

DOCTOR OF PHILOSOPHY

Exploring the experiences of nurses who
care for children who have Acute Life
Threatening Events (ALTE) in hospital

Adrienne Hudson

2014

Aston University

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EXPLORING THE EXPERIENCES OF NURSES WHO CARE
FOR CHILDREN WHO HAVE ACUTE LIFE THREATENING
EVENTS (ALTE) IN HOSPITAL

ADRIENNE PATRICIA HUDSON

Doctor of Philosophy

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September 2013

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Abstract

Aston University

The experience of nurses who care for children who have Acute Life Threatening Events (ALTE) in hospital

Adrienne Patricia Hudson

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2013

This thesis presents a program of work designed to explore and describe what the experience of caring for a child who has an Acute Life Threatening Event (ALTE) is like for the nurses. An ALTE may include a cardiac arrest, respiratory arrest or unplanned admission for a ward to the Paediatric Intensive Care unit. Using the MRC framework for the development of complex interventions, this information was then coupled with theory to develop the PREPARE and SUPPORT interventions. Given the wide-ranging and exploratory nature of this research, a pragmatic, mixed design approach was used to address the aims and objectives of the thesis. The mixed design approach included: a systematic literature review; international survey of practice; interviews with nurses and doctors using Interpretative Phenomenological Analysis; development, refinement and evaluation of interventions during a feasibility study. Two studies were identified through the systematic review which aimed to evaluate the effectiveness of debriefing. The studies did not provide evidence to support the use of these interventions within healthcare. The international survey of practice demonstrated hospitals were using interventions to both prepare and support nurses for these events. The preparatory interventions were clinically focused and the majority of the supportive interventions included a debrief. The interventions were not being evaluated for effectiveness. The interviews conducted with nurses and doctors provided insight into what that experience was like for the participants. Using the MRC framework, this evidence was coupled with theory to develop the PREPARE and SUPPORT interventions. A multidisciplinary working party used an iterative process to refine and evaluate the interventions and study procedures were explored through a feasibility study. The pragmatic, mixed design approach demonstrated how the empirical evidence was coupled with theory and clinical expertise to develop interventions for use within the healthcare environment.

Key words: Acute Life Threatening Event (ALTE); prepare; support; self-efficacy; stress and coping theory.

Dedication

This thesis is dedicated to my husband Stu and my two sons, Jack and Flynn. They have been at my side throughout this journey providing me with constant love, support, reassurance and understanding.

“A code is always an emotional experience. It’s an adrenalin rush when you’re successful and a drain when you are not” (Pups, Weyker, Rodgers, 1997)

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“International survey of practice to identify psychological interventions that prepare or support nurse that have cared for a child who have an unexpected acute life threatening event (ALTE) in hospital”. Paediatric Nursing 1St PNAE Congress on Paediatric Nursing, Turkey, November 2011.

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1 Chapter 1 – General introduction

1.1 Introduction and Literature Review

This thesis presents a program of work designed to explore and describe what the experience of caring for a child who has an ALTE is like for the nurses who are involved in these events. The information will be used to develop evidence-based interventions aimed at preparing and supporting the nurses who care for these children to minimise the potential psychological impact that these events may have on the staff involved.

This introductory chapter will review the literature relating to nurses who care for a child who has an ALTE in hospital, discuss background work which has contributed to the concept of the thesis, identify where there are gaps in knowledge, and outline the proposed program of work developed to address these gaps in knowledge.

Nurses who care for children in hospital are routinely exposed to potentially stressful situations by the very nature of the work they do (Huff, 2006). Sources of day to day stress include increasing acuity and complexity of patient's conditions, staff shortages, inappropriate nursing skills mixes, interaction with sometimes distraught family members, conflict with colleagues, shift working patterns and rigid working hours (Borrill, 1998; Haines, Perrott, & Weir, 2006; Mcinnes & Bannister, 2002; Tibballs, Kinney, Duke, Oakley, & Hennessy, 2005; Tume & Bullock, 2004). Caring for a child who has an ALTE or an unplanned admission from the ward to the Paediatric Intensive Care Unit (PIC) in hospital has the potential to be a powerful source of stress for the nurses involved. This stress may have a negative impact on them at work, but also in terms of their psychological well-being.

No publications have been identified which explore the potential psychological impact on a nurse of caring for a child who has an ALTE. There have been papers published which explore the experience of caring for an adult who has an ALTE, however it is not clear whether those experiences are directly comparable in different patient populations.

1.2 Definition of an Acute Life Threatening Events (ALTE)

An ALTE can include a cardiac arrest (CA), respiratory arrest (RA), call for immediate expert assistance or an unplanned admission from a ward to the Paediatric Intensive Care Unit (PIC). These events are generally unexpected and occur on the in-patient wards in an acute care hospital.

Cardiac arrest (also referred to as a cardiopulmonary arrest) is defined as 'the cessation of cardiac mechanical activity, determined by the inability to palpate a central pulse,

unresponsiveness and apnoea' (Zaritsky et al., 1995, pp. 2007). During a CA the patient requires chest compressions and assistance with ventilation (breathing), which is commonly known as CPR.

Respiratory arrest is defined as the absence of respirations when a patient stops breathing (Zaritsky et al., 1995, pp. 2007). A patient having an RA may still have a pulse, however they require immediate assisted ventilation, most commonly from a bag-valve-mask or mouth-to mouth mechanisms (Zaritsky et al., 1995).

A call for immediate assistance is generally made when a healthcare professional suspects the patient may have either a cardiac or respiratory arrest imminently. An *unplanned admission from a ward to the PIC* occurs when a patient deteriorates and requires additional treatment that cannot be provided in the ward areas. The treatment may include assistance with breathing via a machine or the administration of medication that needs additional monitoring.

The National Institutes of Health (National Institute of Health, 1986) uses the term Apparent Life-Threatening Event interchangeably with an Acute Life Threatening Event (ALTE). The NIH define an ALTE as:

“an episode that is frightening to the observer and that is characterized by some combination of apnoea (central or occasionally obstructive), colour change (usually cyanotic or pallid but occasionally erythematous or plethoric), marked change in muscle tone (usually marked limpness), choking, or gagging. In some cases, the observer fears that the infant has died” (National Institute of Health, 1986, pp. 1).

The aetiology of cardiac arrest differs in adults and children (Engdahl, Axelsson, Angela Bang, Karlson, & Herlitz, 2003; Herlitz et al., 2007). Adults who suffer a CA often have sudden, unexpected ventricular fibrillation as a result of underlying coronary artery disease (Herlitz et al., 2001; Herlitz et al., 2000). Adults tend to deteriorate from the arrhythmias very rapidly and with little warning. The cause of CA in children is often secondary to respiratory or cardiovascular failure which leads to hypoxia and acidosis (Herlitz et al., 2007). Due to the physiological differences between children and adults, children often deteriorate over a number of hours or even days prior to having a cardiac arrest opposed to the sudden deterioration experienced by adults.

1.3 How frequently do ALTEs occur in hospital?

There are no national published data recording the incidence of paediatric ALTEs in hospitals in the UK so the experience of individual tertiary referral hospitals is useful. At the

Birmingham Children's Hospital (the tertiary referral hospital in which the program of work is being carried out) the rate of cardiac arrests alone is on average 0.83 per 1000 admissions. In Melbourne, a children's hospital with a similar yearly admission rate reports a cardiac arrest rate of 0.11-0.19 per 1000 hospital inpatient admissions (Tibballs et al., 2005). Within the Birmingham Children's Hospital NHS Foundation Trust (BCHNHSFT) there were 82 ALTE calls made from April 2012-April 2013 (which include CA, RA and call for immediate assistance) from in-patient wards and approximately 370 unplanned PIC admissions for the same time period. These rates mean staff members are potentially exposed to these events on a daily basis.

1.4 What are the outcomes for patients who have an ALTE?

The outcomes of paediatric cardiac arrests are poor (Nadkarni et al., 2006; Tibballs et al., 2005; Young & Seidel, 1999). The reported survival rate for children after a CA is approximately 13-27% (Nadkarni et al., 2006; Young & Seidel, 1999). The reported survival rate for children after an RA is approximately 75% (Young & Seidel, 1999). The frequency of events coupled with the poor patient outcomes mean these events have the potential to be a particularly intense source of stress for the staff involved.

1.5 Background work that has contributed to the concept of the PhD:

Within BCHNHSFT a research project was conducted to develop a Paediatric Early Warning System. During this project the potential for these events to have a negative psychological impact on the nurses was first identified. The PEWS project and other work that has contributed to the concept for the study will be described in the following section.

1.5.1 The Paediatric Early Warning System (PEWS) study:

In 2006, the author, Adrienne Hudson (APH), was employed as a research nurse to work on the PEWS study to develop a Rapid Response System (RRS) (South Birmingham Research Ethics Committee - 04/Q2707/25). RRS have been developed to enable early detection and communication of the deteriorating patient with the aim of reducing the incidence of cardiac arrests in adults and children. Part of the project included interviews with nurses who had cared for children who had an ALTE during the study period. The interviews were clinically focused, revised what observations had been completed, and identified any clinical concerns prior to the ALTE. If concerns had been identified, the interviews explored how these concerns were communicated to senior nurses or doctors and what action was taken. It was originally anticipated each interview would take approximately 15-20 minutes.

It became apparent during the interviews that the nurses who cared for the children who have an ALTE were often quite negatively affected by these events. At times some of the

participants in the interviews appeared upset, frustrated and distressed. Several of the participants cried and questioned their own actions and the actions of the people around them. For some of the participants this was the first time they had witnessed an ALTE; for others it was the first time they were the nurse responsible for caring for the child when the ALTE occurred. Many of the interviews took up to an hour and a half to complete as the participants wanted to discuss their experience and talk through some of the decisions that were made before, during and after the ALTE. Some nurses had clearly identified that the patient was deteriorating yet were frustrated when trying to communicate their concerns to other clinicians responding to the event. Although the initial aims of the interviews were to explore the clinical processes around an ALTE, it became apparent there were no other systems in place for the nurses to talk through decisions, management and responses in order to normalise their feelings, learn from this experience and improve performance for next time. Furthermore, additional clinical and pastoral support was frequently provided during the discussions with the participants because that was what they needed.

1.5.2 Interviews with staff that have cared for a patient who had had an ALTE (unpublished)

A subset of nurses (n=23) in the PEWS study were asked additional questions about feedback after an ALTE. Twenty three (100%) of the respondents felt that feedback after an event would be beneficial, however only 12 (52%) had received feedback after an event which they had to specifically request as this is not automatically provided.

The nurses were asked to discuss their opinions on feedback. The results presented in the following section are representative of the discussions with the participants.

Experiential learning:

Some of the nurses indicated feedback would help them learn from the event. Nurses were often left questioning if there was something they may have missed or if there was something they could have done to prevent the ALTE from occurring. The response from participant 13 was quite typical – this participant felt that feedback would help identify “*if I had done something wrong*” (Participant 13) and help her learn from the experience to prevent it happening again.

Fear of becoming upset:

Caring for a child who has an ALTE can be an emotionally challenging experience. Nurses expressed concerns that they may become upset during the course of the feedback process and they would be considered unprofessional or weak.

“I was worried that I was going to cry and in some ways didn’t want people to ask me if I was okay because it was going to make me cry. But at the same time I wanted people to know what I had just been through and you want them to understand” (Participant 21).

The nurses were caught between not wanting to seem unprofessional and wanting to share their experience and be heard.

Event outcome:

The outcome of the event influenced what feedback and support was required. One participant identified that although they felt feedback in general was useful, if the outcome of the event was positive (for example the patient survived) then feedback might not be necessary:

“I would not find it [feedback] particularly useful in this situation as I was happy with my performance and it was a positive outcome. If the outcome was negative then feedback would be useful” (Participant 11).

Senior Nurses:

When feedback is provided, the senior nurses on the ward generally do it. One of the senior nurses indicated they are not offered any support or feedback within their role.

“Senior staff are often not supported. When more junior staff are involved in an arrest they are given a lot of support from the staff on the ward, but senior staff are thought to be able to cope with it and often not supported. Often they [senior staff] have to continue running a shift and not given time to talk about things” (Participant 11)

The responses from Participant 11 indicate that feedback and support may be required at different levels for staff who are involved in an ALTE.

1.5.3 Reported experiences of nurses who have cared for adults who have had an ALTE

Pups et al (Pups et al., 1997) conducted a study at a large urban hospital in Wisconsin in the United States of America (USA) that looked at nurses’ reactions to participation in cardiopulmonary resuscitation of adults in a ward area. Participants were asked to complete

a questionnaire that elicited a description of the last event in which the nurse participated, feelings related to the code and anything the nurses recalled that helped or hindered them in their experience of that event. The questionnaires were analysed using thematic analysis.

Description of experiences of cardiopulmonary resuscitation:

The descriptions of the experience fell into four general categories: demanding, well-controlled, learning experience and ethically challenging.

- Demanding – a code was deemed more demanding when it involved a patient the nurse was caring for. Nurses reported these codes as more stressful than when the patient was not familiar to them.
- Well-controlled - nine nurses described their experience as well-controlled because the team worked well together and there were people who were “expert” in resuscitation present.
- Learning experience – two nurses found they learned a lot from participating in the code even if they were mostly observing. They were grateful to have the opportunity to witness more experienced staff and learn from them.
- Ethically challenging – four nurses found the code raised ethical questions particularly in regards to the appropriateness of resuscitating some of the patients or if they felt the resuscitation attempt should have been abandoned earlier.

Feelings after the code

Eleven nurses described feeling positive emotions about the event that were related to patient outcomes. Nurses described feeling “relieved” or “proud” that their patient had survived and felt they had done a good job in helping to revive the patient. Eighteen nurses reported negative emotions associated with the event particularly when a patient died. Staff felt frustrated, overwhelmed, angry and helpless when the patients did not survive.

Helpful post event interventions

Eighteen nurses felt that support from others was the most helpful thing for them after an event. Support ranged from: “gallows humour” with peers, talking with other staff and supporting each other’s feelings, discussing what could have been done different/better, discussing good and bad points with peers and knowing that they “did everything possible”.

Post event hindrances

Some nurses found it difficult to return to patient care activities immediately (n=11) or deal with the family (n=4). Two nurses reported that physician behaviours or attitudes, including apathy or not listening to the nurses' concerns, made the time after the event difficult.

Suggestions from participants on how to make the experience less stressful

- Access to more precise information about the patient's history and code status would be beneficial.
- 10 nurses felt that more organisation and control at the event were needed, including role allocation and experienced staff at the event.
- Many responses were related to the positive or negative outcome for the patient, however more time to regroup and more support before returning to patient assignments would be beneficial.

Many of the points discussed in the findings of Pups et al were similar to what the nurses in the PEWS study had discussed.

1.5.4 Development of Rapid Response Systems:

Studies that have looked at cases of ALTE and UPIC in adults and children have found there are warning signs prior to the event in 50-90% of cases (Duncan, Hutchison, & Parshuram, 2006; McQuillan et al., 1998; Parshuram, Hutchison, & Middaugh, 2009; Schein, Hazday, Pena, Ruben, & Sprung, 1990; Smith & Wood, 1998) Studies exploring why ALTE events occur regularly within hospitals despite clear evidence of deterioration prior to the event have highlighted barriers to the early identification of the deteriorating child and the provision of treatment by experienced clinicians. These barriers include: an inability of medical and nursing staff at all levels to recognise serious illness; omission of important physiological observations; incomplete education; lack of empowerment of staff at all levels to obtain assistance from experienced clinicians and challenges in communicating concerns (McCabe & Duncan, 2008; Pearson, 2008; Tibballs & Kinney, 2009; Tume & Bullock, 2004).

Rapid Response System (RRS) were developed within healthcare to reduce the number of ALTEs by enabling the early detection and provision of appropriate treatment for the deteriorating patient (Devita, Bellomo, et al., 2006). RRS is an umbrella term that encompasses a systematic approach to reduce these events. The system generally includes: standardised observation charts with an embedded Early Warning Score; a referral algorithm to report concerns and a team to respond to identified concerns; education and guidance on completing patient assessments and data collection to track the incidence of events (Devita,

Bellomo, et al., 2006; Devita, Hillman, & Bellomo, 2006; Duncan et al., 2006; McCabe, Duncan, & Heward, 2009; Tibballs et al., 2005).

RRS were initially developed and implemented in adult hospitals in the early 1990s. Hospitals that have implemented an RRS have published a reduction in the incidence of CA (Galhotra, DeVita, Simmons, & Dew, 2007; Jones et al., 2005). Paediatric hospitals that have implemented a RRS have also demonstrated a reduction in ALTE calls (Brilli et al., 2007; Hunt et al., 2008; Sharek et al., 2007; Tibballs et al., 2005).

Despite promising reductions in the rate of ALTEs, it is not possible to completely eradicate these events. Patients will still be admitted to hospital with conditions that will inevitably deteriorate to an ALTE. In recognition of this, people within the RRS community have suggested a shift in the RRS from a purely clinical focus to discussing the need for research into what effect these events have for the staff involved in them (Devita, Hillman, et al., 2006; Scott et al., 2010).

In summary, the background work that has contributed to the genesis of this PhD suggests being involved in an ALTE has the potential to have a strong emotional impact on participants. There is often no process in place for staff to discuss the decisions made before, during and after an event despite nurses indicating that feedback or “support” would be highly desirable. Although a lot of work has been done to develop RRS to reduce the incidence of ALTE, these events will still occur on a regular basis. Furthermore, the RRS community are starting to recognise that research is required into what effect these events may have on the staff involved in them.

1.6 What is the potential impact for the staff caring for children who have an ALTE?

Nurses are faced with potentially stressful situations on a daily basis. When a person is faced with an event or situation that may be perceived as stressful they go through a parallel process that includes a physiological response within the body and a psychological appraisal of the level of threat that the stressor poses to activate coping mechanisms if need be.

1.6.1 Physiological Response to stress:

The body’s normal systems are regulated and controlled by the autonomic nervous system. This system unconsciously regulates things like heart rate, respiratory rate, digestion, pupillary response and urination (Schmidt & Thews, 1989). When a person is faced with a situation or an event that they perceive as stressful their body has a physiological reaction to help deal with the stress (Figure 1). When faced with the stressful situation, a person’s sympathetic nervous system is activated.

During the initial reaction (which is often referred to as the “fight or flight” reaction) the body releases the hormones adrenalin, cortisol and other endorphins into the bloodstream. The effects that the hormones have on the body include: blood flow is shunted to the major muscle groups; muscles tense; the heart beats faster; breathing and perspiration increase; pupils dilate and the stomach clenches (Martine, 1993; Murray, 2005). The affect these hormones have on the body can physically manifest as: shaking caused by the release of adrenalin; ringing or the sound of the pulse in the ears as blood flow is redirected and the individual’s ability to think and feel are reduced due to the release of endorphins which dulls the recall of things - which is why people may not be able to recall things they could normally recall or read body language in a stressful situation (Martine, 1993; Murray, 2005). All of these processes evolved in the body to help with the initial fight or flight from physical danger rather than in situations like an ALTE where a person needs to perform skills or tasks and make rational decisions.

After the initial “fight or flight” reaction to stress, a person still exposed to a stressor will move into the resistance or adaptation phase where the body needs to provide slightly longer-term protection against the stress. During this phase the body secretes hormones called corticosteroids that enable the body to increase blood sugar levels to sustain energy and increased blood pressure.

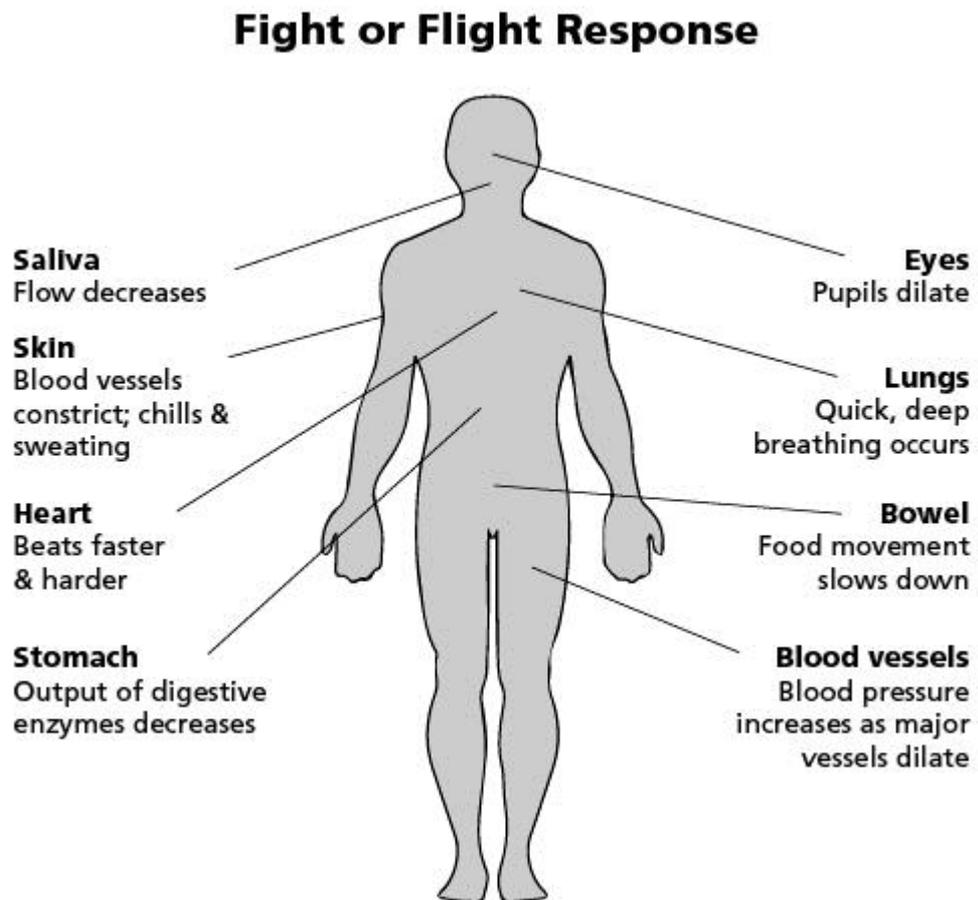
Once the perceived stress or threat has passed, the body activates the parasympathetic nervous system to slowly restore the body back to its regular relaxed state. It may take minutes or even hours for the body to return to normal as the effects of the hormones wear off. In the case of an ALTE, an individual might remain in a state of hyper-arousal or shaking for a period of time after the event as a consequence of the hormone surge. The symptoms of hyper-arousal may include: intrusive thoughts; crying; irritability; disturbed sleep and nightmares; guilt; flashbacks and loss of confidence. If these symptoms last for several days they can lead to increased absenteeism as people call in sick because they have not slept well the night before (Bailes, 2001; Cotterill – Walker, 2000 ; Mcinnes & Bannister, 2005).

The stress reaction has evolved to deal with immediate dangers. It is not well suited to the challenge of dealing with multiple, prolonged or chronic stressors. If a person is faced with on-going stressors then the body can become overwhelmed. The body does not have a chance to rest and relax. That can result in fatigue, concentration lapses, irritability, lethargy and eventually exhaustion. As the body uses up reserves of blood sugar, the individual may experience decreased stress tolerance, mental and physical exhaustion and eventually illness. If cortisol production continues for a long period of time (secondary to prolonged or

chronic stress) this can lead to anxiety, depression, decreased serotonin levels and eventual decreased immunity (Maslach & Jackson, 1980; Zigmond & Snaith, 1983).

There are times when stress can be considered helpful. Hans Selye (1907-1982) coined the term '*without stress, there would be no life*'. Exposure to some forms of stress can help keep people interested, challenged and motivated. However, exposure to prolonged or overwhelming stress can be damaging (Murray, 2005).

Figure 1 - Physiological responses to stress



The initial fight-or-flight response was first described by Walter Cannon in the 1920's. His work looked at how animals reacted to noxious environmental or internal stimuli (for example exposure to cold, hypotensive hemorrhage or very low blood glucose levels) (Cannon, 1929; Goldstein, 2010). Although the early work by Cannon with animals was physiologically based, the fact that animals try to learn primitive methods of dealing with stress (by attempting to stay and fight or escaping from a predator for example) suggests the

stress response is linked to a secondary process. The secondary (or parallel process) involves a conscious interpretation of the perceived stressor and an appraisal of what level of threat is posed and the person's ability to cope with that threat (Goldstein, Somerfield, & McCrae, 2000; Lazarus & Folkman, 1984).

1.6.2 Psychological Response to stress:

The stress and coping theory helps to explain the appraisal process that takes place when a person is faced with a potential stressor (Lazarus & Folkman, 1984; Smyth & Filipkowski, 2010). Stress can be viewed as an interactive *“person-environment relationship that is evaluated as personally significant and as exceeding a person's resources for coping”* (Chesney, Neilands, Chambers, Taylor, & Folkman, 2006, pp 2). Coping with stress or an event or situation that can be perceived as stressful (stressor) has been defined as *“behavioural or cognitive efforts to manage situations that are appraised as stressful”* (Chesney et al., 2006, pp. 2). The interaction and appraisal of stress and subsequent coping are on-going and are referred to as the primary and secondary appraisal.

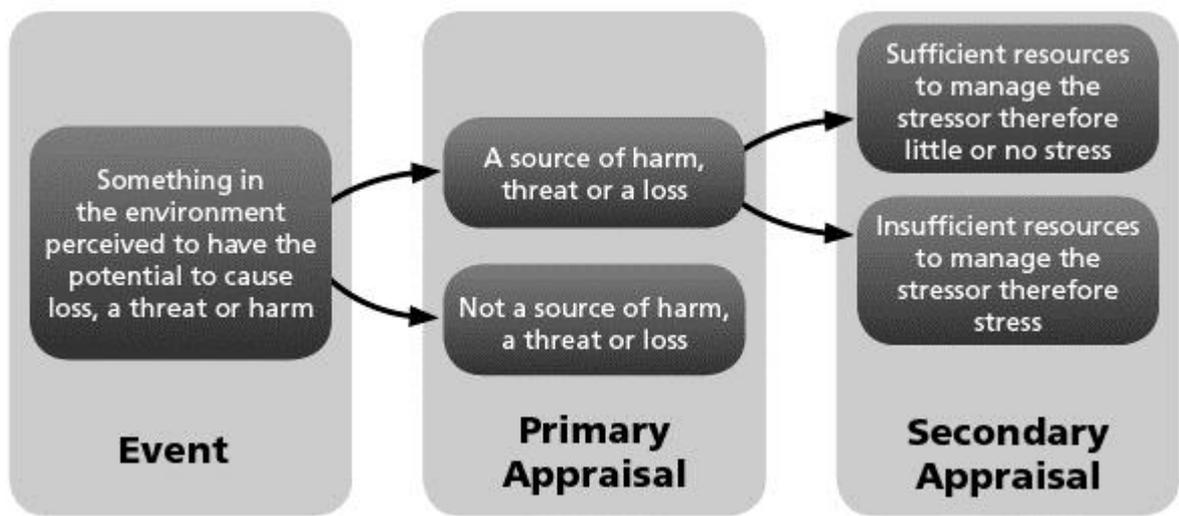
When faced with a potential stressor, a person needs to appraise it and decide how much of a threat it is to them and then make a decision about how they are going to cope with the stressor. Everyone appraises stressors differently based on their own skills, insights and thoughts. During an ALTE for example, people may be at the same event and exposed to the same situation, but each individual appraises the situation for himself or herself and some may deem it stressful while others do not. The appraisal process is described below and outlined in Figure 2.

A stressor is something that a person perceives has the potential to cause loss, threat or harm. When a person is faced with a stressor they evaluate the potential threat. This is known as a primary appraisal (Cohen & Lazarus, 1979; Lazarus & Folkman, 1984). During the primary appraisal the person will decide if the stressor really has the potential for harm, threat or loss. If they decide it does not then it is not considered a threat and the person moves on. Although this sounds as though it is a cognitive and rationale process, a lot of the primary appraisal is unconscious. This process can be triggered by smells, something that is heard or just a “feeling” amongst other things.

If the stressor is considered to be a threat then a secondary appraisal takes place (Lazarus & Folkman, 1984). A key aspect of secondary appraisal is the judgment concerning the extent to which the individual can control the outcome of the situation. During the secondary appraisal the individual will assess if they have the personal resources to deal with the stressor. If they believe they have the resources to deal with it then the stress is minimised.

If the person does not perceive that they have the resources to deal with the stressor then this can lead to them feeling stressed and potentially overwhelmed (Smyth & Filipkowski, 2010). A key aspect of secondary appraisal is the judgment concerning the extent to which the individual can control the outcome of the situation. Self-efficacy contributes to this judgment, which in turn influences which coping strategies may be adopted to deal with the stress (Park & Folkman, 1997).

Figure 2 - Primary and secondary appraisal of stressors



Once the primary and secondary appraisals have taken place the person will then activate coping strategies in an attempt to manage the stress. People adopt different coping styles in different situations (Smyth & Filipkowski, 2010).

Coping styles include:

- *Avoidant versus approach strategies* – avoidant styles tend to try and avoid exposure to a stressor whereas approach strategies tend to take direct actions to influence or manage the problem.
- *Problem-focused versus emotion focused coping* - problem focused coping styles do something constructive about a stressor and take action to resolve the stressor whereas an emotion focused response attempts to regulate the emotions associated with the stressor.
- *Responsive versus proactive coping* – proactive “copers” anticipate a potentially stressful situation and take measures to either avoid or alleviate it whereas responsive “copers” react to a stressful situation and try to cope with it once it has occurred.

Successful coping should ideally result in the individual maintaining or returning to healthy and normal psychological functioning and being able to resume their usual activities (Cohen & Lazarus, 1979). The type of coping style that an individual chooses will depend on the primary and secondary appraisal and can often be different when faced with a different situation.

When discussing the physiological response to stress in the preceding section, the effect of stress in the short term was described as including: intrusive thoughts; crying; irritability; disturbed sleep and nightmares; guilt; flashbacks and loss of confidence. If stress is not managed or dealt with effectively it can result in fatigue, concentration lapses, irritability, lethargy and eventually exhaustion. In addition to the personal ramifications this may have an effect on patient care and the employing organisation. Reduced staff performance and productivity may affect delivery of patient care, lower work morale, accidents caused by human error, provision of suboptimal care and reduced patient satisfaction may all be affected (Healthcare Commission, 2004; Health & Safety Executive, 2007; Murray, 2005; Pines & Maslach, 1978).

A report by the Health and Safety Executive (Health & Safety Executive 1999) estimated that work-related stress costs UK employers about £353 million to £381 million per annum (in 1995/1996 prices). Although these costs are not specific to healthcare, the NHS is one of the largest employers within the UK which means the costs of work-related illness within the NHS is likely to be substantial. Thirty nine per cent of staff in the 2003 NHS staff survey reported that they had felt unwell in the past 12 months as a result of work-related stress, a number that the report itself describes as “under-reporting” (Healthcare Commission, 2004). There have been numerous publications that discuss the issues of stress within nursing and the NHS which acknowledge this is an on-going problem (McInnes & Bannister, 2002; Meadow, Levenson, & Baeza, 2000; Murray, 2005; Royal College of Nursing, 2002a, 2002b, 2002c). Despite the growing evidence acknowledging the stress that nurses face within the NHS, there is very little evidence about what the experience of caring for a child who had an ALTE is like and if this generates stress for the nurses caring for them.

In summary, when a person is faced with a perceived stress the person goes through a physiological and psychological reaction to the stress. If the stressor is not managed effectively or the person is exposed to it for a prolonged period of time, it can result in poor outcomes for both the individual and the organisation by which they are employed.

1.7 Development of interventions to deal with stress in other industries:

An ALTE often comes under the umbrella term of a Critical Incident (CI). A CI was defined by Mitchell as:

“Any situation faced by emergency personnel that causes them to experience unusually strong emotional reactions which have the potential to interfere with their ability to function either at the scene or later” (Mitchell, 1983, pp. 36).

Industries outside of healthcare have developed interventions to minimise the potential negative psychological impact of CI on the people involved in these events. The two main interventions that have been developed include Critical Incident Stress Debriefing (CISD) and Critical Incident Stress Management (CISM). These two approaches will be discussed in greater detail in the following section.

1.7.1 Critical Incident Stress Debriefing (CISD)

Debriefing has its origins in the military, becoming more popular in civilian life when Mitchell introduced the concept to the emergency services referring to the intervention as CISD (Everly & Mitchell, 1997; Mitchell, 1983). The objective of CISD is to mitigate the impact of a CI and return personnel to routine functions as soon as possible after the incident (Mitchell, 1988). CISD consists of seven phases that are described in Table 1.

Table 1 - Mitchell model for CISD

Phase one - Introduction	Facilitators introduced, rules of the debrief explained such as confidential nature of debriefing and no criticising
Phase two - Fact phase	People are asked to describe what happened at the scene
Phase three - Thought phase	The debriefing team leader will assist the participant to move from the fact phase to the thought phase by asking questions like "can you recall your first thoughts once you stopped functioning in an automatic mode at the scene?"
Phase four - Reaction phase	Describe the worst part of the incident and why it bothered them. If a critical incident has a significant emotional content attached to it, it will usually be discussed during this phase.
Phase five - Symptom phase	Participants are asked to describe stress symptoms they experienced during the incident
Phase six - Teaching phase	Normalise the stress response, stress reduction information and suggestions on how to help one and other through the stress
Phase seven - Re-entry	Participants may ask unanswered questions, a summary of the discussion is outlined & the session is concluded.

In 1989, Dyrogrov introduced the concept of Psychological Debriefing (PD) which is similar to Mitchell's model (Dyrogrov, 1989). PD was designed to prevent the development of psychiatric disorders like Post Traumatic Stress Disorder (PTSD) in victims of trauma (Dyrogrov, 1989). The difference between the CISD and PD model is that the teaching phase (Phase six) of Mitchell's model is broken down further into normalisation and future coping phases.

Despite the widespread use of PD, researchers have questioned the appropriateness of using this intervention in general. A Cochrane Review completed in 2002 (Rose, Bisson, Churchill, & Wessely, 2002) looked at the use of psychological debriefing for preventing PTSD. The review included Randomised Control Trials (RCT's) that used a single session PD with people who had experienced a traumatic event within the preceding month. The majority of the trials included in the review had a comparable population of people who had been exposed to trauma and were either admitted to hospital, attended trauma clinics or attended the accident and emergency department. One group included soldiers who were on

a peace-keeping mission. The majority of studies were conducted with people who under normal circumstances would not have anticipated either being involved in the traumatic event or witnessing such an event (for example someone who has been assaulted or a burn victim as opposed to a paramedic who is called to an accident).

The authors of the review concluded there was no evidence that single session individual psychological debriefing prevented the onset of PTSD nor reduced the psychological distress compared to control groups. In fact, one study reported a significantly increased risk of developing PTSD in those who received PD (Bisson, Jenkins, Alexander, & Bannister, 1997). There was also no evidence that PD reduced general psychological morbidity, depression or anxiety (Rose et al., 2002).

Van Emmerik et al performed a meta-analysis of RCT's which used debriefing (van Emmerik, Kamphuis, Hulsbosch, & Emmelkamp, 2002). The authors reviewed and compared studies that used CISD, non-CISD and no treatment controls. The meta-analysis showed the studies using CISD did not improve symptoms of PTSD, whereas the interventions that did not use CISD and the control interventions demonstrated improved symptomatology. The reviews by both van Emmerik and Rose only including studies that used debriefing with individuals who had been exposed to trauma as opposed to a group debriefing session. The lack of evidence to support the effectiveness of this intervention in individuals, coupled with the findings that suggested that debriefing could lead to an exacerbation of symptoms the recommendations by both authors were that the provision of compulsory debriefing should cease (Arendt & Elklit, 2001; Deahl, Gillham, Thomas, Searle, & Sprinivasan, 1994; Rose et al., 2002; van Emmerik et al., 2002).

1.7.2 Critical Incident Stress Management (CISM):

Critical Incident Stress Management (CISM) builds on the original CISD work by Mitchell (Mitchell, 1983) and incorporates a comprehensive, systematic and multi-faceted approach to the management of critical incident stress. CISM is used extensively within the aviation industry (Leonhardt & Vogt, 2006). There are seven core components of the CISM approach which are outlined in Table 2 (Everly & Mitchell, 1997; Leonhardt & Vogt, 2006).

Table 2 - CISM approach in the aviation industry

Pre-crisis preparation	Includes stress management education, stress resistance, and crisis mitigation training for both individuals and organizations.
Disaster or large-scale incident management	School and community support programs including demobilizations, informational briefings, "town meetings" and staff advisement
Defusing	This is a 3-phase, structured small group discussion provided within hours of a crisis for purposes of assessment, triaging, and acute symptom mitigation
Critical Incident Stress Debriefing (CISD) "Mitchell model"	Seven phase, structured group discussion, usually provided 1 to 10 days post crisis, and designed to mitigate acute symptoms, assess the need for follow-up, and if possible provide a sense of post-crisis psychological closure
One-on-one crisis intervention/	Counselling or psychological support - throughout the full range of the crisis spectrum.
Family crisis intervention	Family crisis interventions can be provided for families in addition to organisation consultation
Follow-up and referral	Mechanisms for assessment and on-going treatment if necessary

The CISM systematic approach includes elements that are put in place before a CI occurs, during the event and follow up and referral after the event (Leonhardt & Vogt, 2006). The pre-CI elements include education, policy development, training and planning. The interventions used during an event include: defusing; debriefing and one-on-one or group interventions. After the event follow up and referral for ongoing treatment are provided.

CISM interventions are generally provided by peers who have undergone specialist training. The peer may not normally work directly with the person involved in the CI, however they are usually from the same profession for example in aviation, pilots are generally deployed to provide support to fellow pilots. Peers can provide support in combination with mental health workers if it is deemed necessary or alternatively, they can refer people to more qualified clinicians for ongoing assessment or treatment.

Reports in the literature suggest that CISM can have positive effects on the reduction of stress symptoms. CISM has been used with: victims of trauma (Boscarino, Adams, & Figley,

2005; Campfield & Hills, 2001); emergency service workers (Bohl, 1991, 1995; S. R. Jenkins, 1996; Wee, Mills, & Koelher, 1999); soldiers (Deahl et al., 2000) and within air traffic control (Vogt, Leonhardt, Koper, & Pennig, 2004). The majority of these reports have focused on the debriefing aspect of CISM which is only one element of the CISM systematic approach. As discussed in section 1.7.1 for as many reports of benefits of this intervention, there are as many reports condemning its use.

CISM is a comprehensive and systematic approach that should be adopted in its entirety. As demonstrated, many of the reports focus on the debriefing intervention in isolation. Evaluation of such a complex approach presents challenges in terms of the time, resources, expertise. In addition the most appropriate methods and outcome measures to demonstrate effectiveness of the entire system need to be addressed. Finally, although CISM and CISD appear to be used within healthcare, no published reports evaluating the effectiveness of these interventions within healthcare have been identified through the primary literature review.

1.8 How is caring for children different to caring for adults?

Studies completed with emergency service workers showed incidents involving children rated amongst the most stressful events that staff dealt with. Ambulance crews rated incidents including cot death, injured children, and situations where the child resembled a family member as very stressful (Clohessy & Ehlers, 1999; Halperna, Gurevichb, Schwartzc, & Brazeau, 2009). They also cited incidents where they had spent some time with the child and felt a connection with the child as stressful (Halperna et al., 2009). A study by Mukherjee with nurses who worked in the Emergency Department found there was a stronger emotional reaction to the death of a child when the nurse had cared for the child as an inpatient for a period of time (Mukherjee, Beresford, & Sloper, 2009). Nurses are in a unique profession because they often have an established relationship with the patient and they care for the patient before and after they have died (Page & Meerabeau, 1996)

In addition to the stress of caring for a child, nurses also have to care for the family. The death of a child was particularly difficult for staff because they had to cope with the sadness of not being able to save a child's life as well as a sense they had failed the child's parents (Mukherjee et al., 2009). This added dimension of the relationship with the parents increased the stress of these events for the staff involved.

1.9 Is it possible to prepare staff for the potential psychological impact of an ALTE?

The CISM approach provides some pre-crisis preparation which includes stress management education, stress resistance and crisis mitigation training for both individuals

and organisation (Everly & Mitchell, 1997; Leonhardt & Vogt, 2006). To date no publications have been identified that have assessed the effectiveness of CISM in healthcare so it is difficult to assess how effective this component of CISM might be.

No literature has been identified to date that explores how doctors, nurses, emergency service workers or the armed forces prepare for stressful events during their training. The training appears to be focused on developing and refining clinical skills to deal with these events (for example life support training). Traditionally, the focus seems to be a retrospective approach whereby supportive interventions are utilised once a CI occurs as demonstrated by the use of PD and CISD.

Some hospitals appear to be following this trend and adopting CISM or the debriefing component of CISM (Bendersky Sacks, Clements, & Fay-Hillier, 2001; Boudreaux & McCabe, 2000; Caine & Levon Ter-Bagdasarian, 2003; Hollister, 1996; Ireland, Gilchrist, & Maconochie, 2008; Laws & Hawkins, 1995; Martin, 1993; Spitzer & Burke, 1993). To date no studies have been found which evaluate the effectiveness of this intervention. Given the concerns raised about the use of debriefing outside of healthcare, these interventions should be used cautiously (Rose, Bisson, Churchill, & Wessely, 2002; Rose, Wessely, & Bisson, 2004; van Emmerik et al., 2002).

Within healthcare, preparation for an ALTE is clinically focused. There are clear evidence-based international guidelines on how to perform cardio-pulmonary resuscitation in both adults and children for healthcare professionals (Nolan, 2010). As part of the guidelines, each healthcare institution provides yearly updates and practical training for staff on how to perform cardiopulmonary resuscitation. Despite this guidance, the available evidence suggests the quality of cardiopulmonary resuscitation in practice is often suboptimal (Abella, Alvarado, & Myklebust, 2005; Abella, Sandbo, & Vassilatos, 2005). As discussed earlier in this chapter, the negative experience/feelings generated by caring for a patient who has an ALTE can come from difficulties in communicating concerns about the patient's condition and the absence of a forum in which to discuss the event. This raises the question of whether it might be possible to lessen the impact of these events by preparing the staff through discussions of what it might feel like to be involved in an ALTE or providing the staff with the opportunity to discuss events and learn for next time.

Simulation has been used effectively within healthcare to prepare staff to deliver a variety of clinical skills and procedures (particularly in medicine) including laparoscopic surgery (Fried et al., 2004), emergency airway management (Rosenthal, Adachi, & Ribaldo, 2006) and cardiac life support (Kory et al., 2007; Wayne et al., 2005). Simulation training is particularly

useful to train for high-risk, low frequency events like cardiac or respiratory arrests (Kory et al., 2007). Simulation enables clinicians to practise clinical skills in a controlled, safe and reproducible environment where there is no risk to the patients (Kory et al., 2007). Simulation helps to prepare staff to deliver the clinical skills and procedures, however this preparation remains purely focused on the clinical.

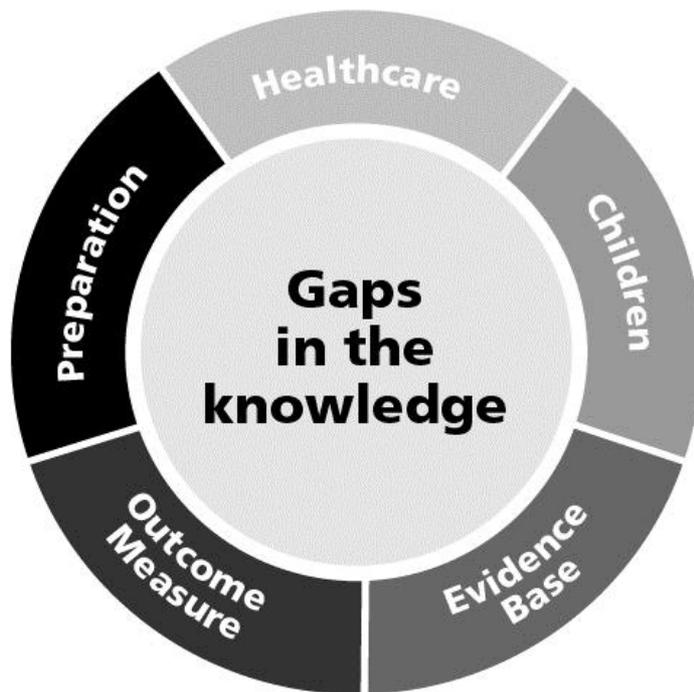
1.10 How do we measure effectiveness of interventions aimed at reducing the impact of caring for a child who has an ALTE?

Most studies that attempt to measure the effectiveness of CISM, CISD or PD use a reduction in PTSD symptomatology as their primary outcome measure. Deahl et al suggest that researchers should consider using more subtle outcome measures than PTSD symptomatology (Deahl, 2000). An example of a more subtle outcome measure might include measuring stress, distress, anxiety, depression or exploring coping strategies when dealing with an ALTE. Although PTSD is a possible outcome when exposed to a CI, it is not an inevitable outcome (Jeannette & Scoboria, 2008). Having more subtle outcome measures in place may help. By measuring more subtle outcomes, it may mean that interventions are put in place earlier to prevent a person going on to develop PTSD.

1.11 Gaps in the knowledge

Gaps in the knowledge have been identified through the literature review and the background work which has contributed to the concept of this thesis (Figure 3). The gaps include: healthcare; children; evidence-based; outcome measures and preparation.

Figure 3 - The gaps in the knowledge



Healthcare:

To date, the literature review has not identified any studies that have evaluated the effectiveness of CISM within healthcare. It is unclear whether there is anything unique about healthcare professionals, the healthcare environment or the patient population that might be different to the aviation industry in which this intervention was developed. Given the concerns raised by the systematic review and meta-analysis (Rose et al., 2002; van Emmerik et al., 2002 about the use of PD, further investigation needs to take place to assess if it is appropriate to adopt CISM within the healthcare setting or if specialised intervention(s) need to be developed.

Children

Whilst there do not appear to be any studies completed looking at the stress of caring for a child who has an ALTE in hospital specifically, the studies above show that caring for children who have a CI rates as highly stressful for ambulance crews and nurses working in the emergency department of hospitals. There is a need to explore what the experience of caring for a child who has an ALTE is like for the nurses and how that experience might influence what interventions would be effective in these situations.

Evidence-based:

As discussed above, further work needs to be completed to explore if it is appropriate to adopt interventions that have been developed outside healthcare or if specialised interventions need to be developed. Any intervention developed for use within healthcare should be evidence-based and evaluated for effectiveness in the appropriate context.

Outcome measure:

It is not clear what affect being involved in these events have on the nursing staff. Studies designed to evaluate the effectiveness of an intervention aimed at healthcare staff involved in an ALTE should ideally explore what the most appropriate outcome measure is for healthcare providers. More subtle outcomes than a reduction in PTSD symptomatology should be explored.

Preparation:

Within healthcare there are training opportunities for nurses to develop clinical skills to prepare for an ALTE. It is not clear if there is any training available to help prepare staff for the potential psychological impact of being involved in these events. There is a need for further exploration of whether it is possible to prepare nurses for the potential psychological impact of caring for a child who has an ALTE.

1.12 Methods:

Given the wide-ranging and exploratory nature of this research, it is necessary to develop a program of work that is flexible and responsive to address the developing research questions. Considering the gaps in the knowledge that have been identified, it is necessary to develop a multi-modal program that can address the research questions, rather than adopt a methodology or approach that requires the questions to fit into the type of method being used. Both qualitative and quantitative methods will be used throughout this PhD. This is often referred to as mixed methods. Mixed methods have been described as:

“ . . . research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry” (Tashakkori & Creswell, 2007 pp. 4)

The case for mixed design:

Understanding what the experience of caring for a child who has an ALTE is like for healthcare professionals and then developing interventions to prepare and support staff for the potential impact of these events requires a multi-faceted program of research to address

the inherently complex issues. Detailed research that explores healthcare professionals' experiences and the meanings they attribute to these events is needed in order to understand the experience and use that information to inform the development of evidence-based pilot interventions.

Hiles (Hiles, 2012) has proposed that it is the logics of inquiry which should guide the decision regarding what type of method to adopt to answer a research question rather than a preference for a particular method or historical tradition. The three logics of inquiry Hiles has identified are linked to three modes of inference involved in the processes of doing research and making sense of our findings: deduction, induction, and abduction. The logics associated with these forms of reasoning are: theory-driven, data-driven and explanation-driven, respectively (Figure 4). Quantitative research is generally more theory-driven and is based on a "deductive inference". That is, using a theoretical background the researcher will make predictions or hypothesise what the data will show which can then be tested. Qualitative research is generally more data-driven and is based on an "inductive inference" (that is, collecting data and generating theory from the data). The third logic of inquiry is based on "abductive inference" which explores the explanatory relationship between theory and data in a non-linear manner. It is entirely possible that a project like this will draw on different logics and different modes of inference to answer each of the different research questions. That strengthens the argument for a mixed methods approach to this program of work.

Figure 4 - The Hiles (2012) Logics of inquiry



Research conducted within healthcare, particularly medical research, has traditionally utilised quantitative methods with the aim of producing evidence-based practice that has evolved from evidence-based medicine. Evidence-based practice uses the positivist medical model, underpinned by the natural sciences, which asserts that research can be a value-free process where objective knowledge can be gained through direct observation and measurement. A Randomised Control Trial (RCT) and especially the systematic review of several RCTs is considered the “gold standard” for conducting research into the effectiveness of interventions within healthcare (as demonstrated by the Levels of Evidence in Table 3) (Howick et al., 2011)

Table 3- Levels of evidence from the Oxford Centre for Evidence Based Medicine

Meta-analysis of Randomised Control Trials
Randomised Control Trials
Cohort Studies
Case Studies
Mechanistic reasoning

Relying solely on the methods of the natural sciences may not be appropriate for all research projects as *“the epistemological, ontological and methodological assumptions considered appropriate for clinical medicine may be inappropriate for non-biomedical health and social care”* (Finlay, 2011, pp.7). Some researchers are starting to identify that not all research questions require an RCT to answer them, or there may not be time to run an RCT to get an answer to the questions (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). In the case of exploring what the experience of caring for a child who has an ALTE is like for the nurses, an RCT does not take into account the participants’ own experiences, feelings and interpretations of the phenomena that is being studied (Crossley, 2000). It is becoming increasingly acceptable that other approaches and forms of evidence can and should contribute to the knowledge base (Shaw, 2012). The development of the evidence-base using a mixed methods approach would need to be completed before thinking about conducting a larger RCT.

Sackett describes evidence-based medicine as an integration of clinical expertise with the best available external clinical evidence from systematic research (Sackett et al., 1996). Clinical expertise is acquired through clinical experience and practice and clinical evidence is gathered through clinically relevant research. Both clinical expertise and evidence complement each other and ideally should not be used in isolation. A clinician who practices

without evidence risks providing treatment that is out of date. Similarly a researcher who does not have clinical expertise runs the risk of developing treatment or interventions that are inapplicable or inappropriate (Sackett et al., 1996). In the context of the current thesis, the clinical expertise of the nurses and their experience of caring for a child who had an ALTE must be explored before evidence-based interventions can be developed. Furthermore, those evidence-based interventions would need to be evaluated for effectiveness to ensure that they are clinically relevant and appropriate.

1.12.1 The pragmatic approach

Pragmatism has its roots from the work of the philosophers John Dewey, George Herbert Mead, William James and Charles Sanders Pierce (Johnson & Onwuegbuzie, 2004) and provides a philosophical basis for a mixed design approach. Quantitative purists believe that the natural science inquiry should be objective, and that it must be time and context-free (Nagel, 1986). Ideally researchers should remove biases, remain emotionally detached and uninvolved with the objects of the study and test or empirically justify their stated hypothesis (Johnson & Onwuegbuzie, 2004). Qualitative purists on the other hand contend that multiple-constructed realities abound and that it is not desirable or possible to have time and context free inquiry. Furthermore, qualitative research is characterised by detailed, rich and thick written descriptions that do not strive to be unemotional or uninvolved (Johnson, Onwuegbuzie, & Turner, 2007). Pragmatism is a philosophical underpinning that can facilitate the use of both quantitative and qualitative approaches within a program of work like the work proposed within this thesis.

The pragmatic approach holds the following assumptions: researchers are free to choose techniques which best meet their needs and purposes; the world is not an absolute unity; truth is what works at the time; research occurs in social, historical, cultural and political contexts; and that there is an external world independent of the mind as well as lodged within the mind (Creswell, 2009). Pragmatism focuses on dealing with facts or actual occurrences and relies on a practical approach to answering questions or exploring experiences. A pragmatic approach is not committed to any specific theory and does not subscribe to the idea that one particular method or approach to answering questions is superior. The pragmatic approach is concerned with finding the right approach or research method(s) to answer the question rather than subscribing to a single methodology, which must be adhered to rigidly. This is referred to as methodolary, as term discussed by Chamberlain (Chamberlain, 2000) which encompasses an over-enhanced valuing of methodology. Thinking back on the quantitative and qualitative purists stances discussed in the previous section we can see how methodolary can be problematic. The quantitative purists promote

the notion of objective reality, unbiased, emotionally detached research. Qualitative purists promote the notion of multiple-constructed realities that cannot be time and context free. Methodology is a rigid attachment to a particular method which creates a risk the researcher might exclude the actual substance of the story being told because of a preoccupation with selecting and defending a particular method (Chamberlain, 2000).

A pragmatic approach acknowledges there are multiple ways of making sense of the world and multiple views and experiences that are valuable (Greene, 2008). Pragmatic approaches acknowledge the complex nature of the world and the way in which people interact within that world (Sale, Lohfeld, & Brazil, 2002). This approach is ideal for research exploring nurses' experiences of caring for children who have an ALTE in hospital. When exploring what this experience is like there are a multitude of issues and influences that can come into play: for example the nurses themselves have their own experiences, feelings, knowledge and influences within their personal and working environment which might influence their experience. The nurses also have a complex interaction with the children and their families who come with their own experiences, feelings, knowledge and influences. This portion of the investigation requires a more qualitative approach. In contrast, the identification of existing interventions and the development of new interventions lends itself to a more quantitative approach. The complex program of work required to explore these complex issues cannot rely on one method or approach in isolation.

In 2000 the Medical Research Council (MRC) published the *MRC Framework for the Development and Evaluation Of RCTs for Complex Interventions to Improve Health* (MRC, 2000). In 2008 an updated version of the guidance was published (*Developing and evaluating complex interventions: new guidance*) include non-experimental methods to assist researchers to choose appropriate methods to answer the research questions (Craig et al., 2008).

The MRC guidance outlines the development-evaluation-implementation process of a complex intervention. A complex intervention is described as an intervention that contains interacting components (Campbell et al., 2000; Craig et al., 2008). The complexity of an intervention may not pertain to the intervention itself. The complexity may lie with the development of the interventions, range of possible outcomes or the variability in the target population (Craig et al., 2008).

The first steps in developing a complex intervention are to identify the evidence-base, apply a theoretical framework and model the process and outcomes. The application of a theoretical framework facilitates the process of modifying or changing behaviours. Theories are made up of theoretical constructs or component parts of the theories. It is these constructs that can facilitate the behaviour change (Michie et al., 2011; Michie et al., 2005). In an effort to make it easier to navigate the numerous theories in existence, Susan Michie and colleagues have created a Behaviour Change Taxonomy. This taxonomy outlines relevant behaviour change techniques that can be linked with the evidence-base and be incorporated into complex interventions (Abraham & Michie, 2008; Michie et al., 2011; Michie, Johnston, Francis, Hardeman, & Eccles, 2008). Studies have shown that implementation of evidence-based interventions without the supporting theory have failed to change clinical practices (Al-Damouk, Pudney, & Bleetman, 2004). The more detailed application of the MRC framework will be discussed in greater detail later in the thesis (chapter 5 & 6).

In summary, the logics of inquiry should guide what methods are used to answer the research questions rather than try and fit the questions into a particular methodology. It has also been shown that methodolary can run the risk of losing important information if researchers stick rigidly to a type of methodology. Although an RCT was historically considered the “gold standard” in evidence-based medicine, researchers have acknowledged it is not always the best approach to answer all research questions. The update to the MRC framework acknowledges the contribution that non-experimental research can make to the development of interventions for use within healthcare. The MRC framework outlines that interventions should combine evidence with a theoretical framework. All of these factors bring together the different fields of nursing research, evidence-based healthcare, health psychology and mixed methods into a PhD program of work. The program of work that has been developed will be describes in the following section.

