chance of survival to be discharged from hospital	134	15.7	51.5	32.8	45.3	59.3
21 Talking about CPR is upsetting to patients	140	30.0	40.7	29.3	39.7	41.9
22 A patient can refuse to have CPR	139	5.8	89.2	5.0	84.6	95.1
23 Age alone is an important factor in a successful outcome following CPR	136	44.1	36	19.9	27.6	46.7
24 Most patients want to be included in NFR decision making	141	10	65.7	24.3	74.3	54.8
25 CPR is more likely to be successful in acute MI than in chronic conditions	140	7.8	61.4	30.7	48.7	77.4
26 CPR is more likely to be successful when the cardiac rhythm is VF than asystole	140	7.1	64.2	28.5	47.4	85.4
27 CPR is less likely to be successful when the cardiac rhythm is VT than EMD	139	37.4	16.5	46	13.0	21.0
28 The outcome of CPR is dependent on the presence of underlying medical conditions	140	7.1	75.7	17.1	70.5	82.2
29 At least 25% of successfully resus patients will be alive at one year	140	16.4	32.1	51.4	37.2	25.8
30 CPR must be performed unless there is a 'NFR' order written	140	30.0	60.0	10.0	82.0	32.2
31 Immediate survival following CPR remains likely even if there is no pulse, and the arrest is unwitnessed	139	60.4	12.2	27.3	14.3	9.7
32 If initial CPR is successful patients are likely to be discharged from hospital	138	37.6	28.9	33.3	40.7	14.5
33 Patients over 70 years old have a poor quality of life following CPR	140	40.7	19.2	40.0	16.6	22.5