1.13 PhD program of work

Based on the gaps in the knowledge identified through the literature review and background work described in this introductory chapter, a PhD program of work has been devised to gather an evidence-base specific to nurses who care for children who have an unexpected ALTE in hospital. Table 4 outlines the proposed study methods, the logic of inquiry that has guided the development of each study, the corresponding phase of the MRC and the gaps in the knowledge that it aims to address. As each study is described through the thesis, further details of each methodology used will be discussed.

Table 4 - The mixed-design approach for the program of research

Study methods	Aims	Logic of Inquiry (reference laws)	Phase of the MRC Framework	Gap in the knowledge
Systematic Literature Review	Identify what interventions are being utilised, evaluated and shown to be effective within healthcare to prepare and support staff	N/A – a description of the existing evidence	Development	Healthcare Evidence-base Preparation
International survey of practice	Identify interventions being used in clinical practice to prepare and support staff	Inductive (collecting data to generate theory)	Development	Healthcare Children Evidence-based Preparation
Interviews with nurses and doctors who care for a child who has an ALTE	Explore what the experience is like for the participant to gain a deeper understanding of these events and the impact they have on the staff.	Inductive (collecting data to generate theory)	Development	Healthcare Children Evidence-based Outcome measure Preparation
Develop interventions to prepare & support staff who care for children who have an ALTE	A working party will be used to refine and evaluate the interventions themselves using an iterative process	Abductive (explanatory relationship between theory and data)	Development	Evidence-based
Feasibility study of interventions	Run a feasibility study to inform outcome measures, test the acceptability of the interventions and test procedures	Deductive – (generating a hypothesis (theory) and then testing that)	Feasibility Study	Evidence-based Outcome measure

1.14 Aims and objectives

The overarching aim of this thesis was to explore and describe what the experience of caring for a child who has an ALTE is like for the nurses who are involved in these events.

At each stage of the research project there were more focused objectives to be addressed which includes:

- 1 Identify what interventions are being utilised, evaluated and shown to be effective within healthcare to prepare and support nurses who care for children who have an ALTE.
- 2 To explore if caring for children who has an ALTE presents any unique or additional challenges for providing preparation or support for nurses who care for this population.
- 3 Apply the MRC framework for the development of complex interventions to existing interventions (identified through the systematic review or international survey of practice) or develop interventions aimed at preparing and supporting staff based on the evidence gathered during the program of work.
- 4 Complete a feasibility study on the interventions to help inform the most appropriate outcome measures.

2 Chapter 2 - Systematic Review to identify any existing interventions that aim to prepare or support healthcare professionals who care for patients who have an ALTE.

2.1 Introduction

Chapter one described how caring for a child who has an unexpected Acute Life Threatening Event (ALTE) or an unplanned admission from the ward to the Paediatric Intensive Care Unit (PICU) in hospital has the potential to be a particularly powerful and intense source of stress for the nurses involved. Critical Incident Stress Debriefing (CISD), Psychological Debriefing (PD), and Critical Incident Stress Management (CISM) have been developed in industries outside of healthcare to manage the stress and trauma generated from critical incidents (CI) and reduce the possible psychological sequelae of these events (Dyrogrov, 1989; Everly & Mitchell, 1997; Leonhardt & Vogt, 2006; Mitchell, 1983).

Over the last two decades, healthcare organisations have started to use the CISD and CISM approaches to minimise the impact of critical incidents on staff (Bendersky, Clements, & Fay-Hillier, 2001; Cooper, 1993; Cudmore, 1996; Iacono, 2002; Lane, 1993; Laws & Hawkins, 1995; Robbins, 1999; Spitzer & Burke, 1993; Tan, 2005; Turner & Kelly, 2000). Ireland et al (Ireland, Gilchrist, & Maconochie, 2008) published a survey conducted with 180 nursing and medical lead clinicians from 50 different UK hospitals to determine what the current UK practices were in relation to debriefing after failed paediatric resuscitation attempts. Sixty two per cent of the respondents identified that a debriefing would occur after these events most of the time. Despite the widespread use of this supportive intervention, no studies were identified in the literature review that examines the effectiveness of these interventions within healthcare settings.

This chapter will describe a systematic literature review that has been conducted to address the gaps in the knowledge:

- 1 Healthcare – are there any interventions that have been developed specifically for use within healthcare? Are any interventions that have been developed outside of healthcare being evaluated for effectiveness in the healthcare environment?
- 2 Evidence-base – are there interventions being used within healthcare that are evidence-based?
- 3 Prepare – Have interventions been developed to prepare staff for the potential psychological impact of these events?

2.2 Why is it important to do this review?

ALTEs occur in hospitalised children on a regular basis. These events have the potential to be a particular source of stress for the staff involved. If the stress generated by these events is not managed effectively they can have a negative impact on the individual and on the delivery of patient care. The frequency of events coupled with the potential impact on the individuals, the organisations they are employed by and the delivery of patient care made this an important area of study.

Health care decisions for patients and for public policy should be informed by the best available research evidence (Centre for Reviews and Dissemination, 2009b). Performing a systematic review and subsequent meta-analysis is the first step in identifying and evaluating interventions which are being used to prepare and support staff who care for patients who have an ALTE in hospital.

A review of the Centre for Reviews and Dissemination (Centre for Reviews and Dissemination, 2009b) and the Cochrane Database of Systematic Reviews (Cochrane) did not identify any existing reviews looking at this topic within healthcare.

2.3 Objectives of the review

The objectives of the review were:

1. To identify interventions which have been evaluated for effectiveness within healthcare that aim to prepare or support staff for the potential psychological impact of caring for a patient who has an ALTE in hospital.
2. To systematically review the literature and, if feasible, perform a realist synthesis meta-synthesis on the identified studies. A realist synthesis can be performed on studies with different designs and aims to explore what aspects of the interventions work for whom in what circumstances (Pawson, Greenhalgh et al. 2005; Wong, Greenhalgh et al. 2013).

2.4 Developing the search strategy:

2.4.1 Refining the review question:

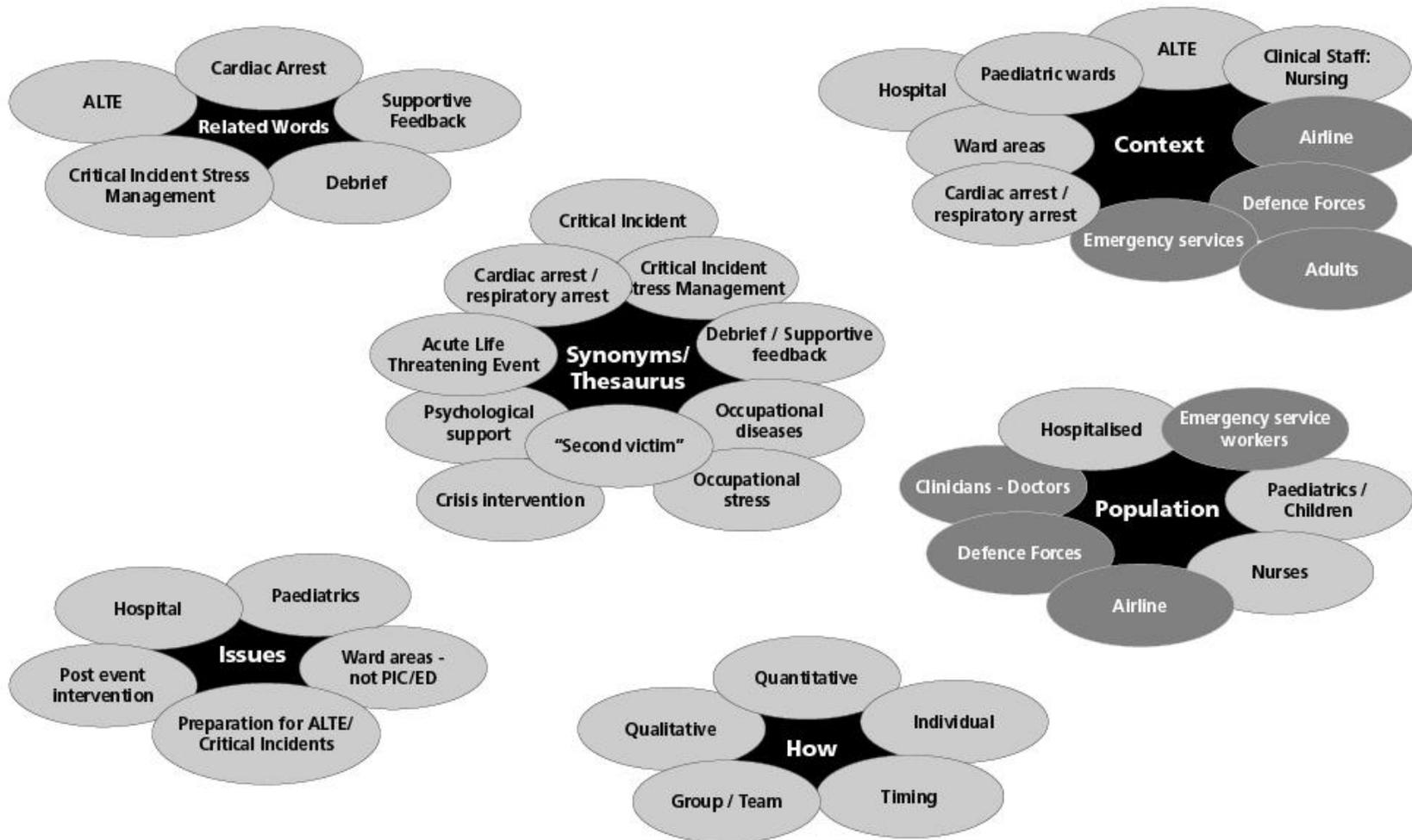
The CHIP tool (Shaw, 2010a) was used to refine the research question (Table 5). Initial scoping searches did not identify any articles when the search was limited to nurses who care for children who have an ALTE in hospital. Therefore, the search was expanded to include *healthcare workers* who care for *patients* who had an ALTE.

Table 5 - CHIP Tool (Shaw, 2010)



A mind map (Figure 5) was then created to generate possible search terms in accordance with the guidance outlined by Shaw (Shaw, 2010a). The Mind Map informed several scoping searches conducted to identify if the terms were generating relevant articles. The final search terms are outlined in section 2.8.

Figure 5 - Mind Map



2.5 Inclusion and exclusion criteria for the review:

Inclusion and exclusion criteria were developed prior to conducting the review which standardise the content of articles that would be included in the review:

2.5.1 Inclusion criteria

1. In-hospital – an ALTE that occurs in a hospital
2. Healthcare worker – any healthcare worker employed in an acute care hospital
3. Unexpected Acute Life Threatening Event (ALTE) – cardiac arrest, respiratory arrest, call for immediate assistance, unplanned intensive care unit (ICU) admission.
4. Evaluation of an intervention that aims to prepare or support staff who care for a patient who has an ALTE. The intervention must look at preparation or support from a psychological point of view rather than just a clinical point of view.

2.5.2 Exclusion criteria

1. Events that occur out of hospital – this may include (but are not limited to) events such as out-of-hospital arrests, sudden infant death syndrome, drowning, shooting, acts of terror, natural disasters.
2. Non- hospital worker – this may include (but is not limited to) military personnel, aviation, emergency services: police, fire, ambulance, aid workers
3. Not an ALTE (as defined by the researcher) for example (but are not limited to) palliative care, suicide of a patient, medication error
4. Does not evaluate the effectiveness of the intervention – this may include description of existing literature, reviews of literature, description of practice with no evaluation of the effectiveness of the intervention or studies that are purely focused on the acquisition of clinical skills.

2.6 Methods

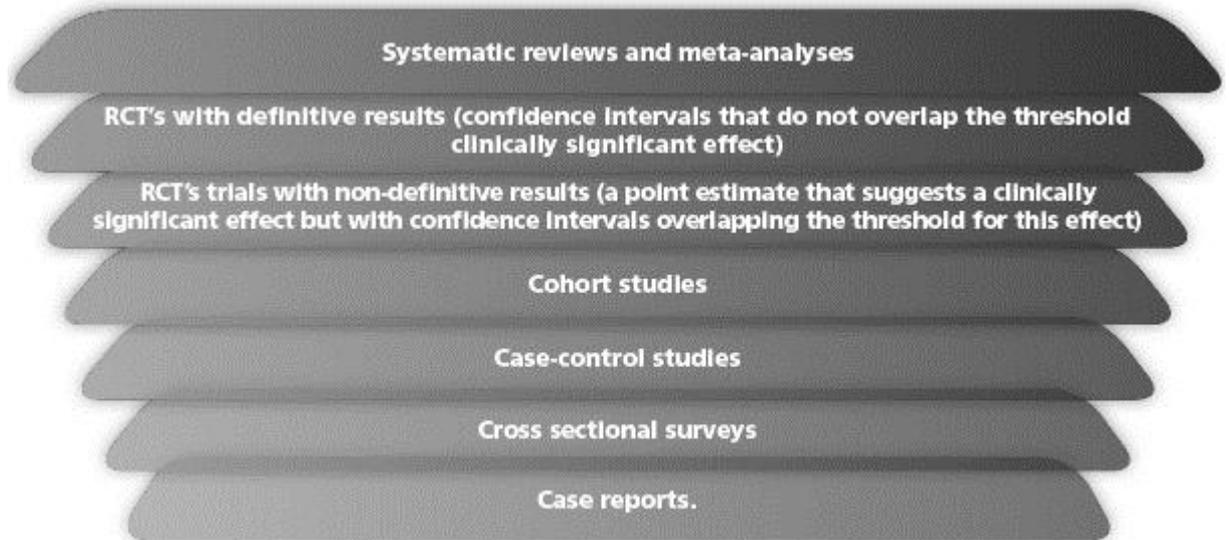
Criteria for considering studies for this review

2.6.1 Study Design:

The Hierarchy of Evidence (Greenhalgh, 1997; Guyatt et al., 1995) suggests that meta-analysis of systematic reviews or randomised control trials (RCT) are the gold standard for developing guidelines for evidence- based best practice (Figure 6). However, there is growing recognition of the contribution that qualitative research can make to reviews of effectiveness and to knowledge (Centre for Reviews and Dissemination, 2009a; Sheldon, 2005). This has led to a growing recognition that there are benefits to including qualitative evidence in systematic reviews within healthcare (Collins, Onwuegbuzie, & Sutton, 2006;

Johnson et al., 2007).. All studies that met the inclusion criteria were considered for the review regardless of study design.

Figure 6 - Hierarchy of Evidence



2.6.2 Inclusion of unpublished studies

The Centre for Reviews and Dissemination (Centre for Reviews and Dissemination, 2009b) suggest that all relevant studies regardless of publication status should be included in a systematic review to avoid publication bias. Publication bias can occur when the publication of a study is influenced by its results. For example, studies that show a positive effect may be more likely to be written up and accepted for publication as opposed to studies that showed a negative effective which may lead to an overestimation of the intervention effect (Song, Eastwood, Gilbody, Duley, & Sutton, 2000). Any unpublished study, identified through the grey literature or hand searching that met the inclusion criteria was considered for the review.

2.6.3 Language

There were no resources available to translate non-English language papers. If non-English papers were identified then the plan was to document their existence, but record language as the reason for exclusion (Centre for Reviews and Dissemination, 2009b).

2.6.4 Year of publication

The search strategy did not include a limitation of year of publication to ensure comprehensiveness.

2.7 Search methods for identification of studies

2.7.1 Electronic searches

Online bibliographic databases searched included:

1. Cinahl
2. Medline
3. Psych Info
4. Embase
5. Web of Knowledge
6. Web of Science
7. Psychology and Behavioural Science
8. Cochrane Reviews

2.7.2 Other searches

In addition to the online bibliographic databases, the following methods were also used to identify relevant studies:

1. Citation searching
2. Searching the reference lists and bibliographies of retrieved and relevant articles
3. Contacting authors of relevant articles
4. Searching the "grey literature"
5. Hand searching key journals
6. Searching relevant internet resources

2.8 Search terms

Once the Mind Map (discussed in section 2.4.1) was completed, scoping searches were conducted to determine whether the terms were generating relevant articles and were sufficiently comprehensive. After this refinement process, the final search terms used for the review were:

1. (healthcare OR "health care" OR hospital*).af;
2. nurs*.af;
3. exp MEDICAL STAFF, HOSPITAL/ OR NURSING STAFF, HOSPITAL/;
4. 1 OR 2 OR 3;
5. ("cardiopulmonary arrest" OR "cardiac arrest" OR "cardio-pulmonary arrest" OR "cardio pulmonary arrest" OR "CA").af;

6. ("cardiopulmonary resuscitation" OR "cardio-pulmonary resuscitation" OR "cardio pulmonary resuscitation" OR).af;
8. "acute deterioration".
9. exp HEART ARREST/
- 10 ("cardiorespiratory arrest" OR "cardio-respiratory arrest" OR "cardio respiratory arrest").af
11. ("cardiorespiratory resuscitation" OR "cardio-respiratory resuscitation" OR "cardio respiratory resuscitation").af
12. ("respiratory arrest" OR RA).af
13. ("peri-arrest" OR "peri arrest").af
14. ("acute life threatening event" OR "acute life threatening episode" OR ALTE).af
15. (("critical inciden*" NOT ("critical incident technique" OR "critical incident analysis" OR "critical incident report*" OR "critical incident interview*" OR "critical incident stud*"))).af
16. 6 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15
17. exp STRESS DISORDERS, POST-TRAUMATIC/
18. ("post traumatic stress disorder" OR "post traumatic stress" OR "PTSD").af
19. exp STRESS, PSYCHOLOGICAL/
20. "psychological stress".af;
21. BURNOUT, PROFESSIONAL/;
22. "burnout".af
23. ("occupation* stress" OR "occupation* health").af
24. distress.af
25. 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24
26. ("critical incident stress" OR "critical incident stress management" OR "CISM").af
27. ("critical incident stress debrief*" OR "CISD").af
28. "peer support".af
30. "crisis intervention".af
31. CRISIS INTERVENTION/
32. CRITICAL INCIDENT STRESS/ OR CRISIS INTERVENTION/ OR STRESS MANAGEMENT/
33. "stress management".af
34. "psychological support".af
35. ("manage*" OR "intervention*" OR "prepar*" OR "support*").af
36. 26 OR 27 OR 28 OR 30 OR 31 OR 32 OR 33 OR 34 OR 35
37. 4 AND 16 AND 25 AND 36

2.9 Data collection and analysis

2.9.1 Reference management and documenting decisions

All references generated through the searches were entered into Endnote (EndNote X5) either directly through the electronic data base search or manually if required. Custom fields were created within the Endnote library labelled with the inclusion/exclusion criteria to track the reason for inclusion or exclusion of each article.

2.9.2 Selection of studies

Potentially eligible papers were identified based on screening the titles and abstracts by one author (APH). Ideally more than one author should independently assess the papers, however this was not feasible within the time and resource constraints of the program of work. To combat this, the approach was one of over-inclusion at this stage so as not to miss any important studies. APH would discuss any articles that she questioned eligibility with the supervisory group to reach a consensus.

Full copies of potentially eligible studies were then obtained. APH reviewed the full text articles and decided on the inclusion or exclusion of papers based on the predefined criteria. APH discussed the exclusion of papers with the supervisory group (HD, HP, and RS). If there was any disagreement within the supervisory group of eligibility for inclusion this would be resolved through discussion. There was no blinding to the journal, the authors or the institution.

2.9.3 Quality assessment

The QATSDD quality assessment tool (Sirriyeh, Lawton, Gardner, & Armitage, 2012) was used to assess the quality of articles to be included in the review. The QATSSD was developed specifically for its application to methodologically diverse research articles.

The QATSDD comprises of 16 quality criteria; 14 of these criteria apply to qualitative studies, 14 apply to quantitative studies and all 16 apply to any mixed methods papers. Each criterion has a description under each score from 0-3, which outlines what is required to obtain each score. Using the descriptions for each score, each paper is given a score from 0-3 for each item on the scoring grid. This results in a score out of a maximum of 48 (16x3) for mixed methods papers, and 42 (14x3) for qualitative or quantitative papers. In order to compare the quality of the papers, a percentage of the maximum possible score is calculated. A copy of the completed scoring grid with the included studies is attached as Appendix 1..

2.9.4 Data extraction

A data extraction form was adapted from the Cochrane Handbook (Higgins & Green S (editors), 2008). (Appendix 2)

2.9.5 Data synthesis

Synthesis of RCTs is performed by a meta-analysis and meta-synthesis is performed on qualitative studies. This review included all study designs that met the inclusion criteria therefore it was proposed that a realist synthesis was performed. A realist synthesis can incorporate different study designs and has an explanatory rather than a judgemental focus. The realist research question aims to explore what works for whom in what circumstances, in what respects and how (Pawson, Greenhalgh, Harvey, & Walshe, 2005; Wong, Greenhalgh, Westhorp, Buckingham, & Pawson, 2013). This approach has the potential to expand the knowledge base by explaining why complex interventions may be successful or unsuccessful. Traditional reviews focus on measuring and reporting effectiveness and provide little explanation why interventions may work when applied in different contexts or circumstances (Pawson et al., 2005). The aims of the synthesis are to provide a deeper understanding of how interventions can be modified or applied most effectively by combining the theoretical understanding and empirical evidence. This combination helps to explain the relationship between the context in which the intervention is applied, the mechanisms by which it works and the outcomes which are produced (Pawson et al., 2005).

2.10 Results

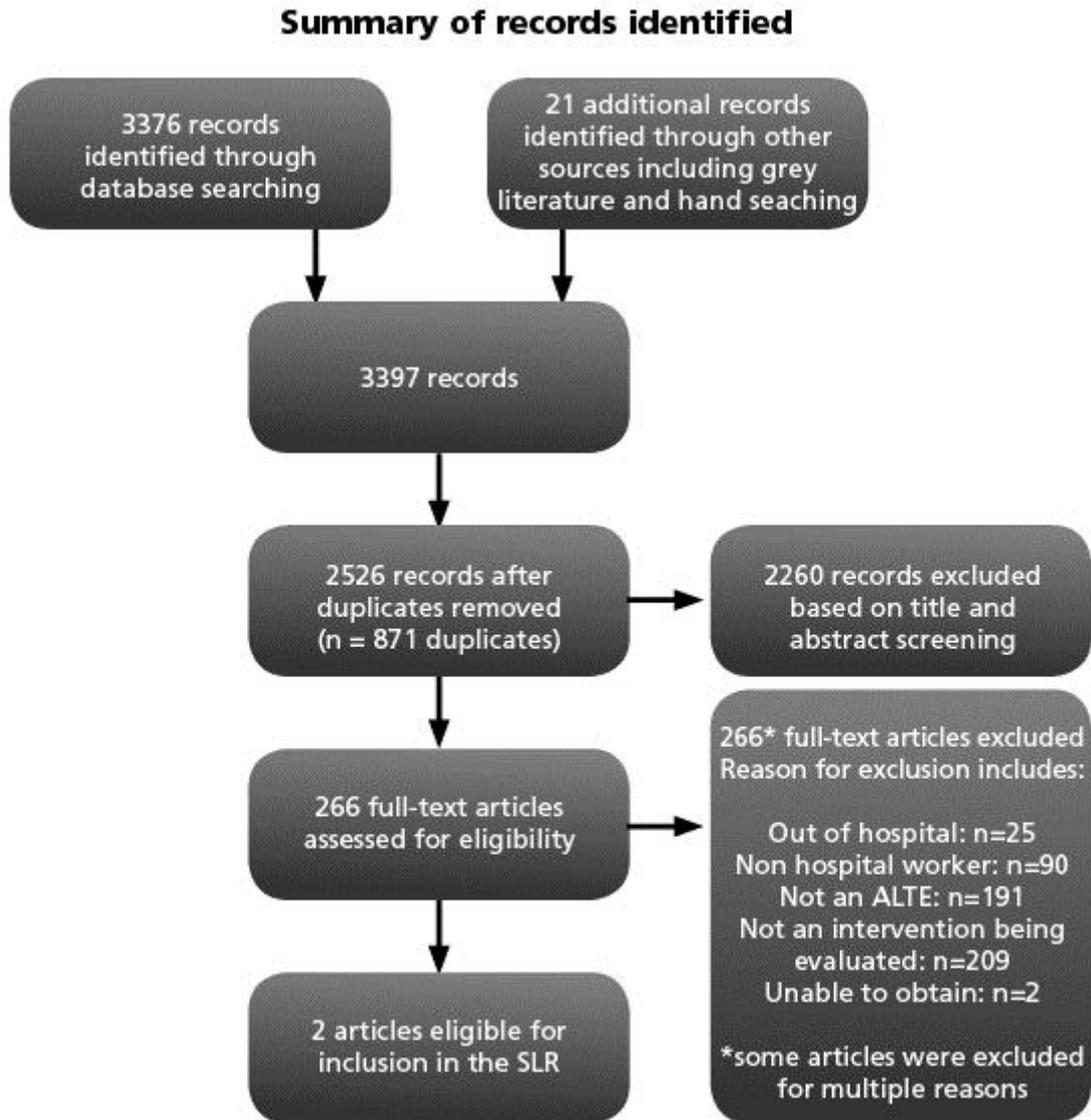
2.10.1 Description of studies

The search strategy resulted in 3376 records being identified through database searches and a further 21 by other search methods (Figure 7). Following the removal of duplicates (871) the remaining 2526 records were screened. 2260 records were excluded based on title and abstract leaving 266 full text articles to be reviewed. Two articles could not be obtained. Twenty five* articles were excluded for events that occurred out of hospital, 90* were excluded as the interventions was not provided with healthcare workers, 191* were excluded as they were not used for an ALTE and 209* were excluded as they were not interventions being evaluated for effectiveness. *Articles could be excluded for more than one reason therefore the numbers do not add up to 264

Of the 3376 records identified through the systematic search, only two articles were eligible for inclusion in the review (Blacklock, 1998; Gamble, 2001). The studies by both Blacklock and Gamble used a debriefing intervention to support staff healthcare after an ALTE had

occurred within the hospital. The following section is going to review the methods, participants, interventions, outcome measures and results described by the authors.

Figure 7 - Summary of records



Adapted from Moher et al reporting items for systematic reviews in accordance with the PRISMA statement (Moher, Liberati et al. 2009)

2.11 Methods of the included studies

Refer to Table 6 provides a for a summary of the methods for the two included articles.

2.11.1 Study design:

There was no specific description of the study design reported by both authors.

The study by Blacklock (1998) described a quantitative approach to ascertain the value of a debriefing intervention. People were invited to participate in a debriefing session after witnessing a suicide in the hospital. They were asked to complete the Impact of Events Scale (Horowitz, Wilner, & Alvarez, 1979) at two time points: ten days and again at six weeks post intervention.

The study by Gamble (2001) described both a quantitative and qualitative approach to identify whether a debriefing process after a resuscitation attempt on a patient following a cardiac arrest reduced the degree of stress generated by dealing with the physical and psychological demands of the situation. The nurses in the study were also asked to reflect on the incident and identify any learning needs.

2.11.2 Study aims:

Both studies evaluated the use of debriefing with clinical staff who were involved in or witnessed a critical incident in a hospital setting.

Blacklock (1998) described the development of a hospital team approach using debriefing. Although the author does not specifically state the aims of the study, the Impact of Events Scale (Horowitz et al., 1979) was used to ascertain the value of a debriefing intervention when discussing the results.

The study by Gamble (2001, pp. 157) aimed to:

“Identify whether a debriefing process after a resuscitation attempt on a patient following a cardiac arrest reduced the degree of stress generated by dealing with both the physical and psychological demands of the situation”.

In addition to the primary aim, the nurses were asked to reflect on the incident and identify any learning needs. Although this is not the primary aim, the results of the study focus on this objective.

2.11.3 Duration of studies:

Neither author defines the length of the study or the length of time participants were asked to participate in the study. Blacklock (1998) reports that the participants were followed-up three months after participating in the debrief. Gamble (2001) describes that the debriefing session was held as soon as possible after the event.

2.11.4 Sequence generation, blinding and bias

There was no sequence generation, allocation sequence concealment or blinding identified by either author for the studies. Issues of bias were not addressed by the authors.

Table 6 - summary of the methods for included studies

	Blacklock (1998)	Gamble (2001)
Study design	Does not state – quantitative approach described in methods	Does not state – qualitative approach described in methods
Study aims	Not specifically stated – uses the Impact of Events Scale to ascertain the value of debriefing	Does debriefing reduce the stress generated by a cardiac arrest? In addition to the above primary aim a further objective of the article was for nurses to reflect on the incident and identify any learning needs
Duration of study	Not defined	Not defined
Sequence generation, blinding and bias	Not discussed	Not discussed

2.12 Participants

2.12.1 Number of participants

There was no sample size calculation generated for either study. Forty three people participated in the study by Blacklock (1998). Gamble (2001) does not identify the number of people who participated in the study.

2.13 Setting

The study by Blacklock was conducted at the Wesley Hospital in Queensland, Australia. The study by Gamble describes the study participants as being from a large medical unit comprising of a medical assessment unit, cardiac care unit and eight medical wards. No further details are given about the institution, the characteristics of the participants or the study setting from either study., Given however the author is employed by the Leicester Royal Infirmary, it is assumed the research took place within the University Hospitals of Leicester NHS Trust therefore it is presumed the research took place within this institution.

2.14 Interventions

2.14.1 Total number of intervention groups:

Blacklock (1998) describes one intervention group who received a group debrief. There was no control or comparison group for this study.

Gamble (2001) reported that people were invited to participate in an individual debrief or a group debrief. No details are provided on how many people participated in the intervention or how many people received individual or group debriefing. There was no control or comparison group for this study.

2.14.2 Description of intervention:

Blacklock (1998) describes the development of a Critical Incident Stress Management team who provided a group debrief (based on Mitchell's Critical Incident Stress Debriefing (CISD) approach (Mitchell, 1988). The session was held approximately seven hours after the incident and lasted for approximately 90 minutes. Following the session, some of the participants were followed up as they required it for approximately 12 months. All participants of the group debrief were asked to complete the Impact of Events Scale 10 days and 6 weeks after participating in the debriefing session (Horowitz, Wilner, & Alvarez, 1979). All participants were contacted via the telephone or spoken to at work at 3 months post intervention.

Gamble (2001) describes the provision of a CISD based on a model described by Jimmerson (Jimmerson, 1988). This model appears similar to the Mitchell model, however it only has six phases as opposed to Mitchell's seven-phase model. The Jimmerson model combines the thought and reaction phases (phase three and four) of the Mitchell model into a single feeling phase. The sessions were tape-recorded and then transcribed. The participants were asked to reflect on the issues raised during the session and identify learning needs. The timing between the session, transcription and then reflection of the issues is not described by the author.

No details are provided by either author on who delivered the intervention, the format or content of the session (apart from the CISD format). Not enough detail was provided by the authors to replicate the studies.

2.15 Outcomes Measures and Results

Blacklock study:

After participating in the debrief session, the 43 participants were sent the IES and asked to state whether they were affected by the event (never, rarely, sometimes or often) at 10 days and again at six weeks. At three months all participants were followed up with a phone call or a visit, however it is not clear if they were asked to complete the IES at this time (see Table 7 for summary of results).

The Impact of Events Scale presents 15 statements and participants are asked to indicate their responses as not at all (0), rarely (1), sometimes (3) or often (5). A completed IES score can range from 0 (indicating no impact from an event) to 60 (indicating high impact of event). The paper does not present the range of IES scores generated by the participants. In addition, it is not clear how the author analysed the results and generated the scores they have presented in the paper. As described, the IES generates a score of 0-60, however the author has presented the results of how affected they were by the event (never, rarely, sometimes or often).

Table 7 - Results from the Blacklock study

Follow up period	Number who returned scale	Results
Ten day follow up	13/43 (30%)	6/13 (54%) often affected 7/13 (45%) sometimes affected
Six week follow up	18/43 (42%)	9/18 (54%) sometime affected 4/18 (21%) rarely affected
Three month follow up	Not clear if participants were asked to complete the IES	All reported having no further symptoms

Gamble study:

Quantitative results

The aim of the study was to identify whether a debriefing process after a resuscitation attempt on a patient following a cardiac arrest reduced the degree of stress generated by dealing with both the physical and psychological demands of the situation. The author did not attempt to measure this or address this as part of the paper.

Qualitative results

An additional objective of the study was to ask the participants to reflect on the incident to try and identify learning needs. The themes generated through these reflections include:

1. *Stress response* – participants interpreted the shaking, fumbling and dropping things as a lack of practical and manual skills rather than being associated with the adrenaline rush that happens when you are stressed.
2. *Emotional response* – Knowing the patient affected how the participant responded to the event. The participants indicated that they coped better with the resuscitation and the outcome if they hadn't developed a relationship with the patient. Emotional responses like euphoria, increased activity and sadness were described by the participants.
3. *Laughter* – the author describes that many of the participants used laughter during their accounts. Laughter seemed to break up some of the more harrowing accounts and may be linked to a nervous response.
4. *Guilt* - Many of the nurses expressed feelings of guilt ranging from a perceived lack of clinical skills, doubts about the ethics of resuscitating certain patients or experiencing strong emotions arising from the death.
5. *Leadership* – participants identified that the appointment of a recognised team leader reduced the stress of a resuscitation attempt.
6. *Experiential Learning* – many of the participants recollected previous arrests they had been involved in and indicated that they felt more confident during the event as a result of having been involved in the other events. The more experienced nurses were able to discuss how they felt during the situation and were able to think about the relatives, other patients and staff whilst still taking an active part in the resuscitation whereas the less experienced nurses were very skills focused and tended to worry about their level of knowledge.

Attempts were made to contact both authors via email on several occasions to gain further information about the studies, however no response was received.

2.16 Quality assessment:

The QATSSD (Sirriyeh et al., 2012) was used to conduct a quality assessment on both the Blacklock (1998) and Gamble (2001) papers. A description of the QATSSD was provided in section 2.9.3. A copy of the scoring system for each article is included in Appendix 1.

The Blacklock (1998) study generated a quality score of 9/42 (21%) and the Gamble (2001) study generated a quality score of 12/42 (28%). Although the authors of QATSSD do not specify what the cut-off scores for quality may be, it is expected that a maximum score of 28% (as generated by Gamble 2001) is not very high.

2.17 Comparisons available for realist synthesis

A realist synthesis of the included articles was planned as part of the systematic review. There is no guidance for the number of studies that are required to conduct a synthesis, however Bondas and Hall suggest that a minimum of 10-12 studies are required to perform a meta-synthesis (Bondas & Hall, 2007).

2.18 Excluded articles:

Please see Appendix 3 for a summary of the excluded articles.

2.19 Discussion

Although the articles by Blacklock (1998) and Gamble (2001) generated low quality scores (9/42 (21%) and 12/42 (28%) respectively), the quality scores were not used as exclusion criteria for the review. Dixon-Woods et al discuss that papers should not be excluded for reasons of quality. If papers are excluded for quality reasons then important data may be lost due to 'surface mistakes' in reporting as opposed to fatal flaws in the study process itself which may invalidate findings (Dixon-Woods, Agarwal, Jones, Young, & Sutton, 2005). Despite generating low quality assessment scores, the paper by Gamble (2001) in particular generated very rich qualitative data that contributes to the knowledge base of what the experience of caring for a patient who has an ALTE is like for the healthcare workers. This contribution would otherwise have been lost if the papers were excluded on the basis of the quality scores.

Lessons have been learned through this process of applying a quality assessment tool to the published studies. As discussed by Dixon-Woods et al., it is difficult to assess whether the study itself is flawed, or there is merely a flaw in the way in which the study is reported (Dixon-Woods et al., 2005). In the future, the quality assessment tool could be used as a template when planning, conducting and reporting the subsequent results from a study to ensure the entire study is of high quality.

The results from the Blacklock (1998) study tend to suggest that the participants were less affected by these events over the study period with the reducing scores. However, these results should be interpreted with caution for several reasons. Firstly, it is not clear how the author has generated the scores on the IES as the standard way to report the scores is 0-60.

The author has only reported that participants were affected “rarely” through to “often” which represents a portion of the IES scores. Secondly, the researcher has not accounted for the poor response rate. It is difficult to know if the people who did not complete the IES score would have scores higher or lower which could affect the results. It is also difficult to know if the difficulty in interpreting the results is a reflection of a poor study design and conduct, or if it is a difficulty in the reporting process which would be addressed if a quality assessment tool was used as a template when planning, conducting and reporting the results of a study for transparency and reproducibility.

The qualitative data from the Gamble (2001) paper gives an insight into what the experience of caring for a patient who has an ALTE is like for the nurses involved. The data generated requires further exploration to help deepen the understanding of what this event might be like, but also to inform the development of relevant interventions. The findings from Gamble (2001) warrant further discussion in the following section of this chapter.

The participants in the Gamble (2001) study indicated that they often interpreted the physical signs of stress (caused by the increased release of hormones as part of the stress response) as a perceived lack of practical or manual skills. Fumbling, shaking and dropping things can all be caused by the stress response, however the nurses often misinterpreted these things as a lack of skills and chastised themselves. This warranted further exploration when exploring the experience of caring for a child who has an ALTE in the interviews (chapter 4) to see if nurses in the present study reported similar findings.

The nurses reported that knowing the patient affected how they felt and responded to the event. These results support findings from other studies which indicated that nurses had a stronger more emotional response to the event when it was either their own patient or a patient with whom they had developed a relationship (Pups et al., 1997; Tanner, Benner, Chelsea, & Gordon, 1993). As a result, the nurses often described crying after an event which has been referred to as an emotional outburst (Menzies, 1960). Socialisation within nursing creates a culture where nurses are expected to control their feelings and these “emotional outbursts” are seen as a failure to cope, or may be regarded as being unprofessional in some way (Menzies, 1960). In stark contrast, Finlay and Dallimore describe that parents take great comfort when they see that staff are upset after a resuscitation attempt rather than have a cold, business like or “professional” approach (Finlay & Dallimore, 1991).

The participants found that the appointment of a recognised team leader reduced the stress of the resuscitation attempt. This was echoed by the participants in the Pup’s study who

described the event as well controlled when there was clear teamwork and recognised expertise of the people participating in the event (Pups et al., 1997). O'Donnell describes the confusion that occurs during a resuscitation attempt when people are not sure what their role is, or when they are interchanging roles (O'Donnell, 1990). The appointment of an experienced team leader can help to create a more controlled environment through the allocation of roles and improved team work which in turn can potentially improve the participants' experience in that event.

A resuscitation attempt can be seen as a learning opportunity that provides experiential learning (Gamble, 2001). Participating in events helps to build confidence for future events, even if the participation is somewhat limited to observing more experienced staff performing skills (Pups et al., 1997). All of the participants in the Gamble (2001) study referred to previous events they had been involved in when describing the current experience. A study by Wynne et al demonstrated a link between experience and confidence when caring for patients who have an ALTE (Wynne, Marteau, Johnston, Whiteley, & Evans, 1987). This tends to suggest that the more ALTE events that people participate in, the more confident they feel. This requires further exploration.

The notion of experiential learning ties in with the work of Benner (1982). Benner's work is concerned with explaining how nurses transition from less through to more experienced clinicians (Benner, 1982). Benner describes this transition as the acquisition of nurses' knowledge through experience and the use of reflective practice (Benner, 1982). Experiencing these events and then engaging in reflective practice can help a practitioner transition into a more experienced practitioner. Reflection is a cognitive process which enables nurses to transform the experience (cardiac arrest) into knowledge, skills, attitudes, values and emotions (Jarvis, 1987). In order for people to learn from an experience they need to engage in reflective practice to learn from the experience and grow as a clinician for the future (Benner, 1982).

The debrief in the Gamble (2001) study provided an opportunity for nurses with varying levels of experience to discuss the event and describe their emotional feelings. This group setting allowed the junior counterparts to realise that it is acceptable and "normal" to have a lot of the feelings generated from these events. Likewise, the junior counterparts could witness their more experienced colleagues engage in the reflective process and learn from this.

All of these findings warrant further exploration to contribute to the knowledge base surrounding what the experience of caring for a patient who has an ALTE is, and contribute

to the development of evidence-based interventions. Performance debriefing has been used effectively to improve the clinical skills required for cardiopulmonary resuscitation (Edelson et al., 2008; Zebuhr et al., 2012). Debriefing in this context differs from psychological debriefing in that it provides feedback from real time clinical data collected from monitors and video recordings to explore skills and clinical decisions. The studies by Edelson et al and Zebuhr had an intervention group who received a performance debrief and control group who did not. The results demonstrated that skills, performance and patient outcomes were improved in the intervention group.

Although the focus for both Edelson et al (2008) and Zebuhr et al (2012) was to provide a clinically focused performance debrief, the results suggest that this may be an effective method of providing feedback after an event. It would be worthwhile exploring if the intervention could potentially be adapted to include discussions on how a clinician might feel during an event to help prepare them for future events. In addition, further exploration of this intervention may help to explain the link between participation in events and feeling more confident for subsequent events.

2.20 How has this systematic review addressed gaps in knowledge?

The systematic literature review was designed to address specific gaps in the knowledge identified. The following is a summary of what information this review has contributed to the gaps in the knowledge:

1. Healthcare – Only two studies were included in the review which aimed to evaluate the effectiveness of a debriefing intervention to support staff after caring for a patient who has had a critical incident.
 - a. The debriefing intervention used was designed outside of healthcare and has been adopted for use within healthcare.
 - b. The results from the studies did not provide adequate evidence to suggest that the intervention was effective. Despite the lack of evidence both authors concluded that the intervention could be beneficial. Both authors called for further research into the use of the interventions.
2. Evidence-base – the review did not provide evidence to suggest that debriefing is effective within healthcare.
 - a. The article by Blacklock (1998) suggested that IES scores reduced over time after receiving the debriefing intervention, however the process by which scores were generated and reported was not clear.

- b. The article by Gamble (2001) provided rich qualitative data about what the experience of caring for a patient who has an ALTE is like for a nurse.
 - c. The qualitative findings from the Gamble study will be compared and contrasted with data generated through the IPA interviews to be discussed later in the thesis.
3. Prepare – no interventions were identified which aimed to prepare staff for the potential psychological impact of caring for a patient who has an ALTE. However, the following findings were discussed and will be explored throughout the subsequent studies presented in this thesis:
 - a. It has been suggested that participating in resuscitation events helps to increase confidence for future events. The link between participation, experience and preparation for future events needs further exploration.
 - b. Studies that provide clinical feedback have been shown to improve skills and patient outcomes.
 - c. Participating in a supportive intervention can enhance experiential learning and encourage reflective practice that in turn will be of benefit in subsequent events.

One of the key findings from the systemic review is that none of the existing interventions are being evaluated for effectiveness within healthcare. This provides a further rationale for the empirical work to be undertaken in the proposed studies within this thesis to address the gaps in the knowledge.

2.21 Limitations of the review

There were limitations to this study. There was only one reviewer looking at both title and abstracts and full text articles. As discussed, APH discussed the articles with the supervisory group, however it is possible that more studies may have been identified for inclusion had there been more than one reviewer. One study found that on average a single researcher is likely to miss 8% of eligible studies whereas a pair of researchers working independently would capture all eligible studies (Edwards et al., 2002).

2.22 Conclusions:

Despite 3376 articles being identified by the search strategies, only two studies were eligible for inclusion in the systematic review. Both studies rated poorly when assessed for quality and deficits in the reporting of the study design, methods, analysis, results and conclusions mean that these studies were not transparent and could not be replicated. In the future, researchers should consider using a quality assessment tool like the QASSD as a guide to the development, design, conduct and subsequent reporting of studies that are more robust and conducted in a transparent manner.

Despite the methodological flaws and subsequent poor reporting of the studies, the study by Gamble provided rich qualitative data that is worthy of further exploration. The information from this study adds to the knowledge base created by Pups et al who described the experience of caring for a patient who has an ALTE, discussed in the introduction chapter (Pups et al., 1997). It is anticipated that further knowledge will be added by the study proposed in chapter four to explore what the experience of caring for a child who has an ALTE is like within the local institution. The results from chapter four will be compared and contrasted with the results from the Pups and Gable studies to address the gaps in the knowledge.

Whilst both authors concluded that debriefing is beneficial for healthcare workers, both called for further research into the benefits of this intervention. Neither study provided evidence to suggest that the intervention was effective, nor did they provide evidence that outweighs the concerns raised by Rose et al and van Emerik on the use of PD (Rose et al., 2002; Rose et al., 2004; van Emmerik et al., 2002). Despite the widespread use of debriefing within healthcare, there is no evidence to suggest that this is an effective intervention.

This systematic review has demonstrated that there is a need for the development of evidence-based interventions specifically for use within healthcare. The interventions should be evaluated for effectiveness using the quality assessment recommendations as a guide for designing, conducting, evaluating and reporting clinical studies to ensure the studies are transparent and reproducible. In particular, details of the interventions themselves need to be reproducible, particularly if they are shown to be effective.

3 Chapter 3 - International Survey of Practice to identify any interventions aimed at preparing or supporting staff who care for patients who have an ALTE in hospital.

3.1 Introduction:

Chapter two described a systematic literature review conducted to identify any interventions evaluated for effectiveness that were used within healthcare to prepare or support staff for the potential psychological impact of caring for a patient who has an ALTE. The review only identified two studies that met the inclusion criteria (Blacklock, 1998; Gamble, 2001). Both studies planned to evaluate the effectiveness of a debriefing intervention in reducing the stress associated with caring for patients who have critical incidents (like an ALTE) in hospital. Both studies had methodological flaws, poor quality assessment scores and were not transparent in their reporting of the study or results. Based on the reports, neither study could be reproduced.

Both authors concluded the debriefing intervention appeared to be beneficial to participants and recommended further studies were needed in this area. No further studies have been identified that provide evidence of the effectiveness of debriefing despite these recommendations. The systematic review identified articles that described their use of CISM and CISD within healthcare institutions (Back, 1992; Boswell, 2006; Cronqvist, Lützn et al., 2006; Devencenzi & O'Keefe, 2006; Guillaume & McMillan, 2002; Iacono, 2002; Johal & Bennett, 1999; Lane, 1993; Laws & Hawkins, 1995; Lenart, Bauer et al., 1998; Ryndes, 1997; Spitzer & Burke, 1993). None of the authors evaluated the effectiveness of these interventions which is why they were not included in the review.

The lack of good quality studies evaluating the effectiveness of debriefing within healthcare coupled with the concerns raised by Rose et al and van Emmerik et al that debriefing may in fact be harmful to participants is cause for concern (Rose et al., 2004; van Emmerik et al., 2002). Despite the lack of evidence to suggest these interventions are effective (in fact there is more evidence to suggest that these interventions may be harmful) many healthcare institutions are still adopting them.

The literature reviews completed in the introduction and systematic review chapters highlighted gaps in knowledge which include:

- 1 Healthcare – what interventions are being used within healthcare and are they being evaluated for effectiveness?

- 2 Evidence-based – are there any interventions that are being used that are evidence-based?
- 3 Children – have there been interventions developed specifically for use with staff that care for children who have an ALTE?
- 4 Outcome Measures – are the interventions being evaluated for effectiveness? If so, what are the outcome measures?
- 5 Preparation – have interventions been developed to prepare staff for the potential psychological impact of these events?

An international survey of practice was planned to address these gaps in the knowledge and identify what practices were in place in other healthcare institutions around the world. The survey may identify interventions that are in the process of being developed, implemented or evaluated by clinicians who may not have had the opportunity to publish the work.

3.2 Aims of the survey

The aims of the international survey of practice included:

1. Identify interventions (which may include training, education or information) that are being used to prepare clinical staff for the potential psychological impact of caring for a patient who has an ALTE.
2. Identify any interventions (which may include training, education or information) that are being used to support clinical staff for the potential psychological impact of caring for a patient who has an ALTE.

3.3 Methods

3.3.1 Study Design

The survey was conducted by administering a semi-structured questionnaire to clinicians who worked within acute care hospitals. The results of the survey provided a description of normal practices within the institution for how the staff are prepared and supported for the potential psychological impact of caring for a patient who has an ALTE.

The survey was designed to yield both quantitative and qualitative data to identify the range of practices currently in place and the participants' experiences of them.

3.4 Study setting and population:

The initial plan was to distribute the survey to delegates at the annual Rapid Response Systems and Medical Emergency Teams conference scheduled to be held in Mexico in October 2011. This annual conference is attended by approximately 500 delegates from across the world. Permission was granted by the organisers to distribute the survey, however the conference was cancelled due to the poor economic climate that year.

A manageable sample for the survey needed to be identified. The survey was being conducted by one researcher with financial and time constraints. Through discussion with the supervisory group, it was decided to include representatives from hospitals in Australia, Canada, New Zealand, the United Kingdom and the United States of America as these countries have led on the development of Rapid Response Systems (RRS). RRS have been established in many adult hospitals since the early 1990's as opposed to the relatively new systems being implemented within paediatrics since about 2003. It was hypothesised that adult institutions may have identified that the staff were affected by these events earlier and potentially have interventions in place therefore both adult and paediatric hospitals were included in the survey.

Hospitals from within Europe were also approached to participate in the survey, however the language barrier presented a challenge. Resources were not available to have the questionnaire and subsequent responses translated.

3.4.1 Selecting a sample of hospital for participation in the survey:

Australia:

There are only seven children's hospitals in Australia. All were approached to participate in the survey.

New Zealand:

There is only one children's hospital in New Zealand (NZ). This hospital was approached to participate in the survey

Canada:

All of the 13 children's hospitals in Canada were approached to participate in the survey (SickKids 2012).

United Kingdom Paediatric Hospitals:

A previous survey conducted by McCabe and Duncan used a PIC admission rate of >500 per year as inclusion for a national survey (McCabe & Duncan, 2008). This admission rate is similar to the admission rate in the local institution in which the current research is being undertaken. Therefore, any hospital that has a PIC admission rate of >500 per year (of which there were 13) were included in the survey as identified through the Paediatric Intensive Care Network (PICANET) annual report (Ashley et al., 2008).

There are no similar networks (PICANET) in Australia, New Zealand or Canada that track PIC admission rates which is why this criteria was not applied in these countries.

United Kingdom adult hospitals

There is no similar network to PICANET in the adult population which identifies the number of adult intensive care admissions per year so alternative criteria were used. However, due to the large population of the UK even if the >500 ICU admissions criteria was used it would yield an unmanageable number of hospitals eligible for inclusion in the survey. Therefore, an alternative approach for inclusion needed to be adopted for the adult hospitals.

The Care Quality Commission (CQC) and the Dr Foster Quality Accounts published reports that rank hospitals according to quality indicators (Commission, 2010; drfosterhealth.co.uk, 2012). The Care Quality Commission is the independent regulator of health and social care in England. The CQC publish performance ratings for NHS Trusts every two years, giving a rating of excellent, good, fair or weak (CQC, 2010).

The Dr Foster Quality Accounts (drfosterhealth.co.uk, 2012) were developed to measure how English NHS Trusts perform across measures of patient safety, clinical effectiveness and patient experience. Hospitals are assigned a score between 0-100, with 100 being the best. Hospitals are then ranked in order of performance. The ranking for patient safety was used for the survey. For the scoring system used, patient safety was the focus.

Hospitals that rated both excellent in the CQC performance ratings and 5-star in the Dr Foster accounts were approached to participate in the survey. There were five hospitals that met these criteria and included in the survey.

United States of America:

As was the case for the UK adult hospitals, due to the large population of the USA criteria of >500 ICU admissions would yield an unmanageable number of hospitals eligible for inclusion

in the survey. Therefore, an alternative approach for inclusion needed to be adopted for the adult hospitals.

In the United States there is an annual publication titled "US News Best Hospitals". Hospitals are rated across specialties which include: cancer, cardiology and heart surgery, diabetes and endocrinology, ear, nose and throat, gastroenterology, geriatrics, gynaecology, nephrology, neurology and neurosurgery, ophthalmology, orthopaedics, psychiatry, pulmonology, rehabilitation, rheumatology and urology. Paediatric specialists and selected hospitals are asked to rank the hospitals according to each specialty. Hospitals with the highest ranking make the Honour Roll.

Hospitals that made the Honour Roll in both the adult (<http://health.usnews.com/health-news/best-hospitals/articles/2010/07/14/best-hospitals-2010-11-the-honor-roll> last accessed 21.09.2010) and children hospitals (<http://health.usnews.com/health-news/best-childrens-hospitals/articles/2010/06/02/best-childrens-hospitals-2010-11-the-honor-roll> last accessed 21.09.2010) were included in the survey.

3.5 Survey development:

APH developed the survey with questions appropriate to the objectives of the program of work. The draft was disseminated amongst the supervisory group for feedback. The draft was then piloted through the Paediatric Intensive Care Society Nursing Research Subgroup. Refinements were made to the survey based on feedback from a pilot group (see Appendix 4 for final version).

3.6 Study procedure:

In the first instance, the Resuscitation Training Officer post was the point of contact in each institution. If the officer was not available, or the post did not exist within the institution (Canada and the US frequently did not have these posts) then the Ward Manager from a general medical or surgical ward was contacted. The initial contact was made by calling the hospital switchboard and asking to be put through to the relevant person. Verbal consent was given by participants.

Once telephone contact was made with the participants, they were provided with an explanation about why the survey was being conducted and how long it was expected to take. If the participant indicated they were interested in taking part a mutually convenient time was arranged to ring back and conduct the survey. Although a telephone survey was the preferred method, participants were given the option to complete a paper or electronic copy.

All participants were given one email reminder to complete the survey if they had chosen to complete a paper or electronic copy. If they did not respond they were noted to have declined participation.

In Europe, the chairwoman of the Paediatric Nurses Association of Europe (PNAE) emailed a link for the survey to members of the PNAE with an accompanying email to describe what the survey was about. A link for the survey was also given to delegates at the PNAE conference in Istanbul in November 2011. No reminders were sent to the members.

3.7 Data Collection:

Where interviews were completed via telephone, the researcher wrote the participants' responses verbatim directly into a Microsoft Word (2010) document. The information was then input into a Microsoft Excel (2010) spread sheet.

Electronic responses were collected via Survey Monkey (Hudson, 2011). The results from Survey Monkey surveys can be exported into a Microsoft Excel (2010) spread sheet.

Each hospital was allocated a unique hospital identification number for anonymity.

3.8 Data analysis

The aim of the survey was to provide a description of "normal" practices within each institution. Therefore, minimal analysis was required. Survey responses were collated and entered into a Microsoft Excel (2010) for ease of data management. Quantitative data are presented as a percentage of survey participants. Qualitative responses are presented in themes where appropriate.

3.9 Ethics:

Ethical approval was granted by the following bodies prior to conducting the survey:

1. National Research Ethics Service – REC Reference: 10/H0408/66
2. Aston University Life and Health Sciences Ethics Committee – Project 504
3. Birmingham Children's Hospital Research and Development

Participants were initially approached via telephone with an explanation of the aims of the survey provided by the researcher. They were given the opportunity to schedule a time to conduct the survey at a time that suited them. Verbal consent was gained prior to commencing the survey - participation in the survey was considered consent by the participants. Each participant was allocated a unique identification code and pseudonyms were used where appropriate to maintain confidentiality. Participants were advised at the

time of conducting the survey that they could withdraw from the survey up to a week after participating and their data would not be included. The data was stored according to the Data Protection Act 1998.

3.10 Results:

3.10.1 Demographics of respondents:

Of the 61 hospitals approached to participate in the survey from Australia, Canada, New Zealand, the United Kingdom and the United States of America, 72% (44/61) completed the survey. An additional six clinicians completed the survey through the link sent out by the PNAE chair. In total there were 50 respondents to the survey from across the world (Table 8)

Seventy two per cent (36/50) of respondents indicated that they worked in a children's hospital, 22% (11/50) worked in an adult hospital and 6% (3/50) indicated that the hospital cared for both adults and children (mixed).

Fifty six per cent (28/50) of respondents completed the survey electronically, 38% (19/50) over the telephone and 6% (3/50) completed a paper copy.

Table 8 - Demographics of the respondents

Hos. ID	Country	Type of hospital	Mode of completion	Professional background	Job title of participant
1	UK	Children	Telephone	Nurse	Resuscitation Training Officer
2	UK	Children	Telephone	Nurse	Clinical Site Practitioner
3	UK	Children	Postal	Nurse	Resuscitation Training Officer
4	UK	Children	Telephone	Nurse	Resuscitation Training Officer
5	UK	Children	Telephone	Nurse	Retrieval co-ordinator
6	UK	Children	Telephone	Nurse	Clinical Nurse Educator
7	UK	Children	Telephone	Nurse	Resuscitation Training Officer
8	UK	Children	Telephone	Nurse	Resuscitation Training Officer
9	UK	Children	Telephone	Nurse	Resuscitation Training Officer
10	UK	Children	Telephone	Nurse	Resuscitation Training Officer
11	UK	Children	Telephone	Nurse	Clinical Site Practitioner
14	UK	Adult	Telephone	Nurse	Resuscitation Training Officer
15	UK	Adult	Postal	Nurse	Resuscitation Training Officer
18	UK	Adult	Postal	Nurse	Resuscitation Training Officer
19	Australia	Children	Telephone	Nurse	Clinical Nurse Educator
20	Australia	Children	Telephone	Nurse	Clinical Nurse Educator
21	Australia	Children	Survey Monkey	Nurse	Clinical Nurse Educator
22	Australia	Children	Telephone	Nurse	Clinical Nurse Educator
23	Australia	Children	Telephone	Nurse	Education Co-ordinator
24	Australia	Children	Telephone	Nurse	Clinical Nurse Educator
26	New Zealand	Children	Survey monkey	Nurse	Nurse
27	Canada	Children	Survey Monkey	Nurse	Clinical Nurse Educator
28	Canada	Children	Survey monkey	Nurse	Clinical Nurse Educator
30	Canada	Children	Telephone	Nurse	Nurse Educator
32	Canada	Children	Survey Monkey	Nurse	Ward Manager
33	Canada	Children	Survey Monkey	Nurse	Nurse Educator
35	Canada	Children	Survey Monkey	Nurse	Registered Nurse
36	Canada	Children	Telephone	Nurse	Clinical Nurse Educator
37	Canada	Children	Survey Monkey	Nurse	Education & development clinician
38	Canada	Children	Survey Monkey	Nurse	Nursing Educator
40	USA	Children	Telephone	Nurse	Clinical Nurse Educator
41	USA	Children	Survey Monkey	Nurse	Education Co-ordinator
42	USA	Children	Survey Monkey	Nurse	Education Nurse Specialist
45	USA	Children	Survey monkey	Nurse	Nurse Educator
46	USA	Children	Survey Monkey	Nurse	Clinical Nurse Educator
47	USA	Children	Survey Monkey	Nurse	Education Co-ordinator
48	USA	Adult	Survey Monkey	Nurse	Nurse Educator
50	USA	Adult	Survey Monkey	Nurse	Clinical Nurse Specialist
51	USA	Adult	Survey Monkey	Nurse	Clinical Nurse Specialist
52	USA	Adult	Survey Monkey	Nurse	Clinical Nurse Specialist
57	USA	Adult	Survey Monkey	Nurse	Nurse Manager
59	USA	Adult	Survey Monkey	Nurse	Nurse Manager
60	USA	Adult	Survey Monkey	Nurse	Clinical Nurse Specialist
61	USA	Adult	Survey Monkey	Nurse	Clinical Nurse Specialist
62	Netherlands	Both	Survey Monkey	Nurse	Senior Nurse
63	Switzerland	Children	Survey Monkey	Nurse	Nurse Practitioner/Ward Manager
64	Switzerland	Children	Survey Monkey	Nurse	Nurse Practitioner
66	Norway	Both	Survey Monkey	Nurse	Registered Nurse, Mental Health
67	Belgium	Both	Survey Monkey	Nurse	Nurse Manager
68	Sweden	Children	Survey Monkey	Nurse	Cardiac Nurse Specialist

3.11 Identify interventions (which may include training, education or information) that are being used to prepare clinical staff for the potential psychological impact of caring for a patient who has an ALTE.

Participants were asked two questions about preparation for an ALTE which included:

1. Did they feel it was possible to prepare staff for potential psychological impact of caring for a patient who has an ALTE?
2. What (if any) interventions did the nurses receive that help to prepare them for the potential psychological impact of caring for a patient who has an ALTE?

The results are presented in table 10.

Table 9 - Summary of response about preparation

	Yes % (n)	No % (n)	Unsure % (n)	No Answer % (n)
Is it possible to prepare staff for these events?	66% (33/50)	4% (2/50)	22% (11/50)	8% (4/50)
Are there preparatory interventions in place?	54% (27/50)	44% (22/50)	0% (0/50)	2% (1/50)

Respondents were asked to describe the interventions being used (n = the number of responses for each intervention). Respondents could give more than one answer to this question. Responses included:

Clinical Skills Training:

Several respondents felt that teaching nurses the immediate clinical skills required at an ALTE would help the nurses feel more prepared when these events occur. Respondents felt that a lot of the upset and stress that was generated by being involved in an ALTE was caused by the nurses feeling inadequate or as though they hadn't made a positive contribution to the resuscitation because they weren't prepared clinically. Quotations from the participants to demonstrate this include:

".....clinical education so they are clinically confident and competent - if they know what to do clinically they will be less affected" (Respondent 5)

"One of the biggest factors is fear and uncertainty. Regular drills help prepare staff on how to respond (clinically) so that do not feel inadequate or that they could have done a better job" (Respondent 32)

“One thing that I think would help would be to ensure that all of the staff received on-going training on how to identify and deal with a deteriorating patient. I believe if the staff had strong skills and confidence in these skills they might not experience the same psychological impact as they would if they did not have the knowledge and skills” (Respondent 47)

Respondents believed that provision of clinically focused training helped to reduce the potential psychological impact of these events. Training included life support courses (n=4), simulation training (n=6), mock cardiac arrest scenario training (n=4) and first five minute training (n=1) which addressed the clinical skills required for these events.

Four respondents indicated that they would address how a nurse might feel during an ALTE if participants in the Life Support Course asked about it. A further respondent said that discussion on how a nurse might feel during and after an arrest was incorporated into the mock cardiac arrest scenario training provided within the institution as part of the curriculum.

Education and Training:

Respondents indicated that they ran various study days to help prepare staff for the psychological impact of caring for a patient who has an ALTE. The study days included: communication skills (n=1), bereavement counselling, conflict resolution, care of the dying child (n=1) and team work (n=1). Respondents felt that the skills acquired during these study days were applicable to caring for a patient who has an ALTE.

Debriefing:

Three respondents indicated they utilised debriefing after an ALTE to prepare staff for future events. They said addressing the events and issues that occurred during the ALTE prepared the nurses for subsequent events. The opportunity to speak with the chaplain either individually or as a group was available in one institution.

Governance:

One institution indicated the whole team was invited to attend a Patient Services Grand Round after each ALTE occurred. A Grand Round involves a lead person presenting the clinical facts of the case to a multidisciplinary audience which facilitates discussion so that lessons can be learned from an individual, ward, departmental and institutional perspective.

Staff Support Services:

One respondent indicated the Employee Assistance Program (EAP) provided “Tea for the Soul” where employees gathered for an informal chat and drink. The EAP also included a

relaxation room, group “chill out” sessions and the chance to speak with someone if the employee wanted to do so. The participant felt this prepared staff for future events.

3.11.1 Differences in adult versus paediatric service provision:

One of the rationales for including adult hospitals in the survey was that because they had RRS in place longer than paediatrics, they may have identified that staff were being affected by these events earlier and may have been more advanced in developing interventions. 91% (10/11) of the respondents from adult hospitals indicated they had interventions in place to prepare staff as opposed to 39% (14/36) of the paediatric respondents. Of the hospitals that indicated they cared for both adult and child patients from within Europe, 33% (1/3) indicated they had interventions in place.

The majority of respondents from the adult hospitals indicated they provided clinically focused training to help prepare staff for the potential psychological impact of these events. The majority of respondents from the children’s hospitals also indicated they provided the clinical training as well. In addition to the clinical training, respondents from the children’s hospitals indicated they also provided education and training (as discussed above) which included bereavement counselling, communication courses and conflict resolution courses.

3.11.2 Differences between countries:

The rationale for conducting an international survey and including both adult and children’s hospitals was twofold. Firstly, Australia and the United States of America were the first countries to develop and implement RRS therefore it was hypothesised they may have developed relevant interventions. Secondly, broadening the scope of the survey beyond the UK might increase the chance of identifying existing interventions.

Table 11 provides a summary of the responses from respondents from each country who indicated that it was possible to prepare staff and those who had interventions in place. Only 17% of the respondents from Australia indicated they had interventions in place despite the fact 67% of the respondents indicating they thought it was possibly to prepare for these events. Although the number of respondents is low and results should be interpreted with caution, it is not clear why this discrepancy exists between those who think it is possible to prepare and those who are actually providing interventions.

Table 10 - Summary of responses about preparation by country

Country	Respondents who felt it was possible to prepare for an ALTE % (n)	Respondents who provided preparatory interventions % (n)
Australia	67% (4/6)	17% (1/6)
Canada	67% (6/9)	56% (5/9)
Europe	33% (2/6)	50% (3/6)
New Zealand	0% (0/1)	0% (0/1)
UK	86% (12/14)	57% (8/14)
USA	50% (7/14)	64% (9/14)

3.12 Identify any interventions (which may include training, education or information) that are being used to support clinical staff for the potential psychological impact of caring for a patient who has an ALTE.

Participants were asked if the nurses received any interventions that help to support them for the potential psychological impact of caring for a patient who has an ALTE after an event has occurred. If interventions were being used the respondents were asked to describe them.

Seventy four per cent (37/50) of the respondents indicated the ward nurses received support to reduce the potential psychological impact of caring for a patient who has an ALTE in hospital. Twenty four per cent (12/50) of respondents indicated there was no support available and 2% (1/50) did not answer the question.

Participants were asked to describe the interventions being used in the ward areas (n = the number of responses for each intervention). Please note respondents could give more than one answer to this question. Responses included:

Debriefing:

Nine respondents indicated a debriefing would be held routinely after an ALTE had occurred. Eleven respondents indicated a debriefing could be organised if it was requested. In these cases the debrief could be led by a Psychologist (n=2), Resuscitation Training Officer (n=2), Ward Manager (n=2), Clinical Site Practitioner (n=1) or a Child Life Specialist.

One respondent indicated a debriefing would always be conducted if the patient did not survive the ALTE.

In the absence of a debrief, respondents indicated the Ward Manager would always speak with any nurse involved in an ALTE as soon as possible after an event (2). Others indicated the Ward Manager could be approached if the nurses wanted to speak about the event (2), as could the Resuscitation Training Officer or Educator (2). Alternatively, three respondents indicated the nurses could approach colleagues for an informal chat about the events for support if they needed to do so.

Staff Support:

Surprisingly, the Family Liaison Nurse (1) and Chaplain (1) only routinely visited the ward after an ALTE had occurred to speak with the nurses about the ALTE in two institutions. Nurses could self-refer to the staff counsellors (3) if they wanted additional support, however the counsellors did not routinely come to the wards. Staff could also approach the chaplain (3) and social worker (1) if they felt they needed to do so.

Other support services available to staff included the mobilisation of the Critical Incident response Team (1) if they were requested. Two respondents indicated the nurses could access the Employee Assistance Program if they wanted to and participate in “tea for the soul”, relaxation classes, or a “chill-out” zone so that staff can regroup. The responses indicated the onus was on the nurse to seek out support if they required it.

A further respondent indicated that when the ward had experienced a particularly “rough week” they organise an informal outing to the local pub to bond as a team and let off some steam.

Governance:

Three institutions used governance processes to review ALTE cases to learn lessons from the event. Through the governance process the clinical facts of the case are reviewed. The process looks at what happened, what a reviewing group of experts would expect to happen, why there was a gap and what lessons could be learned to avoid similar events from happening in the future. The Governance approaches included After Action Reviews (n=1), presentation at Morbidity and Mortality meetings (n=1) and a presentation of each ALTE at Case Conferences (n=1).

3.12.1 Differences in adult versus paediatric service provision:

Forty five per cent (5/11) of the respondents from adult hospitals indicated they had interventions in place to support staff as opposed to 53% (19/36) of the paediatric

respondents. Of the hospitals that indicated they cared for both adult and child patients from within Europe, 100% (3/3) indicated they had interventions in place.

The majority of respondents from both adult and paediatric hospitals indicated they provided a debriefing to support staff after an event had occurred. The provision of the debriefing ranged from mandatory provision after every ALTE down to one being available if requested.

3.12.2 Differences between countries:

As described earlier, the rationale for conducting an international survey was to broaden the scope of the survey and identify the normal practices in other countries in relation to supporting staff who have cared for a patient who has had an ALTE.

Table 12 provides a summary of the responses from respondents from each country who indicated they had interventions in place to support staff for the potential psychological impact of caring for a patient who has an ALTE. The majority of countries indicated they had an intervention in place to support staff. The UK reported the lowest numbers with interventions only available in 43% of cases. Although the number of respondents is low and results should be interpreted with caution, it is not clear why the UK's results are much lower than the other countries.

Table 11 - Summary of responses by country for support

Country	% of respondents who indicated they had interventions in place to support staff
Australia	83% (5/6)
Canada	100% (9/9)
Europe	100% (6/6)
New Zealand	100% (1/1)
UK	43% (6/14)
USA	71% (10/14)

3.13 Discussion

Conducting an international survey of practice resulted in the identification of existing interventions to prepare and support staff that care for children who have an ALTE. The following section will discuss the findings in greater detail including the rationale for conducting an international survey that included adult and children's hospitals, preparation,

supportive interventions and issues around the development, implementation and evaluation of interventions.

3.13.1 Conducting an international survey which included adult and children's hospitals:

The rationale for conducting an international survey and including both adult and children's hospitals was twofold. Firstly, Australia and the United States of America were the first countries to develop and implement RRS (in adult hospitals) therefore it was hypothesised that they may have developed relevant interventions. Secondly, broadening the scope of the survey beyond the UK might increase the chance of identifying existing interventions.

The results from the survey demonstrated that only 17% of the respondents from Australia were providing preparatory interventions. These results were much lower than the results from other hospitals. Respondents from children's hospitals indicated that only 39% of them were providing preparatory interventions as opposed to the 91% of respondents who worked in the adult hospitals. This discrepancy may explain why such a low number from Australia indicated they were using interventions – because all of the participants from the Australian hospitals worked in children's hospital. These results appear to support the rationale that the adult hospitals have had RRS in place for longer than children's hospital and therefore may have had longer to develop interventions.

In terms of the provision of support, the responses from both adult and children hospitals indicated approximately half the respondents were providing supportive interventions. Only 45% of respondents in the UK were providing supportive interventions, which was much lower than other countries. These results appear to support the rationale that expanding the scope of the survey to the international platform increased the chance of identifying existing interventions.

Although the numbers are relatively small and should be interpreted with caution, the inclusion of both adult and children's hospitals and conducting an international survey resulted in greater depth and knowledge about what practices are in place to prepare and support staff for these events.

3.13.2 Preparation:

Traditionally, there has been a focus on providing reactive interventions that provide support for staff after an ALTE has occurred to reduce the potential psychological impact of these events. Within healthcare, debriefing is the most commonly described supportive intervention within the literature (Spitzer and Burke 1993; Blacklock 1998; Johal and Bennett 1999;

Cotterill-Walker 2000; Gamble 2001; Iacono 2002; Regel 2010). The results of the survey confirmed the tendency to provide interventions that support staff after events with 74% of respondents indicating that they were using some form of supportive interventions within their hospital.

The initial literature and subsequent systematic literature review only identified supportive interventions being used within healthcare. Therefore it was surprising to find that 54% of respondents provided interventions to *prepare* staff for the potential psychological impact of caring for a patient who has an ALTE. The majority of preparatory interventions focused on developing and improving the clinical skills required for an ALTE. The respondents indicated most of the distress and upset after being involved in an ALTE was secondary to the staff feeling as though they did not have the clinical skills to deal with the situation.

Respondents felt that if the nurses were able to perform the clinical skills required for these events confidently and competently, then they would feel as though they had contributed to the resuscitation effort and the events would not affect them as much afterwards because they felt equipped with the right clinical skills. Scenario training, life support courses and simulation training provided the opportunity for nurses to practice and improve the clinical skills required during an ALTE.

Simulation has been shown to be effective within healthcare to improve a variety of clinical skills and procedures (particularly in medicine) including laparoscopic surgery (Fried, Feldman et al., 2004), emergency airway management (Rosenthal, Adachi & Ribaud, 2006) and advanced cardiac life support (Wayne, Butter et al., 2005; Kory, Eisen et al., 2007). Simulation training is particularly useful to train for high-risk, low frequency events like cardiac or respiratory arrests (Kory, Eisen et al., 2007). Simulation enables clinicians to practice clinical skills on a mannequin in a controlled, safe and reproducible environment where there is no risk to the patients (Kory, Eisen et al., 2007).

Despite simulation being shown to be effective in improving clinical skills, studies have shown that poor performances continue to be an issue during actual cardiac arrests (Valenzuela, Kern et al., 2005; Wik, Kramer-Johansen et al., 2005; Abella, Alvarado et al. 2005). Apart from the obvious implication of poor clinical outcomes for the patient, poor performance during an ALTE is likely to result in the nurses being negatively affected by these events.

Studies in aviation identified that poor team performance rather than a lack of individual expertise was the root cause of many airplane accidents (Billings and Reynard 1984). Within

healthcare, similar findings have been demonstrated which report that team performance and expert teamwork skills are often suboptimal during a resuscitation (Marsch, Müller et al. 2004; Hunt, Walker et al. 2008). We saw that in the discussion in chapter two that participants in an ALTE were less stressed by the event if they perceived there was good team leadership, communication and team work (Gamble, 2001; O'Donnell, 1990; Pups, Weyker, & Rodgers, 1997).

Providing training to prepare staff for the potential psychological impact of an ALTE that focuses on clinical skills in isolation does not appear to be adequate. The scope of the training needs to extend beyond just clinical skills and incorporate role allocation, team leadership, teamwork and communication (Weinstock & Halamek, 2008). Furthermore, one of the basic elements of the CISM model used in aviation includes pre-incident preparation and education (Leonhardt & Vogt, 2006). Part of this pre-incident training includes general information on stress, trauma and coping. In addition, educational initiatives, simulation exercises and research are used to develop the technical skills required to deal with potential and real airline disasters. It is thought that this preparation helps to prepare the staff for the mental and physical particularities of an airline disaster. Lessons can be learned from this model of aviation within healthcare. Preparation for an ALTE should ideally include education on the stress response, an opportunity to develop the clinical skills required for resuscitation, and include an opportunity to improve teamwork and communication.

Provision of training that incorporates the elements described above may also contribute to the link between experience and confidence when caring for patients who have an ALTE (Wynne et al., 1987). Provision of training that can recreate the ALTE environment may expose the staff to the intricacies of these events (the sights, sounds, pressure for example) to enable them to experience these events in a safe environment. It is possible this repeated exposure may then increase the participant's confidence when faced with a real ALTE. This requires further exploration.

3.13.3 Debriefing

The results from the survey have demonstrated that many institutions are using debriefing to support staff after an ALTE has occurred which is a similar finding to the systematic literature review (based on both included and excluded articles). Healthcare institutions continue to use debriefing despite the concerns raised about the effectiveness of these interventions (Rose et al., 2004; van Emmerik et al., 2002). Evidence was provided through the systematic literature review or the survey of practice to refute these concerns.

Within healthcare education, a form of debrief is used during simulation training to describe a process whereby a trained facilitator provides feedback on skills, teamwork and communication, a format that was developed within aviation (Helmreich, Foushee et al. 1986). The debrief process in simulation, links theory and practice and assists individuals to identify and address learning needs (Page & Meerabeau, 1996). Pearson and Smith assert that debriefing in this context, which is often referred to as a clinical debrief or performance debrief is used for educational purposes to improve future performances (Pearson & Smith, 1985). This contrasts with the counselling and therapeutic purposes for which debriefing has traditionally been used. Given the concerns raised about the potential harm that psychological debriefing may pose to participants, the clinical focus may be more appropriate within healthcare.

Clinical debriefing has been used effectively in medical simulation and is now considered a crucial part of the learning process (Fanning & Gaba, 2007; Sutton et al., 2005). It has been combined with human patient simulators and used in a variety of settings including resuscitation in both adults and paediatrics with positive outcomes (DeVita, Schaefer, Lutz, Wang, & Dongilli, 2005; Savoldelli et al., 2006). Two recent studies have used performance debriefing after a real-life ALTE in both adult and children settings, which used clinical information from the event to guide the session (Edelson et al., 2008; Zebuhr et al., 2012). The results from the studies demonstrated improvements in key resuscitation skills and patient outcomes, however they do not address the psychological outcomes.

Given the concerns raised about the potential harm that the traditional debriefing model may pose to participants and the lack of evidence to support its effectiveness within healthcare, it is surprising and concerning that most of the 74% of respondents indicated they were using this intervention. Given the evidence in support of using a clinically focused or performance debrief this intervention merits further exploration and evaluation. In addition, this intervention may have the added benefit that it not only supports staff after an event, but also prepares them for subsequent events.

3.13.4 Challenges in developing, implementing and evaluating interventions:

Despite 66% of the respondents indicating they thought it was possible to prepare staff for the potential psychological impact of caring for a patient who had an ALTE, only about 54% of the respondents indicated they were actually providing preparative interventions. Approximately three quarters of the respondents (74%) indicated they were providing supportive interventions.

Discussions with respondents revealed there were often time, resource and financial constraints in providing interventions. Respondents reported they provided these interventions in addition to their daily clinical responsibilities because they had a specific interest in this area. They did not have access to additional funds, staff, equipment or the expertise to help develop, run or evaluate interventions. This in part helps to explain why not all institutions are providing interventions, and why many are using pre-existing interventions developed outside of healthcare rather than developing healthcare specific interventions.

Many of the respondents to the survey are only adopting portions of the pre-existing interventions. For example, debriefing was developed as part of a CISM *systems* approach rather than an intervention to be used in isolation. This is concerning because the interventions are not being used within the context for which they have been designed (being used in isolation as opposed to embedded within a system). That may reduce the effectiveness of the intervention. Given the concerns raised within the literature of the use of debriefing, this underlines the need for interventions to be evaluated for effectiveness within healthcare.

In addition to the time, resource and financial barriers to the development and subsequent evaluation of interventions, the challenge of not knowing how or what to measure to evaluate effectiveness of interventions was identified. Scott et al published a series of articles exploring the second victim phenomenon (Scott et al., 2010; Scott, Hirschinger, & Cox, 2008; Scott et al., 2009). Second victim refers to the healthcare workers who are affected by their involvement in critical incidents. The articles go on to describe the development of a state-wide Rapid Response System deployed to provide support for the second victims which included peer support right through to referral to trained mental health specialists (Scott et al., 2010). The articles were not eligible for inclusion in the systematic literature review because the intervention was not being evaluated for effectiveness. When Scott was contacted in person to investigate how she measured the effectiveness of the interventions she indicated she and her colleagues were unsure of how or what to measure to demonstrate effectiveness.

Further work is required to inform the healthcare community of what should be measured to evaluate the effectiveness of interventions. If the pre-existing interventions are not shown to be effective then resources should be provided to develop, implement and evaluate interventions that are tailored for healthcare.

3.14 How has this international survey of practice addressed the gaps in the knowledge?

The international survey of practice was designed to address specific gaps in the knowledge identified in the introduction of this chapter. The following is a summary of what information this review has contributed to the gaps in the knowledge:

1. Healthcare – the results of the survey have demonstrated that approximately half of the respondents are providing training aimed at improving clinical skills. The majority of respondents were providing debriefing as a supportive intervention despite a lack of evidence to demonstrate effectiveness.
2. Evidence-based – no evidence-based interventions were identified through the survey to prepare or support staff for the potential psychological impact of caring for a patient who has an ALTE.
3. Children – interventions specifically developed for staff that care for children were not identified through the survey. Interventions used by hospitals that cared for children did not differ significantly from the adult services. Uptake of interventions did not differ greatly between the children and adult services.
4. Outcome Measures – respondents were not evaluating the effectiveness of the preparatory or supportive interventions due to time, financial and resource constraints. A further challenge of not knowing how and what to measure was identified.
5. Prepare – respondents indicated training that focused on clinical skills improved clinical confidence and competence which reduced the potential for an ALTE to have a negative impact on the staff involved as they felt they had done their best and made a positive contribution to the resuscitation.

Respondents indicated that provision of a debriefing helped to prepare staff for subsequent events.

3.15 Limitations:

The option for the participants to complete the survey via telephone, electronically or as a paper based version gave more flexibility for the respondents. Fifty six of the respondents chose to complete the survey electronically when given the option. The challenge with electronic and paper based surveys is that it was not as easy to clarify or ask additional

questions at the time the survey was being completed as was the case with a telephone conversation.

The researcher only speaks English. That made approaching clinicians in Europe difficult. The survey was only conducted in English (telephone, written or via survey monkey) which may well have excluded some people from participating. In the future, it would be ideal to try and provide a similar survey in different languages.

3.16 Conclusions:

The aim of the international survey of practice was to identify interventions that were developed to either prepare or support staff who care for patients who have an ALTE in hospital so as to reduce the potential psychological impact of these events. The survey identified approximately half of the respondents were providing interventions that prepared staff for these events. The majority of these preparatory interventions focused on improving the clinical skills required for resuscitation. Respondents believed that being clinically confident and competent helped the participants feel as though they had done their best and made a positive contribution which reduced the potential for these events to have a negative impact.

Other studies conducted within healthcare have demonstrated that interventions that focus on improving clinical skills in isolation are not enough. The training needs to incorporate additional skills including role allocation, leadership, teamwork and communication to improve outcomes for both patients and staff and a clinically focused or performance debrief to facilitate the learning process. All of these skills can be provided through simulation training where participants can practice and refine the newly acquired skills in a safe environment. Furthermore, studies within healthcare have demonstrated the use of a clinical feedback or performance debrief has improved the provision of clinical skills, teamwork and patient outcomes. This may help to prepare staff for subsequent events. This concept requires further exploration through this thesis.

The survey revealed nearly three quarters of the respondents were providing a more traditional debrief to provide support after an ALTE has occurred. None of the participants were evaluating the effectiveness of this intervention. The lack of evidence to support the use of this intervention within healthcare coupled with the evidence suggesting this intervention may be in fact be harmful to participants is cause for concern.

The results from the international survey of practice and the systematic literature review demonstrate there is a need for the development, implementation and evaluation of

evidence-based interventions specifically for use within healthcare. The adoption of interventions from outside of healthcare to date has been haphazard with only parts of the system being adopted with no evaluation of the effectiveness of the intervention supporting their use within healthcare.

Results from the survey also demonstrated that there is a need for guidance on what outcomes measures should be used to evaluate the effectiveness of interventions. The guidance should incorporate advice on what measures to use to evaluate the interventions aimed at preparing and supporting staff for these events.

The results from the international survey coupled with the results from the systematic literature review support the need for interventions to prepare and support staff for the potential psychological impact of caring for a patient who has an ALTE. The information gained from these two studies will be compared and contrasted with the results of the interviews conducted in the next chapter to inform the development of evidence-based interventions aimed at preparing and supporting staff for the potential psychological impact of caring for a patient who has an ALTE.

4 Chapter Four – Exploring the experience of caring for a child who had an ALTE: an interpretative phenomenological analysis

4.1 Introduction:

The objective of this chapter is to explore what the experience of caring for a child who has an ALTE in hospital is like for the healthcare professional. Nurses and doctors who have cared for a child who has an ALTE will be interviewed using the Interpretative Phenomenological Analysis (IPA) methodology. A more detailed explanation of IPA will be given later in this chapter, but in essence using IPA enables the researcher and the participant to get to the detail of what the experience is like for the participant, what it means to them and how they make sense of their experience. Exploring these experiences using IPA will give a greater understanding of what the experience in itself is like for the participants, but also how the experience of these events influences or shapes professional identity. The interviews will provide a greater understanding of what the experience of an ALTE is like for individual nurses with varying levels of knowledge and experience. Examining the particular experiences of junior through to senior nurses will give rise to a greater understanding of how their knowledge, experience and observations shape and influence their perceptions and experiences of the event and the meaning this has for them both personally and professionally. The analysis will reveal aspects of the experience that are characteristic of nurses and doctors with varying levels of exposure and experience. A greater understanding of experience through novice to expert will inform the development of evidence-based interventions aimed at preparing and supporting nurses who care for children who have an ALTE in hospital. To date no similar studies have been identified in the literature, which explore what the experience of caring for a child who has had an ALTE is like for the nurses and doctors.

Patricia Benner's work has focused on exploring the transition of nurses from novice through to expert (Benner, 1982). Benner explains that nurses pass through five levels of proficiency: novice, advanced beginner, competent, proficient and expert. These levels of proficiency are based on the Dreyfus Model of Skill Acquisition (Benner, 1982; Dreyfus & Dreyfus, 1986). The practitioners on the novice end of the skills acquisition spectrum have no prior experience to draw from so they use context-free rules to guide their task performance. Those in the middle of the spectrum start to draw on their experiences to help prioritise and make decisions about care. Practitioners at the expert end of the skills acquisition spectrum generally no longer rely on conscious, analytical principles and often have an intuitive grasp

on clinical situations based on their previous skills and knowledge (Benner, 1982; Dreyfus & Dreyfus, 1986).

The “preconscious” intuitive nature of the expert practitioner makes it extremely difficult to capture the explicit, formal steps in the mental process they go through when making decisions or providing care (Benner, 1982). It is often extremely difficult for the person to articulate how they made a decision or came to a conclusion when assessing patients and providing treatment. There is “just a feeling” or a “sixth sense” about the situation which is generally based on past experience that leads them to perform the actions or provide the treatment that they do. Although the nurses themselves may not easily be able to recapture the mental steps they went through, Benner and Dreyfus suggest that observation and narrative interpretation may help to describe the accomplishments and characteristics of the expert nurse.

It is anticipated that framing this work within the IPA methodology will provide an interpretative description of the experience of these events. Participants will explore some of the preconscious thought processes and bring them into the conscious to provide a rich account of what the experience is like for them and how their experience shapes them as a practitioner. As these experiences are brought into consciousness, valuable lessons may be learned and applied to help colleagues learn from these events.

In addition to providing a rich account exploring what the experience of caring for a child who has an ALTE in hospital is like, the interviews aim to address some of the gaps in the knowledge:

- 6 Healthcare – is there anything particular about working within a hospital environment that affects the participant's experience?
- 7 Children – is there anything in particular about caring for children who have an ALTE that affects the participant's experience?
- 8 Outcome measure – through the participants' accounts of their experience, is it possible to identify what effect these events may have on them? Is it possible to identify or inform what outcomes should be measured to evaluate effectiveness of interventions aimed at preparing or supporting staff for these events?
- 9 Evidence-base – it is anticipated the IPA interviews will yield rich qualitative data that will inform the development of evidence-based interventions aimed at preparing and supporting staff for these events.

- 10 *Preparation* – the results from chapter two and three have suggested it may be possible to prepare staff for the potential psychological impact of caring for a child who has an ALTE by ensuring they are clinically confident and competent. Is this supported by the participants' accounts of their experience?

It is anticipated that the rich data gathered in this empirical work will form the groundswell of evidence used to develop the interventions.

4.2 Aims:

The primary objective of the interviews are to explore and describe what the experience of caring for a child who has an ALTE is like for the nurses and doctors who are involved in these events.

4.3 Interpretative Phenomenological Analysis (IPA)

Interviews were conducted and analysed using Interpretative Phenomenological Analysis (IPA). The following section provides an overview of the origins of phenomenology and the philosophical foundations of this method and how this has been combined with the theory of hermeneutics to develop the IPA methodology. A greater understanding of the philosophical and theoretical underpinnings of IPA will help to demonstrate why this approach is the most appropriate methodology for exploring what the experience of caring for a child who has an ALTE is like for healthcare practitioners.

4.3.1 The philosophical and theoretical contributions to IPA:

4.3.2 Phenomenology:

Phenomenology is the study of human experience and how people perceive the world in which they live and what this means to them (Langdridge, 2007). Phenomenology is a philosophical movement that began with Edmund Husserl (1859-1938) and was then developed further by Martin Heidegger (1889-1976) and his followers. Husserl described phenomenological psychology as a “return to the things themselves”. Phenomenologists don't believe that it is possible to think of objects (things) in the world as separately from subjectivity and our perception of them. Objects (things) enter our reality when we perceive them and when they are presented to consciousness.

In order for the object (thing) to move from the unconsciousness to the consciousness it needs to have some meaning for the person. A process of reflecting, thinking, feeling and interpreting needs to take place for the person to make sense of the object (thing) and for that object (thing) to have some meaning (Smith, Flowers, & Larking, 2009). This is often referred to as sense-making. It is through this sense-making process that objects (things) are

given meaning and move from the unconscious to the conscious. Once the object (thing) is given some meaning it then becomes an experience that has the potential to be drawn on in the future.

From a professional point of view, if an object (thing) remains in the unconscious and is not given meaning which transforms it into a concrete, lived experience then healthcare professionals cannot use this experience in the future to inform practice. As described in the introduction to this chapter, the expert practitioner draws on their extensive knowledge and experiences to inform their practice. If this sense-making process has not taken place the “things” remain objects in the unconscious, not transformed into experiences that can be drawn from to guide practice and the provision of treatment for patients.

Phenomenology is concerned with exploring experiences in their own terms. Smith et al (J. A. Smith et al., 2009) propose that an experience can be considered a comprehensive unit that is made up of different parts of life. The parts can be separated in time, but are linked with a common meaning. The parts of an experience include the knowledge, experience and observations that are then subject to a process of reflecting, thinking, feeling and interpreting.

4.3.3 Transcendental phenomenological approach – Husserl:

Edmund Husserl was considered the founder of phenomenology. Husserl asserted we should go “back to the things themselves”. He wanted to establish how objects appeared to people in their experience of them. Husserl used a transcendental reductionist approach to get to the core structures of experience. The traditional transcendental approach required that the researcher transcends everyday assumptions. In order to get to the core, abstract, essential features of the experience the researcher must identify and suspend their prior assumptions by bracketing off things like culture, context and history in order to get at the universal essence of a given phenomenon, that which transcends the subjective. Engaging in phenomenological reduction (the epoché) the researcher abandons her ‘natural attitude’ and takes on a ‘phenomenological attitude’. This enables the researcher to go beyond the taken-for-granted knowledge about her world and move the focus toward making sense of the objects in the real world in terms of how they appear to us in consciousness, i.e. how they are lived in everyday practice. This draws strongly on reflexivity especially when the analyst is part of the same world as the participants.

More contemporary writers believe that the term bracketing (the idea that it is possible to suspend or “cut off” one’s own pre-understandings that have developed through the physical, social and cultural world that we have lived) should be replaced with the concept of bridling (Dahlberg, Dahlberg, & Nystrom, 2008; L. Finlay, 2011). It isn’t possible to completely

suspend our own pre-understandings and ideally these pre-understandings should be bridled, reined in from having an uncontrolled effect on understanding the emerging phenomenon. Bracketing has a retrospective, sometimes negative connotation, whereby the researcher identifies pre-existing beliefs and assumptions and aims to prevent those from affecting the “here and now” of the emerging phenomenon (Dahlberg et al., 2008; L. Finlay, 2011). Conversely, bridling has a more positive, forward facing stance whereby the researcher adopts a more open attitude to allow the phenomenon to “show itself” or emerge and develop an understanding of it. Researchers are part of the same world they are investigating and it is not possible to completely cut one’s self off from that world. Therefore, the concept of bridling assists the researcher to identify, explore and give meaning to their own pre-understandings whilst enabling them to embrace a restrained, systematic, open, scientific and careful way of examining the phenomenon (L. Finlay, 2011). Bridling uses an “active passivity” where the phenomenon is allowed to emerge in its own time, rather than making definite decisions or interpretations and not searching for further meaning.

As a researcher I have had many years’ experience as a nurse and have been involved in numerous ALTEs. Bridling my own pre-understandings and assumptions is essential to ensure the account is a true reflection of the participants’ experience and not unduly influenced by my own experiences. It is impossible to completely bracket off and ignore my prior experience. This previous experience helps to give some situatedness to my interpretations which is necessary in order to make sense of the experience within the temporal context. Reflexivity will assist this process and ensure the emerging phenomenon is based on the participants’ accounts and not on my own experience. This will be discussed further throughout this chapter.

4.3.4 Existential phenomenological approach – Heidegger / Merleu-Ponty

Husserl’s transcendental phenomenology gave way to an existential approach as philosophers argued that it was not possible to bracket off or transcend everyday assumptions entirely (Satre, Merleau-Ponty and Heidegger). Heidegger did not believe it was possible to investigate experiences in the detached way that Husserl’s transcendental approach suggests is required (Langdrige, 2007; Smith et al., 2009). Heidegger believed we should use our own context and historicity to make sense of experience. Heidegger in particular built on the hermeneutic tradition that says it is not possible to avoid interpreting. All of our experiences are already interpreted in a sense because they are couched within our own knowledge, experience and observations. For example, a scene of people lying in beds with monitors beeping and people in white coats carrying stethoscopes is already interpreted as hospital-based given our previous experiences and observations. Our culture

is so ingrained that it is virtually impossible to be faced with these visual and audio cues and not interpret in predictable ways. If we are able to identify our own assumptions, it means we have already interpreted them and brought them from the unconscious through to the conscious. They have been transformed from being an object (or thing) to an experience.

Merleau-Ponty (1962) also believed context and historicity were important in understanding experience and emphasises the idea of embodiment. Merleau-Ponty saw individuals as 'body-subjects' whereby consciousness (knowledge, experience, observation, context and history) are embedded in the body (Langdridge, 2007). The body-subject allows us to communicate with the world. In essence we speak with our body. For example, a nurse who shakes, fumbles or forgets how to perform tasks during an ALTE that they may otherwise do efficiently in a less pressured situation is communicating with their body. Each individual has their own embodied position within the world and we need to strive to understand that embodiment in order to understand their experience.

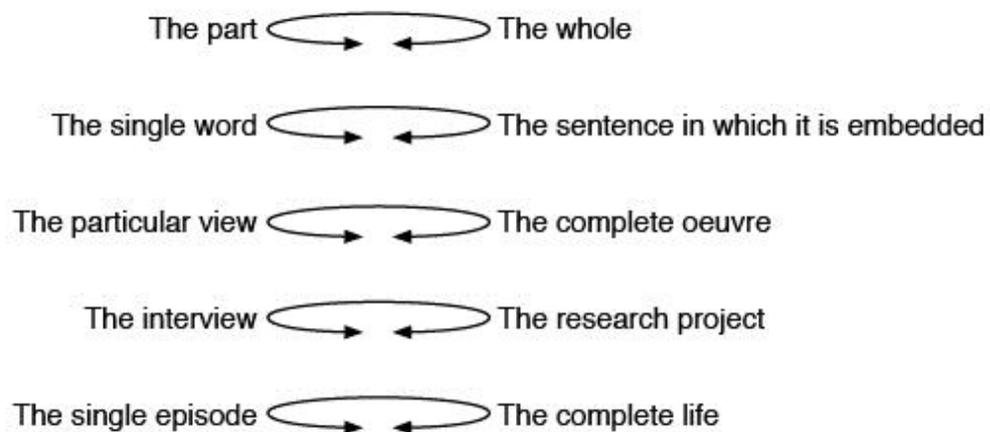
4.3.5 Hermeneutics:

Heidegger in particular built on the hermeneutic tradition which proposes that it is not possible to avoid interpreting. People are sense-making creatures in nature who strive to understand experiences. Whilst phenomenology is primarily concerned with the study of human experience and making sense of the world we live in through experiences, Hermeneutics is concerned with how we interpret those experiences. We make sense and see meaning in the world around us through reflection and subsequent interpretation of experiences. A cyclical process of interpretation and reflexivity takes place whereby our knowledge, past experiences and observations all inform how we interpret experience (Langdridge, 2007; Smith et al., 2009).

The hermeneutic circle helps to explain the process of interpretation and reflexivity which occurs constantly throughout our everyday lives (Finlay, 2003). This is a dynamic relationship between the whole experience and the parts that contribute to that experience. An iterative and reflective process must take place whereby an experience is examined in the context of its parts and each part is examined within the whole experience (Figure 8). This is described as a cyclical process because the researcher uses the iterative process whereby they move back and forth throughout the parts of the experience and the whole experience to make sense. This iterative process requires reflexivity to make the unconscious conscious, which then makes this knowledge and experience accessible for the future to inform practice (Smith, 2007).

Likewise, the researcher goes through a similar nonlinear process when interpreting an account using the hermeneutic circle. The researcher starts at one point in the circle where they are influenced by their preconceptions which are shaped by their experience and expertise (Smith, 2007). An attempt is made to bracket either bracket off or acknowledge the preconceptions and then focus on the participant's experience. This is an ongoing process, because once the researcher comes to analyse and interpret the interviews they again need to acknowledge their own preconceptions and acknowledge how they might be influenced by their encounter with the participant and the experience they are describing. The researcher then goes through another circle as they re-listen to the interview and attempt to question and make sense of the account all over again.

Figure 8- Example of the Hermeneutic Circle (adapted from Smith, Flowers et al 2009)



4.3.6 Reflexivity:

As a researcher, it is important to remain reflexive throughout the research process (Finlay, 2003; Shaw, 2010). As previously discussed, it is not possible to completely bracket off pre-existing knowledge and experience, therefore it is important to identify presuppositions. Gadamer (1975) refers to these as horizons. Each person has their own beliefs, cultural context, experience and knowledge which contribute to their own horizon (or sphere of understanding). The people that take part in the research have their own horizons (sphere of understanding). There are times when these horizons can overlap either in a very small way (in this study the fact that I am a nurse who is interviewing other nurses may be where our horizons overlap) and there are times when the horizons remain separate (some of the people being interviewed were doctors who had only ever worked with adults which was outside the scope of my horizon). It is essential that the researcher takes the time to consider their own horizons before conducting research so the researcher's horizons or

“prejudices” don’t dominate the direction of the interview (potentially limiting its scope) or cause an inappropriate responses or reactions during the interview process (Shaw, 2010).

During the interpretation, analysis and reporting phase of the research process it is important to ensure the findings are based on the actual experience of the research participant. Being aware of preconceptions, assumptions, thoughts and experiences and reflecting on how these might influence the interpretation of the account can be done by keeping a reflective journal. Frequent cross-referencing and checking back with each participant’s accounts can help to keep the interpretations focused on the participant’s experience.

Finally, using a reflexive approach after the research encounter can help the researcher to identify both their existing horizons and any new horizons or revised fore-understandings that may have developed throughout the research process. This continual reflexive approach enables the researcher to develop their skills and learn for future encounters (Shaw, 2010).

4.3.7 Interpretative Phenomenological Analysis:

Interpretative Phenomenological Analysis (IPA) is informed by the phenomenological philosophy and draws on the theory of hermeneutics. IPA is committed to examining how people make sense of their life experiences (phenomenology) which involves an interpretative process between the researcher, the participant and the data. This has been described as a double hermeneutic in which the participants are trying to make sense of their world; the researcher is trying to make sense of the participants trying to make sense of their world (Smith & Osborn, 2008).

IPA is considered idiographic and aims to “explore in detail how participants are making sense of their personal and social world” (Smith, Jarman, & Osborn, 1999). Most quantitative approaches tend to look at larger numbers of participants to make generalizable claims about the population as a whole; IPA and its idiographic approach are committed to understanding the particular. The particular phenomenon of interest in this study is the ALTE event and then the nurses and doctors who were at the event are the focus.

The idiographic focus of IPA is particularly well-suited to exploring the experiences of nurses who care for children who have an ALTE in hospital for several reasons. Firstly, a single ALTE can be attended by an average of 13 nurses and doctors with varying levels of clinical expertise and experience. Each person's “experience” of the event will be different depending on the knowledge, experience and observations upon which they draw to make sense of the experience. These things will also influence how the participants interpret the

experience. IPA provides a medium to tap into those varied experiences which in this case will help inform the development of evidence-based interventions.

Secondly, as discussed in the introduction of this chapter, Benner suggests the expert practitioner often draws on a “preconscious”, intuitive “sixth sense” which is generally based on past experience that leads them to perform the actions or provide the treatment that they do. The expert practitioner often finds it difficult to capture the explicit, formal steps they go through in the mental process when making decision or providing care (Benner, 1982). It is anticipated that through IPA, the “sixth sense” which is made up of the knowledge, experience and observations of the nurses may be accessed and interpreted. This will not only provide a great insight in terms of understanding the individual experience, but will also be invaluable in contributing to the development of targeted evidence-based interventions that will help to prepare and support other nurses in this particular situation.

4.4 Study Design

The remainder of the chapter will outline how the principles of IPA are applied to the study design. Interviews were conducted and analysed using IPA. Participants were asked to participate in a voluntary, semi-structured interview to explore what the experience of caring for a child who has an ALTE is like for them and what meaning it has for them both personally and professionally. The interviews were scheduled to last for approximately 45-90 minutes, depending on how much the participant had to say. The interviews were audio-taped to enable accurate transcription.

4.5 Study setting and population:

4.5.1 Setting:

Participants were recruited from a single tertiary referral hospital that cares for approximately 50,000 paediatric inpatient admissions per year. The participants were recruited from wards that cared for children who had been admitted to hospital (in-patients) and excluded Accident and Emergency, PIC and theatre departments.

4.5.2 Population:

Doctors and nurses who were involved in an ALTE after the commencement of the study were invited to participate. An ALTE is attended by both nurses and doctors with varying levels of knowledge and experience who work within a team to provide clinical care for the child. Both nurses and doctors were included in the study to gain an insight into the different perspectives of each event.

The recruitment for this study was event-focused however members of the multidisciplinary team attend each event and have their own unique experiences of the event. IPA studies are typically conducted on small homogenous sample sizes so shared and divergent experiences of the same event can be examined in detail. In an attempt to achieve homogeneity in this study, the researcher recruited participants into sub-groups according to their clinical experience. The groups are as follows:

1. Sub-group 1 - Nurses with less than five years nursing experience
2. Sub-group 2 - Nurses with greater than five years nursing experience
3. Sub-group 3 - Consultants or Specialist Registrars with advanced airway management skills.
4. Sub-group 4 - Doctors from paediatric specialties with no advanced airway management skills.

The researcher aimed to recruit five participants to each sub group.

4.6 Study procedures:

4.6.1 Recruitment:

When an ALTE occurs in a ward area, the hospital switch board is contacted. The switch-board then sends an alert via a paging system to pre-allocated clinicians from across the hospital to attend to the patient. The Resuscitation Training Officer (RTO) is part of the team that attends each event. Once an ALTE had occurred, the RTO would contact the researcher after the event and provide them with demographic details, names and designation of the staff who attended the event.

4.6.2 Consent:

Participants were approached in the ward areas and given details about the research project. They were given a verbal explanation of the study, provided with a Participant Information Leaflet (Appendix 5) and given the opportunity to ask questions. A time to come back and answer any additional questions and an opportunity to accept or decline participation was negotiated with the participant.

At the second contact, if the participant agreed to take part in the research a time was negotiated to come back and conduct the interview. The negotiated time aimed to minimise disruption to the clinicians, colleagues and their patients.

The participant signed the consent form at the interview (Appendix 5). Copies of the form and the Participant Information Leaflet were given to the participant. After taking part in the interview, participants were given five days to withdraw from the study if they wished.

4.6.3 Conducting the interviews:

The interviews were conducted in a private room to allow for privacy and to minimize disruptions. The room was generally located within the ward area that the clinician worked in as they wanted to remain close to the clinical area in case they were needed.

An interview schedule was used to guide the interviews for nurses (Appendix 6) and doctors (Appendix 7) as an initial prompt, however the interviews were really led by the participant and their account of their experience. Participants were not restricted to answering questions from the schedule: the *real* schedule was the participant's account of their experience and the direction they needed to take the discussion in order to explore that experience. Terms like "can you explain that more" or "tell me more about that" were often used to prompt the participant to explore the issue in greater depth.

Contact details were provided for the participant in case they went away after the interview and thought of something they wanted to add to the discussion.

4.6.4 Reflexivity:

As part of the IPA research process, it is suggested the person conducting the interviews keeps a reflexive diary (Smith, Flowers et al., 2009). A diary can help identify preconceptions, thoughts and experiences and reflect on how these might influence the interpretation of the participant's account. A diary entry was made after each interview and throughout the analysis process so that the researcher could keep cross-checking that their interpretation and analysis were rooted in the participant's account and not based on their own life-world interpretations.

4.6.5 Analysis:

The researcher listened to each audio-recording of an interview on several occasions to become familiar with the participant's account. Notes were made not only on the content of the interview, but also the phrases, language and pauses used throughout the accounts.

Interviews were then transcribed verbatim. At the point of transcription, the accounts were anonymised to time, place, event and participants. Pseudonyms were used throughout the accounts. The researcher read the transcripts a number of times to ensure accuracy and familiarity with the account.

Each line of the transcript was numbered to assist with identifying text throughout. The transcript was set out in three columns. The first column was titled Phenomenological Coding, the second column was the transcribed interview and the third column was titled Interpretative Coding (see Appendix 8).

Phenomenological Coding:

In this column the researcher made notes about what it is like to be the participant in this account. What is important about this experience for the participant? What language, phrases and pauses are they using to describe their experience? What is the participant's stance in relation to this experience (Shaw, 2010b)?

Interpretative Coding:

In this section of the transcript the researcher considered: what patterns are evident in the account, what conflicts are there, what is interesting about the claims and concerns made by the participant, what language do they use – do they use metaphors to express what they mean (Shaw, 2010b).

Through this process emergent themes were identified and clustered. The themes were re-checked against the transcripts to make sure the connections adequately represented participants' accounts. In addition to keeping a reflective diary, I met with my Academic Supervisor RS who looked through the transcripts and notes as an independent checker. Having the independent checker helped to ensure that the interpretation, analysis and subsequent results were a valid representation of the participants' accounts and not based on my fore-understandings.

The process described above was completed on each individual transcript before moving onto the next transcript where the entire process was repeated.

Once this task was completed for each individual case, the researcher performed a cross-case analysis within each group (Group 1: Group 2: Group 3: Group 4) –. A further cross-case analysis was then conducted between Group 1 (junior nurses) and Group 2 (senior nurses) and then Group 3 (junior doctors) and Group 4 (senior doctors). A final cross-case analysis was performed between all four groups.

The cross-case analysis performed between the four groups produced overarching themes and then sub-themes were generated based on the various experiences. The sub-themes are grouped on the same levels as they were equal and inextricably related (Stewart & Rae, 2012). Although the participants were all exposed to the same clinical circumstances of the

ALTEs, each person had their own experience of each event based on their own historicity but the common phenomenon led to inextricable links between the experiences.

4.7 Ethics:

Ethical approval was granted by the following bodies prior to conducting the interviews:

1. National Research Ethics Service – REC Reference: 10/H0408/66
2. Aston University Life and Health Sciences Ethics Committee – Project 490
3. Birmingham Children’s Hospital Research and Development approval

Consent was obtained as outlined in section 4.6.2. The participant information leaflet outlined that participants could withdraw their consent up to five days after the interview was conducted and their interviews would be withdrawn from the analysis.

The interviews were audio-taped using a password protected, encrypted recording device. Each participant was allocated a unique identification code that only APH had the code for. Pseudonyms were used to maintain confidentiality and any clinical data (for example colleagues’ names, patient diagnosis, ward names) were omitted from the quotes that may have been presented. The hard copy of the interviews and the audio device were stored in a locked filing cabinet in a locked office according to the Data Protection Act 1998.

4.8 Results:

4.8.1 Demographics of participants:

The interviews were conducted between October 2010 and April 2011. A total of 24 interviews were conducted with nurses and doctors who had cared for a child who had an ALTE during the study period. A summary of the characteristics of the participants is provided in Table 13.

Table 12- Characteristics of the study participants

Study Number	Pseudonym	Type of event attended	Years' Experience	Sub Group Allocation
A2	Jessica	UPIC	3	Junior Nurse - Group 1
A3	Claire	UPIC	5	Senior Nurse - Group 2
A4	Daniel	CA	15	Junior Doctor - Group 3
A5	Jonathon	CA	9	Junior Doctor - Group 3
A6	Carol	CA	2	Junior Nurse - Group 1
A7	Katherine	UPIC	3	Junior Nurse - Group 1
A8	Samuel	CA	10	Junior Doctor - Group 3
A9	Vanessa	CA	8	Senior Nurse - Group 2
A10	Emma	CA	8	Senior Nurse - Group 2
A11	Belinda	CA	3.5	Junior Nurse - Group 1
A12	Laura	CA	20	Junior Doctor - Group 3
A13	Henry	CA	11	Junior Doctor - Group 3
A14	Diana	CA	6	Senior Doctor - Group 4
A15	Susan	CA	3	Senior Doctor - Group 4
A16	Patricia	CA	3	Senior Doctor - Group 4
A17	David	UPIC	8	Senior Doctor - Group 4
A18	Nicole	UPIC	0.5	Junior Nurse - Group 1
A19	Mary	CAC	10	Senior Nurse - Group 2
A20	Kelly	CAC	0.5	Junior Nurse - Group 1
A21	Sarah	CAC	4	Junior Nurse - Group 1
A22	Nathan	CAC	14	Junior Doctor - Group 3
A23	Margaret	CAC	15	Senior Nurse - Group 2
A24	Rachael	CAC	3	Junior Nurse - Group 1
A25	Charlotte	CAC	5	Junior Doctor - Group 3

4.9 Key themes identified:

Figure 9 provides an overview of the five key themes to be discussed in this chapter.

Figure 9- The key themes identified in the IPA interviews



4.9.1 Theme 1 – The person within the patient and the nurse

Nurses and doctors have a relationship with the patients and their families before an ALTE occurs which is unique to people working in this setting. This relationship may be from a superficial introduction and interactions during a patient examination through to being the named nurse or doctor for that patient with multiple interactions over weeks, months and sometimes years. This is very different from other industries where there is generally not a pre-existing relationship with the patient equivalent. For example, with aviation the pilot or air traffic controllers do not meet the passengers before a flight and emergency service workers are generally called for assistance after an event has occurred. This theme explores how that pre-existing relationship or previous interaction with the child affects the participant's experience of the event.

In addition to performing clinical duties, nurses who care for children take on extended roles. These extended roles have a parental nature about them. In addition to the clinical duties, the nurses will sit and feed the babies their bottles, and help older children eat, bathe and dress. They may also play with the children. These roles may be carried out in conjunction with the parents: for example if a child has a lot of intravenous lines the nurse will help the parents dress and undress the patient to give them a bath. When parents are not in attendance it is the nurse who soothes and comforts the child. All of these interactions are

quite intimate in nature and contribute to the nurse developing a rapport and relationship with both the child and the family.

“Umm I think it’s just more the patient, I mean I’ve looked after Isabelle a lot, I’ve known her from a baby, I brought her up from PIC after her first stage, I’ve admitted her in for catheters, discharged her when she’s had catheters. Her Mum and Dad are lovely and I had quite a good relationship with her parents, so I think it was that and the fact of, of Dad, of seeing Dad and he was on his own, he was so scared to ring Mum ‘cos he didn’t want her to rush here and, and it was all of that together it was all that really I think”. (Sarah – L-298-308)

Nursing children is quite different from other professions. There is inevitably a blurring between the personal and professional roles. As described above, in addition to performing professional clinical duties such as measuring vital signs, administering medications and performing dressing changes for example the nurse provides more holistic care for the child and their families. An example of this more intimate care is the simple act of administering a bottle to a baby. The baby sits and looks at the nurse intently; he or she may wrap their little fingers around the nurse’s fingers as he or she accepts essential nutrition with seemingly unconditional trust. The nurse tends to develop a more intimate and personal relationship with the patient than would occur if the nurse was providing clinical care in a different context. The very nature of the additional care required when looking after children demonstrates that the characteristics of this profession make it difficult to distinguish between the professional and the person who is a nurse. A quote by Margaret illustrates the blurring between the personal and professional as she describes how the children and families become part of the family:

“..... I mean it’s, it’s sad, because you think, as you walk past their room, (.) ah, they were there or miss their parents ‘cos they’re not there. Cos a lot of them are part of the family basically, they’re here for a long time some of them. Umm and so you do, you sort of miss from that point of view”. (Margaret – L585-590)

This quote from Jessica further demonstrates the blurring between the person and the nurse:

“When Mum came to, I rang Mum and said I think you need to come to the ward she...um has become unsettled and Mum came to the ward and she like came to the ward and was like “what have you done to my girl”. Obviously I took that personally, as you do. But like when I spoke to her after and the girls spoke to her, she didn’t

mean it as in “what have I done to her” (points to herself). So I think.... and going to see Mum again just....”.(Jessica – L262-L268).

When Jessica says “*obviously I took that personally*” she is demonstrating the personal nature of nursing. Her personal feelings are inextricably intertwined within her professional role and it is difficult to separate the two. The terms “profession” or “professional” used to describe nursing are a double-edged sword. In one respect these terms denote a unique body of knowledge, skills and experience that can be described, tested and demonstrated. Being a professional is a badge of honour which commands respect and recognition in its own right. On the other hand, contemporary culture dictates that there is no place for the personal within the professional. However, as described above the personal and the professional become inextricably linked by the very nature of nursing children.

A further interesting aspect of Jessica’s interaction with the mother of the child immediately after the ALTE is the feeling that she let the mother down in some way by *allowing* this to happen to her child. After the mother’s comments, Jessica is worried about seeing the mother again in case she blames Jessica for this event occurring. Although Susan doesn’t have such an outwardly confrontational interaction with the mother of the child she is caring for, she describes a similar feeling of letting the mother down and being worried that she might blame her when she describes her experience:

“Mmm. It does and I think because I was there before hand and I had met the mum in the morning and then when I was doing the gas she was cuddling the baby. I guess I felt in a way um (...) (makes a sound like she is trying to find the right word ach) I don’t know how to explain it, ah (...) I felt that I had let her down in a way that the baby had arrested cause you sort of think, it’s natural to think “what could I have done to prevent this?” and there was no particular warning that the baby was going to arrest so I felt that, oh I don’t know in a way that I should have been able to prepare her for it, but that’s an unnatural thing and you wouldn’t of ever even you know..... Afterwards, when you think about it you think “gosh, what do the parents think?” it’s awful, all of a sudden she is giving her baby a cuddle and the next minute you are trying to resuscitate her baby in front of her um” (Susan – L191 – L205)

This description ties in with the discussion about difficulty in separating the personal and professional identity of the nurses and doctors who care for a child as well as the feeling of letting down the mother. Susan can’t seem to find the words to express how she felt during this time and there is an assumption that she should have automatically known this event was going to occur and she should have done something to prevent it from happening

because she is a healthcare professional. There seems to be a belief that because she is a healthcare professional then all of the knowledge, skills and experience that contribute to these professions should come naturally somehow. There appears to be an assumption that because healthcare professionals receive training on clinical skills that they come naturally, however this isn't the case. The difficulty with this assumption is that when these things (the skills or knowledge) don't come naturally or intuitively the person perceives themselves as being an inadequate practitioner.

Another issue related to the person within the patient is the challenge of distinguishing between the child and the condition that requires treatment. Belinda has got to know the patient and his family very well over his multiple, lengthy admissions. She describes her experience of the ALTE:

"I mean the one thing I remember thinking was it looked like they were going to break his ribs they were sort of doing it quite hard and I remember at one point someone saying "you need to do it harder" but I don't know who said it and I don't know who they were saying it to. I just remember thinking "oh my gosh, they are going to break his ribs". Because Zahid, by this point he'd been intubated and was totally unconscious, he was really floppy and I could just sort of remember his head bouncing off the bed and it (.) it was just really horrible to watch, I mean I know I am going to see it again at some point, but I just hope it's // well I hope it's not like that, but I hope I can deal with it better, because I found that, that was quite, not disturbing thing to see, like I say they were pushing in his chest so hard, and I think I was quite shocked by that if I am honest". (Belinda – L241 – 256).

The detail that Belinda goes into and the way in which she describes what is being done to this child is revealing. Belinda still clearly sees the person within this little boy as she worries that they might break him by doing chest compressions so hard. She is also disturbed to see his head bouncing off the bed and his body all floppy. When learning to look after children in any capacity (parent, nurse, doctor) people are always taught to support their head and swaddle them. This scene that Belinda is witnessing goes against all of those natural instincts. It is clear that this is a very difficult scene for Belinda to witness, also substantiated by her own claim that it was "horrible to watch".

This account by Belinda is quite typical of many of the more junior staff who knew these patients before the event. They still see a child as opposed to an object that requires treating. The pre-existing relationship with the child is the key element that makes this situation so difficult for the nurses and doctors who care for them. It appears as though the nurse can

become almost rooted in position because they are fixated on the person rather than depersonalizing the patient into a condition that requires treatment. This fixation on the person prevents them from moving onto the more automatic response of providing clinical treatment. Again, the challenge within the dichotomy of the personal and professional reveals itself.

During the interviews, Belinda's colleagues describe her as "*a rabbit in the headlights*" and seemingly frozen. The following extracts demonstrate how Belinda's inability to see the patient's body without conjuring up the patient's personhood and her relationship with him affects her behaviour and performance at the event:

"Then when I came back to him, he was having back to back fluid bolus', he was having sort of adrenaline every couple of minutes, they started giving cardiac massage, um, and people had started taking it in turns so I went and stood next to Spencer (staff nurse) who was doing the cardiac massage and I said "if you get tired I am right behind you if you need a break" and he said "I am ok" um, and Harriet was on my other side and she was doing the fluid bolus's and I think I said the same to her....".(Belinda - L193-202)

Belinda goes on to say that she offered to help with some of the clinical tasks, however these tasks were already being completed by the other staff at the event.

"I don't know if anyone else had said to him "you know, do you need a break" but they must have, because Andy took over for a bit and then the charge nurse took over, and then they seemed to swap between the three of them as well." (Belinda - L321-330)

Belinda's account of the event initially seemed to indicate that Belinda was very busy and involved in this event. However, throughout the transcript she often uses terms like "everybody, somebody, they, people, he, she" which sounds as though Belinda is describing what she is watching other people do, rather than tasks she is actually performing herself. When Belinda does offer to take over a clinical task (administering chest compressions) it is clear that this task is already being performed effectively by three other members of the team. Belinda's prior relationship with the patient keeps her focused on the person within the patient rather than shifting the focus to providing the effective clinical treatment that this patient requires.

On the other hand, Daniel, a very experienced senior doctor working in PIC, is very clinically focused during these events. He has advanced clinical skills and knowledge and attends

these events as a team leader on a regular basis. Although Daniel has not had any interaction with the patient before the ALTE, his interaction with the patient during the event reminded him that the patient was a little boy as opposed to a clinical condition or an object to be treated.

“Um, and then while we were doing CPR I am getting adrenalin and bag and masking this child certainly....(draws in breath) it was breathing which hasn't happened to me very often. I, he was certainly fighting for his own life and then you have to put a tube down and paralyze and ventilate them on the unit, that's on....not on the unit, on the ward which is normally only happens when you have someone totally collapsed in front of you. But it was a different kind of set up. So it is stressful because it is different and it is always stressful in that sense” (laughs). (Daniel – L121-L132)

Daniel's initial use of the term “it was breathing” is characteristic of the responder who generally views the patient as an inanimate object during an ALTE. During the account Daniel moves from referring to the child as **it** to “**he was certainly fighting for his own life**” which shows that he is seeing this child as a person. The act of the child trying to breath in this situation moves Daniel's experience from one of providing treatment to a seemingly inanimate object through to personalizing this child which made this experience unique for Daniel. The child was attempting to breath during the event which does not usually happen and Daniel describes him as fighting for his life – he is personalising this event. These aspects made the event more poignant for Daniel.

Later in the discussion with Daniel he describes how this act of personalizing has affected his clinical practice and how he thinks training should be provided for colleagues.

“I think part of it would be certainly like training as well. The thing about scenarios as well you have to think that if you are doing effective resuscitation on this child's heart or it's not working, it doesn't mean that the brain isn't working i.e. somebody's already, especially in a set up like in a hospital quite often people are quite quick in chest compressions because they see bradycardias, they can't feel a pulse so they go for chest compressions. That means quite often the blood supply into the lungs and the heart and the brain might be sufficient enough, so yes, we may have to think about training this because in the standard APLS (Advanced Paediatric Life Support course) that is not actually trained, because rarely would you see someone who collapses in front of you and who still...yeah is more or less alive while you are doing CPR. It is one of those things that I think people just have to be aware that you may need drugs. Maybe not as high a dose of drugs but you may still need them. Um,

because you and me would feel quite bad if we were to get chest compressions while we could see what is happening around us because it is not...(suck in breath) yeah, it's a bit hard but anyway (laughs)" (Daniel – L221-242)

When Daniel refers to drugs in this case he is referring to drugs that help to relieve pain and sedate the child. Again, this description signifies that Daniel is reminded that the patient he is treating is a person with feeling as opposed to an inanimate object that requires treating. Daniel's account reinforces the need for training in these situations that not only focuses on the clinical skills required to resuscitate the child, but also helps staff to understand the subtle differences between each case. When caring for children who have an ALTE, staff deal with human beings with different anatomy, physiology and feelings as opposed to an inanimate object (like an aircraft) that does not have a personality or nuances between cases. Within healthcare, no two cases are ever likely to be the same so the staff need to learn the skills to adapt to each situation. This will come from repeated exposure, seeing other people in these situations and through professional experience.

The nurses and doctors aren't just caring for a child, but a child who is part of a wider family. Susan describes the difference between caring for an adult and caring for a child who is part of a family unit.

"The big difference I think, I felt emotionally (.) I felt more emotional at the end of it seeing the parents there, than I have done seeing the families of adults who have arrested and died. Um, and it was just a, it was a moment where, because after the arrest I think (.) they were taking the baby to ITU on the cot and the person pushing it, without thinking just knocked the baby's toys from the cot onto the floor and then I saw the mum, the mum was crying and picking them up and it was just one of those horrible scenes that you just think "oh it's incredibly sad" and horrible. Yeah, so that was sad" (Margaret – L177-186)

Like the nurses and doctors that were described earlier, Margaret was reminded of the person who was being resuscitated rather than a condition that needed treating when the baby's toys fell off the cot. The toys reminded her of the personality in this situation, a living breathing child who had previously been playing with toys. Witnessing the mother being upset and going to the trouble of picking the toys up also reminded Margaret that this little person was part of a family unit which was made up of parents who had feelings and a connection with this child. This interaction with the parents served to remind Margaret of the personality at the centre of this situation. Caring for a child is not something that is done in isolation – the child is part of a family unit that requires care and compassion.

A further unique aspect of caring for children who have an ALTE as opposed to adults is that it challenges the generally held perception that children should have a long, healthy life ahead of them. It is this challenge that makes the experience of caring for a child in these situations more poignant.

“I must say in adult medicine I have done elderly care a lot. I haven’t done young adults like cardiology, so I’ve done a lot of older adults respiratory, elderly care. They’re elderly patients; most who arrest are older patients. I think the situations and the circumstances can be very difficult (.) but it’s a bit different to paediatrics. This is a child, who has potentially got a larger, long life span ahead of them and I was consciously aware of the parents who arrived in front, right in the middle of the arrest, which would not ever happen in an adult arrest really. That was a big difference. I noticed that nobody actually asked them to leave and they were almost encouraged to be standing by, so I wasn’t (.) I haven’t experienced that before. But in an adult arrest, depending on the situation, if they are very old you would do what you can and it gets, families are almost aware of what you are going to tell them”. (Patricia – L349 – L367).

Again, this account challenges the dichotomy between the personal and professional identity. The person within the nurse has lived in a society where the natural order of things is that children should have their lives ahead of them. Unfortunately in professional experience they know that this may not always be the case. As we are learning through these accounts, the personal and professional identities of the nurses and doctors are inextricably linked.

The participants’ accounts have revealed that the pre-existing relationship between the healthcare professional and the child and their family can affect the experience of these events and the challenges in distinguishing between the personal and the professional identity. This pre-existing relationship can affect how the participants respond during the ALTE. The following section will go on to explore what roles staff play during an ALTE and how this affects their experience.

4.9.2 Theme 2 – The significance of role during resuscitation:

The previous theme explored how the junior staff tend to focus on the person within the patient during an event rather than the provision of clinical skills. It is not clear if this focus prevented them from performing their clinical roles effectively or if the lack of a defined role gave them the time to stop and focus on the patient as a person. The following theme will explore the interaction between having a role during an ALTE and how that can affect their experience of the event.

Susan has previously described how she had an interaction with the child and parents throughout the morning before the child had an ALTE. When the ALTE occurred, she was at the bedside and initially commenced CPR. Once the resuscitation team arrived they took over Susan's role and she was left there to focus on the patient.

"I think partly whilst we were resuscitating, there were lots and lots of people there, so in the actual resuscitation itself I didn't take, apart from doing the initial cardiac compressions with Jonathan, once the rest of the team arrived I wanted to let the more experienced um people come in and take over that role whilst myself and the other SHO's um got on with preparing the drugs and writing up the stuff. So, it kind of (.) gave me more time to sit back a little bit and think "oohh" (laughs)". (Susan – L191-215)

Once Susan was left without a specific role to perform during the ALTE she describes having the time to "sit back a little bit" which is when the gravity of the situation starts to sink in. Having a role gave her something to focus on and kept her busy. Once she no longer had a role she has the time to start personalizing the child in the situation and her language suggests that this is not a good thing.

Likewise, Rachael who is a junior nurse describes that once the role she was performing was over she has the time to stop and think about things. Rachael moves from performing a clinical task to stopping and personalizing the child and that becoming the focus for her.

"If I had, if I was, if someone had said "do this, or do that maybe", then you have, you don't have a choice but to do it. You can't say "no, no it's all right, think I'll sit this one out". I think you would, I, (.) I dunno, you wouldn't have time to stop and think then, because after I'd done the chest compressions it's like you take a step back and you think oh, you sort of take in what's going on, but I think if I'd a, something, I'm not saying something to do like I was bored, but if I had something to get on with I think umm (.) I don't think those feelings would have (.) I wouldn't have been feeling how I was feeling. I wouldn't have time to I think". (Rachael – L338-349)

Having a role to play during an ALTE helps the clinicians focus on the clinical aspects of the resuscitation as opposed to thinking about the child in the centre of it. This can help to prevent them from having an emotional reaction by busying themselves with practical tasks. As Rachael describes, having a role would have enabled her to feel as though she had made a useful contribution to the event and achieved something.

Having an emotional reaction during the event can *interfere* with their ability to provide clinical care. Having a role to focus on is a method of preventing this reaction and assists the clinician to work effectively.

“For me, yeah I think it was training and knowing what to do, knowing what my role was. I think, you turn up to an arrest and, I know (..) so many people have said it, that they feel better when there is somebody in charge who tells them what to do .So, I think if they know what their role is by (..) scenario training, I am not talking about psychological preparation, but I know that scenario training allows them to deal with it better. And, also having the team leader that tells them what to do, points at them and says “you, go and do this”. They actually like to have a job. Um, it is almost like actions, sort of stops you feeling the emotion, so you stop thinking and you start doing” (Laura– L1044 – L1067)

Laura’s experience ties in with the notion that repeated exposure to these events (through training) helps improve the participant’s experience of them. She has participated in training which enables to her have an almost automatic reaction and more global overview of the event. Being allocated a role helps to give the participants something to focus on and they feel more confident there is someone more experienced in attendance. In addition to the benefits of training, Laura is acting as a role model for junior clinicians. She is demonstrating good team leadership, demonstrating how to prioritize clinical care and giving colleagues a task on which to focus. Additionally, Laura reinforces the notion that having an emotional reaction interferes with colleague’s ability to provide clinical care. Although there seems to be a feeling that having an emotional reaction can interfere with the provision of clinical care, it appears from this account that having a role prevents the emotional response from occurring and therefore reduces the interference this reaction has the potential to cause.

Charlotte is an experienced senior doctor who works in a ward area. She attends ALTE as a responder on a regular basis. Charlotte describes how she detaches herself from the patient during the event as a way of coping. By detaching from the patient she is able to provide the clinical treatment required by the patient and not be distracted by her emotions. Charlotte was the doctor reviewing this patient before they had an ALTE, so like the junior nurses she had a rapport with the child and family.

“Yeah, and I think, but that’s the whole thing about situations like this. In acute situations you need to detach because if you don’t that’s when all the emotions come in and you can’t get on with the A (Airway), B (Breathing), C(Circulation) and D (Disability) because you’re thinking about everything else and that’s I don’t know

that's what I guess I'm particularly good at, it's just the fact that I don't, I stop seeing Mum, I stop seeing Dad, and I stop seeing the baby that I might have cooed at this morning and it's just "this is what I have to do". (Charlotte – L676-685)

Charlotte, like Laura believes that having a specific role or focus during the ALTE helps to maintain the clinical focus. Charlotte's experience maintains that having an emotional response interferes with the provision of clinical treatment – you can't get on with the clinical assessment required in these situations. In order to prevent emotions interfering with the clinical aspects of an ALTE, she describes becoming detached from the patient and family. Charlotte is able to maintain this detached state by focusing on clinical roles, skills and tasks. Charlotte's explanation and use of the term "detached" explains how responders are perceived as seeing the patients as inanimate objects or conditions that need to be treated rather than the person within the patient.

Although the junior clinicians want to be allocated a role and the senior clinicians feel that having a role prevents an emotional reaction which can interfere with the provision of clinical treatment, the junior colleagues want to be allocated a role that they are confident in performing. Carol's experience demonstrates that she was happy to perform the tasks that she was comfortable and confident to perform.

"Just drawing up fluids really um (.) and then getting the heparin bolus - then it occluded so that (.) I just gave Jonathon the syringe and he disconnected it and just gave it through the syringe (.) and put some new probes on him and things, just generally just bits, I wasn't doing any of the drugs, cos I wouldn't have felt confident to do that. So I thought no. I think Rachael and I think a PIC nurse came up and did those. I wouldn't have wanted to do those. I was quite happy to do the bits that I knew I could do" (Carol – L155-L165)

Carol describes being "quite happy to do the bits that I knew I could do". She was confident to perform the tasks that she was performing but would not have been confident to help with the drugs. Drawing up and administering drugs is considered a standard nursing duty at these events, however the nurses are not taught how to draw up the drugs used during resuscitation. This is connected with the inference that nursing knowledge and skills are an automatic "known" thing. When staff are not taught how to perform the skills, yet they are fully aware that these skills are expected of them at an event, it can lead them to question their own knowledge and skills and reduce their confidence. This is reflected through Carol's account.

Kelly acted as the scribe during the event she was involved in. She had previously done this role as a student where she was supported by a more experienced nurse.

“Yeah, but because I’d done that before, I kind of felt more comfortable in that than drawing up all the medications that maybe I’m not so familiar with” (Kelly – L248 – L250)

Scribing is another of the skills that is considered a standard nursing role at an ALTE. Despite this, nurses are not formally taught how to do this job. Kelly is more comfortable undertaking this role because she has had the opportunity to do it before. This further reinforces the significance of repeated exposure and its role in enabling clinicians to improve their professional experience of an ALTE.

Nurses who work within the NHS wear a uniform that denotes a certain level of clinical expertise and experience. The junior nurses wear a light blue uniform, the intermediate nurses wear a royal blue uniform and the more experienced nurses wear a navy uniform. The colour of the nursing uniform worn by two of the participants affected how they felt they may have been perceived by clinical responders at the event they were involved in.

“The arrest team came. I gave them a full handover on the full diagnosis, what he had come in with. I was just very fortunate the fact that I actually knew, the only thing that really worries me about an arrest team coming if I am not looking after the child and being the nurse in charge, is not fully knowing the patient. That is always a real fear because they obviously look at a person, and you’ve got blue (points to her navy blue uniform) and expect you to know everything about the patient. So that is one thing that is always my fear when the arrest team come”. (Vanessa - L166-L177)

Vanessa was wearing a navy blue uniform on the day of the ALTE because she was filling in for the Ward Manager. The Ward Manager has a global overview of all the patients and often feels a sense of responsibility for all of the patients and staff alike. When doctors come to the ward they look to the ward manager for information about each and every patient. To people on the resuscitation team, the navy uniform is a visual cue that Vanessa is the most senior nurse on the ward. Vanessa is normally a Band 6 (intermediate levels of knowledge and skills), however on this day she was “acting up” and there was no way to distinguish her level of skills and expertise from the more experienced manager that she was standing in for. Vanessa felt the uniform carried with it an anticipation of a certain level of clinical skills from both the other nurses and doctors at the event. She also indicated that she expected more of herself. This left Vanessa feeling slightly vulnerable to other people’s expectations.

Kelly also describes how the colour of the uniform she was wearing left her feeling slightly vulnerable. She was wearing a light blue uniform that denotes a junior nurse. Despite being seen as a junior nurse, Kelly feels that the uniform does not indicate what her skill level is and potentially leaves her feeling vulnerable

“Scary. I think it was more scary than that other arrest, that we’ve had. Being a student you’ve always got that back-up and support. And I know you have here in a way, umm whereas everyone will try and help you, blah blah blah but you’re in your uniform and the doctors don’t know how qualified, how umm experienced you are, so they’ll just say “get this” and I’d be like “don’t quite// I don’t know what that is so much” (.) umm, like obviously we go through the arrest trolley and we kind of learn where things are and what things are, but when you are in that panic situation it is, it is more difficult to remember and things like that” (Kelly – L293- L308)

Kelly describes that in previous arrests she was a student. Students wear a different uniform that denotes the student status and Kelly felt safer because there were minimal expectations of her based on this. Now Kelly wears the same uniform as the other junior nurses. Despite being qualified for approximately only 6 months, now that Kelly is wearing the same uniform as her colleagues there is an expectation that she can perform as efficiently as colleagues who may have been qualified for several years. The uniform places an expectation on Kelly that people will perceive that she should *know* how to perform clinical tasks which leaves her feeling vulnerable. In this particular case, Kelly has seen an ALTE previously and been supported to practice a typical nursing duty (scribe) with support from senior colleagues. However, many of her junior colleagues may not have seen an ALTE or been trained on how to perform some of the standard clinical skills that would be expected of them at an ALTE. Although the uniform denotes a certain level of training, it does not account for knowledge, experience or observation which all contributes to performance and provision of patient care.

4.9.3 Theme 3 - Clinical confidence and competence improves experience of events

The interviews have identified that nursing children requires the nurse to do more than provide clinical care. The provision of more parental-like care can make it difficult for the nurses and doctors to separate their personal identity from their professional identity. This difficulty in separating identity and the pre-existing relationship developed with the child can lead the junior nurses and doctors to remain focused on the person within the child during an ALTE. This fixation on the person can prevent them from providing clinical care effectively during the events. In addition, there appears to be an expectation that nurses intuitively *know* how to be a nurse and provide nursing interventions during an ALTE. We have previously discussed that there is a perception that because nurses received some training that these

skills should come naturally. However many of the skills are never explicitly taught nor have the nurses witnessed others performing them during an ALTE before.

The more senior participants believe training on how to perform the standard nursing skills and then being allocated a role during an ALTE will give their junior colleagues something to focus on. In turn, having an allocated role to play during an ALTE will make nurses feel as though they have made a useful contribution to the event and feel better about their involvement. Having a role to play also helps to shift the focus from the person within the child to performing a clinical role. Whilst both senior and junior clinicians feel it is beneficial to be allocated a role, the junior clinicians want to ensure they are allocated a role they are confident and competent to perform. As discussed, although there are certain roles that are considered standard in nursing accompanied by an expectation that all staff can perform them at any given time, there is not necessarily any training provided on how to perform these roles or tasks.

The terms clinical confidence and competence have been used by the participants throughout the interviews. There is an inference that if staff are clinically confident and competent it will have a positive impact on their experience of an ALTE. This theme aims to explore these concepts and what their meanings are for the participants.

Emma describes that on-going clinical training and repeated exposure and involvement in ALTEs has increased her knowledge and skill base. This in turn has led her to being more confident in her abilities and more comfortable in the ALTE situations.

“Learning more. So knowing more. So, since then I’ve done my EPLS and we’re always being updated on PILS and things. So I feel more comfortable, if that’s the right word, in those situations and feel more confident in my abilities and (.) the more things you see the more you become acquainted with different situations. So, every arrest is not the same. But I feel the more you see, the more you do, and the more involved you get, the better you are at dealing with it, and being useful. There were many times, and I think that came from when I was a lot junior, you’re not, you don’t feel useful, you sort of just stood there, and you’re watching everything happen around you. Hence why you feel so upset and and emotional.

However when you go along, because you’re able to do more and participate more, one you haven’t got the time to get emotional, and feel (.) you’re not doing anything, because you are doing stuff. Plus you feel like you’re contributing. So you feel like

you've actually made a difference. So I think that's one of the reasons why my feelings have changed as I have changed and learnt more". (Emma - L704 – L726)

The key for Emma is repeated exposure to the ALTE environment and on-going training. These contribute to her feeling more confident in her own abilities and more comfortable in the ALTE situation. Although each situation can be different, if you are equipped with the right skills and feel confident in performing those skills and you have had exposure to different events you are able to adapt to each situation. If you have not had training or exposure and you are not confident in your skills then participants don't feel as though they have been useful, don't feel as though they have made a contribution and as a result they question their ability and become upset.

Rachael is a junior nurse and she describes how she was asked to draw up some medication at the event. Previously discussions have highlighted that drawing up medication during an ALTE is a standard nursing responsibility, yet the nurses are not necessarily given any training on how to perform this task. Rachael describes what impact this had on her experience of the ALTE.

"Yeah because I sort of, I couldn't (.) I couldn't say, "I'm sorry I don't know how to do this". I just sort of handed it to the Bed Manager; I just thought I don't know what to do. I just sort of mimed to him "I don't know how to do it". (giggles) Yes, one of the SHO's (doctors) didn't know how to do it which I thought, okay he doesn't know either.//yeah// Knowing, I think knowing how to do that then I'd of felt that I've done that right, I've done that on time, I've done that properly //yeah// I've helped in that way" (Rachael – L757 – 766)

Rachael did not feel as though she had performed her job properly or made a useful contribution to the event because she did not know how to perform the clinical skill. The tone of her account indicates that this was not a positive experience for her, she did not feel comfortable. This is in keeping with Emma's account - if you are confident in your abilities and skills then you are more comfortable. Rachael is not confident in her ability to draw up the medication so she is not comfortable within her experience of this event. Rachael did seem to get some comfort from the fact the SHO (junior doctor) did not know how to draw up the drug either.

It is worth discussing the concept of a positive and negative experience of an ALTE. There are two contexts that this may be referred to: a positive learning, self-reflective experience of the event for the nurse based on their performance and a positive or negative outcome for

the patient. A positive experience for the nurse tends to stem from them feeling useful at an event and as though they have made a worthwhile contribution. As Rachael and Emma have demonstrated, confidence in the ability to provide clinical care contributes to staff feeling more comfortable during these events which in turn left them feeling as though the experience was a positive one for them. This confidence is built through training, exposure to ALTE and subsequent involvement in events. Confidence in your ability leads to feeling comfortable and competent. This is a cyclical process: confidence and competence result in the clinician feeling as though they have made a useful contribution at the event and leaves the nurse feeling as though they have had a positive experience of the event. Likewise, a positive experience of the event leads to an increase in confidence and competence.

The second context of a positive and negative experience is to explore if the nurse's experience is bound up in the outcome for the patient. In general a positive outcome for the patient is survival from the ALTE with minimal neurological insult; a negative outcome usually involves the patient not surviving.

In the discussions above Rachael did not appear to have a positive experience of the event because she did not feel as though she had made a useful contribution by not knowing how to draw up the medication. The patient that Rachael cared for did not survive the event (negative outcome).

"I'd like to think it would have done, but then I suppose when you've had something, when you've had a negative outcome it's hard to be positive about any situation. Yeah it did knock my confidence a bit". (Rachael - L672 – 677)

It is unclear whether Rachael's inability to perform the clinical task influenced her experience or if the outcome for the patient influenced her experience. In her previous quote (which was actually taken after the quote above), Rachael indicates that if she had been able to perform the clinical task proficiently then she would have at least felt she had made a useful contribution, regardless of the outcome for the patient and improved how she felt about the event. If Rachael had been confident in her skills and abilities she would have felt more competent and as though she had made a useful contribution which in turn would have improved her experience of the event.

Charlotte's account supports the notion that confidence and competence in clinical skills contributes to the experience of an ALTE more than the patient outcome.

"I think when I was a medical student and I shadowed senior people, I think I was always put into the mind set of "this is what happens and you have to deal with it". As

long as you know you're A,B,C and D it'll be okay, even if the outcome is not okay you will know that you have done something. And I think it's that focus of (.) in the situation, it doesn't help to be emotional. That it helps if you did what you could do and I think it's getting into that mind set of you know, you won't be able to help everyone, you can't save everyone and you know it, and you know that. But you might, if you did this, this and this. So you clutch onto the might be able to do the, this, this and this and see what happens. Then when you've seen some positive things happen, and I think I've seen more positive things happen in these resus situations in children rather than in adults. That makes you think, well it is worth knowing what to do, and it is worth doing it, as such, even if it's short lived, but I think that's what it is". (Charlotte – L694 – L714)

Through Charlotte's medical training it is instilled into her as a doctor that ALTE events can and do occur on a regular basis and there will be times when patients do not survive these events regardless of the treatment provided. This is quite a frank approach to training staff, but it sets up a realistic expectation of what the clinical environment is like. This approach appears to prepare staff for the reality that these events occur. Similar approaches towards setting up realistic expectations (a form of preparation if you like) of these events were not identified within the nurse's accounts. The nurses did not discuss any prior conversations during their initial training or during their day-to-day working lives where the nurses were reminded these events can and do occur. This lack of mental preparation may contribute to the junior nurse's experiences of these events.

This setting of realistic expectations (preparation) for the event allowed the doctors to focus on honing the clinical skills required because they are anticipating these events will occur. Again we see that having a role to play helps to give the participant something to focus on and reduce the potential to stop and become emotional. Providing appropriate, timely and effective clinical care enables the participants to feel as though they have been useful and made a positive contribution to the event regardless of the patient outcome. The knowledge that they have done the best they can in the situation may offset the negative outcome for the patient.

Likewise, Jonathon (a senior doctor Group 3) believes that having good clinical training improves clinical outcomes for the patients, but also helps reduce the fear and stress for the clinicians by having a structured approach to focus on rather than the fact a baby has collapsed in front of you.

“I think APLS is very good, because as I was saying before, I think that if you can (.). You think about something in a structured fashion, rather than saying “help there’s a child or a baby or whatever crashed in front of me”. If you can get your thinking very, very, basic just the ABC of APLS then I think that really helps to take away a lot of the fear and gives you a process to go through. If you can focus on something nice and simple, and something that is simple to remember, then that by itself I think deals with a lot of the stress of the situation and gets you doing something, gets you thinking about stuff and obviously it’s also stuff that positively affects the outcome of the patient having the resuscitation. And I don’t know (.). well I guess my impression would be that one of the only things that helps you deal with the stress of the situation, is the doing it again and again and again and so you’d only get that through ..sort of seniority I suppose” (Jonathon– L408 – L426)

Jonathon suggests having clinical skills and processes to focus on helps to maintain a clinical focus on the patient. Instead of focusing on the person within the patient, the nurse or doctor can focus on the clinical skills required in order to treat the patient. Jonathon alludes to the fact that repeated exposure to these events is the key to maintaining the focus on the clinical requirement of the situation. Doctors are expected to complete Advance Paediatric Life Support Courses (advanced clinical skills required for resuscitation) whereas nurses are not. This reaffirms the contrast in approaches between the doctors and nurses. Doctors are continually reminded that these events can and do occur by focusing training on dealing with these events through the application of specific clinical skills. Nurses on the other hand do not receive the same training and are not equipped with the same skills or reminded that these events occur on a regular basis.

4.9.4 Theme 4 - Misinterpretation of stress response:

The participants described their reactions and feelings during the event. The junior clinicians described a more physical and emotional response to the events, whereas the senior staff described a more clinical reaction to these events. Throughout this theme the similarities and differences in the responses will be explored.

Rachael describes that she was shaking so much during the event that she was not able to write notes on the observation chart.

“Umm (.). yeah, and then I thought to myself what do I do now, because I was doing that little role umm and there were a couple of other nurses who were drawing up meds and ummm. I couldn’t write because I was shaking, I was thinking, I must have been in shock, I must have been. Umm I tried to write on the PEWS (observation

chart) *chart to get some documentation and I couldn't even do that*". (Rachael – L249-256)

When people are faced with situations they perceive as stressful the body releases hormones to prepare them to "fight or flight". The stress response will be discussed further in the following chapters however in this context the resulting release of hormones can lead to shaking, fumbling, and reduced cognitive functioning which can lead to an inability to recall information quickly. These are very normal responses to a stressful situation and have a physiological grounding. For Rachael, she interprets the shaking as a lack of manual and clinical skills rather than attributing the shaking to the normal physiological response to stress. Her use of the term at the end of her account "I couldn't even do that" indicates this had a negative impact on her experience.

Carol also describes feeling numb and getting the shakes during the ALTE.

"Well, I just – it was very, very quick so (.) well just sort of panicked you know, you go kind of a bit numb if I'm quite honest. Yeah, your hands start shaking and stuff like that and I just thought "oh god his poor mother". (Carol – L109 – L113)

"I haven't been involved in many but, yeah, you just sort of go to pot straight away (laughs)". (Carol – L129-L130)

Carol's use of the terms "*panicked*" and "*you just sort of go to pot straight away*" suggest she too interpreted the normal signs of the stress response in a negative light. Carol hasn't been involved in many events but in her experience to date she feels as though she is not functioning effectively. The focus for both of these nurses is on the physical response to stress and how it has affected their performance.

The more senior clinicians still experience the normal signs of the stress response but they seem to have developed ways of recognising and managing this response so they can continue to provide clinical care and then deal with the physical signs after the event.

"No, then you go into automatic mode, it's just pure and simple it's automatic mode. He's not breathing, poked him, basically shook him (laughs), no response. It is just automatic. I don't think, it was just like (claps hands) get this, this and this. I need this, this and this and basically that's all I did, was just went, shouted at people I need ECG monitoring, I need a call and this and this and that's basically... I don't think it was so much as I'm scared, I wasn't thinking I'm scared, or I don't think "or how this

was going to go”, I was just I want this, this and this and it's just automatic”.

(Margaret A23 – L201 – L212)

“I still have that sort of feeling, of where, I don't know about anybody else, but I can sort of cut myself off, while I'm doing the resuscitation, but post resuscitation, feel very shaky and emotional, not, not crying but just shaky”.(Margaret – L261-266)

Margaret has been a nurse for over 20 years and has been involved in multiple ALTEs throughout her career. Margaret describes being able to “*cut myself off*” from the physical response to the stressful situation. She still experiences the physical response but she is able to focus on the provision of clinical care, rather than focus on the physical response like the junior nurses. Her description of the “automatic mode” is echoed in other senior clinicians' experiences.

Charlotte alludes to the automatic mode that Margaret has referred to when she describes going into a robot mode.

“I don't think I'm very conscious of how I'm feeling. I genuinely love emergencies 'cos I live on the adrenalin buzz. So in terms of fear, I don't think there was a lot of fear. There was more excitement as to what can I do, what needs to be done next. I'm generally quite a high energy person so I get, I work well in the buzz. So I think in terms of fear or anything like that there's not a lot of..... Anxiety in the fact that “gosh this is something that is happening and it's happening in front of me”. I kind of tend to go into robot mode, so I don't think I have any sort of like emotions as such at the time. Afterwards I think though, I'm able to sort of reflect about what I think I should be feeling afterwards (laughs) but I don't know that I necessarily feel it at the time if that makes sense?” (Charlotte – L383- L398)

Despite Charlotte's claim that she isn't aware of how she is feeling during an event she describes the “adrenalin buzz” she has at these events. So like Margaret, she is still aware of and experiences the feelings and symptoms of a normal stress response, but she has *learned* to react to the adrenalin and use it to enhance her performance rather than seeing it as a fearful unknown and something that hampers performance like the junior staff seem to do.

Robot and automatic mode conjure up an emotionless, stress-free response. The use of the term automatic could also be confused with a response that suggests the reactions are natural in some way. Being in this situation could never be something that feels natural, however the automatic and robotic reactions described can be learned through repeated

exposure and practice. This corroborates findings in the earlier themes that suggest nursing should come naturally to people even though many of the skills required for this job might not be taught during training. Again, it is through repeated exposure, seeing other people do these things and through experience that these things can become automatic.

4.9.5 Theme 5 –Sense-making and reflection

Participants appeared to go through a “sense-making” process where they asked questions of their practice after an ALTE occurred. They attempted to make sense of their experience in order to identify things they had done well, or things that they may need to do differently in the future.

“You don’t (.) you don’t have anything, I mean you used to have the PEWS people, they used to always come up after an arrest, they don’t do that now. So you just don’t talk, unless you choose to talk to somebody about it, when you’re at work it’s just not spoken about. And I think that can be quite difficult, ‘cos I think even, just talking through these are the obs I did, this is what I wrote on my PEWS chart or this is what I take to the doctors. Or, just go through it like that, its helps you to process it in your head and realise that you did a good job, or you did a good job but this is what you could do next time. And things like that” (Sarah – L427 – L440)

Sarah feels that having someone to talk to after an ALTE would help facilitate the sense-making and reflective process. These events aren’t spoken about afterwards which makes it difficult for junior colleagues to learn from these events. It is important for clinicians to have exposure to these events and to see others performing the skills. However in this theme, a key part of the learning process is the sense-making and reflection that takes place. The talking and sense-making help to answer any questions and also help the junior nurses see that their senior colleagues often experience similar emotions and feelings after an event which can result in a greater feeling of camaraderie.

Carol also describes the sense-making and reflective process that she goes through after an event.

“Umm, it’s a bit of both with just say you know, I’d say like “that was a bit hairy wasn’t it” and we’d all agree about that and I think also to reassure each other that we hadn’t done anything// well not to each other because Jacqueline hadn’t got him, but I said “well he was all right earlier wasn’t he?”, and she was like “yeah he was fine”. And you sort of go through this –you play out the day again, and you play out having the gas and was that what set him off.? And no, having the gas can’t give him a clot and

things. So yeah you talk it through just to reassure yourself, that there isn't anything that you could have picked up on, and (.) that there wasn't anything really that you could have done differently". (Carol - L392 – L405)

Carol uses her colleagues as more of a sounding board than an interactive discussion. She describes talking through the event to reassure herself which suggests a slightly more self-directed sense-making reflective process than Sarah described. Again the camaraderie that can be gained through discussing the event with other people is evident in Carol's account when they all acknowledge it was "a bit hairy".

Both Sarah and Carol are engaging in the same sense-making and reflective practice although they utilize slightly different strategies to get to the same end-point. The provision of clinical feedback after an ALTE would engage with and address both of these sense-making and reflective styles; the provision of clinical feedback by a clinician would address Sarah's style that requires an interactive discussion and the process of engaging in a group discussion would address Carol's need to engage with colleagues. In addition, both would gain the validation that a group feedback with colleagues would provide.

The challenges in separating the personal and professional identity of nurses at work that have previously been discussed are highlighted when the nurses do not feel they have anyone to speak to at work after these events. Rachael lives on her own and had no one to speak to about her experience after her event.

"Straight away. I think I'd have just wanted to talk about it straight away. (.) Yeah and then it's hard when you go – I mean I live on my own, so it's hard when you go home, 'cos you've still got no-one to talk to and then you can't call (.) your mum, because they don't, they don't quite understand, and yeah, and then the only people you can talk to are the girls on the ward which is nice, it's still nice.//Yeah// But yeah I think it's, it's when I went home that I thought (.) "Bloody hell" (laughs). Yeah" (Rachael – L551-L560).

With seemingly no one at work to speak with, Rachael has to consider speaking with people outside of work. Her account indicates that she has tried to do this with her mother before but unsurprisingly her mother didn't understand. Being forced to rely on people outside of work adds to the blurring of boundaries between professional and private identity.

Like Rachael, Emma feels that despite not having anyone at work to speak with she can't speak to people outside of work about these events.

“I do, but then a lot of the time, they, most of them say “don’t tell me it’s too sad”. You know, if I worked on a ward with elderly people, I’m sure they’d listen and then, but then ‘cos it’s children, its babies people don’t. You know, people in everyday life - old people die, children and babies don’t die do they to them? They sort of block it off so some of my friends do say, “oh no don’t tell me that’s too sad” and they don’t want to listen, because it makes them upset. But you know I have got support”. (Emma – L648 – 658)

Again, the lack of people to speak with in a professional capacity forces the nurses to turn to friends and family outside of work which blurs the personal and professional identities. The discussion about the perception that babies shouldn’t die highlights why nursing children can be such unique a challenge. In trying to make sense and reflect on her experience with friends and family, Emma finds herself in a position where she then has to support them and care for them because they are upset about the events they are hearing about.

The lack of provision of routine clinical feedback results in the senior nurse providing support and feedback when they are able to do so. The senior staff find themselves in the position of providing support out of necessity.

“Yeah. I think so. Cos when we do it, we just (.) do it from experience, you just make it up as you go along (giggles) really. So maybe to have something, just like some sort of , I know we have lectures on communication and things like that, but just something to (.) that I could theoretically draw on which would help you to support people better. Sometimes I think I’m supporting someone brilliantly, their feelings might be completely different so just to know what to pick up on, what questions to ask the person, just some, something formal to guide. Because you might think you’re supporting someone brilliantly, you don’t know until they say “no that was not very good” or “yeah that was good”. You can’t say afterwards, at the end “did you feel that that was okay” you know, you don’t know. Whereas if you had something formal, that would be good definitely.” (Emma – L1053 – 1070)

Like many of the other clinical skills required at an ALTE, providing feedback and support may not be something that senior nurses are ever taught how to do. The senior nurses are somehow meant to *intuitively know* how to provide support for colleagues. Emma suggests this skill is something that is learned from experience.

The challenge with this self-taught approach for Emma is that there is no forum or feedback mechanism for people like Emma to know if what they are doing is helpful or *right*. She can

help to support junior colleagues by reviewing the provision of clinical care during the ALTE to enhance their learning experience from the event, but there is no one to help review Emma's performance when it comes to providing support so that she can learn from these experiences.

During the previous research projects that fed into the background to these studies, some nurses reported going on sick leave after being involved in an ALTE. When we think to the previous discussion about Emma, she may perceive that the support she gave the person was not helpful if they still go off sick. It might be useful for Emma to receive feedback in a more structured way from someone who has observed her supporting a colleague.

Feedback for the participants and the senior staff who support their colleagues helps to facilitate the sense-making and reflective process. This process helps the participants learn from each event so that they can move forward and use their experience to guide their practice at subsequent events.

4.10 Discussion:

4.10.1 Intuitively knowing:

There is an expectation that nurses can perform certain clinical skills during an ALTE call. Drawing up medication, supporting parents and scribing are examples of skills that are considered a nursing role during resuscitation. There appears to be an expectation that these nursing skills should be *intuitively known*. However, nurses are generally not formally taught how to perform these skills. There may be times when the nurses may be supported or coached on how to do these skills during an ALTE (on the job training) or they may witness colleagues perform them (role modelling), but there is no formal process for them to be trained, or to witness, practise and consolidate these skills. Many nurses will not have witnessed an ALTE prior to the event in which they participated or had the opportunity to witness colleagues performing these skills.

Despite the lack of training and opportunities to witness, practise and consolidate these skills there is still the expectation that a nurse will be able to provide these clinical skills during an ALTE. When a nurse is called upon to perform these skills and cannot do them it can affect their sense of professional identity, lead them to question their ability and reduce their confidence.

4.10.2 Caring for children:

The interviews have revealed that caring for children sets nursing aside from other professions. It is through the provision of extended care (dressing, feeding and comforting

the child and their families) that the nurses take on a pseudo parental role. The nurses often develop a more intimate and personal relationship with both the child and their families, often referring to the child and parents as members of the family. The nature of these relationships further blurs the boundaries between the personal and professional lives. The effect of this relationship is evidenced during the participants' experience of seeing the person within the patient during resuscitation. This was particularly true of the more junior staff that were more likely to have pre-existing relationships with the children. The junior nurses were focused on the person within the patient during the ALTE as opposed to the senior responders who were able to detach themselves and view the patient almost like an inanimate object. The senior responders maintained a clinical focus secondary to this ability to detach from the person within the patient. Repeated exposure to these events and additional training enables the senior responders to maintain a clinical focus during the event. The repeated exposure and additional training led to an increase in clinical confidence and competence which also enables the clinician to maintain the focus on the clinical situation.

4.10.3 Clinical confidence and competence:

Repeated exposure to the events and clinical training enables the senior responders to feel more confident in their abilities to provide clinical care. Increased confidence in clinical abilities leads to clinicians feeling more comfortable in these pressured situations which lead to competence. This is a cyclical process – increased confidence leads to the clinicians feeling more comfortable and competent. Likewise, an experience that decreases your confidence (like when junior nurses are asked to complete tasks they don't know how to do) means the clinicians feel less comfortable and less competent.

Increased clinical confidence and competence enables the senior clinicians to complete the clinical roles that are expected of them. Scribing, drawing up medication and supporting parents are examples of roles that are traditionally seen as a nursing responsibility during an ALTE, but as shown the junior staff might not be formally taught how to perform these roles. Repeated exposure, witnessing colleague's role modelling and the opportunity to practise these skills enable senior clinicians to learn them.

The other advantage of being clinically confident and competent is that during an arrest the nurse has a role to focus on. We have seen through the accounts that when the nurse does not have a role to perform during an ALTE, they are left to focus on the person within the patient. Having a role to play helps to shift the focus away from the person within the patient to the clinical requirements. This in turn helps the nurse to feel as though they have been useful at the event and made a positive contribution.

These observations are consistent with the results from the international survey of practice. Respondents felt that if the nurses were able to perform the clinical skills required for these events confidently and competently, they would feel as though they had made a positive contribution. This was addressed by providing scenario training, simulation training and mock arrests in the ward areas.

4.10.4 Personal and Professional identity:

We have seen how the very nature of caring for children can create a blurring between the personal and professional identity for the nurses and doctors who care for them. The notion that nurses should *intuitively know* how to be a nurse and perform nursing roles further affects personal and professional identity. When the nurses are asked to perform the clinical roles at an ALTE that they have never been taught how to do the cycle perpetuates itself through decreased confidence and competence.

Despite the *caring* nature of nursing, it does not come as second nature. Nurses need to learn how to be a nurse and how to perform the nursing skills required for resuscitation. Whilst nursing students receive training at university on basic nursing skills, the learning does not stop once the student nurse graduates to become a qualified nurse.

Patricia Benner's work has described the transition of the novice through to the expert nurse (Benner, 1982, 2001). Benner proposes that nurses pass through five levels of proficiency: novice, advanced beginner, competent, proficient and expert. These levels of proficiency are based on the Dreyfus Model of Skill Acquisition (Benner, 1982, 2001; Dreyfus & Dreyfus, 1986). The Dreyfus model outlines that each level of transition reflects changes in three general aspects of skills performance. The first aspect is a movement from a reliance on abstract principles (skills taught in a classroom or skills lab) to the use of past concrete performances. Earlier accounts describe that the nurses are taught how to perform CPR on a plastic doll, however this is very different to what it looks, sounds and feel like in a real life situation. It is only through witnessing this skill in the real life situation that the abstract principles of CPR are cemented through actual clinical experience.

The second aspect of skills performance is a change in the learner's perception of the demand of the situation. During this stage learners start to prioritise and decide what information is relevant and make decisions for themselves. Repeated exposure to the events, witnessing colleague role model skills and allocation of a role helped the nurses start to participate in these events and feel more confident and competent. The more junior nurses still needed to be allocated roles, but as their experience, knowledge and confidence increased they were able to pre-empt treatment and start to transition to a more global

clinically focused outlook. Feedback after an event helps to cement the knowledge, skills and context learned from the event through sense making and reflection.

The third aspect of skills performance is a transition from a detached observer to an involved performer. They no longer stand and watch others doing, but rather they prioritise and take a more global view of the situation. Skills in this context are not just something that can be taught in a classroom and subsequently tested. The term “skills” encompasses skilled nursing interventions and clinical judgment skills. It is not just a classroom-based skill that can be taught and subsequently tested. The Dreyfus model has situational, contextual and experiences at its core (Dreyfus, 1982). Despite having many years’ experience, if a nurse is put in an unfamiliar environment or situation (like being involved in an ALTE for the first time) they revert back to being a novice in that situation. In addition to the situational, contextual, and experiential components of skill acquisition a further essential component is reflection. Reflection enables us to make sense of events, situations and actions and learn from experiences that can sometimes seem uncertain, chaotic or even mundane (Boros, 2009; Howatson-Jones, 2010; Oelofsen, 2012).

Through reflection a practitioner can access previous experience and develop an understanding and link experiences (Johns & Freshwater, 1998). Reflection involves a transformative process that changes individuals and their actions and enables practitioners to become more aware of what has been done and what needs to be done in the future (Ghaye & Lillyman, 2000; Johns, 2002). It is not enough just to witness or perform tasks during an ALTE in order to learn from the experience. A process of reflection needs to take place to make sense of the experience. The nurse can then draw on that contextual experience for the future. The nurses and doctors frequently expressed a desire to be given feedback and the opportunity to talk about the events in order to learn from them.

Theoretical approaches to reflective practice are primarily drawn from adult learning theory (Kolb, 1984), and the work of educationist John Dewey (1933) who developed the concept of “reflective thought”. According to Dewey, reflective thought involves:

1. Developing a sense of the problem at hand;
2. Enriching that sense with observations of the relevant conditions
3. Elaborating a conclusion
4. Testing that conclusion in practice

Reflective thinking enables a person to make sense of a situation, experience or event by getting to the core of what this event means to them. This reflective and sense-making process turns it into a concrete, lived experience which can be drawn on in future (Dewey, 1933).

Based on what has been learned by examining the participants' experiences using IPA and drawing on the theories of skills acquisition, adult learning and reflective practice nurse training interventions need to incorporate the following principles:

1. Repeated exposure to ALTE environment: the more of these events the participants witnessed and were involved in the more confident they became in their skills and abilities.
2. Witnessing (role modelling) - an ALTE provided the opportunity for junior nurses to observe senior colleagues perform the essential clinical skills required for resuscitation. Supporting parents and drawing up medications were particularly challenging skills for the junior nurses.
3. Experience – nurses are not necessarily taught how to perform the essential clinical skills required for resuscitation. Participation in an ALTE provided the on-the-job training to learn the skills (primarily through role modelling) and then provided an opportunity for the nurses to practise those skills. Participants described feeling more confident and competent at subsequent events if they have had the opportunity to practise the skills during a previous ALTE. Allocation of a role for the more junior nurses provided them with purpose and helped to shift the focus from the person within the patient to a clinical focus. Experience of these events was preparation for future events.
4. Sense-making / reflection – the process of sense-making and reflection needs to take place in order to learn from each experience and give it context so that the skills, knowledge and experience can be drawn on for the future. This process helps to move the “parts” of the event from the unconscious to the conscious so that it can be accessed for future reference during an ALTE. This process can be facilitated through the provision of feedback that provides an opportunity for people to reflect on their own experience and that of others. Junior colleagues will learn from senior colleagues (and vice versa) as they go through a reflective process together.
5. Consolidation - through consolidation the skills, experience and knowledge gained at each event can be built on at subsequent events. The participants are able to perform the clinical skills more confidently and competently which contributes to their experience.

This is a cyclical process – the more events the participants attend and the more they practise and provide clinical skills, the more confident they feel at each subsequent event. Consolidation can only occur when the preceding processes (steps 1-4) take place.

Previous chapters have demonstrated that many of these principles can be achieved through simulation training. Adaptation of existing scenarios (in a simulation environment) can address the clinical skills required for resuscitation with experienced faculty who can role model different roles including things like how to support a parent during an ALTE. Through simulation the participants can practise the skills in a safe environment. The provision of a debrief will facilitate the sense-making and reflection process. Consolidation of the skills, experience and context will take place as the participants are asked to run through the clinical scenario a second time.

4.11 How have the interviews addressed the gaps in the knowledge?

1. Healthcare – the interviews have demonstrated that within healthcare, there is an expectation that nurses can perform certain clinical tasks during an ALTE, however the nurses are not provided with training to complete these tasks. Nursing skills needs to be learned and are not *intuitively known*. There is a need for training on how to perform these skills.
2. Children – caring for children and their families in hospital requires the nurse to take on a parental-like role. This can lead to a blurring between the personal and professional identity of the nurse. The pre-existing relationship that has developed between the nurse and patient affects the nurse during the ALTE. The nurses still see the person within the patient which can affect the provision of clinical care.
3. Outcome measure – the results from this chapter have not specifically addressed what are the most appropriate outcome measures. However, once the interventions have been developed based on the evidence gathered through this work then the pilot of the interventions can explore the most appropriate outcome measures to evaluate the effectiveness of the interventions.
4. Evidence-base – the IPA interviews have generated rich qualitative data that have formed the cornerstone of interventions that will be developed and piloted. The development of the pilot interventions based on the information gathered through chapters two, three and this current chapter will be explored in chapter five.

5. Preparation – the results from chapter two and three have suggested that it may be possible to prepare staff for the potential psychological impact of caring for a child who has an ALTE by ensuring that they are clinically confident and competent. This was supported by the information gained in this current chapter. The additional information gained through this chapter have informed the development of pilot interventions which will be explored in the next chapter.

4.12 Conclusions:

The phenomenon explored is an ALTE occurring in children. When an ALTE occurs the nurses and doctors on the ward administer immediate life support measures by providing respiratory support through mechanical ventilation and chest compressions if they are required whilst waiting for a responding team. The responding team is alerted via an internal paging system within the hospital and generally get to the patient within 3-5 minutes of hearing the alert. An audit completed by APH in 2011 of ALTEs revealed that on average 13 clinicians ranging from junior nurses through to senior PIC consultants attended these events (McCabe & Duncan, 2011). The bed space where the children are cared for in a ward area is generally quite small, so accommodating the additional 13 people plus the additional equipment that is required creates an extremely busy and seemingly chaotic environment.

The phenomenon is described from two perspectives - that of the junior clinicians who were at the bedside with the patient leading up to the event, and that of the senior clinicians who respond to the event. The nurses and doctors at the bedside described that once the team arrived and took over their roles they were often left with the time to stop and focus on the person within the patient. Their descriptions of their relationships with both the child and the parents reinforced this *personhood* within the patient. The pause created when their role was taken over created time for them to start questioning if they had missed something or done something to contribute to this event.

We have learned from senior clinicians during the interviews that training on clinical skills enables them to perform their roles confidently and helps them to maintain a clinical focus rather than a focus on the person within the patient. Likewise, the senior clinicians described that having the advanced clinical skills and a role to play helped them to focus on the task at hand and prevented them from focusing on the physical signs of the stress response they experienced. Repeated exposure to these events helped the senior clinicians recognise these signs of stress as a “normal” response to the situation. This was in contrast to the junior staff who were infrequently exposed to these events and did not have the clinical skills or a role to perform. This contributed to them focusing on the physical manifestations of the

stressful event and in turn interpreting them as a lack of skills, rather than the normal stress response.

The junior clinicians were expected to fulfil clinical roles based on their profession. Nurses for example are expected to draw up medications and support parents for example despite never being formally training to do these things. Despite the junior nurses wanting a role to play, they were concerned about being allocated tasks that they did not know how to do. Through the IPA study we saw that this resulted in the nurse's professional identity being affected and they did not feel as though they had made a positive contribution to the resuscitation effort.

These findings through the IPA study were physically manifested during the audit of ALTEs which identified the following: inadequate monitoring of the patient; a delay in accessing the drugs required for intubation; difficulty in identify the roles of people at the event and unfamiliarity with commonly used drugs and equipment (McCabe & Duncan, 2011). The lack of training on the clinical skills required for an ALTE resulted in confusion and essential tasks not being completed which in turn could have had a negative impact on the provision of clinical treatment.

The rich data generated through the IPA interviews has made a significant contribution to the evidence-base for the development of the PREPARE and SUPPORT interventions. The following chapter (chapter 5) will describe how the evidence gathered through the systematic literature review, international survey and IPA interviews was underpinned with theoretical frameworks to develop the interventions. The development and refinement of the interventions using the MRC framework for the development of complex interventions will be explored in chapter 5. The description and analysis of the feasibility study conducted of the interventions will then be described in chapter 6.

5 Chapter 5 – Development, refinement and evaluation of the PREPARE and SUPPORT interventions

5.1 Introduction

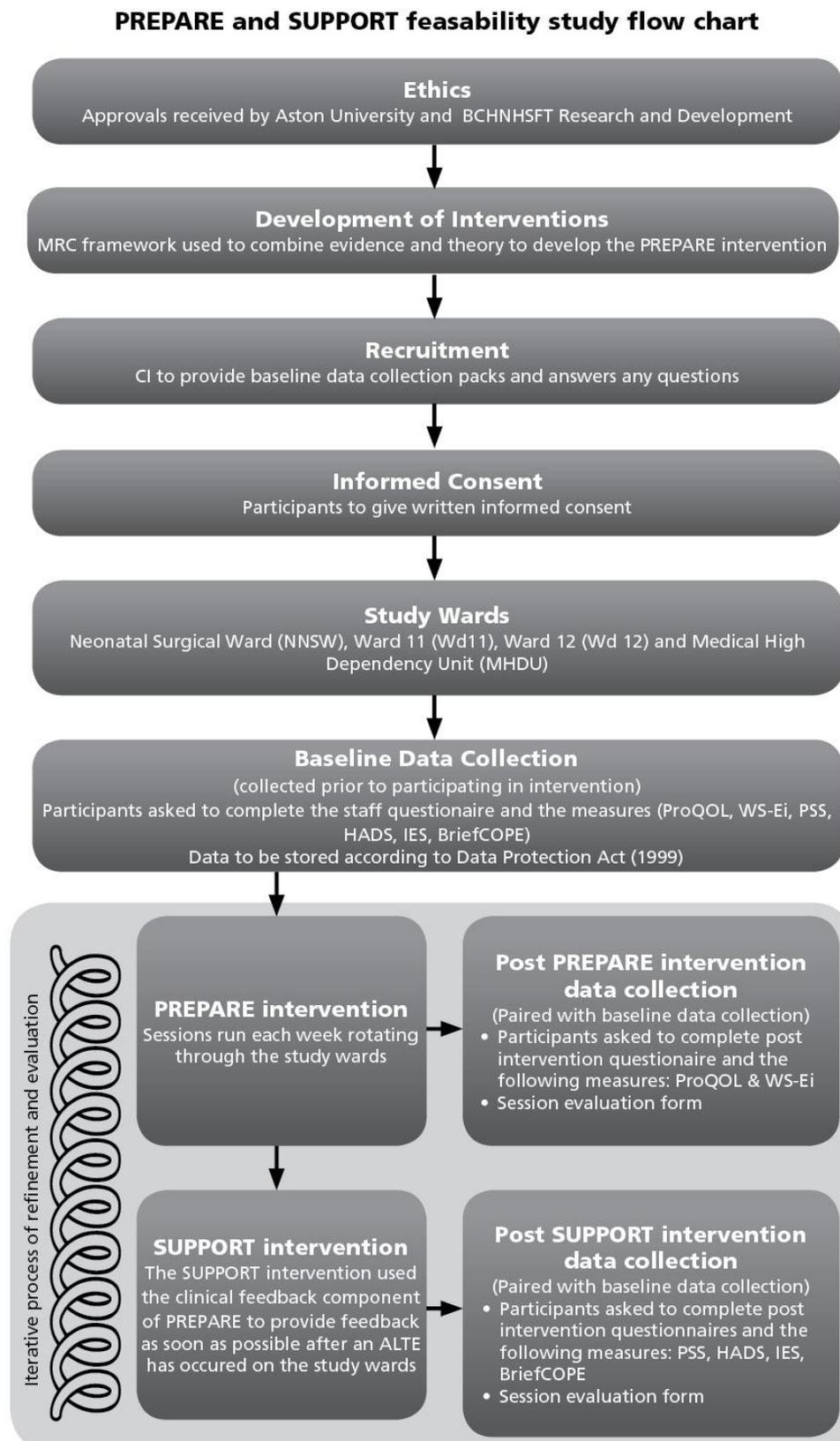
The preceding chapters have discussed the use of existing interventions aimed at preparing and supporting staff that care for children who have an ALTE. The international survey of practice identified that some hospitals were providing clinically focused training for the staff to help prepare them for an ALTE. Participants in the survey felt staff who were clinically confident and competent (through skills training) would feel more useful at the event and feel as though they had made a contribution which would reduce the potential negative impact of these events. The systematic literature review and international survey of practice identified that many hospitals are providing a debriefing after an ALTE despite the concerns raised about the effectiveness of this intervention (Rose et al., 2002; Rose et al., 2004; van Emmerik et al., 2002). None of the interventions being used to prepare or support staff were evidence-based, nor were they being evaluated for effectiveness within the healthcare setting.

Chapter four explored what the experience of caring for a child who has an ALTE is like for the staff. Some of the pertinent issues associated with the experiences included: the pre-existing relationship between nurse and child can affect how they view the patient during an ALTE and subsequently how they react; nurses are not necessarily formally taught the essential skills required for resuscitation which suggests nursing skills should be *intuitively known* rather than something that can be learned; the experience of these events can affect personal and professional identity; clinical confidence and competence can potentially improve the experience of these events and participants need to go through a process of sense-making and reflection to examine the *parts* of the experience to move them from the preconscious to the conscious so that they can be accessed for future events.

This chapter focuses on the development of the interventions aimed at preparing and supporting staff to reduce the potential psychological impact of caring for a child who has an ALTE. The Medical Research Council (MRC) framework for the development of complex interventions (Craig, Dieppe et al., 2008) was used as a template to bring together the evidence presented in chapters' two to four with theoretical frameworks. The PREPARE intervention (which includes simulation training) was developed in its entirety first, then the clinical feedback portion of the PREPARE intervention was to be provided for staff after a real time ALTE had occurred. This will be explored in greater detail throughout this chapter.

Once the interventions were developed, they were refined and evaluated during a feasibility study (Figure 10). One of the aims of the feasibility study was to test procedures – one portion of this testing of procedures was the refinement and evaluation of the interventions themselves. This took place through an iterative process whereby the interventions were run on a weekly basis during the feasibility study and then refined based on feedback from the participants and working party members. The overall feasibility study will be discussed in greater detail in chapter six.

Figure 10 - Development of interventions and feasibility study flow chart



During the introduction chapter of this thesis gaps in the knowledge were identified. Studies were developed to address the gaps in the knowledge. This particular study was designed to address the following gaps in the knowledge:

1. Evidence-base – the findings from the preceding chapters will be presented to a working party with the aim of refining and evaluation of interventions.
2. Preparation– interventions specifically aimed at preparing staff of an ALTE will be refined and evaluated through the working party iterative process.

5.2 Aims:

The aims of this chapter include:

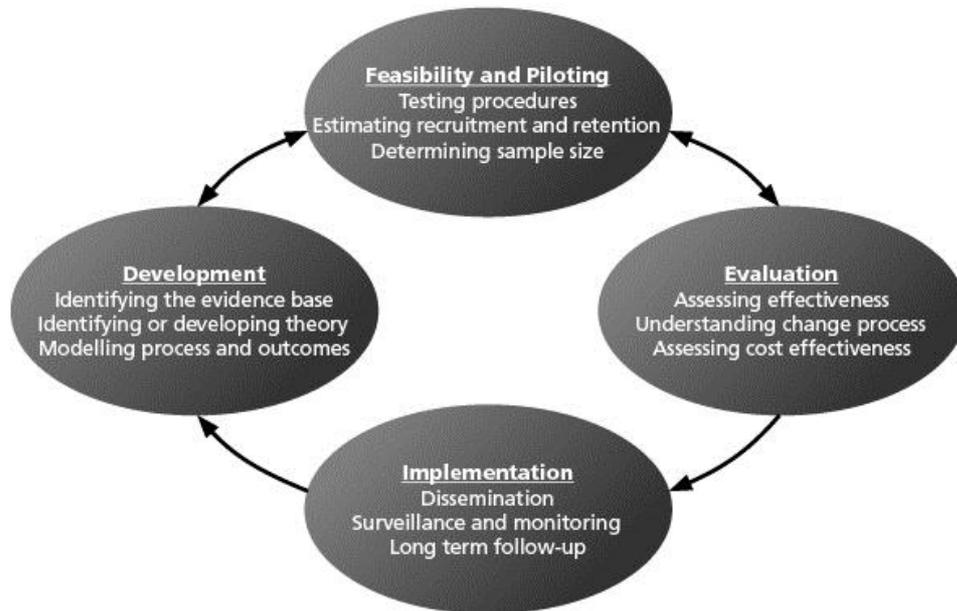
1. Describe the development of the interventions using the MRC guidance as a framework.
2. Describe the refinement and evaluation of the interventions using a working party iterative process.

5.3 The Medical Research Council (MRC) framework for the development of complex interventions

The MRC framework was used as a template for the development of the PREPARE and subsequent SUPPORT interventions (Craig et al., 2008). The MRC guidance outlines the development-feasibility-evaluation-implementation process of a complex intervention (Figure 11). The first stage of this framework (development) involves identifying the evidence-base (presented in chapters 2-4), combining the evidence with a theoretical framework and then modelling processes and outcomes.

The MRC framework provides a useful platform to guide the development of a complex intervention and provide an outline for how to report this process. Clear, accurate reporting helps to improve our knowledge-base surrounding the complex intervention and allows the intervention to be assessed for effectiveness, be replicated and then subsequently implemented in other settings (Michie et al., 2011). As discussed in chapter 2, the process of development-feasibility-evaluation-implementation is often not described transparently when reporting studies which make it difficult to reproduce the results in other settings.

Figure 11 - MRC development-feasibility-evaluation-implementation guidelines



5.4 Identifying the evidence base

The evidence-base for the interventions has been gathered through the systematic literature review, international survey of practice and the interviews conducted with staff to explore their experience of caring for a child who has had an ALTE. Table 14 summarises the key findings from the studies.

Table 13 - Summary of key findings which form the evidence-base

Study completed	Key Findings
Systematic Literature Review	<p>No studies to prepare staff for an ALTE</p> <p>No interventions developed specifically for healthcare</p> <p>Hospitals are using the Mitchell model of debriefing (developed outside healthcare)</p> <p>No evidence to support the effectiveness of debriefing.</p> <p>Rich qualitative data about what the experience of caring for a patient who had an ALTE is like for the participants (Gamble 2001)</p>
International survey of practice	<p>Interventions to prepare staff focused on developing the clinical skills required for an ALTE (simulation and scenario training)</p> <p>Participants felt that clinically focused preparation increased confidence and participation at events which made staff feel useful and as though they had made a contribution</p> <p>Simulation training has been used within healthcare to practice both clinical skills and crew resource management skills (teamwork, communication, leadership skills)</p> <p>Provision of a debrief aimed to not only support staff after an ALTE, but helped to prepare them for future events</p>
Interviews with nurses and doctors	<p>Nurses who had a pre-existing relationship with a child were focused on the person within the patient during an ALTE</p> <p>Nurses are not taught the essential clinical skills required for an ALTE which leads to:</p> <ul style="list-style-type: none"> • The nurse focusing on the person within the patient • The nurse not having a role to perform at the event which can affect their experience of the event (personal and professional identify) <p>Clinical confidence and competence helps to maintain a clinical focus and contributes to feeling more useful and as though they have made a useful contribution</p> <p>Having a role at the event gives the nurses something to focus on rather than the person within the patient and improves their experience of the event</p> <p>Nurse and doctors need to go through a sense-making and reflective process</p> <p>Clinical feedback facilitates the sense-making and reflective process and prepares for future events</p>

5.4.1 Interventions aimed at preparing staff:

The intervention aimed at preparing staff was developed in the first instance. Based on the evidence gathered through the studies and the literature reporting the effective use of simulation and clinical feedback within healthcare, the PREPARE intervention combined these two elements. The simulation session was developed to include:

1. Repeated exposure to ALTE environment: through simulation the participants can witness and be involved in the ALTE environment that will increase confidence in their abilities and skills.
2. Witnessing (role modelling) – scenario training provides the opportunity for junior nurses to observe senior colleagues perform the essential clinical skills required for resuscitation. Experienced staff can role-model the particularly challenging skills like drawing up medications and supporting parents for their junior colleagues.
3. Experience – nurses are not necessarily taught how to perform all the essential clinical skills required for resuscitation. Participation in a simulated ALTE environment provides the opportunity for nurses to witness the clinical skills and then practice them in a safe environment. Participants in the IPA interviews described feeling more confident and competent at subsequent events if they have had the opportunity to practice the skills during a previous ALTE. Allocation of a role for the more junior nurses provides them with purpose and helps to shift the focus from the person within the patient to a clinical focus. Experience of these events was good preparation for future events.
4. Sense-making / reflection – the process of sense-making and reflection needs to take place in order to learn from each ALTE. That process permits individuals to give the event context so the skills, knowledge and experience can be drawn on for the future. The process helps to move the *parts* of the event from the unconscious to the conscious so they can be accessed for future reference during subsequent ALTEs. This can be facilitated through the provision of feedback which provides an opportunity for people to reflect on their own experience and that of others. Junior colleagues will learn from senior colleagues (and vice versa) as they go through a reflective process together.
5. Consolidation - through consolidation the skills, experience and knowledge gained at each event can be added to at subsequent events. The participants are able to perform the clinical skills more confidently and competently which contributes to their experience. This is a cyclical process – individuals will feel more confident at subsequent events if

they attend more events and practice clinical skills. Consolidation can only occur when the preceding processes (steps 1-4) take place.

5.4.2 Intervention aimed at supporting staff:

The sense-making and reflective process described in step 4 of the PREPARE intervention above formed the basis of the SUPPORT intervention. Given the evidence base supporting the use of a clinical feedback that facilitates a sense-making and reflective process, this appeared to be the most pragmatic approach. The SUPPORT intervention (clinical feedback) was to be provided after a real time ALTE had occurred in the study wards. The template for discussion during SUPPORT was developed and refined through the PREPARE intervention.

5.4.3 Applying a theoretical framework:

Incorporating theory into the development of complex interventions is more likely to result in an effective intervention than one based purely on an empirical or pragmatic approach (Albarracin, Gillette, Earl, Durantini, & Moon-Ho., 2005; Craig et al., 2008; Michie et al., 2005). Interventions based on evidence-based practice (EBP) are published regularly within healthcare, however these interventions are frequently underutilised or ineffective within the routine clinical setting. EBP needs to be paired with theoretical frameworks to facilitate the behaviour change required for the interventions to work effectively.

Changing hand hygiene practices is an example where implementing interventions based on EBP alone were not effective. Evidence suggests good hand hygiene amongst healthcare professionals can reduce the incidence of healthcare associated infections. However, when this evidence is introduced without a theoretical framework, the compliance with good hand hygiene standards remains low (Al-Damouk et al., 2004). It is not enough to merely introduce the *knowledge* (need for good hand hygiene) and *equipment* (sinks, hand sanitising products) or *skills* (hand washing techniques). *Behaviours, attitudes and barriers to change* need to be addressed by underpinning the intervention with a relevant theoretical framework. Interventions that incorporate behaviour change techniques are more likely to induce changes in clinical practice. That should in turn improve outcomes rather than interventions solely base on EBP.

Bringing together theory and evidence within complex interventions bridges the boundaries between disciplines. The current project brings together the nursing, medical and health psychology disciplines. The evidence gathered through the nursing and medical disciplines will be paired with the theory and behaviour change techniques from health psychology.

Behaviour Change Taxonomy and Behaviour Change Techniques (BCT)

Theory has been used to underpin interventions aimed at modifying behaviour for many years. A theory can be defined as “*A set of interrelated concepts, definitions, and propositions that presents a systematic view of events or situations by specifying relations among variables in order to explain and predict events or situations*” (Glanz, Lewis et al., 1997, pp. 21).

Theories are made up of theoretical constructs or component parts of the theories. It is these constructs that can facilitate the behaviour change (Michie, Johnston et al. 2005; Michie et al., 2011). For example, the Social Cognitive Theory incorporates the constructs of self-efficacy and role modelling (Bandura, 1977, 1986). These particular constructs (and how they are used to elicit a change or modify behaviour) will be examined in more detail throughout this chapter.

Psychological theories are numerous and many have shared or overlapping constructs (Michie et al., 2005). It can be challenging for people who do not have a health psychology background to identify and subsequently apply the most appropriate theory to their intervention. Two recent developments have occurred to address these challenges and guide researchers within healthcare on how to incorporate theory into interventions. The first development is the publication of the MRC guidance on the development of complex interventions (Craig et al., 2008). The guidance clearly outlines the importance of combining evidence with a theoretical framework. In addition, the framework sets out clear guidance on how to report the development of the interventions and subsequent implementation and evaluation so the interventions are transparent and reproducible.

The second development is the creation of a Behaviour Change Taxonomy, which contains Behaviour Change Techniques (BCT) that can be used in the development of healthcare-related interventions. The taxonomy and techniques were developed as a guide to make it easier to navigate the numerous theories in existence (Abraham & Michie, 2008; Michie et al., 2011; Michie et al., 2008). The behaviour change taxonomy outlines relevant behaviour change techniques that can be linked with the evidence base and be incorporated into complex interventions. Standardising the taxonomy and techniques enables researchers to be more consistent in how to identify, apply, evaluate and report the theory component of the intervention.

5.4.4 Theoretical framework underpinning the interventions aimed at preparing and supporting staff for the potential impact of caring for a child who has an ALTE.

The theories used to underpin the development of the PREPARE and subsequent SUPPORT interventions include: the Social Cognitive Theory, more specifically the construct of self-efficacy; stress and coping theory, reflective practice and advocacy inquiry. These will be described in greater detail in the following section.

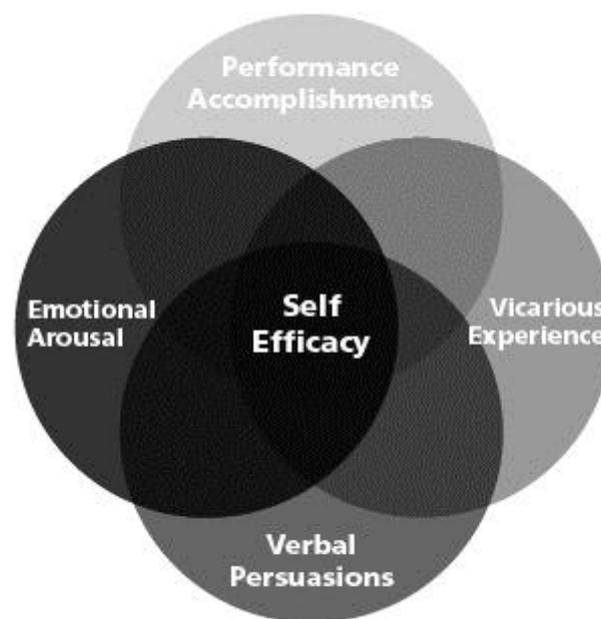
5.4.4.1 Social Cognitive Theory

In order to develop the PREPARE intervention the evidence was underpinned by the Social Cognitive Theory (SCT), more specifically the construct of self-efficacy developed by Albert Bandura (Bandura, 1977). Prior to Bandura's work, there was an assumption that learning occurred through the consequences of one's behaviour in a "trial and error" type approach (Bandura, 1977; Luszczynska & Schwarzer, 2005). This approach could often be hazardous and assumed there was no conscious cognitive process taking place to learn or inform new behaviours. Bandura's work shifted the focus from behaviour to cognition. Bandura believed that even through the "trial and error" approach, cognitive processes (albeit sometimes unconsciously) take place to modify a person's behaviour. When someone "trials" something, the person processes the consequences of the action (be it positive or negative) to shape future behaviour. If the outcome of the trial is positive then the person is more likely to adjust behaviours and continue to perform that behaviour to maintain the optimal outcome. Likewise, if the outcome is negative the person learns to modify the behaviour to get the desired outcome. Cognitive processes play a prominent role in acquiring and particularly in retaining new behaviour patterns (Bandura, 1977; 1978).

One of the key constructs of SCT is self-efficacy (SE). SE encompasses a person's belief in their own ability to succeed in specific situations. It refers to the person's perceptions of their ability to perform a behaviour (task) and is assumed to reflect accurately the *actual* control over that behaviour (Bandura, 1977; Bandura, 1978 ; Luszczynska & Schwarzer, 2005; Ogden, 2007; Smyth & Filipkowski, 2010). Within the healthcare context, clinicians with higher self-efficacy are more likely to look forward to and be successful in workplace performance. Increased work accomplishments are more likely to increase self-efficacy through a feedback loop - when someone has been successful in performing a behaviour or task they are more likely to feel more confident and have increased self-efficacy in relation to that behaviour or task. Likewise, as demonstrated in the cases of some of the nurses who were involved in an ALTE, if the nurse does not feel as though they have been successful in completing a task or behaviour it may reduce their self-efficacy and affect how they perceive their ability to perform that task or behaviour in the future.

SE is one of the few theoretical frameworks which specifies how to change the main causal determinants of behaviour using four techniques (Michie et al., 2008). The techniques include: mastery experiences or performance accomplishments, modelling or vicarious experiences, verbal persuasion, and giving physiologically compatible experiences (Figure 12) (Bandura, 1977; Luszczynska & Schwarzer, 2005; Michie et al., 2008). The following section includes a discussion of the techniques themselves and considers how they have been applied to the development of the preparatory interventions.

Figure 12 - Techniques to modify self-efficacy



Mastery experience or performance accomplishments:

This source of efficacy information is the most influential because it is based on the person's own experiences of performing a task or behaviour. If they are able to complete the task or behaviour successfully then they are more likely to have increased self-efficacy in relation to that task or behaviour. Likewise, repeated failures can lower self-efficacy. People with increased self-efficacy are more likely to perform well in similar situations and then eventually in generalised workplace performance (Bandura, 1977).

Modelling or vicarious experiences:

Watching peers or colleagues with similar abilities perform skills, tasks or behaviours can increase an individual's belief in their own ability to do the same thus potentially increasing SE. Vicarious experiences rely on inferences from social comparisons. This is a less dependable source of information than mastery or performance experience as it does not provide the same experiential evidence that these experiences provide, however they can be useful to change behaviour (Bandura, 1977; Luszczynska & Schwarzer, 2005).

Verbal persuasion:

Verbal persuasion can be used to increase a person's belief that they can complete a task or behaviour through suggestion. If people are actively encouraged by others or use the power of positive suggestion on themselves they are more likely to believe they can complete the task or behaviour successfully. Again, this is a less dependable source of information than the experiential learning gained through mastery or performance accomplishment, however when they are coupled with these they can be powerful. For example, if they are actively encouraged to complete a task or behaviour and given the opportunity to complete the task they are more likely to be successful and increase SE (Bandura, 1977; Luszczynska & Schwarzer, 2005).

Physiologically compatible experiences:

Exposing people to similar environmentally and physiologically challenging situations they may face when asked to perform tasks or behaviours can assist in developing coping strategies to deal with similar situations. Exposing people to stressful and taxing situations may elicit reactions that help to inform them of ways to cope in these situations in the future. Physiologically and emotionally compatible experiences are best coupled with modelling and vicarious experiences and mastery or performance accomplishments to be most effective (Bandura, 1977; Luszczynska & Schwarzer, 2005).

The techniques to assist with behaviour change in relation to self-efficacy are practical, intuitive and match the pragmatic approach of the entire project.

5.4.4.1.1 Work Self-Efficacy:

Raelin has developed the concept of work self-efficacy which incorporates the principles of SE specifically applied to the workplace. Work Self-Efficacy (WS-Ei) refers to a worker's confidence in managing workplace experiences as opposed to the more general principle of SE which refers to one's confidence in executing courses of action to manage a wide array of situations (Raelin, 2010). As discussed in chapter three, provision of training that aims to

improve clinical skills in isolation is frequently not effective. Despite mandatory resuscitation courses being provided in all hospitals, provision of resuscitation and the associated skills is still poor during an ALTE (Valenzuela, Kern et al., 2005; Wik, Kramer-Johansen et al., 2005; Abella, Alvarado et al., 2005). Interventions aimed at improving clinical skills and performance need to incorporate behaviour change techniques (more specifically self-efficacy and work self-efficacy in this context) in order to improve the uptake and provision of these skills and behaviours during a real time ALTE.

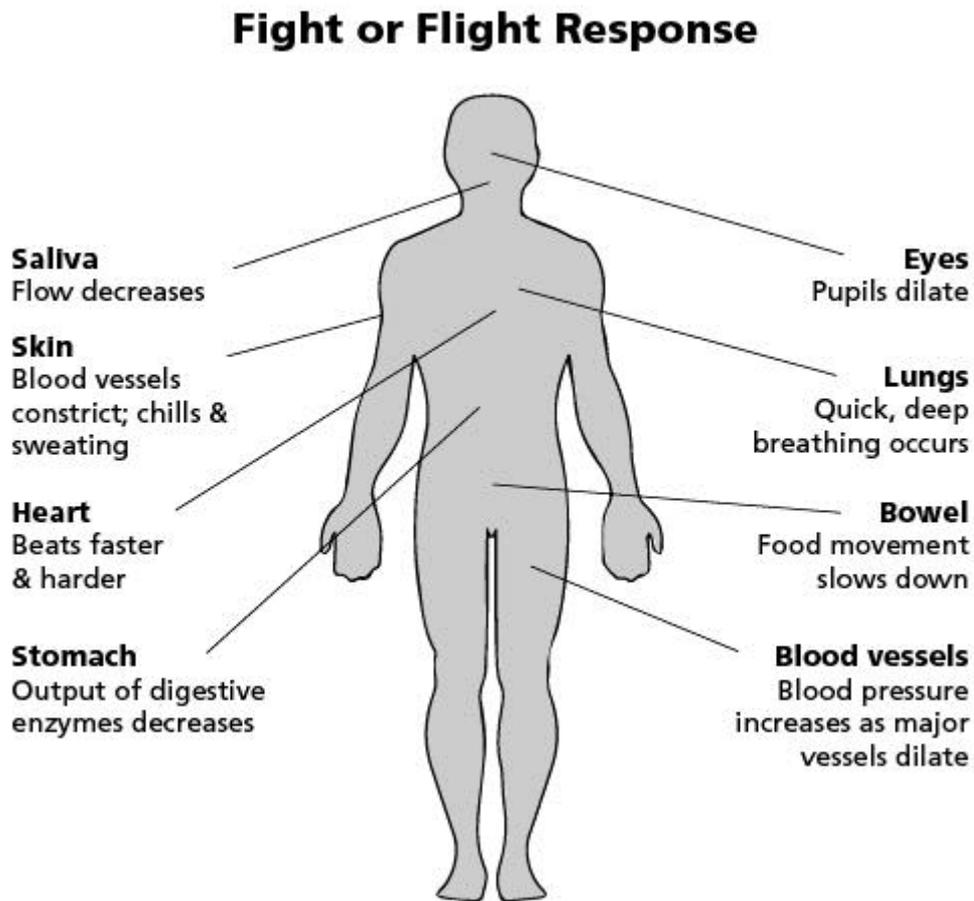
5.4.4.2 Stress and coping theory

The stress and coping theoretical framework were incorporated into the PREPARE and then subsequent SUPPORT intervention (Lazarus & Folkman, 1984; Smyth & Filipkowski, 2010). Michie et al suggest using this theory when developing interventions that involve emotional events (Michie et al., 2005; Michie et al., 2008).

When a person is faced with an event or situation that may be perceived as stressful they go through a parallel process that includes a physiological response within the body and a psychological appraisal of the level of threat that the stressor poses which leads to the activation of the coping mechanisms if need be. This process was described in detail in the introduction chapter.

In summary, the physiological response includes the release of hormones like adrenalin, cortisol and endorphins into the bloodstream (Figure 13). The release of these hormones prepares the body to physically deal with the perceived stressor. The effect these hormones have on the body can physically manifest as: shaking caused by the release of adrenalin; ringing or the sound of the pulse in the ears as blood flow is redirected and body's ability to think and feel are reduced due to the release of endorphins which dulls the way in which people recall things which is why people may not be able to recall things they could normally recall or read body language in a stressful situation.

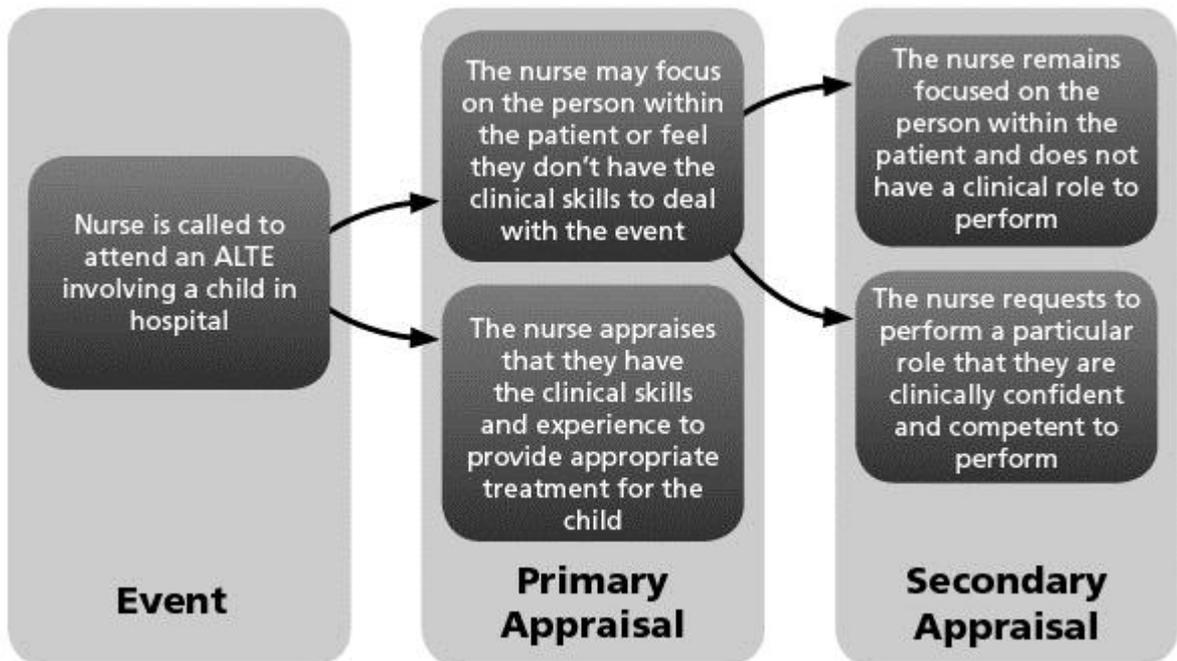
Figure 13 - Summary of the physiological responses to stress



A psychological process takes place in parallel to the physiological response (also described in the introductory chapter of this thesis). In summary, when a person is faced with a perceived stressor they go through an appraisal process. During the primary appraisal the person will decide if the stressor really has potential for harm, threat or loss. If the stressor is appraised as such, the person completes a secondary appraisal (Lazarus & Folkman, 1984).

During the secondary appraisal the individual will assess if they perceive they have resources to deal with the stressor, which will reduce their stress level. If they perceive they do not have the resources to deal with the stressor they can feel stressed and potentially overwhelmed (Smyth & Filipkowski, 2010). A key aspect of secondary appraisal is the judgment concerning the extent to which the individual can control the outcome of the situation. Self-efficacy contributes to this judgment, which in turn influences which coping strategies may be adopted to deal with the stress (Park & Folkman, 1997). A practical example of how this appraisal may take place during an ALTE is outlined in Figure 14.

Figure 14 - Practical example of the primary and secondary appraisal to a stressor



As outlined in the introductory chapter of this thesis, once the primary and secondary appraisals are completed the person will activate coping strategies in an attempt to manage the stress. There are different coping strategies that people adopt. The type of coping strategy that is adopted can depend on the situation and the levels of self-efficacy. The same person may adopt different coping strategies in different situations. For example, a PIC consultant may have high levels of self-efficacy when it comes to dealing with the provision of clinical treatment during an ALTE (secondary to their clinical confidence and competence) and therefore utilise approach coping strategies; yet the same PIC consultant may find public speaking very stressful and adopt avoidance strategies to cope with situations where they might have to speak in front of a large audience.

The three main dimensions of coping style outlined by Smyth and Filipkowski (Smyth & Filipkowski, 2010) are avoidant versus active or approach, problem-focused versus emotion-focused and responsive versus proactive coping strategies. These strategies are not orthogonal but offer different ways of dividing similar types of coping strategies.

People who adopt avoidant styles tend to try and avoid exposure to the stressor and avoid talking about it after the event. For example, during an ALTE the person may offer to go and gather equipment from other areas to avoid being asked to perform a clinical task during the event. People who use more active coping mechanisms tend to take direct actions to

influence or manage the problem. For example the person may enrol in a resuscitation course to ensure they have the appropriate clinical skills for these events or seek out senior colleagues to discuss the event to learn for next time.

People who adopt problem-focused coping styles do something constructive about a stressor. For example, if they were asked to perform a skill they were not sure how to complete they might enrol in additional training to become more proficient in that skill for the future. In contrast, an emotion-focused approach attempts to regulate the emotions associated with the stressor. For example, if they have not been able to perform a skill they may get upset and cry or go out for a drink with colleagues to try and distract themselves from the event.

People who adopt responsive coping strategies tend to react to a situation after it has occurred and try to cope with it retrospectively. A person who uses proactive coping strategies will anticipate a potentially stressful situation and either take measures to avoid the situation or take measures to alleviate it, for example, ensuring they are familiar with the resuscitation equipment available at the beginning of a shift.

Successful coping should ideally result in the individual maintaining or returning to healthy and normal psychological functioning and being able to resume usual activities (Cohen & Lazarus, 1979). Individuals will use different coping strategies to deal with different situations. One of the aims of the supportive intervention during the pilot phase is to get a profile of what coping strategies the nurses are utilising. The information gained from the profile of coping strategies will be used to inform the future development of interventions for use within a larger interventional trial. That may help staff utilise coping strategies that assist them to return to healthy and normal psychological functioning. This will be discussed further in the next chapter.

5.4.4.3 Reflective practice and Advocacy Inquiry

In order for practitioners to move experiences from the preconscious to the conscious so that they may be accessed for future events a process of sense-making and reflection needs to take place. Through reflection and sense-making, practitioners can look back on an experience, explore, develop insights and an understanding of it and then access those insights and subsequent understanding for future events (Johns & Freshwater, 1998). Theories of reflective practice are generally drawn from Reflective practices are Kolb's Adult Learning Theory (1984) and the work of the educationalist John Dewey (1933). Dewey outlined that reflective thought involve the following elements: developing a sense of the

problem; enriching the sense with relevant observations; developing conclusions or a plan for change and testing those conclusion or plans in practice. AI engages with the participants while they make-sense and reflect on their actions and enables the facilitator to engage with the participants as they explore the parts of their experience in a more interactive way.

AI is also known as debriefing with good judgement (Rudolph, Simon et al., 2006). Historically facilitators have either used a judgemental approach to providing feedback or a non-judgemental approach. The judgemental approach can often be confrontational and the recipient feels humiliated, “named and shamed” and reluctant to ask questions. The advantage of this approach is that the recipient is left in no doubt about the facilitator’s concerns. The non-judgemental approach uses a non-blame approach and avoids most of the hurt and humiliation that can go with judgemental debriefing. The disadvantage of this approach is that the real message or issues that the facilitator is trying to address may be lost in this “softly, softly approach” (Rudolph, Simon et al., 2006). AI was developed as a result of this need for a technique that sits somewhere between the judgemental and non-judgemental approaches.

AI incorporates the concept of reflective practice and includes the central idea that people make sense of external stimuli through internal cognitive “frames” (Rudolph, Simon et al., 2006). These frames are often referred to as frames of reference, schemata or mental models. These frames can often influence how a person acts. An example of this may include: in an ALTE situation a nurse may be asked to draw up adrenalin. The nurse would be aware of the normal dose required in this situation but they may not know if the solution needs to be diluted for administration. The nurse does not feel as though she can ask the team leader at the event how it should be administered because she does not feel she can interrupt the team leader (or that she may look foolish) which is the nurse’s frame. An observer might assume the delay in drawing up the medication is due to the nurse not knowing how much adrenalin to draw up or a perceived skill deficit rather than the real reason (frame) for the delay. Frames are central to why people behave in a certain way and if the observer is able to access and challenge those frames they are more likely to change the behaviour.

AI pairs Advocacy with Inquiry to form a conversation to try and access the frames behind the participant’s actions. Advocacy is an assertion or an observation made by the facilitator and inquiry is a question. This technique pairs an objective assertion with an inquiry. In the example given above the observer might formulate this AI:

Observer: “I observed that you did not draw up the adrenalin when you were asked to and I am concerned that a delay in drawing up and administering Adrenalin could result in the patient deteriorating further, can you help me understand why there was a delay in drawing up the Adrenalin?”

Participant: “I know how to draw up Adrenalin but I was not sure if it needed to be diluted to give to the patient or if it can be given neat. I didn’t want to interrupt the team leader to ask them because I didn’t feel as though I could stop to ask them a question and I was worried I would look foolish” (frame).

By addressing the internal frames, the facilitator is able to assist the participant engage in reflective practice that is more likely to lead to a change in behaviour or re-frame that they will be able to draw on in the future to influence practice. The issues addressed through the clinical feedback should ideally be generalizable to the entire group rather than honing in on a particular skill issue of one candidate that would be better addressed on an individual level. As this process continues the conversation described above may go like this:

Participant: (making sense and reflecting) “Next time I will ask”

Observer: “That is a good plan. We all worry that we might look foolish from time to time but it is important to ask rather than delay the administration of a time-critical drug. Has anyone else in the group ever been worried to ask a question in case they looked foolish in their clinical practice?” (Normalise and generalise).

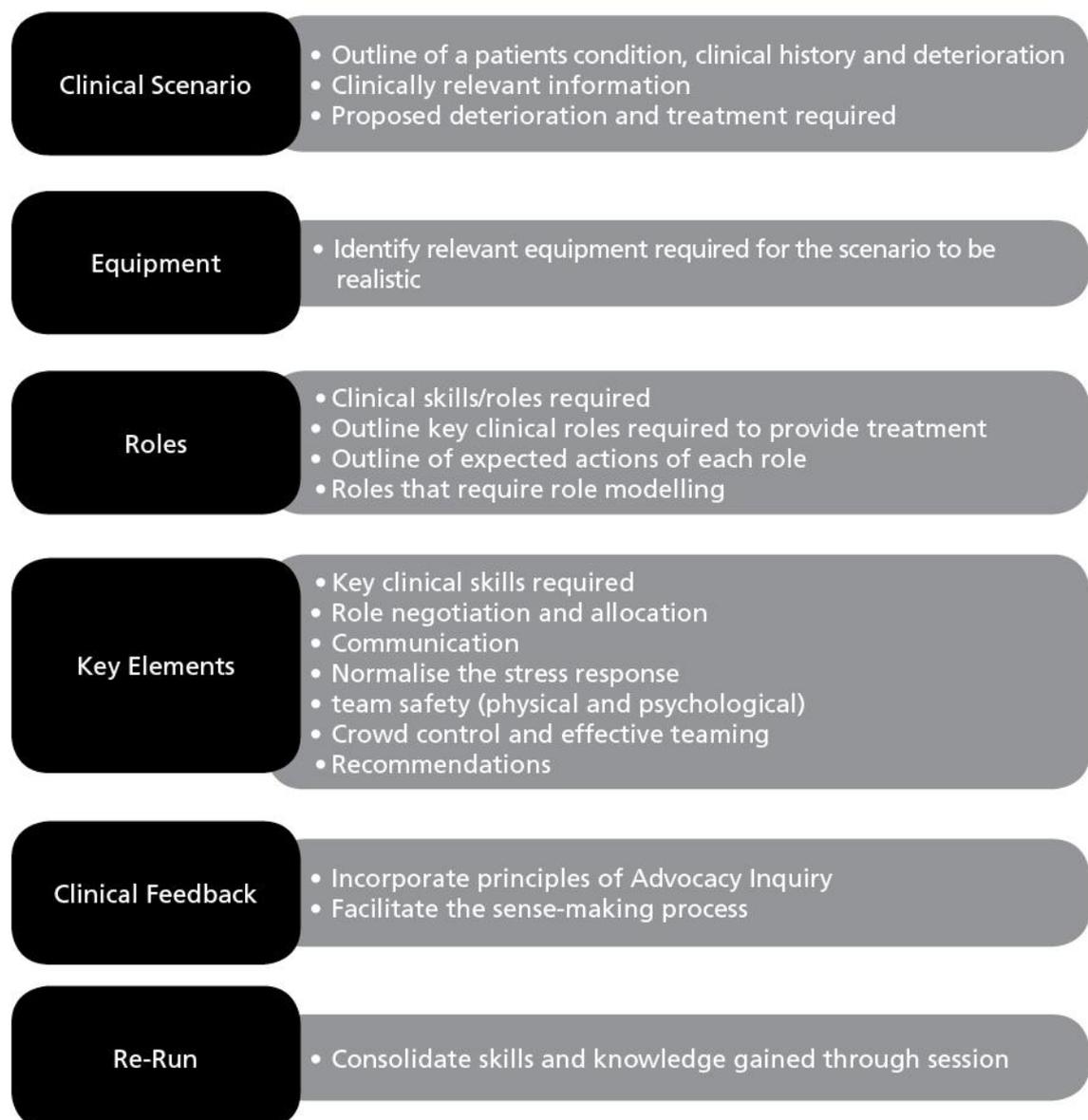
In summary, using AI as the framework for providing a clinical feedback is more likely to facilitate the sense-making and reflective process. AI enables the facilitator and the participant to explore the participant’s internal frames to help explain why the participant made certain decisions, behaved in a particular way or performed a particular skill. By accessing and exploring these internal frames a change in behaviour is more likely to result.

5.5 Modelling process and outcomes:

The third step in the development phase of the MRC Framework suggests modelling an intervention prior to a full scale evaluation to inform the design, intervention and evaluation (Craig et al., 2008). A working party was formed to develop the initial PREPARE intervention and then subsequent SUPPORT intervention. An outline of the PREPARE interventions is provided in Figure 15. The SUPPORT intervention used the template for clinical feedback as described in the PREPARE intervention. The initial development of the intervention took place prior to the commencement of the feasibility study (as described in figure 10). The feasibility study had broader aims than just the refinement of the PREPARE and SUPPORT

intervention and these will be discussed in greater detail in chapter 6. However, for the purpose of this chapter, the focus remains on the development, refinement and evaluation of the interventions. During the feasibility study, the PREPARE intervention was run on a weekly basis during which the working party used an iterative process to refine and evaluate the intervention. The iterative process used by the working party to develop, refine and evaluate the interventions will be discussed further throughout this chapter. The results from the pilot study will be discussed further in the following chapter.

Figure 15 - Summary of the scripts used for PREPARE



5.5.1 The working party process

A working party (WP) was formed to refine and evaluate the interventions using an iterative process in response to feedback from both the WP members and the participants in the interventions. The simulation sessions were run on the study wards on a weekly basis as part of the broader feasibility study.

5.5.1.1 Demographics of the working party

The multidisciplinary WP was convened with the aim of refining and evaluating the preparative and supportive interventions. Members of the WP were purposefully chosen to represent both the key stake holders within the organisation and for their clinical skills and expertise. The members were from disciplines and clinical specialties from across the organisation who were considered leaders and change champions who were likely to have an impact on changing the behaviour of colleagues at an individual, ward and organisational level. The success of these interventions relied on a cultural change in the way these issues are approached. Potential members were initially approach via email to participate in the WP where the aims of the group were outlined and the anticipated time commitment. Table 15 summarises the demographics of the WP members.

Table 14- Members of the working party

Members' Initials	Job role within the organisation
APH	Experienced clinical nurse/facilitator of the WP
HD	Paediatric Intensive Care Consultant
AMA	Paediatric Intensive Care Consultant
HS	Education Sister/experienced senior nurse
PM	Resuscitation Services Manager
AC	Clinical Co-ordinator/experienced senior nurse
AA	Senior Cardiac Registrar
MP	Ward Manager/experienced senior nurse
JF	Lead for Clinical Site Practitioners
JB	Clinical Site Practitioner
JS	Band 6 nurse from PIC
LW	Band 5 nurse Ward 12
LD	Band 5 nurse Ward 12
KF	Band 5 nurse Ward 11
JH	Band 6 nurse Neonatal Surgical Ward
NK	Senior PIC nurse and previous PEWS Educator

5.5.2 Refinement of the interventions through the working party (WP)

5.5.2.1 Workshop with members of the working party

A one day workshop was held in September 2012 facilitated by Adrienne Hudson (APH). APH presented the evidence (as described in chapters 1-4 of this thesis) to the group and outlined the underpinning theoretical frameworks. This was the first time many of the clinicians had been involved in a project that combined evidence with a theoretical framework to develop a complex intervention.

Based on the MRC framework, APH had developed the outline for the PREPARE intervention. The PREPARE intervention delivered through simulation training included the following elements (as described in figure 14): repeated exposure to the ALTE environment; an opportunity for senior colleagues to role model skills and behaviours; the opportunity for nurses to learn and practice skills in a safe environment; clinical feedback which facilitated

the sense-making and reflective process and second run through of the session to consolidate the discussion held during the clinical feedback.

After the initial presentation of the PREPARE concept to the whole group, the WP was divided into two separate groups. The groups were purposely chosen by APH before the meeting in an attempt to evenly divide the clinical expertise and experience amongst the groups. The rationale for splitting the groups into two was to have smaller, more focused discussion and to divide the workload. HD and AMA were asked to act as team leaders and APH roamed between the two groups.

The groups were asked to brainstorm and suggest the outline for two clinical scenarios based on the headings outlined in Figure 14. The scenarios incorporated the principles discussed above and the principles of self-efficacy (mastery experience or performance accomplishments, vicarious experience, verbal persuasions and emotional arousal).

At the end of the workshop the two groups came together to present, discuss and feedback the developed scenarios for further refinement of the scripts for the interventions. The Team Leaders (HD and AMA) were asked to incorporate the feedback into the scenarios, modify them and then they were disseminated to the rest of the group via email for further feedback and refinement. This feedback and refinement was led by APH.

The plan was to refine and evaluate the PREPARE intervention during the feasibility study. Once the template for PREPARE had been developed and gone through many iterations (approximately 3 months into the 6 month study), the plan was to use the clinical feedback component of PREPARE to provide the SUPPORT intervention after real time ALTEs.

5.5.2.2 On-going iterative process with the working party

After the initial scripts had been refined and circulated amongst the WP for feedback, a further meeting was scheduled. The purpose of the meeting was to run a simulation session in real time to identify practical issues that required refinement, for example equipment required to make the scenario more realistic. After this iteration, the PREPARE sessions were run on a weekly basis in the study areas within the feasibility study. During this time, ongoing iterations, refinements and evaluation of the intervention itself took place. The following section will discuss in further detail the iterations, refinements and evaluation of the intervention that took place.

5.6 Modelling process, iterations, refinements and evaluation:

5.6.1.1 Conducting the PREPARE and SUPPORT sessions:

The PREPARE and SUPPORT sessions were conducted at the BCHNHSFT on the following wards: Neonatal Surgical Ward (NNSW), Ward 11 (Wd11), Ward 12 (Wd12) and Medical High Dependency Unit (MHDU). These wards care for a variety of patients in terms of age groups and medical and surgical conditions. This was useful to ensure the PREPARE scenarios were clinically relevant and could be run with nurses from different clinical environments. These wards also generate the highest number of ALTE calls which in theory increased the opportunity to run the SUPPORT intervention after a real time event.

The sessions were conducted on the ward to make the session more realistic for the participants (so they are in a familiar environment where an ALTE may occur) and have access to commonly used equipment. The dates and times for the scenarios were agreed with the Ward Managers in advance of the sessions to assist the managers' plan staffing levels and clinical duties so the nurses could be released to attend the hour-long session.

The advance planning of the dates and times of the PREPARE session also enabled the WP members to commit to sessions. Members of the WP were asked to volunteer as faculty for a minimum of two sessions, with an average of 2-3 WP required for each session.

Time was allocated at the end of the PREPARE session for the participants to complete a session evaluation (Appendix 9) before resuming clinical duties. The WP members came together for a discussion to provide feedback for the refinement and evaluation of the interventions based on their experience of the session.

5.6.1.2 Plan for running the SUPPORT intervention:

The plan for the SUPPORT intervention was to provide the clinical feedback template that had been developed in the PREPARE intervention after an ALTE had occurred on the study wards. This was planned to commence about 3 months into the 6 month study to allow the PREPARE interventions to be more fully refined and evaluated. The feedback would be provided by HD or AMA as they had undergone training on how to use the AI technique that was incorporated into the clinical feedback. After the session, participants would be asked to complete a session evaluation form.

5.7 Data Collection

The data from the session evaluation forms was input into a Microsoft Excel spread sheet (2010).

5.8 Data analysis

The responses from the session evaluation forms were collated and entered into a Microsoft Excel (2010) spread sheet for ease of data management. Quantitative data are presented as a percentage of participants responses. Qualitative responses are presented in themes where appropriate.

5.9 Results:

5.9.1 The PREPARE intervention:

The most recent version of the PREPARE script based on the refinement, evaluation and iterations by the participants and WP are enclosed as Appendix 10. A total of four scenarios were developed as outlined in Table 16.

Table 15 - The four scenarios developed for the PREPARE session

Scenario	Key clinical issues
Hypoglycaemic seizure	Identification and treatment seizure Diagnosis of hypoglycaemia (low blood sugar level) Treatment of hypoglycaemia
Respiratory arrest secondary to a narcotic overdose	Identification and treatment of respiratory arrest Identification of narcotic overdose as cause of seizure Challenging the power gradient when overdose has been identified Supporting a colleague who has made a medication error
Distressed parent	Both the above scenarios could be adapted to incorporate a distressed parent at the child's side to teach staff how to deal with a distressed relative.
Cardiac arrest	Identification and treatment of a cardiac arrest Provision of appropriate treatment to manage the cardiac arrest Management of the resuscitation team – team leader, role allocation, team work, communication.

The following section will describe the PREPARE session as outlined in Figure 16.

Figure 16- Summary of the content of the PREPARE intervention



5.9.2 Incorporation of the self-efficacy construct into PREPARE

Table 17 outlines how the techniques to modify self-efficacy were incorporated into the PREPARE intervention.

Table 16- Summary of how the techniques to modify self-efficacy were incorporated into the PREPARE intervention

Techniques to modify self-efficacy	How the techniques were incorporated in the PREPARE intervention
Mastery experience/ performance accomplishments	<ul style="list-style-type: none"> • Provide an opportunity through simulation for participants to learn and practice the skills/task/behaviours required to care for a child who has an ALTE • Participants are asked to choose a skill/role they wish to perform and then receive feedback on their performance. • The scenario is run a second time after the Advocacy Inquiry led feedback session so that participants can practice what they have learned through feedback to reinforce what has been discussed. • Conduct the simulation session in the clinical area and use authentic equipment from the ward areas • Ask participants to act in their own roles – never ask a nurse to act as a doctor for example.
Modelling or vicarious experiences	<ul style="list-style-type: none"> • Members of the faculty participate in the simulation session and role model skills/tasks/roles/behaviours for less experienced staff • Encourage other/external (1st time) participants to observe the simulation sessions so that they may observe skills/tasks/roles/behaviours being performed • Participants observe their colleagues undertaking tasks/skills/roles/behaviours during the simulation session as they work alongside each other
Verbal persuasions	<ul style="list-style-type: none"> • The simulation environment is a safe environment where participants are actively encouraged to participate and practice skills/tasks/roles/behaviours by both colleagues and members of the faculty • The simulation environment is a safe environment where participants can practice skills without fear of harming a real child. • Through the provision of feedback using the Advocacy Inquiry technique good practices are highlighted and reinforced. • Likewise, unsafe or unhelpful practices can be identified. The consequences of these actions can be explored and the participant guided to offer safer practices.
Physiologically compatible experiences	<ul style="list-style-type: none"> • The session is run in the participant's normal clinical environment with a clinical scenario that is relevant to that ward areas. • Equipment that would normally be used in the clinical environment are used to make the scenario as close to a real event as possible • The scenarios are run in real time to mimic the expected timings of a real life ALTE • A low fidelity mannequin that cries, interacts, has palpable pulse, breathes and has realistic monitoring alarms is used to simulate as close as possible a real child. • Members of the faculty play the roles of members of the extended multidisciplinary team that would normally attend an ALTE to make this situation as close to a real life situation as possible • Same team content (inexperienced to experienced and mix of professions) • All of these things help to recreate an environment that closely mimics the sights, sounds and feelings generated by an ALTE.

5.9.3 The SUPPORT intervention:

The SUPPORT intervention was made up of the clinical feedback component of the PREPARE intervention. This component was refined as part of the PREPARE intervention and then was planned to be conducted after a real time ALTE had occurred in the study wards. The clinical feedback used the Advocacy Inquiry (AI) approach to facilitate the sense-making and reflective process of the participants with the aims of modifying behaviours for future events.

Unfortunately there were no SUPPORT sessions run during the study period. The only people who had completed training on using the advocacy inquiry technique were HD, AMA and APH, therefore they were the only people who could provide the SUPPORT intervention. There were 6 ALTE calls during the study period, however the facilitators (HD, AMA and APH) were not available to attend the calls due to the time of the day or night the call was made or conflicting clinical demands. Therefore it was not possible to provide the SUPPORT intervention an ALTE had occurred. In order for the intervention to be delivered in the future, a wider group of clinicians would need to be trained with this technique. Despite not running the SUPPORT intervention after a real time event, the scripts for the clinical feedback were refined as part of the PREPARE intervention. As part of the PREPARE intervention, when the scenario was re-run after the clinical feedback, a modification in behaviour was seen in the participants which suggests that SUPPORT would be effective in the future. Of course this would require further formal evaluation.

5.9.4 The results of the iterative process of the working party:

After each scenario, members of the WP discussed the session and suggested modifications and amendments based on their own experience and feedback from the participants. A summary of the modification made to the intervention based on the iterative process is presented in Table 18.

Table 17 - Summary of changes made to the PREPARE interventions based on the iterative process used by the working party

Element of the scenario	Modifications made as a result of the iterative process
Brief	<ul style="list-style-type: none"> • Needed to go into greater detail explaining the simulation technology and available equipment for the participants • Needed to highlight the difference between this session and other scenario training the participants may have completed. • Introduced a "pre-brief" with the faculty to standardise the information they received before assisting with the scenario e.g. outline the scenario, what their role will be (including what information to feed into the scenario) and outline that during the debrief they were to debrief in "role".
Clinical Scenario	<ul style="list-style-type: none"> • The proposed clinical scenarios required minimal modification – they were purposefully straightforward so that the participants would not be distracted by a complicated scenario. • The sessions were being run in different clinical areas that cared for children with varied ages and conditions. Improved communication between the facilitator, WP members and the person setting up the scenario was needed to ensure that everyone was aware of the clinical details of the session. Communication was improved by the introduction of the "pre-brief".
Equipment	<ul style="list-style-type: none"> • A dedicated equipment box was developed for each scenario. The participants found it very distracting if certain pieces of equipment were not available for example a stethoscope, thermometer, IV infusion pump. • Where it was not possible to borrow commonly used equipment (blood glucose machine, thermometer, IV infusion pump) a picture was taken of the equipment and it was used instead of the real thing. As long as this was explained in the pre-brief the participants found this acceptable. • The SIMBaby is not able to change colour, therefore colour charts were developed to simulate colour change which increased the realism of the scenario. • A children's baby doll was kept with the equipment for times when the SIMBaby did not work. Participants found this an acceptable alternative if it was explained during the pre-brief.
Roles	<ul style="list-style-type: none"> • Very few doctors attended the sessions to fulfill the medical roles therefore members of the WP needed to act in extended roles. Many members of the WP were senior nurses so they were able to act in advanced nursing roles. • In the future we would need to ensure we had doctor as sessions become more complex. • Participants were able to choose their own roles so that they could practice the skills/ tasks/behaviours that they wanted rather than pre-allocate. • The WP had to be reflexive to what roles and input they had during the session depending on the level of experience of the participants.
Key elements / aims	<ul style="list-style-type: none"> • These did not differ significantly from the outset. • It was surprising to the WP that we could run the exact same scenario in the ward areas and the outcomes would be different depending on the skill mix of the participants.
Clinical Feedback	<ul style="list-style-type: none"> • The debrief had a tendency to run over time, therefore time keeping for this section of the scenario needed to be strict. • As AMA and AH began to facilitate the sessions it was a challenge to only address 2-3 key issues using AI rather than try to address every issue • Learn what to generalise and when to have further discussion about after a session (often a skills or knowledge deficit) • This style of debriefing was very different to other debriefing that is used within the hospital – other styles were more education focused and concentrated on teaching the participants.
Re-run	<ul style="list-style-type: none"> • The facilitator needed to reassure the participants that there were no changes to the scenario (or tricks) and that the purpose was to allow them to practice what had been discussed in the debrief. • Initially participants were able to choose what role they wanted to "practice" during the re-run, however it became evident that to maximise the impact of the re-run the facilitator needed to be more directive in what the expectations were.

Although there were a number of changes made as a result of the iterative process there were several changes that warrant further discussion. The following section will highlight some of the more challenging issues that confronted the working party.

5.9.4.1 Communication amongst members of the working party who attended a session:

WP members were asked to participate in a minimum of two sessions. Attendance was at the members' discretion and based on their availability within their existing clinical roles. In some cases it may have been several weeks between attendances at a session. As the sessions progressed the scripts were modified with the iterations. As part of their role within the scenario, the WP member may be required to feed additional information into the scenario - for example if the patient's colour was changing or the patient appeared to have an increased work of breathing to make up for the life-like information that was missing from the simulation doll. This additional information would help to prompt the participant to provide clinical treatment or modify their treatment plan.

Communication between the WP members needed to improve throughout the pilot to ensure each person was aware of any modification to the scripts based on the iterations between sessions. A structured "pre-brief" was conducted with the faculty to outline the details of the scenario, the proposed key elements / aims of the particular session and what information was required to be "fed in" during the scenario for the participants. The WP found this pre-brief very useful and improved the communication within the team.

5.9.4.2 The effects that the PREPARE sessions had on the working party members:

The members of the working party were all nurses and doctors who work clinically within the hospital. The iterative process and feedback from the working party members was relatively unstructured and informal – the members stayed back after a session and provided feedback, which was then incorporated into the changes for subsequent sessions. There were two unanticipated observations during the iterative process that warrant further exploration in any subsequent studies.

The first finding was the effect that being involved in the working party and the sessions had on the members. For example, several of the members reported that their own clinical practices changed as a consequence of being involved in the session. For example, two of the senior doctors reported being more aware of the need to allocate roles for the staff during an ALTE (particularly the nurse who was caring for the patient at the time of the event) and found themselves paying particular attention to this during a real time ALTE. In addition, they

reported seeing a change in practice with the nurses who had done the PREPARE session (challenging the power gradient, supporting colleagues whom may have made an error for example). Further qualitative work would be required to explore this in greater detail and capture these findings in a future trial.

The second finding was during one of the scenarios which focused on a staff member making a medication error. In the scenario the patient receives a ten-time overdose of morphine which results in the child having a respiratory arrest. The aim of the scenario was to identify and treat the respiratory arrest and to keep the staff member who has made an error safe within the scenario by keeping them at the bedside and ensuring they were given a role for the rest of the ALTE. When this scenario was initially introduced, a member of the working party was asked to simulate making the medication error so the rest of the team could role model how to keep a member of staff who made an error safe. During the debrief, the WP member who simulated the mistake appeared quite affected by the possibility of making a mistake. At times they looked to be close to tears and appeared shaken by the experience.

This scenario was run twice with a similar reaction being noted by the WP member asked to simulate the error. This finding was discussed with the individual members of the WP who simulated the error and then with the wider group. The members who were asked to simulate the error indicated they had not previously made a medication error but they were upset when they imagined how they would feel in a real-life situation. Concerns were raised by HD, AMA and APH as to what impact this simulation might have on the WP members when asked to act in these roles – it was important to keep them safe as well.

Strategies to deal with the potential impact on the WP member asked to simulate a mistake included:

1. Asking the WP member if they would be happy to perform this role prior to the pre-brief. This gave them the opportunity to request not to perform this particular role if they did not feel comfortable to do so.
2. Outline what would be expected of them during the pre-brief with their other colleagues so that everyone was aware of keeping that team member safe.
3. During the debrief it was specifically pointed out to the participants that the person was “acting” and had been asked to simulate making a medication error so the group could role model how to keep a team member safe in a similar situation. The aim of this was to ensure the WP member’s professional credibility was not questioned.

4. The WP member who had simulated the mistake was debriefed in their role to maximise the vicarious learning. Others could see the emotional impact this had on the clinician, which reinforced the need to support colleagues who have made a mistake.
5. The facilitator checked with the WP member at the end of the session (in private) if they wanted to have any further discussion about their role and how they felt to ensure that they felt safe and supported.
6. The facilitator discussed how simulating a mistake might make members of the WP feel during the post session discussion to highlight this for the future.

5.9.4.3 Clinical Feedback:

The facilitator of the session led the clinical feedback during the intervention. The aims of the session were outlined in the brief with the whole group. The clinical feedback also addressed the aims of the session. If a relevant issue arose during the session (challenging the power gradient for example) the clinical feedback might be modified to address the “gift” issue if it were relevant to all of the participants.

There were times when members of the WP may have observed an issue with one of the participant’s skills level (for example they may not have accurately completed a task) and they asked questions of the participant or attempted to “teach” them the skill. This was frequently not generalizable to the whole group and made the participants feel as though their skills were being tested which shifted the focus of the scenario. Participants felt as though there were too many “teachers” in the session and felt outnumbered and vulnerable. It also made it difficult for the facilitator to maintain the focus of the clinical feedback and achieve the aims of the session.

To combat this, the pre-brief was modified to include an overview of how the members of the WP were expected to interact during the debrief. The facilitator was to lead the discussion and the WP members could respond to questions in “character”, but they were not to address individual skills issues with the participants during the session. If they did have concerns with a particular candidate’s skills or behaviour this was to be addressed through the facilitator at the end of the session.

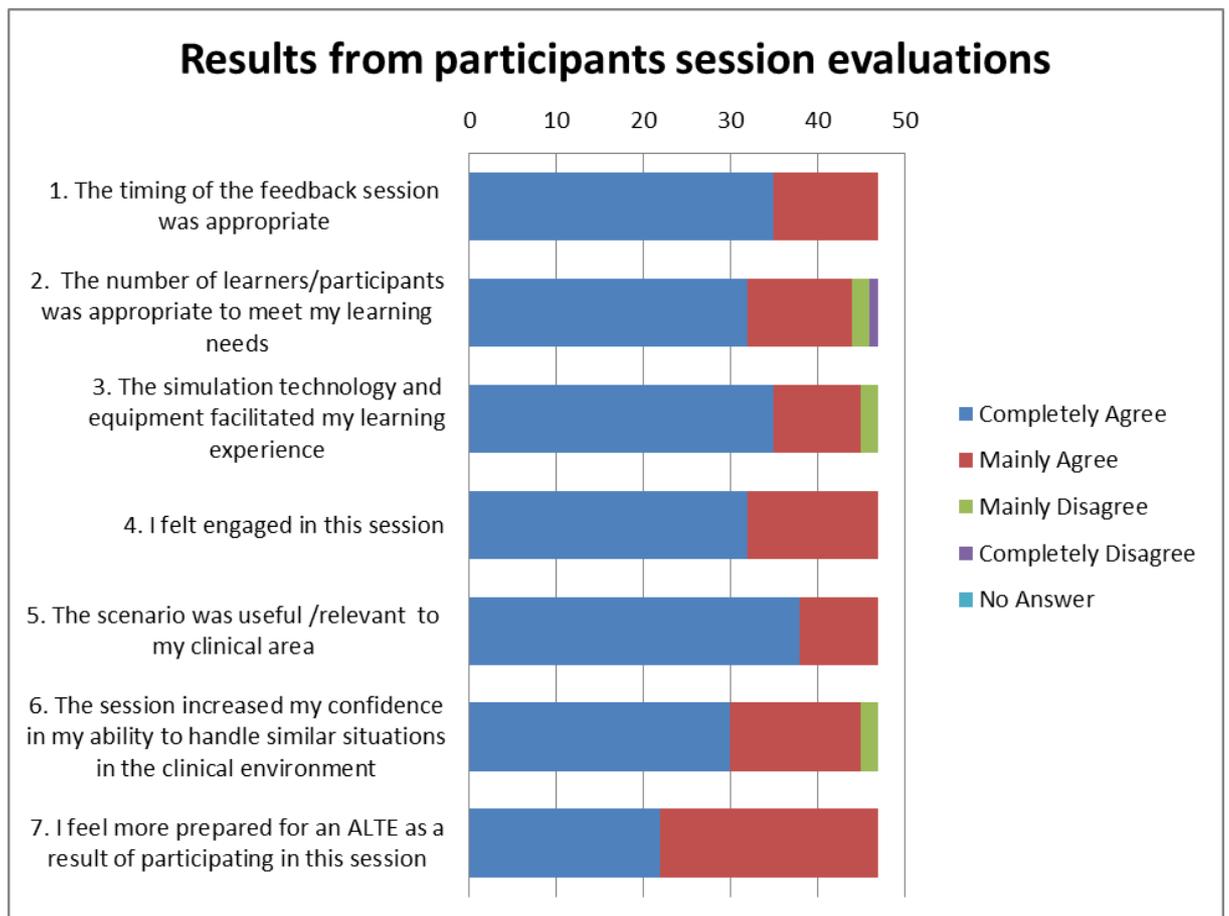
The clinical feedback developed through the interventions is quite different to other forms of debrief the WP may have experienced. Many of the WP are involved in clinical education and found it difficult not to “teach” people about the clinical skills.

The facilitator of the session should lead the debrief and address the key issues using their observations. The facilitator has been observing the session and therefore has a more objective overview of the issues than other WP members who were involved in the session. Members of the WP are welcome to contribute to the discussion or generate discussion in their role within the scenario. For example, if the facilitator asks how people feel during these events the group would welcome members of the WP to acknowledge their stress response to help normalise this response and generate discussion.

5.9.5 Participant evaluation of the PREPARE intervention:

Participants were asked to complete an evaluation form at the end of each PREPARE session they participated in to assist the WP to refine and evaluate the intervention. Seven statements were posed to the participants who were asked to completely agree, mainly agree, mainly disagree, completely disagree. The results from those statements is presented in Figure 17.

Figure 17- Summary of the participants evaluations of the PREPARE session



Results of note from the session evaluations include:

Those participants who did not feel that the number of learners was appropriate to meet their learning needs (statement 2) cited the reason for their disagreement was because too many members of the WP tried to “teach” them during two of the sessions. This feedback was reflected in the modification to the sessions where the faculty were “pre-briefed” on the rules for debriefing and the reinforcement that the facilitator was to lead the clinical feedback.

The respondents who did not feel the technology and equipment facilitated the learning experience (statement 3) were involved in sessions where the SIM Baby stopped functioning in the middle of the scenario which the participants found very disruptive. Additional “props” were created to make the sessions more realistic, including colour strips to indicate the child’s perfusion, thermometers and blood glucose machines that were often difficult to borrow from the busy clinical area.

Respondents who did not feel the session increased their confidence in their ability to handle similar clinical situations (statement 6) were the same participants who felt that the members of WP tried to “teach” them during the debrief and felt this session had not been beneficial. This highlights that a clinical feedback done “badly” has a negative impact on the participants, demonstrating the need for training in the AI technique before providing the interventions.

All of the participants indicated they either completely or mainly agreed they felt more prepared for an ALTE as a result of participating in the session (statement 7). This response indicated the intervention may fulfil its aims.

It is worth noting this is a sum of the evaluation over the study period and the interventions were evolving (in response to feedback).

5.10 Discussion:

The plan of this particular study was to develop, refine and evaluate the PREPARE and SUPPORT interventions. Using the MRC guidance, the complex interventions were developed by combining empirical evidence from this program of work (described in chapters 1-4) with a theoretical framework. The modelling process and outcomes involved the refinement and evaluation of the interventions by a multidisciplinary WP using an iterative process. Although it was not possible to run the SUPPORT intervention due to a limited

number of staff trained in the technique, the scripts for the clinical feedback were refined during the PREPARE sessions.

The PREPARE intervention was delivered through simulation. As previously discussed, simulation training has been used effectively within healthcare to improve a variety of clinical skills and procedures particularly within anaesthetics, surgery and cardiac life support (Fried et al., 2004; Kory et al., 2007; Rosenthal et al., 2006; Wayne et al., 2005; Wayne et al., 2008). Simulation is also used within healthcare to provide Crew Resource Management (CRM) training. CRM training focuses on the delivery of more global team-working skills including role clarity, communication, personnel support, resources and global assessment. CRM has its origins in aviation where it was first postulated that many aircraft incidents were linked to failures in crews to manage resources appropriately rather than a lack of technical skills (Billings & Reynard, 1984). CRM training is often delivered through simulation training and has been adopted widely within healthcare (Fletcher et al., 2003; Gaba, Howard, Fish, Smith, & Sowb, 2001 ; Gaba et al., 1998; Weinstock & Halamek, 2008; Weller et al., 2003; Yee et al., 2005). The PREPARE intervention is unique in that it uses a combination of these principles (combining clinical skills and CRM principles) in addition to being developed using evidence from within healthcare and an underlying theoretical framework.

Clinical staff are expected to complete mandatory resuscitation training on a yearly basis. At present the training involves practising the skills of basic resuscitation which include the provision of chest compressions and mouth to mouth resuscitation. Skills are practiced on a plastic mannequin that is just a torso and does not resemble a real child. During the IPA interviews Rachael refers to the life support training she received.

“Yeah actually, because you go down, you use the simulator and the baby, which would be as realistic as it can get, and then after you’ve sorted the simulator baby out, you sit down and next, its somebody else’s turn” (Rachael – L777-780).

Rachael’s account portrays an almost conveyor belt, impersonal account of the training. The participants are expected to go down to a training room located away from the ward. The participants are expected to demonstrate their skills and then move on to the next person. She also refers to the mannequin being as realistic as it can get – her description indicates she doesn’t feel the mannequin is very realistic in her eyes.

Belinda also mentioned in her account that she has only ever practiced compressions on a mannequin which was completely different to seeing it on a real patient. There appears to be a disconnect between practicing resuscitation skills on a plastic doll in a classroom setting and having to perform skills on a real patient during an ALTE.

Several tactics were employed to overcome the disconnect between training and the real life situation. Firstly, the sessions were run using a low to medium fidelity simulation doll which can breathe, has breath and heart sounds, can vocalise and cry. This increases the realism of the mannequin. Participants were often observed patting the SIM Baby's head or holding their hands like they would with a real child in a ward area.

Secondly, the PREPARE intervention is based on clinically relevant scenarios that occurred in ward areas. This makes the scenario more relevant to the participants and helps to not only engage them, but to put the situation into a relevant context for the participants.

The PREPARE session was run in the ward environment in which the participants normally work, using the ward's equipment and resources. Weinstock et al and his colleagues have recently published on the cost saving and practicalities of providing this style of "point-of-care" simulation (Weinstock, Kappus, Garden, & Burns, 2009; Weinstock et al., 2005). Weinstock and his colleagues found it was often more cost-effective to develop a simulation cart that could be transported to a clinical area as opposed to building an expensive simulation centre. The other advantage of the point of care approach is that staff become more familiar with the location of resuscitation equipment in their own clinical environment which is useful for future events.

The further advantage of point of care sessions is that staff do not have to be released to attend training for long periods of time. Apart from providing the clinically relevant context by running the session in the ward areas, the managers were more comfortable knowing the staff were close by in the case of an emergency. The advantage of using point-of-care simulation is that it enables facilitators to take the simulation technology and all the learning opportunities that come with it to the clinical setting that otherwise may not be accessible to many participants.

Rudolph et al (Rudolph, Simon, Dufrense, & Raemer, 2006) described the use of AI when providing a clinical feedback within simulation. No reports have been identified through the literature of AI being used to provide feedback after a real-life ALTE has occurred. The

SUPPORT intervention is unique in that it has combined evidence gathered from within healthcare and a theoretical framework to underpin the intervention. Given the concerns raised about the use of the traditional model of debriefing, this evidence-based intervention developed specifically for healthcare workers is an intuitively practical approach to providing feedback after an ALTE has occurred.

The challenges of not having enough staff trained in the technique of AI have been identified as a barrier to providing the SUPPORT intervention during the study period. Although it would have been ideal to refine and evaluate this intervention like the PREPARE intervention, this did take place to a degree through the refinement of the clinical feedback at the end of the PREPARE session. In the future, more staff would need to undertake training in the AI technique to ensure the SUPPORT intervention can be delivered after each ALTE call. What was demonstrated during the PREPARE intervention was that participants gave negative feedback when the members of the WP interjected and attempted to turn the session into a “teaching session” by addressing specific clinical skills. This reinforces the need for clinicians trained in the AI technique to provide clinical feedback to ensure the safety of the participants.

5.11 How has this study addressed the gaps in the knowledge?

1. Evidence-base – the PREPARE and SUPPORT interventions were developed specifically for use within healthcare. They are evidence-based and underpinned by a theoretical framework aimed at modifying behaviours. The interventions were developed, piloted and refined by a working party which used an iterative process. They are the first evidence-based interventions aimed at preparing and supporting staff for the potential psychological impact of caring for a child who has an ALTE.
2. Preparation– based on the evidence gathered through the program of work, clinicians felt that the best way to prepare for the potential psychological impact of caring for a child who has an ALTE is to focus on improving the clinical skills required for these events. This was then underpinned with the SE theoretical framework to provide an empirically based, pragmatic approach to preparing for the events.

5.12 Limitations:

This study had some limitations. Only three people had the training in AI to facilitate the SUPPORT intervention. Due to the time of day that ALTEs occurred and clinical commitment during the study period none of the facilitators were available to provide the SUPPORT intervention after a real life ALTE. In the future, more people would need to be trained in this

technique to ensure SUPPORT could be provided. At present, training days are being held with key clinical staff at the BCHNHSFT to teach them how to provide the clinical feedback as outlined in this thesis.

Only the three people trained in the AI technique could facilitate the PREPARE sessions. Whilst this was not an issue during the study period, due to increased clinical commitments of the three facilitators more people would need to be trained in the future to ensure that sessions are covered.

Doctors were invited to participate in both the PREPARE and SUPPORT sessions, however very few doctors were available when the sessions were run. Having members of the multidisciplinary team participate in the sessions would make the session more realistic and prepare the extended team for these events.

5.13 Conclusions:

This chapter has described how evidence gathered through the program of work has been combined with a theoretical framework to develop two complex interventions. The PREPARE and SUPPORT interventions were developed, refined and evaluated using a working party through an iterative process.

There are several unique features of the PREPARE and SUPPORT interventions that make them different from other interventions being used within healthcare. Firstly, the cornerstone of the interventions was the evidence collected from within the healthcare context which makes the most significant contribution to the content of the interventions. Secondly, the evidence-base was then combined with Behaviour Change Techniques and developed using the MRC framework for the development of complex interventions. To date, no other complex interventions aimed at minimising the impact of caring for a child who has an ALTE have been identified through the literature. Other reports have described how they use simulation or CRM to improve skills or teamwork, however they have not described the development process of the intervention itself or the evidence-base or theory that underpin the intervention. Many of these interventions appear to have been adapted from other industries, predominantly aviation, because they appear to be transferable.

The unique PREPARE and SUPPORT interventions were developed within healthcare, based on evidence gathered from healthcare professionals, and coupled with a theoretical framework that is relevant to healthcare workers. These interventions were refined and

evaluated within the healthcare environment by a WP made up of healthcare practitioners using an iterative process. This iterative process has taken place during a feasibility study (which will be described further in the following chapter).

6 Chapter 6 – Feasibility study of the PREPARE and SUPPORT interventions

6.1 Introduction

Chapters one to four of the thesis have described the background work and the studies that have been conducted to gather the evidence-base for the development of interventions aimed at preparing and supporting staff for the potential psychological impact of caring for a child who has an ALTE in hospital. Chapter five described the process whereby the evidence was combined with theoretical frameworks to develop the PREPARE and SUPPORT interventions. The chapter went on to describe how the interventions were refined and evaluated by a multidisciplinary working party using an iterative process.

The PREPARE and SUPPORT interventions were developed in accordance with the first phase of the MRC guidelines for the development of complex interventions (Craig et al., 2008). This development phase was discussed in chapter five. This current chapter will focus on the next step in the development-implementation-evaluation process (Figure 18), which is to undertake a feasibility study. The feasibility study provided an opportunity to not only refine and evaluate the interventions, but also to test procedures, estimate recruitment and retention and help to determine sample sizes (Craig et al., 2008).

Trials and subsequent evaluations are often hampered by difficulties with recruitment and retention, acceptability and delivery of the proposed intervention (Bower, Wilson, & Mathers, 2007; McDonald et al., 2006; Prescott et al., 1999). A feasibility pilot study can help to address some of those issues before attempting to run a larger interventional trial. In addition, the MRC framework provides a useful platform to guide the conduct of the feasibility study and how to report this process. Clear, accurate reporting helps to improve our knowledge base surrounding the complex intervention and allows the intervention to be assessed for effectiveness, be replicated and then subsequently implemented in other settings (Michie et al., 2011).

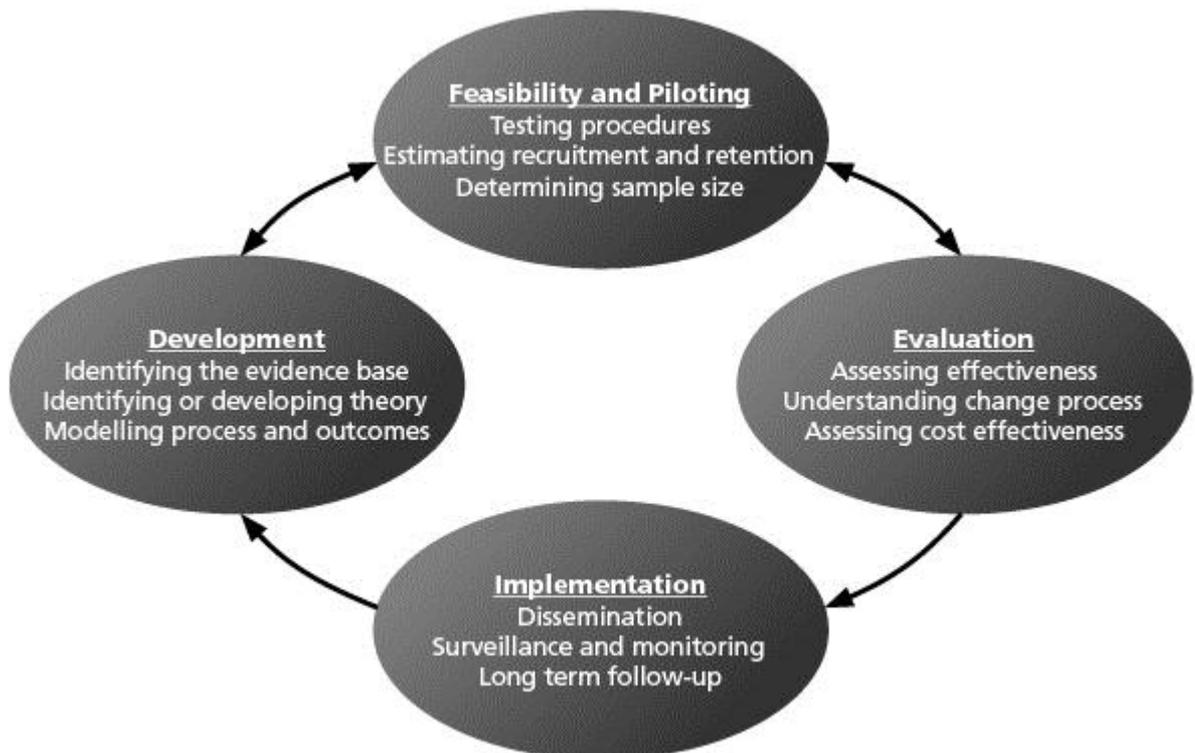
This study was designed to address the gaps in the knowledge highlighted in the introduction. The gap in the knowledge this study aims to address is:

1. Outcome measures – what outcome measures should be used to evaluate the effectiveness of interventions aimed at preparing and supporting for the potential psychological impact of caring for children who have an ALTE in hospital?

The primary outcome measure for studies conducted outside healthcare to evaluate the effectiveness of interventions has been the prevention or reduction of Post-Traumatic Stress Disorder (PTSD). Questions have been raised about the appropriateness of using PTSD symptomology as the primary outcome measure. It has been suggested through the literature that more subtle outcome measures should be explored (Deahl, 2000; van Emmerik et al., 2002).

Participants in the international survey of practice discussed that they were unsure of how to measure the effectiveness of these sorts of interventions. Therefore, this study will aim to explore some softer outcome measures which include professional quality of life, work self-efficacy, stress, anxiety, depression and coping strategies. As discussed, the results from the feasibility study will form the basis for recommendations for a larger interventional trial that will include information on testing procedures, recruitment and retention, estimated sample sizes and suggested outcome measures.

Figure 18 - MRC development-feasibility-evaluation-implementation guidelines



6.2 Aims:

The two primary aims of the feasibility study include:

- 1 To refine the PREPARE and SUPPORT interventions based on feedback from the working party and participant session evaluation forms.

2 Gather a baseline profile of the following in nurses: professional quality of life, work self-efficacy, anxiety, depression, perceived stress, impact of events and coping strategies utilised.

The objectives of the feasibility study included:

1. *Test procedures* – the study will provide information to refine the integrity of the study protocol and refine the data collection forms.
2. *Estimate recruitment and retention* – acceptability of the intervention will be explored by looking at how many people are willing to participate in the intervention. The logistical aspects of running the intervention will also be explored including: the length of the intervention; the least disruptive time of day to run the interventions; how frequently the interventions can be run and the location for running the intervention.
3. *Sample size* – the baseline data gathered during the study will inform which outcome measures should be used to evaluate the effectiveness of the interventions in a larger trial. This will include suggestions for how to measure effectiveness and inform a sample size calculation.

It is anticipated the results from this study will inform recommendations about outcome measures to evaluate the effectiveness of interventions in the future.

6.3 Development:

The second phase in the MRC development-feasibility-evaluation-implementation process of developing a complex intervention is to conduct a feasibility study. Feasibility studies are done prior to a main study to answer the question “can this be done?”. The information gained through a feasibility study will provide important information that will inform the development of a larger trial which may include (but is not limited to): willingness of people to participate in the interventions; willingness of clinicians to provide the interventions; exploring appropriate outcome measures; response rates to data collection forms; time needed to collect data (Smith, 2007).

6.4 Methods

6.4.1 Study design:

The PREPARE and SUPPORT feasibility modelled a “before and after” design. Baseline data was collected prior to people participating in the interventions, and then post-intervention data was collected. Although the baseline and post interventions results were compared and contrasted, the objective of the trial was to test procedures and inform the

most appropriate outcome measure. This “before and after” approach would ideally be utilised in a larger trial (not covered in this thesis).

6.5 Study setting

6.5.1 Study population:

The study was conducted at the BCHNHFT on the Neonatal Surgical Ward (NNSW), Ward 11 (Wd11), Ward 12 (Wd12) and Medical High Dependency Unit (MHDU). These wards were chosen as pilot wards as they generate the highest number of ALTE and UPIC calls. In addition they have patients with varied age groups and different medical and surgical conditions.

6.6 Inclusion and exclusion criteria:

6.6.1 Inclusion:

1. Any qualified registered nurse who worked on the pilot wards.
2. Doctors and allied health professionals (physiotherapists, occupational therapists) were invited to participate in the interventions for their own professional development. They were expected to evaluate the interventions but not to complete the associated study paperwork. It was not possible to collect the baseline data on all of the doctors due to the large numbers of doctors who attend an ALTE call and cross-site working.

6.6.2 Exclusion:

1. Provisions were not made to include participants from non-English speaking backgrounds in the study. All participants are employed by the NHS and must be able to speak English to gain registration and employment.
2. The SUPPORT intervention would not be conducted with staff caring for a child receiving palliative care or have an active “Do Not Attempt to Resuscitate” order and a natural death was anticipated.

6.7 Study procedure

6.7.1 Data collection:

Data was collected from participants at two time-points. The first time-point was at baseline (prior to receiving the interventions) in September 2012. The second time-point was immediately (or as soon as possible) after they had participated in the intervention. A list of the nurses who worked on the study wards was generated, with each nurse being allocated a unique participant identification code by APH. The unique participant identification code was

written on both the pre and post data collection forms by APH each time the study paperwork was provided for the participants. This ensured that the pre and post data collection forms could be matched to each participant.

6.7.1.1 Baseline data collections for both PREPARE and SUPPORT included:

Each nurse had an allocated pigeon hole on the ward for post as part of their normal working lives. A study pack was left in the pigeon holes with the participants name on it at the beginning of the study. The study pack included:

- A letter of invitation to take part in the study
- A Participant Information Leaflet (Appendix 11).
- Consent Form
- Baseline questionnaire (Appendix 12)
- Baseline measures (Appendix 12) which included:
 - Professional Quality of Life Scale (ProQOL) (Stamm, 2010)
 - Work Self Efficacy (WSEi) (Raelin, 2010)
 - Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983)
 - Hospital Anxiety and Depression Scale (HADS)(Zigmond & Snaith, 1983)
 - Impact of Events Scale (IES) (Horowitz et al., 1979)
 - Brief COPE (Carver, 1997)

A more detailed description of the questionnaire and the measures will be provided in section 6.8.2. All of the measures were included in the initial packs to gather a baseline profile of the participants before undertaking the interventions. Due to the unexpected nature of ALTEs, it would not have been possible to collect baseline data in the nurses before an ALTE occurred like it may have been for the planned PREPARE sessions. In addition, the time taken to complete the baseline measures would have been prohibitive in both interventions,

The data collection packs included a blank envelope with the researcher's details and asked to seal the envelope and return the anonymised packs to a box-file that was kept in each ward area with the PREPARE and SUPPORT logo marked on it. The box-file was emptied on a daily basis.

6.7.1.2 Post intervention data:

Time was allocated at the end of the PREPARE and SUPPORT sessions for the participants to complete the post-intervention data collection forms. The forms were given to participants and they were asked to return them before resuming clinical duties. These forms were

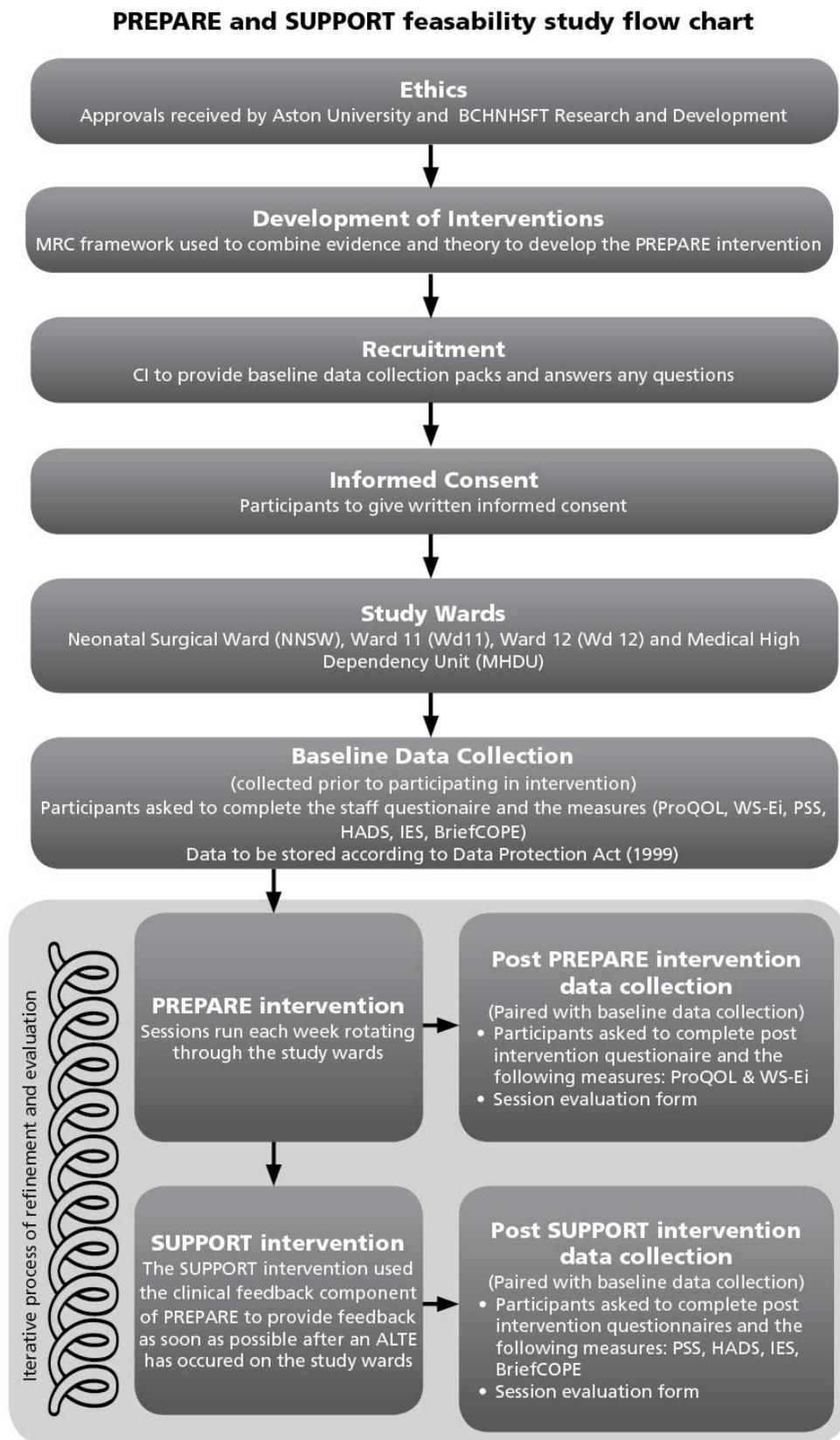
marked with each participants unique identification code prior to being given to the participants to enable matching of the pre and post measure results. The forms included:

- Session evaluation form
- Post intervention questionnaire
- PREPARE post intervention measures included:
 - ProQOL
 - WS-Ei

SUPPORT post intervention measures included:

- Perceived Stress Scale
- Hospital Anxiety and Depression Scale
- Impact of Events Scale
- Brief COPE

Figure 19 - PREPARE and SUPPORT study flow chart



6.8 Description of the questionnaire and measures used in this study:

6.8.1 Questionnaire:

A questionnaire was developed by APH to collect demographic data on the participants. The questionnaire included questions about whether staff felt prepared for an ALTE, what clinical skills they wanted further training on, if they felt supported after an ALTE (pre-intervention) and questions about presenteeism. The purpose of developing the questionnaire was to gather additional information to demonstrate if the participants feel prepared and supported for these events at baseline.

6.8.2 Measures:

Why were the measures chosen?

As previously discussed, more subtle outcome measures than a reduction in PTSD symptomology need to be explored when considering what outcome measures should be used for evaluating the effectiveness of interventions (Deahl, 2000; van Emmerik et al., 2002). Based on the evidence gathered through the studies described in chapters 2-5, measures that look at professional quality of life, work self-efficacy, stress, anxiety, depression, impact of events and coping strategies were chosen to address some of the issues raised particularly in the IPA interviews (chapter 4). Table 19 provides a brief summary of each of the measures.

Table 18 - Summary of the measures used in the study

Measure	Description	Scoring	Population the norms based on	Has it been used in a study with a similar population?	Reliability and Validity data
Professional quality of life scale (ProQOL) (Stamm, 2010)	Professional quality of life is the quality a person feels in relation to their job as a helper. Professional quality of life (ProQOL) is a screening tool made up of three subcategories: 1. Compassion Satisfaction (CS) 2. Burnout (B) 3. Secondary Traumatic Stress (STS)	Thirty item self-reporting questionnaire Likert type scoring system for each of the 30 items (Never =1 - Very Often=5) Results are summed for each category then converted from raw scores to t-scores Results are then reported as participant having a low, medium or high level of CS, B or STT.	Data base of 1289 cases created from multiple studies – the characteristics of the study participants is not described (Stamm, 2010)	Can be used to measure ProQOL in professions where people help others which may include healthcare professionals, emergency service workers, teachers and aide workers. Not studies identified that have used ProQOL in nurses who have cared for patients who have had an ALTE	Validity: The three scales measure separate constructs. The Compassion Fatigue scale is distinct. The inter-scale correlations show 2% shared variance ($r=-.23$; $\text{co-}\sigma = 5\%$; $n=1187$) with Secondary Traumatic Stress and 5% shared variance ($r=-.14$; $\text{co-}\sigma = 2\%$; $n=1187$) with Burnout. Shared variance between Burnout and Secondary Traumatic Stress reflects the distress that is common to both conditions. The shared variance between these two scales is 34% ($r=.58$; $\text{co-}\sigma = 34\%$; $n=1187$). Reliability: Compassion Satisfaction - The average score is 50 (SD 10; $\sigma 0.88$). Burnout -The average score on the burnout scale is 50 (SD 10; $\sigma 0.75$). Secondary Traumatic Stress - The average score on this scale is 50 (SD 10; $\sigma 0.81$). (Stamm, 2010)

Measure	Description	Scoring	Population the norms based on	Has it been used in a study with a similar population?	Reliability and Validity data
Work self-efficacy (WS-Ei) (Raelin, 2010)	WS-Ei refers to a person's confidence in managing workplace experiences specifically	<p>The WS-Ei consists of seven dimensions which include:</p> <p>Learning: confidence in being able to learn productively on the job.</p> <p>Problem Solving: confidence in solving problems in the workplace.</p> <p>Pressure: confidence in coping with stress as well as with time and schedule pressures.</p> <p>Role Expectations: confidence in understanding and fulfilling one's role(s) assigned at work.</p> <p>Teamwork: confidence in working well within a team environment.</p> <p>Sensitivity: confidence in demonstrating sensitivity to others in the workplace.</p> <p>Work Politics: confidence in scoping out and managing organizational politics and traditions.</p> <p>There are 30 questions across the seven domains and participants are asked to complete a 5-point Likert-type scale response format ranging from "Not at all Confident" to "Completely Confident".</p> <p>Scores are summed to produce an overall WS-Ei composite score</p>	<p>Mean scores for 402 young workers published in manual</p> <p>(Raelin, 2010)</p>	<p>No studies identified that have used WS-Ei with nurses who work in hospital</p>	<p>Internal construct validation: All items loaded on the first factor which had an eigenvalue of 11.555, explaining 38.5% of the total variance. Factor coefficients ranged from 0.383 to 0.710, with eighteen items between 0.6 and 0.7.</p> <p>Reliability: The Cronbach alpha coefficient for the full scale was calculated at 0.94.</p> <p>(Raelin, 2010)</p>
Perceived Stress Scale (PSS) (Cohen, Kamarck, Mermelstein, 1983)	PSS is a subjective scale that measures the degree to which situations in a person's life are appraised as stressful	<p>Ten item scale</p> <p>Participants asked to complete a 4-point Likert-type scale response ranging from 0=never to 4=very often</p>	<p>Means scores generated from national survey conducted on the general population (Cohen & Janicki-Deverts, 2012)</p>	<p>PSS to measure stress in patients with Type 2 diabetes</p> <p>(Surwit et al, 2002)</p>	<p>Reliability: College students (n=332; mean 23.18; SD 7.31; α0.84), College students (n=114; mean 23.67; SD 7.79; α 0.85), subjects in a smoking cessation program (n=64; mean 25; SD 8.00; α0.86).</p>

Measure	Description	Scoring	Population the norms based on	Has it been used in a study with a similar population?	Reliability and Validity data
Impact of Events Scale (IES) (Horowitz, Wilner, Alvarez, 1979)	IES is a subjective scale that measures distress related to a specific life event.	The scale is made up of 15 items that are divided into two subgroups – intrusion and avoidance Participants asked to complete a 4-point Likert-type scale: 0=not at all 1=rarely 3=sometimes 4= often	Validation study for the IES - 66 participants with stress response syndromes completed the IES (Horowitz, Wilner, Alvarez, 1979)	IES has been used in the following populations: Measure effects of horizontal violence amongst nurses (McKenna, Smith, Poole, Coverdale, 2003) Measure the effects on police officers of recovering bodies that had been submerged in water for several weeks after an oil rig collapse (Alexander & Wells, 1991) Fire-fighters who helped during bushfires (McFarlane, 1988) Has also been used in the following populations: survivors of road traffic accidents; debriefing as treatment for PTSD; exposure to a hurricane.	IES was administered to 66 people with stress response syndromes. Mean scores 39.5 (SD 17.2, range 0-69). Internal consistency calculated using Cronbach's Alpha was high (intrusion=0.78; avoidance=0.82). Test-retest reliability completed with 25 physical therapy students one week apart was calculated at 0.87 (Horowitz, Wilner, Alvarez, 1979)
Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983)	HADS is a self-assessment scale which monitors the participants levels of anxiety and depression Made up of two subcategories: Anxiety and depression	Made up of 14 questions Participants are asked to underline a response that reflects how they have been feeling in the last week (despite when an event may have occurred). Responses are a Likert-type scale: 0,1,2,3	Developed for use within non-psychiatric hospital departments (patients)	Used in studies with burn victims (Bisson, Jenkins, Alexander, Bannister, 1997)	Internal consistency established in a study by Moorey et al (1991) on the replies of 568 people with cancer: Cronbach's alpha was 0.93 for the A scale and 0.90 for the D-Scale. (Zigmond & Snaith, 1983)

Measure	Description	Scoring	Population the norms based on	Has it been used in a study with a similar population?	Reliability and Validity data
Brief COPE (Carver, 1997)	Brief COPE is used as a measure to examine different coping responses to life events.	<p>It consists of 28 items with 14 conceptually different coping reactions.</p> <p>Participants asked to respond to statements using a Likert-type scale: 1 (I haven't been doing this at all) to 4 (I've been doing this a lot).</p>	Sample of community residents who were exposed to a hurricane	No studies identified that have administered Brief COPE to nurses	<p>An exploratory Factor Analysis was performed with 168 members of the community whom were affected by Hurricane Andrew. This analysis yielded nine factors with eigenvalues greater than 1.0, which together accounted for 72.4% of the variance in responding.</p> <p>(All primary loadings exceeded .4, and 22 of 28 were above .6; only six secondary loadings exceeded .3, and only one of them exceeded .4.)</p> <p>(Carver, 1997).</p>

Participants were asked to complete the baseline ProQOL, WS-Ei, Perceived Stress Scale and The Hospital Anxiety and Depression Scale measures thinking about their daily working lives. These instructions were clearly written on the top of the measures. Participants were asked to complete the baseline Impact of Events Scale and BriefCOPE thinking about a significant ALTE they had been involved in. For those nurses who had not been involved in an ALTE before, they were asked to think about their responses in relation to any other stressful event that comes to mind at work.

The participants were then asked to complete the ProQOL and WS-Ei after participating in the PREPARE intervention. The other four measures (PSS, HADS, IES and ProQOL) would have been administered again after participation in the SUPPORT intervention. The reason for collecting the measures in this fashion was to get a baseline of what the stress, anxiety and depression levels were for the ward nurses. The plan was then to see if the responses changed after participating in the SUPPORT intervention.

Consideration was given to the order in which the measures were placed in the data collection packs. The measures referring to the participants' daily working lives (ProQOL, WS-Ei, PSS and HADS) were placed in the front of the pack in an effort to minimise any potential distress caused by thinking about an ALTE. The IES and BriefCOPE were purposefully situated at the back of the data collection packs.

6.9 Data analysis:

Data was input into SPSS to assist with analysis (SPSS version 20). The results from each of the measures were explored using descriptive analysis. The data was reviewed for normality and, where required, transformations were performed based on the skewness demonstrated from the histogram and descriptive exploration (Dancey & Reidy, 2011; Field, 2009; Pallant, 2010; Tabachnick & Fidell, 2007). Parametric tests were then run to analyse the data. Exploratory inferential analysis was also conducted on the results at baseline and post-intervention.

The following procedures were performed:

- .
- Frequency histograms were generated to provide a profile of the participants' responses.
- Pearson's correlation co-efficient was performed to explore the relationships between the inventory responses and participants' demographic data.

- Paired t-tests were performed to explore the differences between the baseline and post interventions scores for participants.
- One sample independent t-tests were performed to explore differences in means scores generated by participants in the studies and published data.
- A multiple regression analysis was performed to explore if the Impact of Events Scale results were predicted by a linear relationship with any of the other inventories.

There is a risk of generating Type 2 errors when making multiple comparisons on the same group of people. Therefore a higher significance level ($p < 0.01$) was used and the results were interpreted with caution. The purpose of the feasibility study was not to test hypotheses (Does the intervention make a difference when comparing before and after scores?) but rather generate a baseline profile of the scores and see which measures require further exploration in a future study (beyond the scope of the thesis).

6.10 Ethics:

Ethical approval was granted by the following bodies prior to conducting the survey:

1. National Research Ethics Service – REC Reference: 10/H0408/66.
 - a. This project was exempt from requiring NRES approval as it was being conducted with NHS staff, however a formal application needed to be completed to generate the Site Specific Approvals from BCH.
2. Aston University Life and Health Sciences Ethics Committee – Project 586
3. Birmingham Children’s Hospital Research and Development - Ref BM/SS/R&D

All of the registered nurses who worked on the study wards were provided with a data collection pack (as described in section 6.7.1). A list of the nurses who worked on the study wards was generated, with each nurse being allocated a unique participant identification code by APH to allow a comparison of measure results. APH was the only person who had the key to the unique identification code information and this was stored in a password protected electronic file on a password protected university computer in accordance with the Data Protection Act 1988. Likewise, the measures were stored in a locked filing cabinet in a locked office in accordance with the Data Protection Act 1988.

Participants were advised (in the Participant Information Leaflet and again verbally post intervention) that they could withdraw from the study at any time and the data from the questionnaires and measures would not be included in the results. Participant data was

anonymised with the unique identification code and any results presented have used pseudonyms where appropriate.

6.11 Results:

6.11.1 Demographics of participants:

The feasibility study was conducted between September 2012 and April 2013. During the study, 70% (19/27) of the planned PREPARE sessions were completed. Eight sessions were cancelled by the wards due to staff shortages or high clinical demands.

One hundred and fourteen nurses were approached across the wards to participate in the study. Seventy five percent (85/114) completed the baseline data collection forms. Fifty five percent (47/85) of the nurses who had completed the baseline data participated in the PREPARE session. Eighty seven percent (41/47) of the participants who completed PREPARE completed the post-intervention data collection forms. Nurses who participated in more than one session were only required to complete the post-intervention paperwork once. The demographic data of the participants is summarised in Table 20.

Table 19 - Summary of the demographics of study participants

Demographics	Completed baseline data collection N=87	Completed post-intervention data N=41
Age	32 (21-54) ^a , SD 9.0	29 (21-53) ^a , SD 7.7
Gender: Female Male	86 (99%) ^b 1 (1%) ^b	40 (98%) ^b 1(2%) ^b
Band: Band 5 Band 6 Band 7 Missing data	63 (72%) ^b 18 (21%) ^b 4 (5%) ^b 2 (2%) ^b	32 (78%) ^b 7 (17%) ^b 0 (0%) ^b 2 (5%) ^b
Years of experience	8 (0.10-32) ^a , SD 8.0	5 (0.10-30) ^a , SD 5.8
Number of ALTE witnessed	5 (0-20) ^a , SD 5.7	5 (0-20) ^a , SD 4.8

^a Results expressed as mean (range)

^b Results expressed as number (percentage)

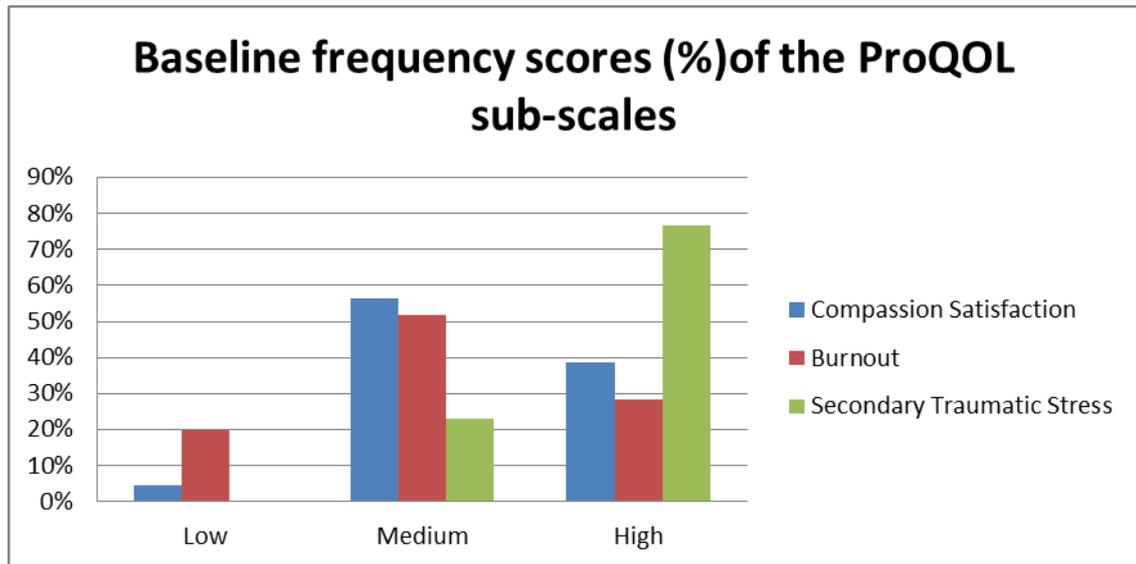
6.12 Results for each of the measures:

6.12.1 ProQOL:

The results for the ProQOL measure are reported as the number of participants who scored Low (25th Percentile), Medium (50th Percentile) or High (75th Percentile) in the sub-categories of Compassion Satisfaction (CS), Burnout (B) or Secondary Traumatic Stress (STS).

Participants tended to show a medium level of Compassion Satisfaction, medium level of Burnout and high levels of Secondary Traumatic Stress Figure 20.

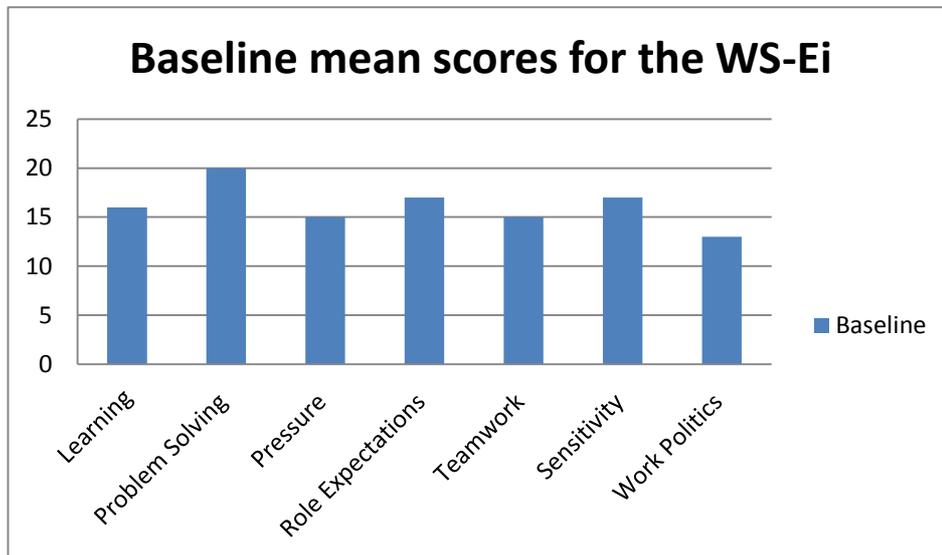
Figure 20 - Baseline frequency scores of the ProQOL sub-scales



6.12.2 Work Self-Efficacy:

The baseline mean scores for the dimensions of the WS-Ei are summarised in Figure 21.

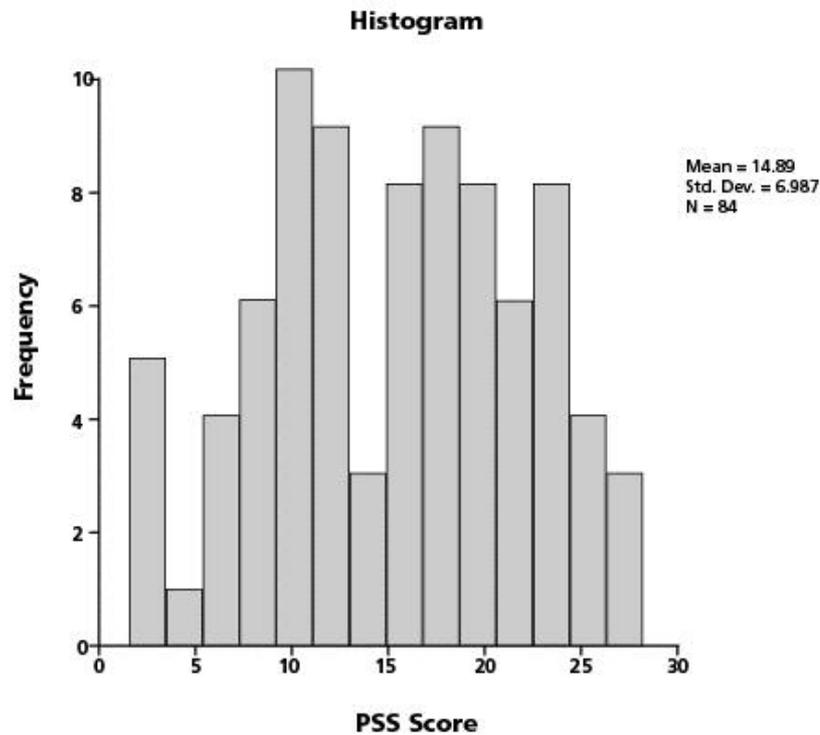
Figure 21 - Baseline mean scores for each dimension of the WS-Ei



6.12.3 Perceived Stress Scale:

Eighty four participants completed the PSS scale at baseline. The median score was 15 (min= 2; max= 27; SD 6.987). Figure 22 is a histogram of the frequency score which appears to demonstrate good variability in the range of scores which indicates there is no floor or ceiling effect with this score.

Figure 22 - Frequency scores for the Perceived Stress Scale



6.12.4 Correlation of PSS scores with demographics of participants:

The data for the PSS was reviewed for normality. The PSS histogram appeared slightly negatively skewed (skewness= -1.0 with SE= .263) therefore the data was transformed using the reverse square root function. This resulted in a histogram that appeared more normally distributed (skewness= -0.460, SE= .263).

The relationship between the Perceived Stress Scale, age, years' of experience and the number of ALTE's participants has been involved in was investigated using the Pearson's correlation coefficient (Table 20). No statistically significant correlations were demonstrated.

Table 20 - Pearson correlation of PSS and participant demographics

		Age	Band	Years' Experience	Number of ALTE	PSS Scores
Age	Pearson Correlation	1	.462**	.845**	.357**	0.072
	N	81	81	78	69	80
Band	Pearson Correlation	.462**	1	.600**	.499**	.083
	N	81	85	82	71	84
Years' Experience	Pearson Correlation	.845**	.600**	1	.484**	.078
	N	78	82	82	69	81
Number of ALTE	Pearson Correlation	.357**	.499**	.484**	1	-.176
	N	69	71	69	71	70
IES (SQRT)	Pearson Correlation	.072	.083	.078	-.176	1
	N	80	84	81	70	84
** . Correlation is significant at the 0.01 level (1-tailed).						

6.12.5 Hospital Anxiety and Depression Scale (HADS):

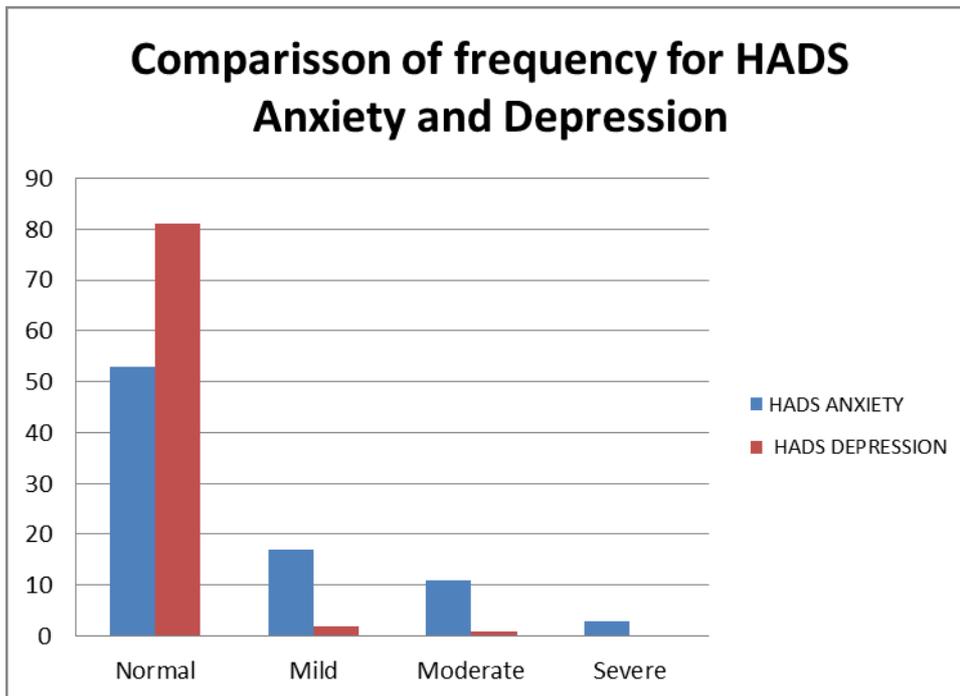
When reporting the results from the HADS, the Anxiety and Depression sub-scales should be reported and considered separately (Zigmond & Snaith, 1983). The mean scores are reported in Table 22.

Table 21 - Descriptive statistics of HADS Anxiety and Depression scores

	N	Minimum	Maximum	Mean	Std. Deviation
Baseline HADS Anxiety	84	0	15	6.50	3.672
Baseline HADS Depression	84	0	11	2.00	2.450

The HADS is not diagnostic – participants' scores are categorised as normal, mild, moderate or severe with decisions about the need for treatment based on the category into which they fall. A summary of the frequency with which participants fell into both the anxiety and depression categories is presented in Figure 23.

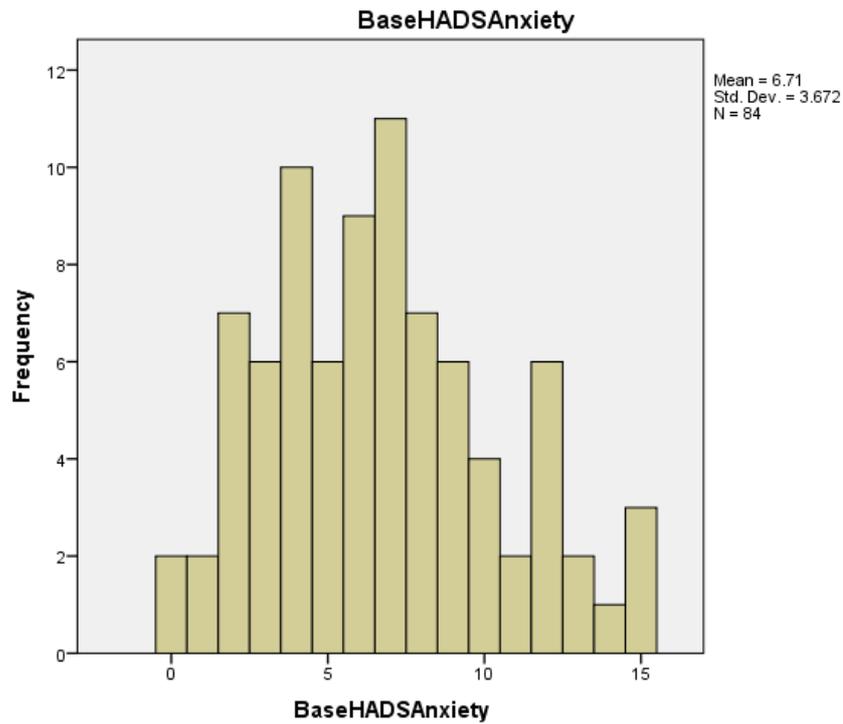
Figure 23- Comparison of the frequency that participants scores in the normal, mild, moderate and severe categories for HAD Anxiety and Depression



Variability in Scores:

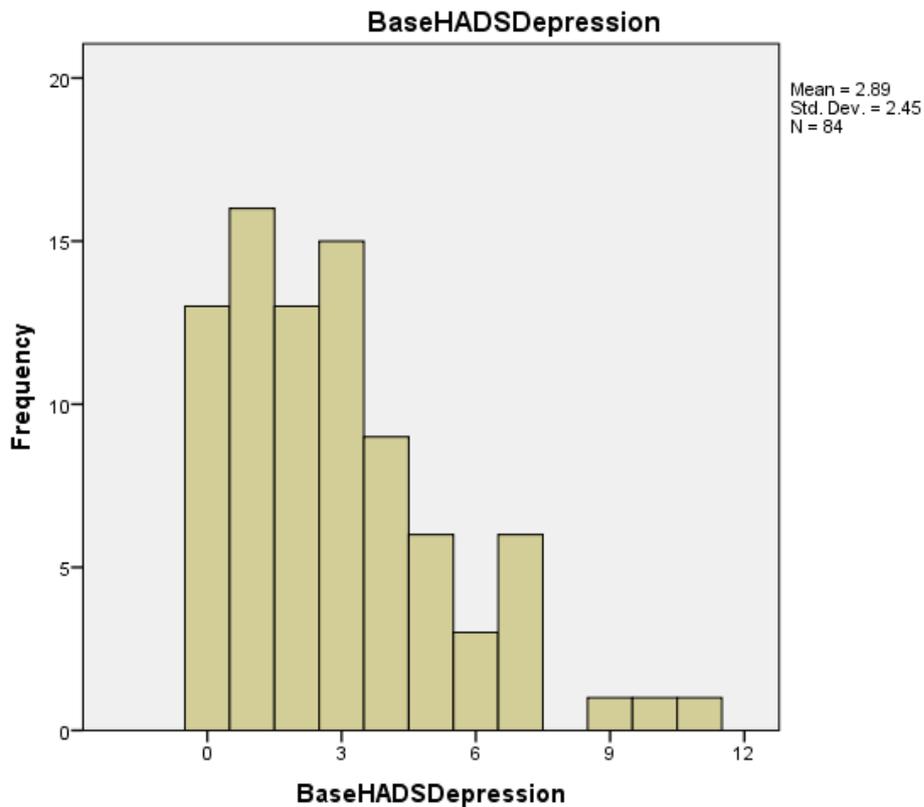
The histogram in Figure 24 demonstrates the distribution of scores from the participants for the HADS Anxiety. The histogram suggests there is good variance in the scores with minimal floor-ceiling effect.

Figure 24 - Histogram of the HADS Anxiety



The histogram in Figure 25 demonstrates the distribution of scores from the participants for the HADS Depression. The histogram appears negatively skewed suggesting participants demonstrated a low level of depression and therefore interventions aiming to reduce the levels of depression in a population that already demonstrates low levels of depression would be fruitless.

Figure 25 - Histogram of the HADS Depression



6.12.6 Correlation of HADS Anxiety and Depression subscales with demographics of participants:

The data for the HADS Anxiety and Depressions scales were reviewed for normality. The HADS Anxiety histogram appeared normal (skewness=.401, SE=.265). The HADS Depression histogram appear positively skewed (skewness 1.064, SE=.261) therefore the data was transformed using the square root function. This resulted in a histogram that appeared more normally distributed (skewness= -.255, SE= .261).

The relationship between the HADS Anxiety and Depression scales, age, years' experience and the number of ALTEs participants have been involved in was investigated using the Pearson's correlation coefficient (Table 23). No statistically significant correlations were demonstrated.

Table 22- Pearson correlation of HADS Anxiety and Depression with participants' demographic data

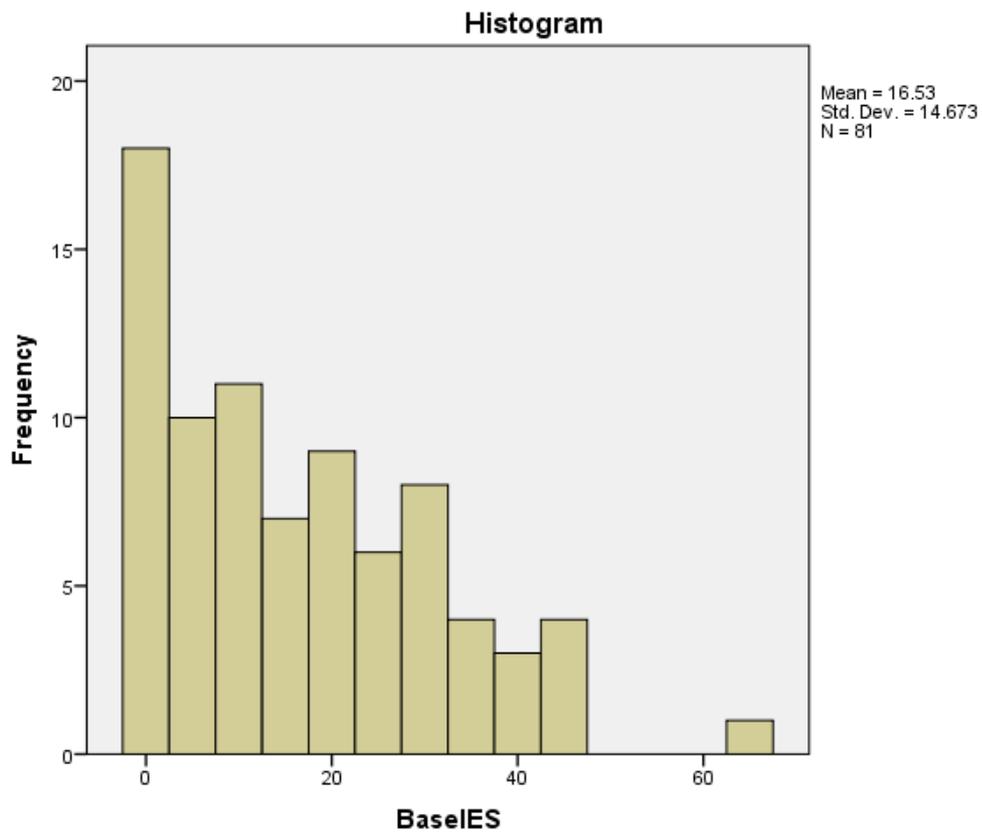
Correlations							
		Age	Band	Years' Experience	Number of ALTE	HADS Anxiety	HADS Depression (SQRT)
Age	Pearson Correlation	1	.462**	.845**	.357**	-.156	-.042
	N	81	81	78	69	81	81
Band	Pearson Correlation	.462**	1	.600**	.499**	-.068	-.048
	N	81	85	82	71	84	85
Years' Experience	Pearson Correlation	.845**	.600**	1	.484**	-.111	-.044
	N	78	82	82	69	81	82
Number of ALTE	Pearson Correlation	.357**	.499**	.484**	1	.027	-.016
	N	69	71	69	71	71	71
HADS Anxiety	Pearson Correlation	-.042	-.048	-.044	-.016	.614**	1
	N	81	85	82	71	84	85
HADS Depression (SQRT)	Pearson Correlation	-.156	-.068	-.111	.027	1	.614**
	N	81	84	81	71	84	84

** . Correlation is significant at the 0.01 level (1-tailed).

6.12.7 Impact of Events Scale (IES):

Eighty one participants completed the IES Scale at baseline yielding a median score of 13 (min=0, max=67, SD=14.673). The frequency with which scores were generated by participants is demonstrated in Figure 26. The histogram appears positively skewed with participants' scores predominantly on the lower end of the scale, suggesting participants have a low impact from the ALTE events they were involved in.

Figure 26 - Histogram of the Impact of Events Scale



6.12.8 Correlation of IES with demographics of participants:

The data for the IES was reviewed for normality. The IES appears positively skewed (skewness .813, SE=.267) therefore the data was transformed using the square root function. This resulted in a histogram that appeared more normally distributed (skewness= -.255, SE= .267).

The relationship between the IES, age, years' experience and the number of ALTEs in which participants have been involved was investigated using the Pearson's correlation coefficient (Table 24). No statistically significant correlations were demonstrated.

Table 23 - Pearson correlation of IES with participant demographic data

		Age	Band	Years' Experience	Number of ALTE	IES (SQRT)
Age	Pearson Correlation	1	.462**	.845**	.357**	-.004
	N	81	81	78	69	77
Band	Pearson Correlation	.462**	1	.600**	.499**	-.093
	N	81	85	82	71	81
Years' Experience	Pearson Correlation	.845**	.600**	1	.484**	-.062
	N	78	82	82	69	78
Number of ALTE	Pearson Correlation	.357**	.499**	.484**	1	.063
	N	69	71	69	71	67
IES (SQRT)	Pearson Correlation	-.004	-.093	-.062	.063	1
	N	77	81	78	67	81
** . Correlation is significant at the 0.01 level (1-tailed).						

6.12.9 Brief COPE:

Seventy nine participants completed all questions on the Brief COPE inventory at baseline. Table 25 summarises the responses from participants. There does not appear to be a floor or ceiling effect when looking at the frequency of the distribution of the median scores, however there is only a small range of scores possible to generate on this scale (0-8).

Table 24 - Summary of the descriptive statistics for the sub-categories of the BriefCOPE

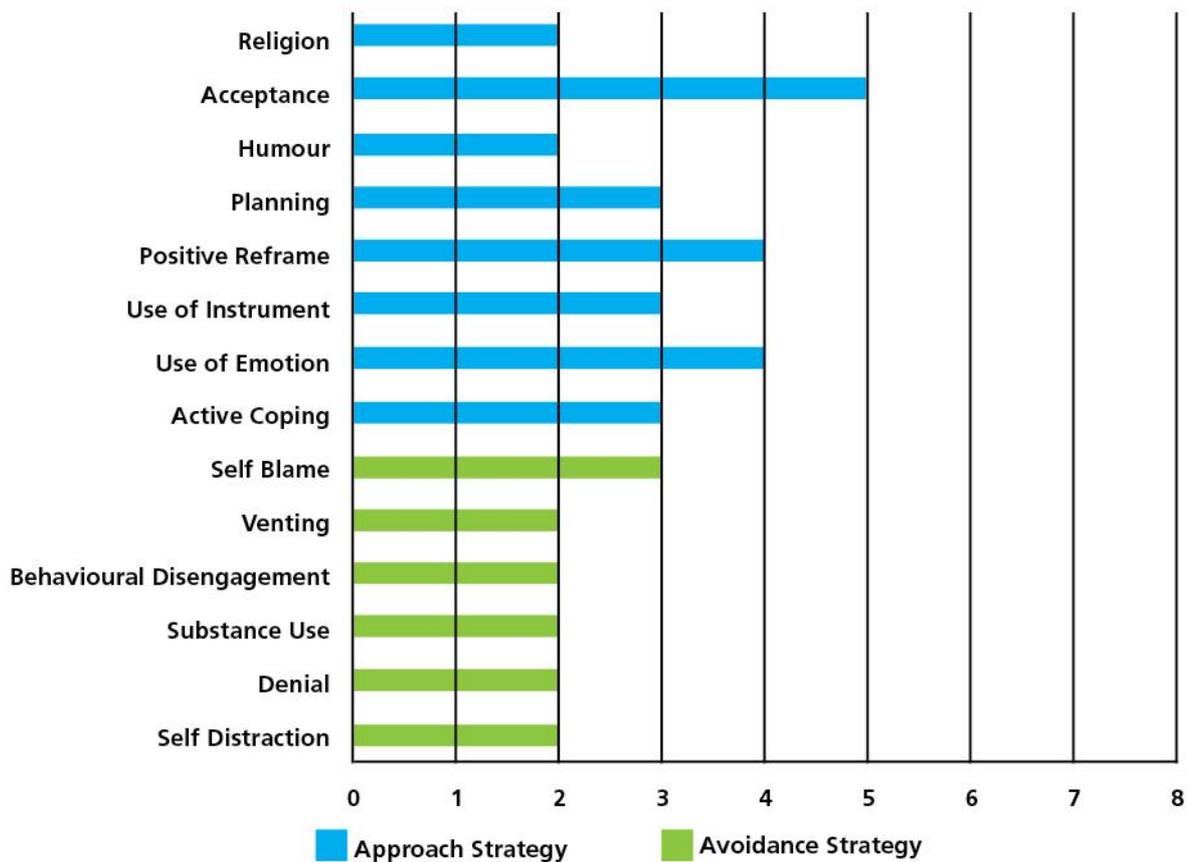
	N	Mean	Minimum	Maximum	Std. Deviation
Active Coping	79	4	2	8	1.58
Use Of Emotion	79	4	2	8	1.75
Use Of Instrument	79	4	2	8	1.66
Positive Reframe	79	4	2	8	1.80
Planning	79	3	2	7	1.61
Humour	79	2	2	7	0.89
Acceptance	78	5	2	8	1.96
Religion	79	3	2	8	1.62
Substance Use	79	2	2	6	0.76
Denial	79	2	2	6	0.69
Self-Distraction	79	3	2	6	1.11
Behavioural Disengagement	79	2	2	8	0.81
Venting	79	3	2	8	1.24
Self-Blame	79	3	2	7	1.49

Approach versus avoidance coping strategies:

Both approach and avoidance strategies appear to be utilised by the participants (Figure 27).

Figure 27- Summary of the mean scores for the sub-scales of the BriefCOPE represented as approach and avoidance strategies

Mean scores for the Brief COPE sub-categories broken down into approach and avoidance strategies



6.12.10 Correlation coefficient between all the inventories:

The relationship between the ProQOL, WS-Ei,, HADS, PSS and IES measures were investigated using a Pearson's Correlation (Table 26). The inventories that showed a correlation of $\rho > .3$ and $< .7$ with the IES were included in a multiple regression (Pallant, 2010).

Table 25- Pearson correlation of all of the measures

		PSS	HADS Anxiety	HADS Depression	ProQOL Compassion Satisfaction	ProQOL Burnout	ProQOL Secondary Traumatic Stress	WSEI Overall T-Scores	IES
PSS	Pearson Correlation	1	-.721**	-.653**	.178	-.494**	-.471**	.260**	-.266**
	p value		p<.01	p<.01	.052	p<.01	p<.01	.008	.009
	N	84	83	84	84	84	84	84	80
HADS Anxiety	Pearson Correlation	-.721**	1	.614**	-.131	.534**	.589**	-.276**	.462**
	Sig. (1-tailed)	p<.01		p<.01	.117	p<.01	p<.01	.005	p<.01
	N	83	84	84	84	84	84	84	80
HADS Depression	Pearson Correlation	-.653**	.614**	1	-.313**	.519**	.435**	-.314**	.222*
	Sig. (1-tailed)	p<.01	p<.01		.002	p<.01	p<.01	.002	.023
	N	84	84	85	85	85	85	85	81
ProQOL Compassion Satisfaction	Pearson Correlation	.178	-.131	-.313**	1	-.469**	-.161	.551**	-.272**
	Sig. (1-tailed)	.052	.117	.002		p<.01	.070	p<.01	.007
	N	84	84	85	85	85	85	85	81
ProQOL Burnout	Pearson Correlation	-.494**	.534**	.519**	-.469**	1	.625**	-.531**	.495**
	Sig. (1-tailed)	p<.01	p<.01	p<.01	p<.01		p<.01	p<.01	p<.01
	N	84	84	85	85	85	85	85	81
ProQOL Secondary Traumatic Stress	Pearson Correlation	-.471**	.589**	.435**	-.161	.625**	1	-.297**	.376**
	Sig. (1-tailed)	p<.01	p<.01	p<.01	.070	p<.01		.003	p<.01
	N	84	84	85	85	85	85	85	81
WSEI Overall T-Scores	Pearson Correlation	.260**	-.276**	-.314**	.551**	-.531**	-.297**	1	-.295**
	Sig. (1-tailed)	.008	.005	.002	p<.01	p<.01	.003		.004
	N	84	84	85	85	85	85	85	81
IES	Pearson Correlation	-.266**	.462**	.222*	-.272**	.495**	.376**	-.295**	1
	Sig. (1-tailed)	.009	p<.01	.023	.007	p<.01	p<.01	.004	
	N	80	80	81	81	81	81	81	81
** . Correlation is significant at the 0.01 level (1-tailed).									
* . Correlation is significant at the 0.05 level (1-tailed).									

6.13 Multiple Regression Analysis:

Multiple regression analysis is used to discover the ways in which several variables are related to one another. A multiple regression analysis was performed to explore whether variation in the IES results was predicted by a linear relationship with background levels of anxiety, depression, perceived stress and work related burnout and secondary traumatic stress (Tabachnick & Fidell, 2007).

One of the overall aims of the thesis is to explore what the experience of caring for a child who has an ALTE is like for the nurses. Therefore, the IES was chosen as the dependant variable as this was the most global measure to describe what impact these events have based on the participants own assessment. A multiple regression analysis was performed to explore if the IES results were predicted by a linear relationship with any of the other inventories.

Based on the results of the correlation coefficient analysis, any variable that showed a correlation of between .3 –.7 with the IES was used to perform a multiple regression analysis (Pallant, 2010). The HADS Anxiety ($\rho=.462$), ProQOL Burnout ($\rho=.496$) and ProQOL Secondary Traumatic Stress ($\rho=.376$) were all included in the analysis.

The association between the independent and dependant variables is moderate (Multiple R = .547; F value = 10.837). The model accounted for 27% (adjusted R^2) of the variation in the Impact of Events Scale. The contribution of each of the variables is summarised in table 27.

Table 26 - Results of the multiple regression analysis

Dependant Variable	Standardised Beta	Unstandardised Beta	Confidence Intervals (95%)	Significance
HADS Anxiety	.168	.280	.021-.315	.026
ProQOL Burnout	.155	.350	.042-.267	.008
ProQOL Secondary Traumatic Stress	-.030	-.008	-1.001-.942	.952

Authors suggest a multiple regression analysis should be performed on studies with a reasonable sample size to make the results more generalizable. The suggested sample sizes range from 15 participants per predictor (approximately 45 participants in this case) to a formula that of $N > 50 + 8m$ (m =number of independent variables) (Tabachnick & Fidell, 2007). There were approximately 80 participants included in the multiple regression which

met the above requirements, though it is recognised that the more participants involved increases the generalizability of the results.

6.14 Comparison of baseline and post interventions scores:

The primary aims and objectives of the feasibility study were not to test the hypotheses of whether the interventions were effective. The aims and objectives were to identify what outcomes measures should be used to measure effectiveness of the interventions in the future. Baseline and post interventions measures of the ProQOL and WS-Ei were collected in participants of the PREPARE intervention. As there were no SUPPORT sessions run during the feasibility study no post interventions measures were collected for the PSS, HADS, IES or BriefCOPE. The following section will explore the pre and post interventions measures.

6.14.1 ProQOL

The ProQOL measures were completed at baseline and again post-intervention. Figures 28, 29 and 30 provide a summary of the comparison of the frequency with which scores were generated in the low, medium and high category for the subcategories.

Figure 28- Comparison of the pre and post frequency scores for the CS sub-scale of the ProQOL

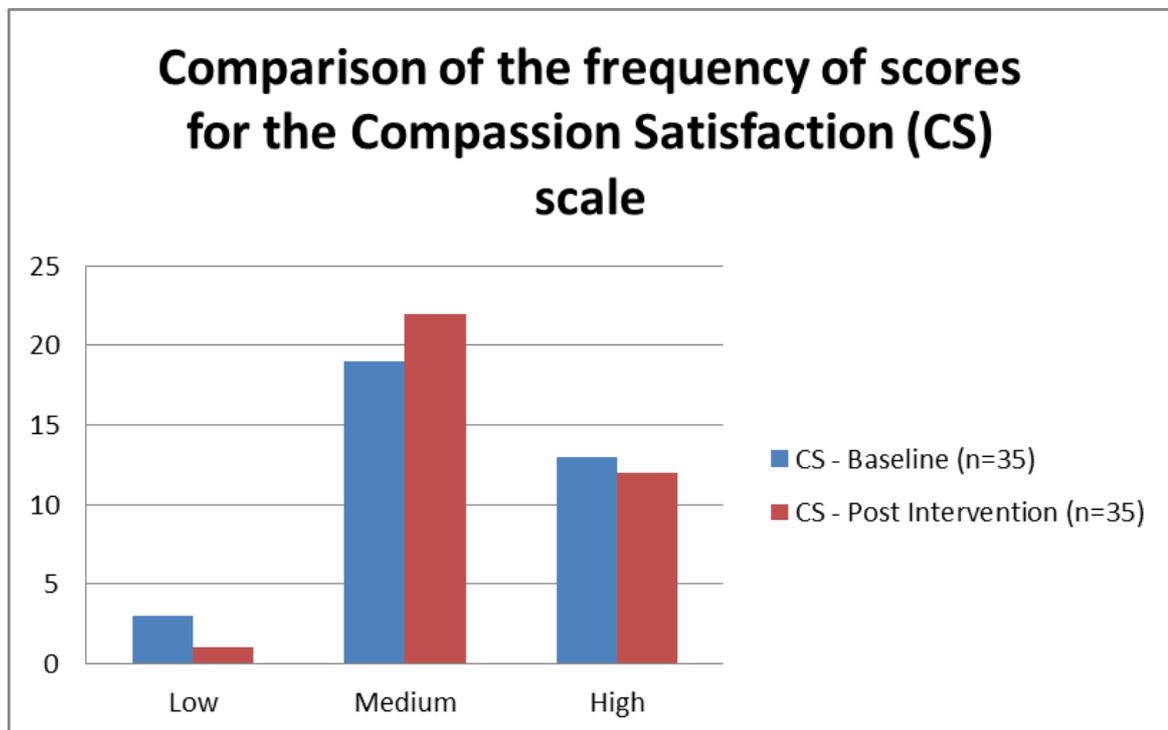


Figure 29 - Comparison of the pre and post frequency scores for the burnout sub-scale of the ProQOL

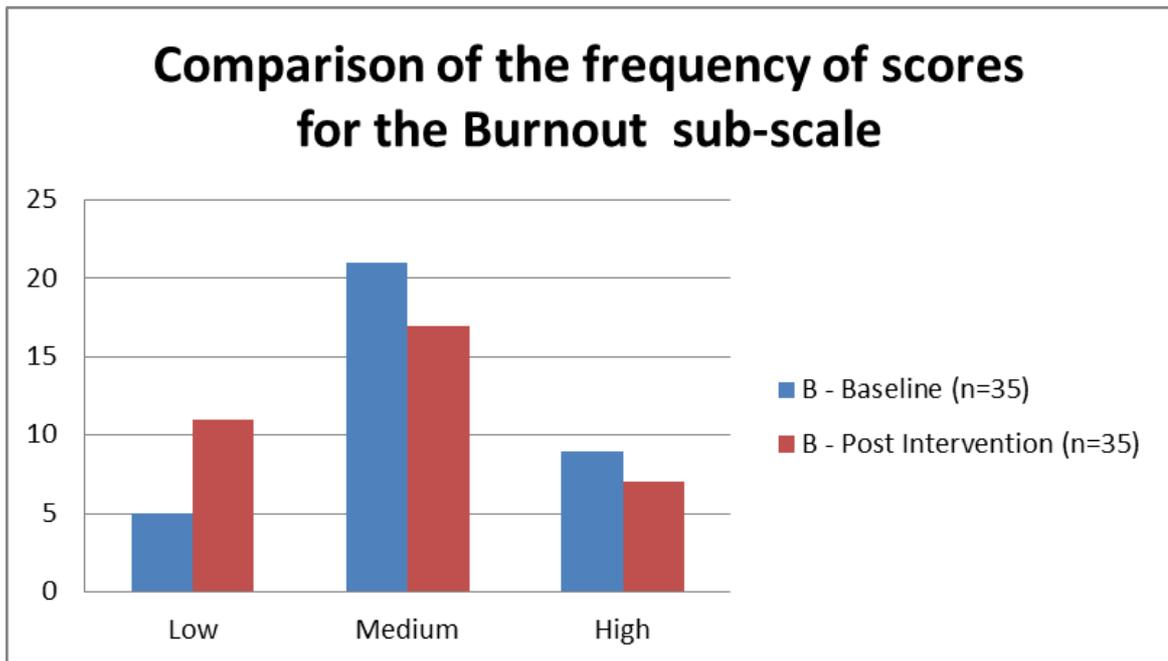
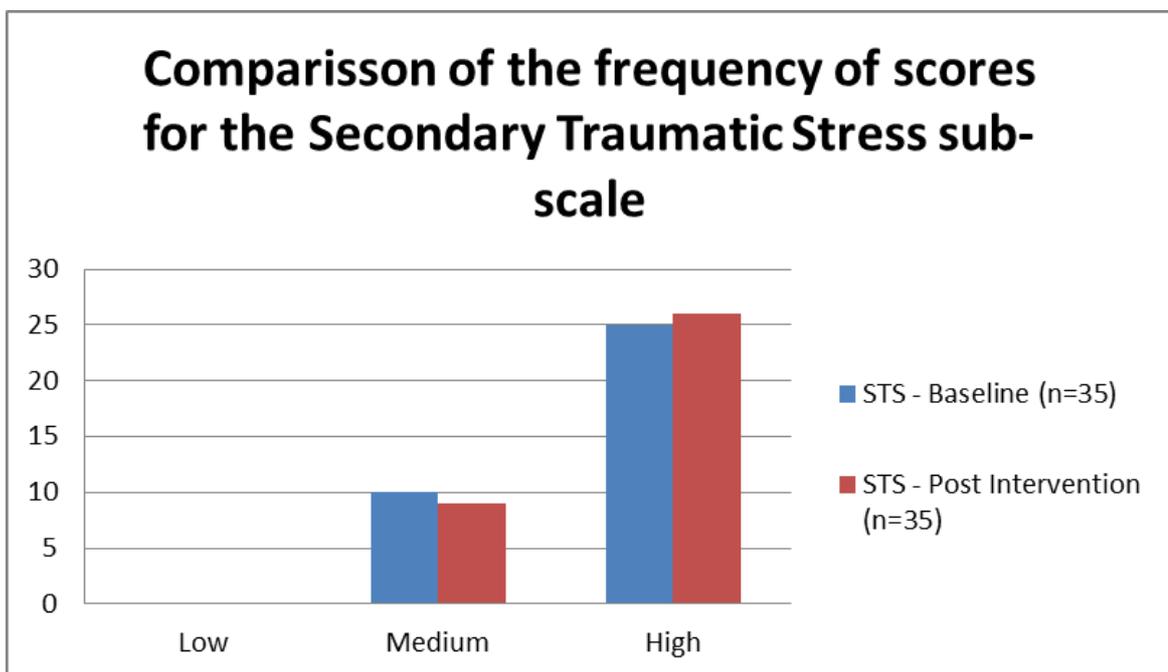


Figure 30 - Comparison of the pre and post scores frequency scores for the secondary traumatic stress sub-scale of the ProQOL



A Paired t-test was performed to establish if there was any difference between the baseline and post-interventions scores of the sub-categories. There was no statistically significant difference between the baseline and post interventions scores as outlined in table 28.

Table 27 - Results of the paired t-test of pre and post intervention scores for the ProQOL

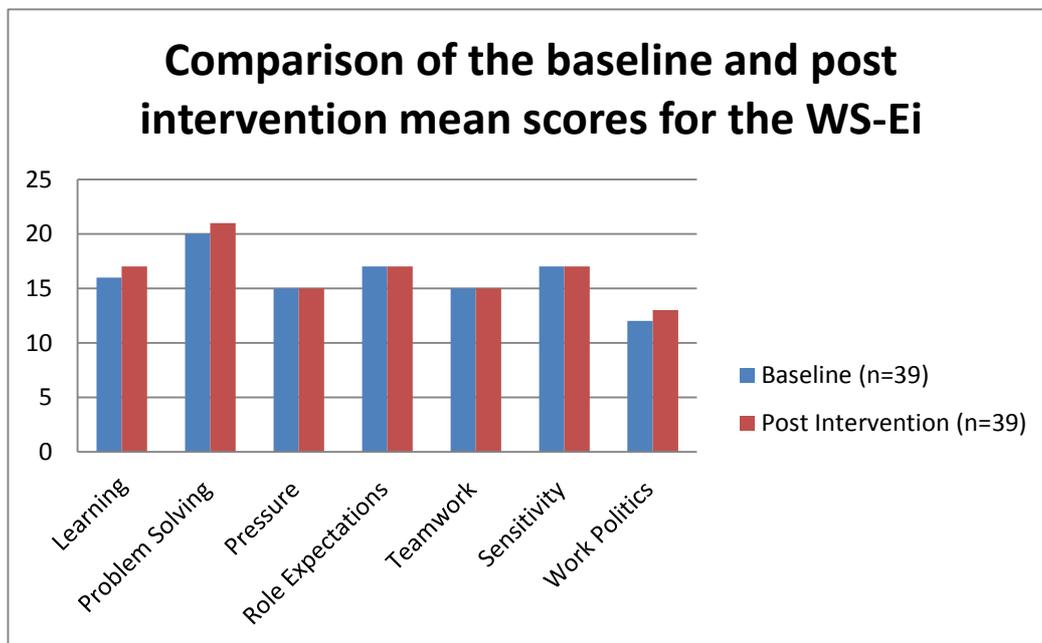
Sub-category of the ProQOL	Baseline		Post Intervention		t	p	r
	Mean	SD	Mean	SD			
Compassion Satisfaction	39.85	4.92	39.85	4.30	t(38)= -.190	.850	.741
Burnout	23.59	4.30	22.28	4.05	t(38)= 2.158	.037	.592
Secondary Traumatic Stress	20.85	5.60	20.92	6.20	t(348)= -.108	.914	.722

6.14.2 WS-Ei

Comparison of the baseline and post-intervention scores:

A comparison of the baseline and post-intervention mean scores are summarised in Figure 31.

Figure 31 - Comparison of the baseline and post intervention mean scores for the dimensions of the WS-Ei



A Paired t-test was performed to establish if there was any difference between the baseline and post-interventions dimensions of the WS-Ei. A summary of the findings are listed in table

29. The baseline scores were generally lower in the baseline group except for Role Expectation, however this was not statistically significant.

Table 28 - summary of paired t-test results for pre and post intervention mean scores for the WS-Ei

Sub-category of the WS-Ei	Baseline		Post Intervention		t	p	r
	Mean	SD	Mean	SD			
Learning	16.17	2.26	16.82	2.07	t(38)= -2.456	.019	.722
Problem Solving	19.58	4.13	20.69	2.90	t(38)=-2.087	.044	.610
Pressure	14.87	2.70	15.46	2.45	t(38)=-1.909	.064	.725
Role Expectation	17.07	2.46	16.82	2.19	t(38)=.881	.384	.702
Team Work	14.82	2.33	15.05	2.02	t(38)=-.776	.442	.647
Sensitivity	16.53	2.89	16.82	2.22	t(38)=-.819	.418	.675
Work Politics	12.33	2.58	13.02	2.19	t(38)=-2.030	.049	.615

6.14.3 Comparison of means from this study with other published studies

A one sample t-test was performed to compare the means from published studies with the means generated from the baseline measures administered in the feasibility study. A summary of results is presented in Table 30. The mean scores from participants in the feasibility study for the PSS were statistically significantly lower than those generated by people in the Surwit study with Type 2 diabetes undergoing a stress management program (t-score=-11.92, P=<.01) (Surwit et al., 2002). Likewise, the means scores in the feasibility study for the IES were statistically significantly lower than those in people in the Horowitz study with stress response syndromes (t-score=-14.09, P=<.01) and the Brady study with PTSD (t-score=-12.98, P=<. 01) (Brady et al., 2000; Horowitz et al., 1979). The results tend to suggest that the nurses in the feasibility study are generating lower scores than those in the published studies.

The means scores for the feasibility study participants was statistically significantly higher on the IES when compared with a study with police officers who had to recover bodies that had been trapped in an oil rig for several weeks out at sea (t-score=4.11, $P < 0.01$ (.000)) (Alexander & Wells, 1991). The results for the current study population were also higher on the IES when compared with nurses who experienced horizontal violence in the workplace (t-score=2.718, $p > 0.05$ (.008)) (McKenna, Smith, Poole, & Coverdale, 2003).

The results suggest that the nurses in the feasibility study are generating lower scores than those generated by the clinical population in the published studies and higher scores when compared to other health care professionals and emergency service workers. It may be possible that some of the training that the nurses receive or their professional experience help to reduce the perceived stress and impact of events compared to the clinical population. It is not clear why the nurses generated higher scores than the other nurses and police, but it may be possible that the police receive some sort of training, preparation or support that reduces the effect of these events. It may be worth exploring these differences in greater detail in the future.

Table 29 - Summary of other studies who have used the measures compared to the feasibility study means

Author	Participants	Current study means	Published Mean	t-score	Significance
Professional Quality of Life					
Compassion Satisfaction T- Score					
Stamm (Stamm 2010)	data base of 1289 cases created across studies published in the manual for age groups	18-35years = 50.37 >36 years = 49.32	50.12 51.00	.182 -.948	.856 .354
Burnout T-Score					
Stamm (Stamm 2010)		18-35years =50.9 >36 years = 46.76	50.11 47.74	.580 -.504	.564 .620
Secondary Trauma T-Score					
Stamm (Stamm 2010)		18-35years = 50.32 >36 years = 48.28	53.61 50.75	-2.362 -1.352	.022 -.191
Work Self-Efficacy Scale					
Raelin (Raelin 2010)	Mean scores for 402 Young Workers published in manual	Learning = 4.08 Problem Solving=3.26 Pressure = 3.80 Role Expectations=4.23 Teamwork = 3.75 Sensitivity = 4.17 Work Politics = 3.15 Composite Index= 3.77	4.23 3.72 3.91 4.08 3.85 3.93 3.86 3.87	-2.468 -6.606 -1.558 2.378 -1.649 3.333 -9.852 -1.763	.016 P<.01** .123 .020 .103 P<.01** P<.01** .082
Percieved Stress Scale					
Cohen and Janicki-Deverts (Cohen and Janicki-Deverts 2012)	Means scores for a national survey conducted on the general population as part of the Harris poll in the United States	<25 years = 15.90 25-35 years = 15.17 35-44 years = 13.25 45-54 years = 13.92	16.78 17.46 16.38 16.94	-.492 -1.851 -2.082 -1.558	.628 .073 .061 .147
Surwit et al (SURWIT, VAN TILBURG et al. 2002) et al	Study providing stress management training for patients with Type 2 diabetes to improve long term control over the diabetes	14.89	23.98	-11.92	P<.01**

Author	Participants	Current study means	Published Mean	t-score	Significance
Impact of Events Scale					
Mayou & Hobbs (Mayou, Ehlers et al. 2000)	Debriefing with victims of road traffic accidents - a 3 year follow up study	16.53	14.9	1	.32
Horowitz (Horowitz, Wilner et al. 1979)	Validation study for the IES - 66 participants with stress response syndromes completed the IES	16.53	39.5	-14.09	P<.01**
Brady et al (Brady, Pearlstein et al. 2000)	RCT of Setraline in the treatment of PTSD	16.53	37.7	-12.98	P<.01**
Shalev et al (Shalev, Freedman et al. 1988)	Prospective study to evaluate the course of PTSD and depressive symptoms in survivors of major trauma	16.53	20.71	-2.563	.12
Chemtobb et al (Chemtob, Tomas et al. 1997)	Provision of a debriefing intervention after exposure to a hurricane. Group 1 - peer support counselors Group 2 - staff members of the local mental health centre	16.53	19	-1.514	.134
McKenna et al (McKenna, Smith et al. 2003)	Experiences of horizontal violence in registered nurses	16.53	12.1	2.718	.008
Alexander & Wells (Alexander and Wells 1991)	Reactions from police officers who had to recover deceased bodies after an oil rig collapsed out at sea	16.53	9.83	4.11	P<.01**
McFarlane et al (McFarlane 1988)	Measuring psychiatric impairment of 449 fire-fighters after being exposed to a bushfire disaster	16.53	18.2	-1.024	.309
HADS Anxiety					
Bisson et al (Bisson, Jenkins et al. 1997)	Provision of PD to 133 adult burn trauma victims to reduce the psychological sequalae	5.65	6.71	2.656	.009
HADS Depression					
Bisson et al (Bisson, Jenkins et al. 1997)	Provision of PD to 133 adult burn trauma victims to attempts to reduce the psychological sequalae	2.89	2.89	.011	.991

6.15 Discussion:

The primary aim of the feasibility study was to gather a baseline profile of the effect on nursing staff of caring for a child. It is anticipated the results from this study will inform recommendations for outcome measures to evaluate the effectiveness of interventions in the future. The objectives of the study included: to test procedures; estimate recruitment and retention; and inform a sample size calculation. The results in this chapter have provided a baseline profile of the scores generated for each of the measures and will be discussed in more detail in the following section.

6.15.1 Baseline profile of effect of caring for a child who has an ALTE:

When the results generated from the measures are considered within the current study population, there were several results worthy of further discussion. These include the results from the ProQOL inventories and the Brief COPE in particular. The results from the ProQOL sub-categories demonstrated that participants showed a medium level of Compassion Satisfaction, medium to high level of Burnout and high levels of Secondary Traumatic Stress. In addition, the regression analysis indicated the ProQOL Burnout score made the most significant contribution to the Impact of Events Score.

Burnout can occur as a result of healthcare professionals being exposed to the chronic stresses generated by caring for their patients both physically and emotionally. Burnout is characterised by three states. The first is a state of emotional exhaustion where the individual feels emotionally depleted and no longer able to give themselves emotionally. The second is a process of depersonalisation, where the individual develops cynical or callous attitudes towards their patients as a result of the emotional exhaustion. The third characteristic of burnout is where individuals start to view themselves negatively, particularly in regards to their job. They feel unhappy with their work and do not feel satisfied with their job accomplishments which can lead to a reduction in professional efficacy (Crabbe, Bowley, Alexander, & Klein, 2004; Maslach & Jackson, 1980; Mukherjee et al., 2009; Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002). Burnout can cause headaches, difficulty concentrating, illness, anxiety and depression for the sufferer (Balogun, Titiloye, Balogun, Oyeyemi, & Katz, 2002; Maslach & Jackson, 1976, 1979; Stamm, 2010). Burnout can also affect an organisation by contributing to high job turnover, absenteeism and low morale which in turn can affect the quality of care provided to patients (Crabbe et al., 2004; Maslach & Jackson, 1980; Mukherjee et al., 2009; Pines & Maslach, 1978; Schaufeli et al., 2002).

Studies on burnout within healthcare have shown healthcare professionals have a high risk of burnout (Balogun et al., 2002; Guntupalli & Fromm, 1996; Guthrie, Tattan, Williams, Black, & Baclicocotti, 1999; Kilfedder, Power, & Wells, 2001; Papadatou, Anagnostopoulos, &

Monos, 1994; Payne, 2001; Ramirez, Graham, Richards, Cull, & Gregory, 1996). Low pay, shift work, inflexible working hours, low prestige, lack of support from supervisors and clinical experience can all contribute to the development of burnout in nurses (Armstrong-Stassen, Al-Ma'Aitah, Cameron, & Horsborough, 1994; Hannigan, Edwards, Coyle, Fothergill, & Burnard, 2000; Koivula, Paunonen, & Laippala, 2000; Kovecses, 1980). In addition to the everyday stressors that nurses face, reports suggest professionals who care for children find adverse events in this population particularly stressful (Clohessy & Ehlers, 1999; Crabbe et al., 2004; Halperna et al., 2009) which makes the nurses who care for children who have an ALTE at particular risk of suffering from burnout.

The moderate to high scores generated on the Burnout sub-scale of the ProQOL suggests the participants in this study are at risk for developing burnout. This requires further exploration in any study that looks at evaluating the effectiveness of the PREPARE and SUPPORT interventions.

Participants scored high on the Secondary Traumatic Stress dimension of the Professional Quality of Life scale. Secondary Traumatic Stress can occur when people are exposed to others who have experienced trauma or stressful events. In the context of this study, the nurses can develop secondary traumatic stress from witnessing children who have an ALTE. Belinda described during the IPA interview that she was disturbed by how hard the staff were doing the chest compressions. Although this is happening to the patient, the nurse has the potential to be traumatised by witnessing this event. People who suffer from STS report feeling trapped, on edge, exhausted, overwhelmed, and describe finding it difficult to sleep, forgetting important things and finding it difficult to separate their personal with their professional life (Figley, 1995; Larsen & Stamm, 2008; Stamm, 1999).

The term “second victim” has been developed to describe healthcare professionals who become traumatised as a result of being involved in an adverse patient event like a medication error or an ALTE (Scott et al., 2009; Wu, 2000). The second victims feel personally responsible for the event and feel as though they have failed their patient. That leads them to second-guess their clinical skills and knowledge. This phenomenon may be even more relevant to this study population than STS as it specifically relates to the staff who care for patients experiencing events like an ALTE. Scott et al have developed a state-wide rapid response team in Missouri (USA) to provide support for staff involved in these events. The interventions include a tiered response of reassurance at the ward level, peer support or an expedited referral to a counsellor, psychologist or chaplain (Scott et al., 2010; Scott, Hirschinger, & Cox, 2008; Scott et al., 2009). The intervention has not been evaluated yet,

and when Scott was contact she indicated that they were unsure how to evaluate the effectiveness of the program.

Given the high STS scores generated by the participants in this study and the reports in the literature of the second victim phenomenon developing after being involved in critical incidents it would be recommended that this should be studied further in any study aiming to evaluate the effectiveness of the PREPARE and SUPPORT interventions. This outcome measure would be in addition to levels of burnout.

Despite the moderate to high scores generated by the ProQOL Burnout and Secondary Traumatic Response, the results from the Impact of Events Scale appeared relatively low with a median score of 13.0. Participants were asked to complete the IES based on how they were feeling in the preceding week, regardless of when the ALTE they were referring to occurred. Some of the participants indicated they were thinking of an ALTE that occurred 12 months prior to participating in the study. This may explain why the IES scores appeared relatively low, because the ALTE had occurred many weeks or months before the participants completed the measure and therefore the impact of the event may have been reduced through time.

Participants were asked to complete the ProQOL measures in relation to their day to day work, rather than focusing on an ALTE. It is not possible to tease out of these results if there are other factors in the participants' day to day work that might generate high burnout or secondary traumatic scores. Alternatively, the participants were fully aware that the studies were being conducted with the aim of exploring what the experience of caring for a patient who has an ALTE is like for them. This made it difficult to tease out if the high burnout and secondary traumatic scores were generated as a result of their daily working lives or in relation to an ALTE.

The low IES scores coupled with the higher ProQOL scores could possibly suggest the higher burnout and secondary traumatic stress scores may indeed be due to circumstances in the participant's daily working life rather than from the ALTE. The regression analysis demonstrated the HADS Anxiety, ProQOL Burnout and ProQOL Secondary Traumatic Stress accounted for 27% (adjusted R^2) of the variation in the Impact of Events Scale. Whilst 27% (adjust R^2) is only a relatively small contribution, the ProQOL Burnout made a statistically significant contribution ($p=0.08$) in predicting the IES scores demonstrating there may be a relationship between the IES and Burnout.

When stressors are not dealt with effectively, they can lead to conditions such as burnout. As previously discussed, coping strategies are employed after primary and secondary

appraisals are carried out by people who are faced with a stressful situation. Given the moderate to high levels of burnout scores generated by participants it seems more important than ever to examine what coping strategies people are utilising in these situations.

The profiles of coping strategies used by participants suggests they are employing both approach and avoidance strategies. People who use approach coping strategies tend to try and confront the problem by gathering information and attempting to take direct action for example undertaking further training on resuscitation. Avoidant coping styles tend to try and avoid the situation all together, deny or minimise the importance of the event. Avoidant coping may be more effective for short term threats or to deal with an immediate stressor (Suls & Fletcher, 1985; Wong & Kaloupek, 1986) however it is less effective for dealing with long term stressors (Holahan & Moos, 1986). Although one ALTE in isolation may be considered a short term one of stressor, many of the nurses are repeatedly exposed to these events which can then become a long term stressor.

Denial and behavioural disengagement (characteristic of the avoidance approach) have been found to be predictors of distress in studies with HIV positive men and women diagnosed with breast cancer (Antoni et al., 1991). People who have been diagnosed with HIV who use denial and behavioural disengagement show greater disease progression within 12 months (Ironson et al., 1994; Lutgendorf et al.). Although these populations are very different to the current studies, they demonstrate that avoidance coping strategies can have negative consequences.

To date, no studies have been identified that have explored the coping strategies adopted by nurses who care for patients who have an ALTE. The results from this study have made a unique contribution to developing a profile of what coping mechanisms nurses adopt when faced with caring for a child who has an ALTE. Given the link between stress and burnout, and the studies that have shown the negative impact of adopting avoidance coping strategies it is important to explore in more detail the coping strategies adopted by nurses who care for children who have an ALTE. Education and strategies for adopting approach coping strategies should be incorporated into the PREPARE and SUPPORT interventions and evaluated for effectiveness.

The HADS Anxiety also made a statistically significant contribution ($p=0.026$) in predicting the IES scores in the multiple regression analysis. In addition to the statistical significance, the HADS Anxiety had the largest standardised beta (.168) indicating it was the biggest predictor of the outcome (IES scores). As discussed in section 6.12.5, the HADS is not diagnostic - participant's scores are categorised as normal, mild, moderate or severe with decisions about the need for treatment based on the category into which the participant falls.

The majority of participants in the feasibility study fell into the normal category which would indicate no treatment is required. However, when the histogram of the HADS Anxiety scores (Figure 24) is considered, there are a range of scores which indicate that this would make this a useful construct to explore in the future. Furthermore, perhaps the HADS instrument is not sensitive enough and a more sensitive measure would be required in a larger trial.

6.15.2 Test procedures:

One of the objectives of the study was to test procedures to help refine the study protocol and data collection forms. Participants were asked to complete a baseline data collection pack that consisted of a questionnaire and 6 measures. The average time to complete the baseline paperwork was approximately 50 minutes then an additional 15-20 minutes to complete the post-intervention paperwork, which included an evaluation of the session. Although it was slightly unusual for participants to complete so many measures, this was necessary to generate the baseline profile and inform what measures should be explored in greater detail. Carver discusses that asking participants to complete a large numbers of measures can lead to participant response burden (Carver, 1997). This may result in the participants either not completing the paperwork or rushing through the paperwork to get it “over and done with”. Given the results from the pilot, fewer measures would need to be included in a larger interventional study.

6.15.3 Outcome measures:

The results from the study suggest anxiety, burnout, secondary traumatic stress and coping strategies should be explored in a larger trial. As discussed in section 6.15.1, a more sensitive measure than the HADS Anxiety may be required to measure anxiety in a larger trial. Given the variation in scores (with no apparent floor or ceiling effect) and the overall high scores it seems appropriate to use the ProQOL measure in a larger study. Although the ranges of possible scores in each sub-category of the Brief COPE are only quite small (0-8), this measure also demonstrated a variation in scores (with no apparent floor or ceiling effect) which would suggest this is an appropriate measure to use in a larger trial measuring the effectiveness of the PREPARE and SUPPORT interventions.

6.15.4 Estimating recruitment and retention:

As discussed in chapter 5, the times and dates of the PREPARE sessions in each ward area were set three months in advance. This was done to assist the Ward Managers to take into account the planned session when planning staffing levels and clinical responsibilities. Seventy per cent (19/27) of the planned sessions were completed during the pilot. Eight sessions were cancelled due to staff shortages or high clinical demand that prevented staff from being released to attend the session. Several of the sessions were cancelled on days

when the Ward Managers themselves were off sick. The absence of the manager contributed to the short staffing on the day of the session and the leadership to ensure the clinical demands of the wards were met to allow the session to go ahead.

Feedback from the Ward managers and participants indicated the length of the session was acceptable (1 hour) however suggestions were made for running the session on different days or times in individual wards. Although the Ward Managers agreed to the proposed times and dates of the session, the participants' feedback was that wards were typically busier on a Monday (due to a backlog of clinical issues that may have occurred over the weekend when there are less staff available) and a Friday (due to increased discharges in preparation for the weekend). Therefore, most participants preferred not to have a session on those days. In addition, different wards have different events occurring on particular days of the week including Grand Rounds or theatre lists so those days should be avoided. This would require further negotiation in the future.

The traditional shift pattern for nurses during the day is 07:00 – 15:00 for an early shift and 13:00 – 21:00 for a late shift. The PREPARE sessions were run between 13:00 -14:00 at the Ward Manager's' request as there was often a crossover of staff so that more staff should have been available to attend the sessions. However, in many ward areas the patient hand-over occurs at 13:00, as do lunch breaks. Therefore, staff in some wards found the session being run at this time disruptive to their normal ward routine. These participants suggested a mid-morning or afternoon time slot would be more suitable. This would require negotiation in the future.

The ward areas are very busy and at times it was difficult to find an empty bed space to run the session. The staff preferred the point of care approach to the provision of this session as they did not have to leave the ward and were familiar with their own environment. As the wards get busier from a clinical point of view it will be a challenge to continue to provide the session on the wards.

In summary, the recruitment to this study was satisfactory and demonstrated staff were willing and enthusiastic to participate. Recruitment and retention in a larger study could be improved by negotiating different times to run the session in ward areas and having the support of ward managers to ensure the sessions do not conflict with the staffing and clinical duties of each ward.

6.15.5 Determining sample size:

As discussed, the primary outcomes measures for a larger interventional trial assessing the effectiveness of interventions should focus on a reduction in burnout and secondary traumatic stress. In addition, a trial should also aim to increase the adoption of approach coping strategies. The next section will briefly outline how a sample size calculation may be determined for a larger interventional trial like a simple RCT.

Given the results from the before and after comparison of the ProQOL measures, it is anticipated that the PREPARE and SUPPORT intervention might generate a relatively small effect size. When calculating the sample size required to demonstrate a significant effect ($P < .05$), for an effect of $d = .30$ ($r = .15$) and a .80 probability of finding an effect a sample of at least 343 people would be required (Friedman, 1982). It would be reasonable to attempt to recruit approximately 200 people in each of the control and interventional arms of the RCT to account for dropout rates. These calculations are based on a straight forward RCT. If a more complex RCT like a cluster or step wedge trial was proposed then a statistician would be consulted as a different sample size calculation would be required.

It was not possible to perform a before and after analysis on the BriefCOPE results as no SUPPORT sessions were run during the feasibility study. Therefore, it is challenging to assess what the effect size might be to inform a sample size calculation. Given the previous discussions on poorer outcomes of patients who have adopted avoidance coping strategies, it seems appropriate that the aim of a larger interventional trial would be to increase the number of participants who adopt approach coping strategies and decrease the use of the avoidance strategies.

6.15.6 Comparison with other studies:

Many of the measures used in the PREPARE study suggest analysis should be conducted within the study population (PREPARE study population) rather than attempting to compare to other studies). As demonstrated in Table 26, the measures have been used in a variety of settings and populations, such as victims of trauma, participants who were being treated for PTSD or other mental health issues or participants from the general population. It is therefore challenging to compare and interpret the t-score within the feasibility study population. The two studies that used the IES scale on populations that were most similar to the current population included nurses who were subject to horizontal violence (McKenna et al., 2003) and police officers who had to recover bodies from an oil rig collapse (Alexander & Wells, 1991). The participants in the feasibility study generated higher IES means than both of these published means, which may suggest caring for a child who has an ALTE may have a high impact on the nurses involved. These results should be interpreted cautiously as they

are not a direct comparison of similar populations. This reinforces the need for further studies to be conducted which evaluate the effectiveness of interventions aimed at preparing and supporting the nurses who care for children who have an ALTE.

6.16 How has this study addressed the gaps in the knowledge?

This study was designed to address the gap in the knowledge highlighted in the introduction to this thesis about which outcome measures should be used to evaluate the effectiveness of interventions designed to reduce potential impact of caring for a child who has an ALTE.

The results from the study have suggested the interventions should incorporate strategies to reduce the incidence of burnout and secondary traumatic stress. Interventions should also incorporate strategies to assist participants to adopt approach centred coping strategies to reduce the impact of these potentially stressful events.

Addressing this gap in the knowledge and highlighting the suggested outcome measures will inform the development of an appropriate study design, methodology and modification of the interventions in order to address these suggested outcome measures.

6.17 Limitations:

This study has some limitations. As previously discussed, the large number of measures that the participants were asked to complete may have led to a participant response burden (Carver, 1997). Placing a high demand on participants in terms of the number of measures to complete or the time taken to complete may lead to them either not completing the paperwork or rushing through the paperwork to get it “over and done with”. The potential for participant response burden may have affected the recruitment of participants to the study. In addition, it may have affected some of the responses that participants made to the measures. In a larger trial in the future the participants would be asked to complete the ProQOL and BriefCOPE which would take the participants approximately 10 minutes which would reduce the participant response burden. In the future, it would be anticipated that fewer inventories would be required to reduce this risk.

People were asked to complete the ProQOL and WS-Ei measures thinking about their general work life. However, people knew the feasibility study was looking at an ALTE in particular so it is difficult to tell if their responses remained general or were focused on their experience of an ALTE. It would be difficult to tease this out. Given the high scores generated for the burnout and secondary traumatic stress dimension of the ProQOL this reinforces the need to use these as outcome measures in a larger interventional trial.

There were a relatively small number of participants in this study at both baseline and post intervention. With small numbers of participants it is difficult to generalise the results, however these small numbers are acceptable for a feasibility study.

6.18 Conclusions:

The primary aim of the feasibility study was to gather a baseline profile of what effect caring for a child who has an ALTE has on the nursing staff. This profile would help to inform what the most appropriate outcome measures would be for a larger trial. The results from the study have demonstrated that participants were gaining moderate to high burnout and secondary traumatic stress scores on the Pro QOL scale. Participants also generated a range of scores on a histogram of the anxiety scores. The study also provided a profile of the coping strategies that nurses were utilising when caring for a child who has an ALTE. The approach and avoidance coping strategies were used in seemingly equal measure. These results suggest the outcome measures for a larger trial should focus on measuring anxiety, burnout, secondary traumatic stress and coping strategies.

The study has also provided an opportunity to test procedures, look at recruitment and retention and inform a sample size calculation. Based on the results from this study the PREPARE and SUPPORT interventions are feasible and should be evaluated within a larger trial. The following chapter will contain a global discussion on the program of work which will include what new knowledge this work has contributed to the existing knowledge, what contribution this work has made to the development of theories and recommendations for a larger interventional trial to evaluate the effectiveness of these interventions.

7 Discussion Chapter

7.1 Introduction:

The overarching aim of the thesis was to explore and describe what the experience of caring for a child who has an ALTE is like for the nurses.

At each stage of the research project there were more focused objectives which included:

- 1 Identify existing interventions being utilised, evaluated and shown to be effective within healthcare to prepare and support nurses who care for patients who have an ALTE.
- 2 To explore if caring for children who have an ALTE presents any unique or additional challenges for providing preparation or support for nurses.
- 3 Apply the MRC framework for the development of complex interventions to existing interventions (identified through the systematic review or international survey of practice) or develop interventions aimed at preparing and supporting staff based on the evidence gathered during the program of work.
- 4 Complete a feasibility study to refine and evaluate the interventions. In addition, collect baseline data to inform what outcome measures should be used to evaluate the effectiveness of the interventions in a larger trial.

This chapter will summarise the findings from the studies and discuss what contribution this program of work has made to existing knowledge, theory and methods. The limitation of the thesis will be addressed and then recommendations for future research and practice will be made before the concluding comments.

7.2 Summary of findings:

Table 31 presents a summary of the key findings from each of the studies described in the thesis.

Table 30 - Summary of key findings

Study	Aims	Summary of findings
<p>Chapter 2 Systematic Literature Review</p>	<p>Identify interventions being evaluated for effectiveness within healthcare that aim to either prepare or support staff for the potential psychological impact of caring for a patient who has an ALTE in hospital.</p>	<p>Only 2 studies of 3377 published articles eligible for inclusion – the articles aimed to evaluate the effectiveness of debriefing</p> <p>Authors did not provide evidence to support the use of debriefing by authors</p> <p>There is a need for the development of evidence-based interventions that have been developed specifically for use within healthcare.</p>
<p>Chapter 3 International survey of practice</p>	<p>Identify interventions that are being used to prepare and support staff who care for patients who have an ALTE</p>	<p>Preparatory interventions focused on clinical skills to improve clinical confidence and competence</p> <p>Supportive interventions focused on the provision of a debrief</p> <p>No evaluation of effectiveness taking place</p>
<p>Chapter 4 Interviews conducted with nurses and doctors using IPA</p>	<p>Explore and describe what the experience of caring for a child who has an ALTE is like for the nurses and doctors</p>	<p>Factors that contribute to the junior nurses focusing on the person within the patient include: pre-existing relationship with the child; lack of training on the essential skills required for resuscitation; not being allocated a role and decreased clinical confidence and competence during an ALTE.</p> <p>Junior staff interpret normal physiological signs of stress as a lack of manual skills, whereas senior staff appear able to over-ride these signs through repeated exposure to these events and on-going clinical training and experience</p> <p>Participants want feedback to learn from these events.</p>

Study	Aims	Summary of findings
<p>Chapter 5</p> <p>A working party used an iterative process within a larger feasibility pilot study to develop, refine & evaluate the interventions</p>	<p>Use the MRC framework for the development of complex interventions to combine knowledge and theory to develop the PREPARE and SUPPORT interventions.</p> <p>Refine and evaluate the interventions using an iterative process through a multidisciplinary working party.</p>	<p>The PREPARE intervention using simulation training to enable the nurses to acquire the skills, knowledge and experience required for an ALTE in a safe environment. The interventions includes the following elements: brief with the participants and the working party members; overview of the simulation technology and equipment to be used; discussion take place about what roles or skills the participants want to practice during the session; key aims and objectives of the session are determined before the session and modified based on the performance of the nurses during the session; clinical feedback is conducted using the Advocacy Inquiry technique to facilitate sense-making and reflection and then the session is re-run to consolidate the discussion from the clinical feedback.</p> <p>The SUPPORT intervention involves the provision of a clinical feedback using the Advocacy Inquiry technique to facilitate the sense-making and reflective process.</p>
<p>Chapter 6</p> <p>Feasibility study</p>	<p>Gather a baseline profile of what effect caring for a child who has an ALTE has on the nursing staff. This will inform outcome measures for a larger study</p> <p>Additional aims of the feasibility study were to test procedures, estimate recruitment and retention and determine sample sizes.</p>	<p>The baseline profile suggests that participants have moderate to high levels of burnout and secondary traumatic stress and are using approach and avoidance coping strategies in equal measure. This needs further exploration in a larger trial</p> <p>The measures used in the study were appropriate, the study demonstrated that the interventions themselves were acceptable and have informed a sample size calculation.</p>

Given the wide ranging and exploratory nature of this project, it was necessary to utilise a pragmatic, mixed design approach in order to answer the research aims and objectives. The choice of each particular research approach within the program of work was guided by the Hiles logics of inquiry which included: theory-driven *deduction*; data-driven *induction* and explanation-driven *abduction* (Hiles, 2012). As discussed in the introduction chapter, quantitative approaches are generally more suited to the deductive logics of inquiry, qualitative research approaches are generally more suited to the inductive logics and a mixture of both approaches may be used to address the abductive logics of inquiry. This supported the need for a mixed design approach.

There is a growing recognition and acceptance that qualitative research offers a valid and necessary source of evidence for use within healthcare (Craig et al., 2008; Dixon-Woods et al., 2005; Institute of Clinical Excellence, 2007; Kelly et al., 2009; Shaw, 2012). Qualitative research approaches take into account the social, psychological, physical cultural, experiential and interpretative aspects of people's life-worlds (Crossley, 2005; Institute of Clinical Excellence, 2007; Kelly et al., 2009). This approach is essential when exploring what the experience of caring for a child who has an ALTE is like for the nurses.

The IPA methodology used when exploring and describing what the experience of caring for a child who has an ALTE is like for the nurses has a phenomenological underpinning. Phenomenology is concerned with the study of human experience and how people perceive the world in which they live and what this means to them (Langdridge, 2007). People's experiences are made up of *parts* or *things* which are interconnected to make up their life-world. Life-world describes the *parts* and the whole (*experience*). Husserl described phenomenological psychology as a return to the *things* themselves. Every day interactions, encounters or moments in life are made up of parts that constitute an experience. The hermeneutic circle helps to explain the dynamic relationship between the whole experience and the parts of the experience. An iterative and reflective process must take place where by an experience is examined in the context of its parts and likewise, each part is examined within the context of the whole (Smith, 2007; Smith et al., 2009). This is a nonlinear process whereby the participant and the researcher move back and forth between the parts and the whole to make sense of the experience. This sense-making process involves reflecting, thinking, feeling and interpreting in order for the person to make sense of the *parts* of the life-world and for those *parts* to have some meaning within the life-world (Smith et al., 2009).

An illustration of the hermeneutic circle and dynamic relationship between the *parts* and the *whole* were evident through the participants' accounts in the interviews in chapter four. The

nurses described taking on a parental role when caring for children and often had a pre-existing relationship with the children and their parents before the events. When the child had an ALTE these factors contributed to the nurses focusing on the person within the patient rather than focusing on the provision of clinical care. Further exploration revealed that a lack of training on the essential skills required for resuscitation and not having a role during the event also made it difficult for junior staff to transition their focus from the person within the patient to a more clinical focus. The result of not being able to transition the focus from the person to the clinical was that the nurses felt as though they had not made a useful contribution to the event and had a negative experience. The participants and the researcher moved between the *parts* and the *whole* to explore the experience and what meaning it had for the participants.

Once the relationship between the *parts* and the *whole* are given meaning they are transformed into a concrete, lived experience which has moved from the unconscious to the conscious. Without the sense-making and reflective process, the parts remain in the unconscious and are not accessible for future reference. Access to the concrete, lived experience can influence the participants own practice and the development of interventions. An example of how this information influenced the development of the interventions can be seen by the inclusion of teaching the essential clinical skills required for resuscitation and emphasising the importance of role allocation during the PREPARE intervention.

An example of how this process influenced Daniels practice can be seen during his account in chapter 4:

“Um, and then while we were doing CPR I am getting adrenalin and bag and masking this child certainly....(draws in breath) it was breathing which hasn't happened to me very often. I, he was certainly fighting for his own life and then you have to put a tube down and paralyze and ventilate them on the unit, that's on....not on the unit, on the ward which is normally only happens when you have someone totally collapsed in front of you. But it was a different kind of set up. So it is stressful because it is different and it is always stressful in that sense” (laughs). (Daniel – L121-L132)

Daniel deals with ALTE situations on a daily basis. He has extensive clinical training and routinely provides medication which paralyzes patients, intubates patients (inserts a breathing tube) and attaches them to machines that help them breath. Under “normal” circumstances (normal within the context of his normal daily work as an intensive care doctor) Daniel would have completed these skills in an almost automatic fashion drawing on his extensive clinical knowledge and expertise (Benner, 1982, 2001; Dreyfus & Dreyfus,

1996). He may have reflected back on his own performance or technique, in the absence of anything out of the ordinary but normally an event like this would not be significant for him as it is part of this daily job. In this particular situation there are *parts* of this particular experience that are not “normal” for Daniel which leads him to engage in the hermeneutic circle. Daniel is going through a sense-making and reflective process whereby the experience is examined in the context of the parts and the parts are examined within the context of the whole experience. The life-world (parts and the whole) have been moved from the unconscious to the conscious in the form of a concrete lived experience which is now accessible for Daniel to inform his future practice. Within the IPA chapter Daniel goes on to describe how this experience has influenced his practice in subsequent situations.

Language has been found to be central to both the participant’s and the researcher’s sense-making (Shaw, 2004). The participants use language to engage with their reflections and express how they make sense of the life-world. Bruner describes that people use language to negotiate and renegotiate meanings every day (Bruner, 1990). It is through language that the rich textures of the participants’ experience can be accessed, expressed and shared (Todres, 2000; Willis, 2004). Galvin and Todres describe an aesthetic phenomenology, where the rich textures of experience can be evoked through language rather than just a surface summary of the clinical events that may have occurred (Galvin & Todres, 2011). Through language, participants are able to express what the experiences feel, sound, smell and look like in richer detail which provide a more intimate access to the parts of the life-world. The phenomenological underpinning of the IPA interviews and the AI approach create the medium for the participants to language their experience.

During the IPA interviews the participants went through a sense-making process in order to explore what the experience meant for them and bring those parts of the experience to the surface so that they were accessible for interpretation. As the researcher, I engaged in a double-hermeneutic where I was making sense of the participant making sense of their experience. I discussed in chapter four the importance of identifying my own “horizons” and assumption prior to conducting the interviews and then again, revisiting those horizons throughout the interpretation, analysis and reporting process. I am a nurse who has been involved in numerous ALTEs and I needed to be careful that I did not make assumptions of the participants or the data based on my own clinical experience. I used a reflective diary and met with my supervisors on a regular basis to help ensure my horizons were not overshadowing the participants’ horizons. During the interviews I learned that I needed to give the participants time to make-sense of their own experiences. An example of this includes, in earlier interviews if the participant was trying to think of the “right” word to

describe their experience or seemed lost for words I would offer suggestions for what I thought they were trying to say based on my own experience. After discussion with my supervisor Dr Rachel Shaw, I learned that I needed to give the participant the time and space to find their own words. It was ok to sit “with” the participant as they worked through their experience rather than trying to rush in and try to help them describe their experience. I learned that silence was a very powerful tool and in fact the silence gave the participant the time and space to make-sense of their experience.

The sense-making and reflective approach was also evident in the clinical feedback elements of the PREPARE and SUPPORT interventions, more specifically the use of Advocacy Inquiry (AI) to facilitate the provision of feedback (Rudolph, Simon et al., 2006). AI engages with the participants while they make-sense and reflect on their actions and enables the facilitator to engage with the participants as they explore the parts of their experience in a more interactive way. Through reflection and sense-making, practitioners can look back on an experience, explore, develop insights and an understanding of it and then access those insights and subsequent understanding for future events (Johns & Freshwater, 1998). As discussed in chapter 5, reflective practices are generally drawn from Kolb’s Adult Learning Theory (1984) and the work of the educationalist John Dewey (1933). Dewey outlined that reflective thought involve the following elements: developing a sense of the problem; enriching the sense with relevant observations; developing conclusions or a plan for change and testing those conclusion or plans in practice. Practitioners are not always able to engage in reflective activity on their own. They may need to be guided or facilitated through this process. AI provides a template for clinicians to engage with colleagues to facilitate this sense-making and reflective process in a more constructive fashion.

AI facilitates reflective practice and includes the central idea that people make sense of external stimuli through internal cognitive “frames” (Rudolph, Simon et al. 2006). These frames are often referred to as frames of reference or schemata and can influence or guide the actions of the participants. The concept of schemata has been explored within health psychology. Schema (plural schemata) describes an organised pattern of thought or behaviour which describes a system for organising and perceiving new information (Bartlett, 1995; McVee, Dunsmore, & Gavelek, 2005). People’s schemata provide a framework or mental structure which influences how they process and interpret new information. Schemata are deep rooted and develop over time based on experiences, knowledge and interpretations and tend to remain unchanged even when faced with contradictory information (Bartlett, 1995; McVee et al., 2005). Schemata guide practices and behaviours, although the person may not identify what their schemata are in a subconscious way.

In the context of the current work the terms schemata and frames are used interchangeably. Frames, much like the *parts* need to be accessed, examined and interpreted in order to understand (make-sense) of them and understand how they then influence actions. People may not always be consciously aware of their frames and how they guide actions. They require assistance to point out the action and then need to engage in a sense-making reflective process to understand what their frames are and how they have influenced their actions.

AI pairs an objective assertion (advocacy) with a question (inquiry) to form a conversation between the facilitator and the participant to gain access to the frames behind the participant's actions. This is a two way conversation whereby the facilitator presents their observations and is "curious" about why the participant may have acted in a certain way whilst giving the participant the opportunity to examine, interpret, and explain their actions based on their frames. Highlighting the frames and exploring how they influence practices or behaviours enables the participant to "re-frame" and subsequently change or modify behaviours in the future.

The life-world led healthcare approach and AI have much in common. Whilst the hermeneutic circle uses a non-linear relationship to move between the part and the whole, AI works in a similar way. The facilitator of the clinical feedback helps the participant move between the parts and the whole. By asking questions of individuals to ascertain why they may have behaved or completed a task in a particular manner the facilitator is asking them to examine the parts to understand how it affected the whole. This is demonstrated when reflecting back on the example given in chapter five where the facilitator makes the AI in relation to a delay in the administration of Adrenalin:

Observer: *"I observed that you did not draw up the Adrenalin when you were asked to and I am concerned that a delay in drawing up and administering Adrenalin could result in the patient deteriorating further, can you help me understand why there was a delay in drawing up the Adrenalin?"*

Participant: *"I know how to draw up Adrenalin but I was not sure if it needed to be diluted to give to the patient or if it can be given neat. I didn't want to interrupt the team leader to ask them because I didn't feel as though I could stop to ask them a question and I was worried I would look foolish" (frame).*

In this example the facilitator addresses the parts (delay in drawing up Adrenalin) and how that interacts with the whole (the patient could deteriorate further). In response, the participant goes through the hermeneutic circle where they consider how the parts and the whole interact with each other. They work through the sense-making and reflective process in order to make sense of the life-world.

Merleau-Ponty saw individuals as 'body-subjects', whereby our body allows us to communicate with the world, in essence we speak with our body and are "embodied" (Langdrige, 2007; Merleau-Ponty, 1962; Smith et al., 2009). Gendlin (Gendlin 1991; Gendlin, 1992) refers to a bodily "*felt sense*" in which a person has an inner feeling (physically) within the body before it is reflectively articulated and named in language (Galvin & Todres, 2011).

No two ALTEs are ever exactly the same, however there may be similarities between events. In a very practical sense, the concrete clinical skills required for resuscitation (chest compressions, provision of bag-valve-mask, drawing up medications for example) may be acquired either in a classroom setting or during a real life ALTE. However, the same environment in which these skills were acquired will never be recreated perfectly. The nurses need to develop a "relational" understanding so that they can apply these skills in different situations. Likewise, the nurses develop an embodied relational understanding when they experience the felt-senses (Galvin & Todres, 2011). Despite no two ALTEs being the same, different situations may still generate the same "felt-sense" (for example the adrenalin buzz, shakes or sense of dread).

A person's attention can be dominated by the felt-senses if an embodied relational understanding is not created which may impede performance (Gobet & Chassy, 2008; Todres, Galvin et al., 2009). Examples from the IPA interviews and the Gamble study demonstrate how the nurses misinterpreted the normal signs of the stress response as a lack of manual or practical skills (Gamble, 2001). Rachael described how she was shaking so much that she wasn't even able to write down the observations and subsequently had quite a negative experience of the event. Todres et al explained when an embodied relational understanding exists, the person is not pre-occupied with the bodily attention which enables them to be more attentive to the people, places and tasks in life (Todres, Galvin et al., 2009). In Rachael's case, if she is able to create an embodied relational understanding she may recognise in the future that the shaking is a normal response to a stressful situation and she may either develop strategies to deal with the shaking or recognise that it is a normal stress response and not interpret it in such a negative way.

In order to gain this embodied relational understanding the practitioner needs to engage in sense-making and reflective practice (Ekebergh, 2007; Finlay, 2002, 2003,2008; Finlay & Gough, 2003; Galvin & Todres, 2011; Rees, 2013). This sense-making and reflective process helps to bring together all of the parts of the ALTE experience and move them from the unconscious through to the conscious. Todres et al discuss how this sense-making and reflective process help to bring together the head (practical knowledge), hand (experiential knowledge) and heart (inner world of the person) and makes these parts of the experience available for future reference through creating a relational embodied understanding (Galvin & Todres, 2011; Todres & Galvin, 2008).

Some researchers from the human sciences may find it challenging to see how the concept of bringing together the head, hand and heart might be applied within the practical medical or nursing disciplines. The Dreyfus and Benner model have applied these concepts to explain the acquisition of skills and subsequent performance in practice when they describe how the expert practitioner draws on their vast experience and knowledge to inform their practice. This experiential knowledge can only be accessed and developed (become a concrete lived experience) through the sense-making and reflective process (Smith et al., 2009).

During the IPA interviews and the clinical feedback using AI, the participants are able to identify and explore the felt-sense and develop the relational embodied understanding. The senior nurses in the IPA study described still getting the shakes, fumbles and feeling of dread for example. However, during their repeated exposure to events they have developed a relational embodied understanding and are now less distracted by these feelings and able to provide the clinical care required at these events. This relational understanding appears to help the senior nurses to shift the focus from the felt sense to the provision of clinical care.

7.3 What do the results of this thesis add to the Dreyfus and Benner Models?

The Dreyfus model postulates that as professionals transition through the model of skill acquisition they move from one of rigid adherence to taught rules and procedures (explicit knowledge) through to a more intuitive mode of operation that relies on implicit knowledge. Experts, who generally use implicit knowledge to guide practice may still draw on explicit knowledge if the intuitive, implicit approach is not achieving the desired outcomes (Dreyfus, 1982; Dreyfus & Dreyfus, 1986).

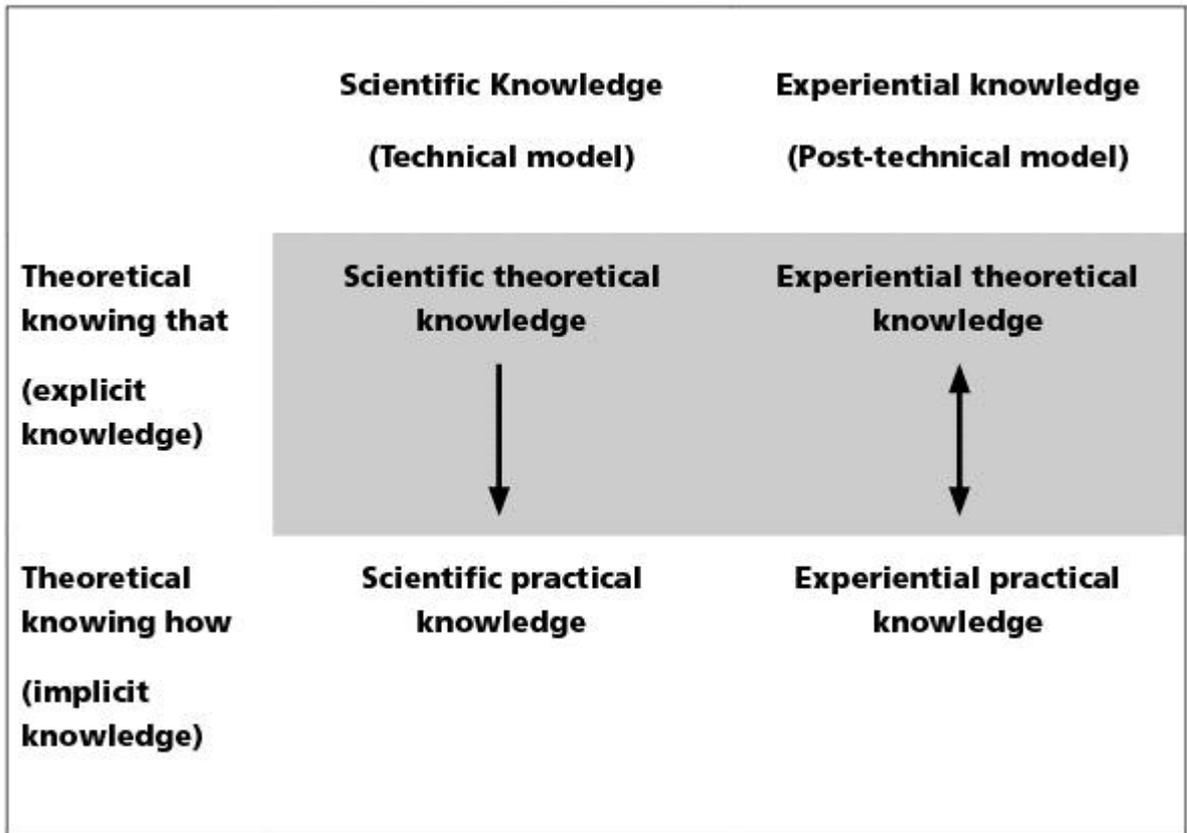
Explicit knowledge (“knowing that”) is accessible to the conscious mind and can be expressed in language quite easily (Bunge & Ardila, 1987; Pena, 2010). Examples of explicit knowledge in the clinical setting include the provision of clinical skills like chest compressions during an ALTE. A novice may have learned the theory and skill of performing chest

compressions on a mannequin in a skill lab. If a novice nurse was asked how to perform chest compressions, they could probably give an almost textbook explanation of the steps and functions of chest compressions. At this stage though, a novice has not developed a sense of relational understanding because despite having practised these skills regularly in a classroom setting, they may not have performed them on a living patient before. Performing these skills on a real patient feels, sounds and looks completely different to what they have done in a skills lab. It is only through the real-time experience that a relational understanding can develop when supported through the sense-making and reflective process. This then leads to the development of implicit knowledge.

Implicit or tacit knowledge (“knowing how”) is acquired through a combination of education, experience and relational understanding. It is not easy to express this type of knowledge in a formalised way (Heiberg Engel, 2008; Pena, 2010). During an ALTE for example, the expert clinical nurse will already know how to perform chest compressions. Based on their previous knowledge, experience, relational understanding and intuition their implicit knowledge will guide them to *know* that the child requires chest compressions. In addition, the expert nurse can probably perform chest compressions whilst allocating roles for junior colleagues, request equipment, provide treatment and communicate with the doctors at the event. They have the baseline explicit knowledge on how to perform chest compressions, but with exposure to multiple events and through experience they are able to broaden their focus beyond these technical skills to multi-task by utilising their implicit knowledge.

The traditional medical model uses a scientific theory approach which has been referred to as the technical rationality model outlined in Table 32 (Rolfe, Freshwater, & Jasper, 2001). This approach holds the notion that theoretical (explicit knowledge) is required first in order to inform the practical (implicit knowledge) in a one way flow from theory to practice. For example, a doctor needs to learn the theory and skill of performing CPR before they can perform that skill in a real life situation to develop the practical knowledge.

Table 31 - Composite model of the technical rationality model (scientific model) and the post technical model (Dreyfus and Dreyfus)



Dreyfus and Dreyfus suggest a composite model (post-technical model) in which theory guides practice and in turn practice grounds theory (Dreyfus & Dreyfus, 1996) (outlined in Table 32). The expert practitioner starts with a baseline of explicit knowledge and through clinical experience, sense-making and reflection they go on to develop implicit knowledge. Thinking back to the previous example of provision of chest compressions – the nurse learns the theory of how to perform chest compressions then through practical experience they are exposed to the colour and sight of the child, the sensation of how hard to compress the chest and the feeling of the cartilage and ribs which can only be gained through practical experience. This practical experience will affect how they perform these skills in future ALTE situations and may indeed help them when teaching more junior colleagues

One of the main criticisms of the Dreyfus model is that expert performance is on-going and non-reflective (Rolfe, Freshwater et al., 2001; Pena, 2010). Dreyfus & Dreyfus themselves propose that the expert is able to act unconsciously, automatically and naturally without needing to evaluate and compare alternatives which on the surface appears to substantiate these criticisms (Dreyfus, 1982; Dreyfus & Dreyfus 1986). Benner further reinforces this notion when describing the “preconscious”, intuitive nature of the expert practitioner making it

difficult to articulate the explicit, formal steps in the mental process they go through when making decisions or providing care (Benner, 1982). When these criticisms are considered in relation to the composite model it suggests that the lack of reflection and challenges in articulating the formal steps in the mental process result in the practical knowledge not informing the experiential theoretical knowledge. This becomes problematic in an age whereby expert practitioners are expected to not only justify their clinical decision making process according to some form of evidence, but to share their expertise with colleagues (Rolfe, Freshwater et al., 2001).

Carraccio et al (2008) propose that in fact the opposite is true – that experts or “*masters*” are indeed intuitive and reflective. The masters are able to self-assess, self-regulate and reflect whilst in action and reflect back on their actions afterwards (Carraccio, Benson et al., 2008). Dreyfus describes that prior experiences provide patterns for the future recognition of similar situations so that the expert practitioners are able to make decisions and provide treatment during the ALTE, much like the development of relational embodied experiences (Dreyfus, 1982; Dreyfus & Dreyfus, 1986). When a clinician is in the midst of an ALTE, there is not enough time to sift through all of the past experiences in a conscious, rational way; rather the practitioner is able to “pattern match” based on past experience which enables them to focus in on the problem seemingly without conscious thought (Dreyfus, 1982; Dreyfus & Dreyfus, 1986). As we have seen in the earlier discussions, these relational embodied experiences rely on a sense-making and reflective process to take place which challenges the claims that the practitioners in the Dreyfus model are non-reflective.

In the context of the current program of work, the abductive logic of inquiry is similar in concept to the Dreyfus and Benner models in that it supports the idea that theory can inform practice and in turn practice can inform theory (Hiles, 2012). As a practical example, this thesis has demonstrated how using the MRC framework which combined evidence and theory led to the development of the PREPARE and SUPPORT interventions (theory informing practice). In the future, these interventions will ideally be adapted to address the issues of burnout, secondary traumatic stress and the adoption of approach coping strategies in a larger interventional trial which in turn may impact clinical practice and further inform theory in a cyclical process.

7.4 Methods:

This thesis has outlined how a pragmatic, mixed design approach has been used to explore what the experience of caring for a child who has an ALTE is like for the nurses. The MRC guidelines for development of complex intervention’s compliments this multi-modal program

of work by providing a framework to combine the evidence with theory to develop interventions aimed at preparing and supporting nurses for these events (Craig et al., 2008).

Research conducted within healthcare has traditionally been based on the natural science inquiry which asserts that research can be a value-free process where objective knowledge can be gained through direct observation and measurement (Johnson & Onwuegbuzie, 2004; Nagel, 1986). These quantitative approaches are not appropriate for all research within healthcare (Finlay, 2011; Sackett et al., 1996). When exploring what the experience of caring for a child who has an ALTE is like for the nurses, an approach that is context specific which takes into account the participants' own experiences, feelings and interpretations of the phenomena are more appropriate (Crossley, 2000).

The results from the studies in the mixed design approach used for the current program of work demonstrated how reliance on one particular methodology (methodology) could have been problematic (Chamberlain, 2000). The results from the systematic literature review (which historically would have been considered the most "valuable" evidence) only identified two studies that aimed to evaluate the effectiveness of a debriefing intervention. The studies were of poor quality and did not support the use of this intervention within healthcare. In the past there was a risk that the evidence gathered through the qualitative component of the program of work may have been missed or excluded as they were not considered as reliable as the more quantitative methods (Chamberlain, 2000). In reality, the insight gained through the international survey of practice and the IPA interviews provided the most in-depth evidence which informed the development of the PREPARE and SUPPORT interventions.

The MRC guidance (2008) takes a pragmatic stance by including non-experimental methods to assist researchers to choose the most appropriate methods to answer the research questions (Craig et al., 2008). The guidance acknowledges that qualitative research offers an equally valid and necessary source of evidence which compliments the mixed design approach (Craig et al., 2008; Shaw, 2012).

Evidence-based interventions that are developed and implemented without a supporting theory have failed to change clinical practice (Al-Damouk et al., 2004). The Behaviour Change Taxonomy (BCT) outlines the relevant behaviour change techniques that can be linked with the evidence-base to develop complex interventions (Abraham & Michie, 2008; Michie et al., 2011; Michie et al., 2008). The BCT does not place value on any particular behaviour change technique, rather it provides a general overview so that the researchers

can decide on the most appropriate technique to use. Standardising the taxonomy and techniques enables researchers to be more consistent in how to identify, apply, evaluate and report the theory component of the intervention.

The development of the MRC guidelines and the BCT has been timely within healthcare. They provide a framework to develop complex interventions that combine evidence with theory. They also provide a structure for researchers to provide clear and accurate reporting of the process to improve knowledge about the intervention. Clear, accurate reporting helps to improve our knowledge-base surrounding the complex intervention and allows the intervention to be assessed for effectiveness, be replicated and then subsequently implemented in other settings (Michie et al., 2011). As discussed in chapter 2, the process of development-implementation-evaluation is often not described transparently which makes it difficult to assess if the study process is flawed rather than a flaw in the intervention itself.

This program of work has demonstrated how a pragmatic, mixed design approach which utilised the MRC guidance (2008) was used to develop evidence based interventions that were underpinned by a theoretical framework within healthcare. Caring for a child who has an ALTE is an issue that nurses are faced with on a regular basis. The nurses need evidence-based interventions that equip them with the skills and technique for dealing with these events from both a practical, clinical and psychological point of view. Utilising a mixed design approach and the MRC framework provided a platform to develop interventions that are based on evidence gathered from within healthcare to be used by healthcare professionals.

7.5 Limitations:

Despite the present research's strengths and contributions to knowledge, theory and methods there are some general limitations which need to be acknowledged.

As discussed in chapter 5 no SUPPORT sessions were held after an ALTE had occurred during the feasibility study. This was due to a lack of availability of staff trained to provide the intervention. In order for the intervention to be delivered in the future, a wider group of clinicians would need to be trained with this technique. Despite not running the intervention as planned, the scripts and template for the intervention were refined through the clinical feedback section of the PREPARE intervention. Through this process, when the scenario was re-run after the clinical feedback in the PREPARE intervention the participants demonstrated a change in behaviour which indicates that the clinical feedback is effective. This would need further evaluation in a larger trial.

People who volunteered to take part in the research may have been more confident in their abilities in relation to caring for a child who has an ALTE or had more positive experiences of these events and therefore been more willing to participate. This may have led to a sampling bias which produced results that are not truly representative of the population. .

The larger number of inventories distributed as part of the feasibility study may have led to participant response burden (Carver, 1997). Participants may have not answered some of the questions or not had time to consider their answers carefully before providing responses that might have affected some of the results. The scores were generally not highly skewed which indicates that this was not generally an issue.

The inventories used as part of the feasibility study were self-reporting. Self-report measures may be prone to socially desirable responding (Anastasia & Urbina, 1997). Therefore a mixture of self-reporting and observational tools would be ideal in any future studies.

People may have been reluctant to disclose some of their experiences or felt compelled to hide their distress as they have been socialised to maintain a stoic, professional stance when participating in the IPA interviews (Rees, 2013).

7.6 Recommendations for future research and practice:

Future research would require an on-going holistic, pragmatic, mixed design approach that explores both context specific and context free knowledge and evaluation. Based on the perceived potential benefit of being involved in the PREPARE and SUPPORT intervention for the nurses a clustered or step-wedge methodology would be suggested as the most appropriate method of conducting a larger interventional trial within the local NHS hospital. Given the lack of evidence to support the use of debriefing within healthcare it would not be appropriate to use an RCT approach that compares the use of the PREPARE and SUPPORT interventions compared to the use of a debrief intervention for example.

A larger trial should also incorporate some more objective measures like observations of participants, interviews with participants and an on-going iterative working party process. As discussed in chapter five, further observational, descriptive and exploratory work would be ideal to capture the anecdotal changes in practice that the working party reported in both their own practices and the team that they work with during an ALTE. Caring for a child who has an ALTE in hospital requires approaches that take into account the social, psychological, physical cultural, experiential and interpretative aspects of people's life-worlds which are more accessible with a mixed design approach that includes qualitative exploration.

The information gathered through the feasibility study has indicated that outcome measures should include the reduction or prevention of anxiety, burnout, secondary traumatic stress and anxiety levels. In addition, the interventions should incorporate strategies to facilitate participants adopting approach coping strategies to deal with these events.

7.7 How has this program of work addressed the aims and objectives of this thesis?

In summary, a pragmatic, mixed design approach was used to develop the research program of work in order to answer the aims and objective of this research project. The mixed design approach enabled a more flexible, reflexive approach to addressing the research questions as opposed to trying to accommodate the questions into a fixed methodology. The logics of inquiry guided the mixed design approach which incorporated deductive, inductive and adductive approaches to identify and evaluate existing interventions, explore what the experience of caring for a child who has an ALTE is like and then develop interventions that aimed to prepare and support staff for these events.

The two studies that attempted to evaluate a debriefing intervention after an ALTE were of poor quality. It was difficult to assess if the conduct of the study, the intervention or the reporting was flawed and did not provide any evidence to suggest that a debriefing intervention was effective within the healthcare environment. None of the existing interventions identified through the international survey of practice were being evaluated for effectiveness. Time, financial and resource constraints and not knowing what outcomes to measure were identified as barriers to evaluating the effectiveness of interventions.

The preparatory interventions identified during the international survey of practice used simulation or scenario training to provide clinical skills training. Participants believed that increased clinical confidence and competence improved the nurses' experience of these events. Debriefing was being used as a supportive intervention. The results of both the systematic literature review and international survey of practice demonstrated the need for the development of evidence-based interventions specifically for use within healthcare. The interventions should be evaluated for effectiveness using the MRC and quality assessment recommendations as a guide for designing, conducting, evaluating and reporting clinical studies to ensure the studies are transparent and reproducible. In particular, details of the interventions themselves need to be reproducible, particularly if they are shown to be effective.

A phenomenological approach was used during the IPA to explore what the experience of caring for a child who had an ALTE was like for the nurse and doctors. This approach enabled the researcher to engage in a hermeneutic circle with the participant as they explored their life-world in relation to these events. The interviews and sense-making

process provided a platform for the participants to use language to engage with their reflections and express how they made sense of the life-world. This sense-making and reflective process also enabled the participants to create embodied relational understanding within their experiences.

The IPA interviews revealed the following key themes: the person at the centre of the patient and the nurse, the significance of role during resuscitation, clinical confidence and competence, responses to an ALTE and sense-making and reflection. The interviews also provide evidence that the nature of caring for children can lead to a blurring between the personal and professional identity of a nurse. The pre-existing relationship that the nurse had with the child before they had an ALTE frequently led to them remaining focused on the person within the patient which affected the provision of clinical care.

The MRC framework for the development of complex interventions was used to guide the development of the PREPARE and SUPPORT interventions. The MRC framework suggests that evidence should be underpinned by a theoretical framework when developing interventions. The evidence collated through the systematic literature review, international survey of practice and IPA interviews was analysed and provided the evidence-base. The theoretical frameworks of self-efficacy, stress and coping, reflective practice and advocacy Inquiry were used to underpin the PREPARE intervention.

A sense-making and reflective approach was used throughout the program of work including the provision of clinical feedback using the advocacy inquiry technique. Through the use of advocacy inquiry the facilitator of the session engages with the participants in a sense-making and reflective process in order to explore their internal frames and modify behaviour.

A feasibility study was conducted in accordance with the MRC guidelines. The results of the study indicated that participants were generating a range of scores on the HADS Anxiety subscale and gaining moderate to high burnout and secondary traumatic stress scores on the ProQOL scale. The study also demonstrated that participants were utilising both approach and avoidance coping strategies in seemingly equal measure. The results suggest that interventions and outcome measures for a larger interventional trial should focus on the prevention or reduction of anxiety, burnout, secondary traumatic stress and adoption of approach coping strategies.

7.8 Concluding comments:

In conclusion, this program of work has made a unique contribution to the existing knowledge, theory and methods of what the experience of caring for a child who has an ALTE is like for nurses and how to best prepare and support staff for these events. Existing interventions were identified through the systematic literature review and international survey. The studies evaluating existing interventions identified in the systematic literature review were of poor quality, although they provided rich qualitative data about the experience of caring for a patient who has had an ALTE. The existing interventions identified through the survey of practice were not being evaluated for effectiveness with practitioners highlighting that they did not know how or what to evaluate to demonstrate effectiveness of the interventions. Despite the lack of evaluation of the interventions, the focus on improving clinical skills through simulation to improve the participants experience of these events made an important contribution to the development of the PREPARE interventions.

The IPA interviews provided a unique insight into what the experience of caring for a child who has an ALTE is like for the participants. No other accounts have been identified (to date) which explore and describe this experience specifically in relation to children. Some of the experiences described through the interviews were similar to experience of healthcare professionals caring for adults who have ALTE for example the misinterpretation of the stress response. However some aspects of the experiences described appeared to be new knowledge and unique to caring for children including seeing the person within the patient, the significance of a role and clinical confidence and competence.

The phenomenological roots of IPA and the sense-making and reflective process that took place during the interviews provided an intimate access to the experience. The sense-making and reflective principles were then combined with the AI technique to form the basis for the clinical feedback section in both the PREPARE and SUPPORT interventions. These principles facilitate the movement of the experience from the preconscious to the conscious so that it can be examined and drawn on to guide practice in the future.

Criticisms of the Dreyfus and Benner models that expert performance is on-going and non-reflective were refuted during this thesis. Indeed the expert practitioner is highly reflective. In order for them to draw on past experiences, knowledge and practice they must have undergone a process of sense-making and reflecting to access these during subsequent events. In addition, this program of work supports the Dreyfus and Benner models which suggest that theory can inform practice and in turn practice can inform theory. The development of the PREPARE and SUPPORT interventions have demonstrated that theory can inform practice. In the future these interventions will ideally be adapted to address the

issues of burnout, secondary traumatic stress and the adoption of approach coping strategies in a larger interventional trial which in turn may impact clinical practice and further inform theory in a cyclical process.

The pragmatic, mixed design program of work completed as part of this thesis provided the flexibility and reflexivity to apply the most appropriate methods of inquiry to address the aims and objectives of this research project. The MRC framework for the development of complex interventions provided the platform to combine the rich, in-depth qualitative work with theory to develop the PREPARE and SUPPORT interventions. The framework brings together nursing research, evidence-based medicine and psychology to develop practical interventions for use within the clinical setting. The PREPARE and SUPPORT interventions are unique in that they have been developed based on evidence gathered from within the healthcare environment and coupled with clinical expertise and theory to facilitate behaviour change. In addition, through the feasibility study it was possible to make recommendations for future research to evaluate the effectiveness of both the PREPARE and SUPPORT interventions which will ideally go on to make further new contributions to theory.

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9 Appendix 1 –QATSSD assessment on the Blacklock article

	Criteria	0=Not at all	1=very slightly	2=moderately	3=complete	
1	Explicit theoretical framework	No mention at all	Reference to broad theoretical basis	Reference to a specific theoretical basis	Explicit statement of theoretical framework and/or constructs applied to the research.	Refers to CISM model
2	Statement of aims/objectives in main body of report	No mention at all	General reference to aim/objective at some point in the report including abstract.	Reference to broad aims/objectives in main body of report	Explicit statement of aims/objectives in main body of report.	Does not mention specific aims/objectives. IN evaluation discusses using the Impact of Events Scale to measure value of debriefing
3	Clear description of research setting	No mention at all	General description of research area and background, e.g. 'in primary care'	General description of research problem in the target population, e.g. 'among GPs in primary care'	Specific description of the research problem and target population in the context of the study, e.g. nurses and doctors from GP practices in the east midlands	Wesley Hospital in QLD – Hospital employees. Not a clear description of what type of hospital etc
4	Evidence of sample size considered in terms of analysis	No mention at all	Basic explanation for choice of sample size. Evidence that size of the sample has been considered in study design.	Evidence of consideration of sample size in terms of saturation/information redundancy or to fit generic analytical requirements	Explicit statement of data being gathered until information redundancy/saturation was reached or to fit exact calculations for analytical requirements.	No sample size. Need for sample size for this study given no clear aims and objectives, however they do use the Impact of Events Scale.
5	Representative sample of target group of a reasonable size	No statement of target group.	Sample is limited but represents some of the target group or representative but very small	Sample is somewhat diverse but not entirely representative, e.g. inclusive of all age groups, experience but only one workplace. Requires discussion of target population to determine what sample is required to be representative.	Sample includes individuals to represent a cross section of the target population, considering factors such as experience, age and workplace.	43 employees – no description of demographics so difficult to assess if representative.
6	Description of procedure for data collection	No mention at all	Very basic and brief outline of data collection procedure, e.g. 'using a questionnaire distributed to staff'	States each stage of data collection procedure but with limited detail, or states some stages in details but omits other	Detailed description of each stage of the data collection procedure, including when, where and how data were gathered	Does not state specific procedure for data collection.
7	Rationale for choice of data collection tool(s)	No mention at all	Very limited explanation for choice of data collection tool(s).	Basic explanation of rationale for choice of data collection tool(s), e.g. based on use in a prior similar study.	Detailed explanation of rationale for choice of data collection tool(s), e.g. relevance to the study aims and assessments of tool quality either statistically, e.g. for reliability & validity, or relevant qualitative assessment.	Does not state why used Impact of Events Scale
8	Detailed recruitment data	No mention at all	Minimal recruitment data, e.g. no. of questionnaire sent and no. returned.	Some recruitment information but not complete account of the recruitment process, e.g. recruitment figures but no information on strategy used	Complete data regarding no. approached, no. recruited, attrition data where relevant, method of recruitment.	No data on how many questionnaires administered and completed. No data on how they were administered i.e. post or given at the time.
9	Statistical assessment of reliability and validity of measurement tool(s) (Quantitative only)	No mention at all	Reliability and validity of measurement tool(s) discussed, but not statistically assessed.	Some attempt to assess reliability and validity of measurement tool(s) but insufficient, e.g. attempt to establish test-retest reliability is unsuccessful but no action is taken.	Suitable and thorough statistical assessment of reliability and validity of measurement tool(s) with reference to the quality of evidence as a result of the measures used.	Mixed methods – scale quantitative?
10	Fit between stated research question and method of data collection (Quantitative)	No research question stated.	Method of data collection can only address some aspects of the research question.	Method of data collection can address the research question but there is a more suitable alternative that could have been used or used in addition.	Method of data collection selected is the most suitable approach to attempt answer the research question	No clear question
11	Fit between stated research question and format and content of data collection tool e.g. Interview schedule (Qualitative)	No research question stated.	Structure and/or content only suitable to address the research question in some aspects or superficially.	Structure & content allows for data to be gathered broadly addressing the stated research question(s) but could benefit from greater detail.	Structure & content allows for detailed data to be gathered around all relevant issues required to address the stated research question(s).	No question
12	Fit between research question and method of analysis	No mention at all.	Method of analysis can only address the research question basically or broadly.	Method of analysis can address the research question but there is a more suitable alternative that could have been used or used in addition to offer greater detail.	Method of analysis selected is the most suitable approach to attempt answer the research question in detail, e.g. for qualitative IPA, preferable for experiences vs. content analysis to elicit frequency of occurrence of events, etc.	No clear question and no clear rationale for Impact of Events Scale
13	Good justification for analytical method selected	No mention at all	Basic explanation for choice of analytical method	Fairly detailed explanation of choice of analytical method.	Detailed explanation for choice of analytical method based on nature of research question(s).	No discussion
14	Assessment of reliability of analytical process (Qualitative only)	No mention at all	More than one researcher involved in the analytical process but no further reliability assessment.	Limited attempt to assess reliability, e.g. reliance on one method.	Use of a range of methods to assess reliability, e.g. triangulation, multiple researchers, varying research backgrounds.	Does not discuss analysis therefore no assessment of reliability
15	Evidence of user involvement in design	No mention at all	Use of pilot study but no involvement in planning stages of study design.	Pilot study with feedback from users informing changes to the design.	Explicit consultation with steering group or statement or formal consultation with users in planning of study design.	No mention of user involvement
16	Strengths and limitations critically discussed	No mention at all	Very limited mention of strengths and limitations with omissions of many key issues.	Discussion of some of the key strengths and weaknesses of the study but not complete.	Discussion of strengths and limitations of all aspects of study including design, measures, procedure, sample & analysis.	Discusses future directions of research but no strengths and weaknesses of this research.

	Criteria	0=Not at all	1=very slightly	2=moderately	3=complete	
1	Explicit theoretical framework	No mention at all	Reference to broad theoretical basis	Reference to a specific theoretical basis	Explicit statement of theoretical framework and/or constructs applied to the research.	Refers to references during Introduction - ?theoretical frameworks
2	Statement of aims/objectives in main body of report	No mention at all	General reference to aim/objective at some point in the report including abstract.	Reference to broad aims/objectives in main body of report	Explicit statement of aims/objectives in main body of report.	Clear aims of the study – can debriefing reduce stress by dealing with physical and psychological demands and identify learning needs
3	Clear description of research setting	No mention at all	General description of research area and background, e.g. 'in primary care'	General description of research problem in the target population, e.g. 'among GPs in primary care'	Specific description of the research problem and target population in the context of the study, e.g. nurses and doctors from GP practices in the east midlands	No description of type of hospital or location – nurses from a large medical unit, cardiac unit and 8 medical wards.
4	Evidence of sample size considered in terms of analysis	No mention at all	Basic explanation for choice of sample size. Evidence that size of the sample has been considered in study design.	Evidence of consideration of sample size in terms of saturation/information redundancy or to fit generic analytical requirements	Explicit statement of data being gathered until information redundancy/saturation was reached or to fit exact calculations for analytical requirements.	No sample size mentioned
5	Representative sample of target group of a reasonable size	No statement of target group.	Sample is limited but represents some of the target group or representative but very small	Sample is somewhat diverse but not entirely representative, e.g. inclusive of all age groups, experience but only one workplace. Requires discussion of target population to determine what sample is required to be representative.	Sample includes individuals to represent a cross section of the target population, considering factors such as experience, age and workplace.	No demographics of participants i.e. age, grading, gender
6	Description of procedure for data collection	No mention at all	Very basic and brief outline of data collection procedure, e.g. 'using a questionnaire distributed to staff'	States each stage of data collection procedure but with limited detail, or states some stages in details but omits other	Detailed description of each stage of the data collection procedure, including when, where and how data were gathered	Semi-structured interviews were tape recorded then transcribed. Does not say if same group reflected on issues or when/how this was done.
7	Rationale for choice of data collection tool(s)	No mention at all	Very limited explanation for choice of data collection tool(s).	Basic explanation of rationale for choice of data collection tool(s), e.g. based on use in a prior similar study.	Detailed explanation of rationale for choice of data collection tool(s), e.g. relevance to the study aims and assessments of tool quality either statistically, e.g. for reliability & validity, or relevant qualitative assessment.	
8	Detailed recruitment data	No mention at all	Minimal recruitment data, e.g. no. of questionnaire sent and no. returned.	Some recruitment information but not complete account of the recruitment process, e.g. recruitment figures but no information on strategy used	Complete data regarding no. approached, no. recruited, attrition data where relevant, method of recruitment.	Does not state number approached/declined
9	Statistical assessment of reliability and validity of measurement tool(s) (Quantitative only)	No mention at all	Reliability and validity of measurement tool(s) discussed, but not statistically assessed.	Some attempt to assess reliability and validity of measurement tool(s) but insufficient, e.g. attempt to establish test-retest reliability is unsuccessful but no action is taken.	Suitable and thorough statistical assessment of reliability and validity of measurement tool(s) with reference to the quality of evidence as a result of the measures used.	N/A although one of the aims is to measure decreased stress
10	Fit between stated research question and method of data collection (Quantitative)	No research question stated.	Method of data collection can only address some aspects of the research question.	Method of data collection can address the research question but there is a more suitable alternative that could have been used or used in addition.	Method of data collection selected is the most suitable approach to attempt answer the research question	N/A does not answer measure of decreased stress but does identify learning needs
11	Fit between stated research question and format and content of data collection tool e.g. interview schedule (Qualitative)	No research question stated.	Structure and/or content only suitable to address the research question in some aspects or superficially.	Structure & content allows for data to be gathered broadly addressing the stated research question(s) but could benefit from greater detail.	Structure & content allows for detailed data to be gathered around all relevant issues required to address the stated research question(s).	Content addresses learning needs but not decreased stress
12	Fit between research question and method of analysis	No mention at all.	Method of analysis can only address the research question basically or broadly.	Method of analysis can address the research question but there is a more suitable alternative that could have been used or used in addition to offer greater detail.	Method of analysis selected is the most suitable approach to attempt answer the research question in detail, e.g. for qualitative IPA preferable for experiences vs. content analysis to elicit frequency of occurrence of events, etc.	Analysis does not answer all of research question. Need additional measure to look at decreased stress
13	Good justification for analytical method selected	No mention at all	Basic explanation for choice of analytical method	Fairly detailed explanation of choice of analytical method.	Detailed explanation for choice of analytical method based on nature of research question(s).	
14	Assessment of reliability of analytical process (Qualitative only)	No mention at all	More than one researcher involved in the analytical process but no further reliability assessment.	Limited attempt to assess reliability, e.g. reliance on one method.	Use of a range of methods to assess reliability, e.g. triangulation, multiple researchers, varying research backgrounds.	
15	Evidence of user involvement in design	No mention at all	Use of pilot study but no involvement in planning stages of study design.	Pilot study with feedback from users informing changes to the design.	Explicit consultation with steering group or statement or formal consultation with users in planning of study design.	
16	Strengths and limitations critically discussed	No mention at all	Very limited mention of strengths and limitations with omissions of many key issues.	Discussion of some of the key strengths and weaknesses of the study but not complete.	Discussion of strengths and limitations of all aspects of study including design, measures, procedure, sample & analysis.	Discusses need for further research but not particularly limitation etc of this study.

10 Appendix 2 – Data Extraction Form

DATA EXTRACTION FORM		
Notes		
Source:		
Study ID		
Report ID		
Review author ID	Blacklock 1998	Gamble 2001
Citation & contact details		
Eligibility:		
Confirm eligibility for review	Yes - in-hospital, healthcare workers, includes ALTE, evaluating an intervention	Yes – in-hospital, healthcare workers, ALTE, evaluating an intervention
Reason for exclusion	N/A	N/A
Methods:		
Study design	<p>Quantitative (Impact of Event Scale used for evaluation) - No specific description of study design for this intervention.</p> <ul style="list-style-type: none"> • <i>Team comprised of:</i> chaplain, interested staff, mental health nurse, senior research assistant from Psychiatry department at local university was project manager • CIS team worked their normal shift patterns (in their normal jobs) and were mobilised if required. Out of hours on call cover. • <i>Referral system:</i> CIS team members can be contacted and will r/v the staff to see if whole team needs to be mobilised or just a single team • <i>Example of process:</i> Debrief conducted at during staff handover (to minimise disruption to patients), lasting ≈90 minutes. CIS team r/v staff on an individual basis over 3 months. • Individual sessions lasted ≈ 45-60mins each • Ten days after initial debrief Impact of Event 	<p>Qualitative – designed to identify whether a debriefing process after a resuscitation attempt on a patient following a cardiac arrest reduced the degree of stress generated by dealing with both the physical and psychological demands of the situation.</p> <ul style="list-style-type: none"> • No outline for how they would measure the degree of stress generated. • The nurses were also asked to reflect on the incident to try to identify any learning needs. • The majority of the report focuses on the learning needs. • The interviews during the semi-structured sessions were tape recorded and then transcribed. • Following the transcription the issues raised by the nurses were identified and the nurses were asked to reflect on these and identify

	Scale was sent to all staff, then 6 weeks after, then follow up at 3 months	learning needs.
Total duration of study (months)	Not stated <ul style="list-style-type: none"> • <i>Example:</i> debrief held then final follow up 3 months after initial debrief 	Not stated <ul style="list-style-type: none"> • The debriefing session was held as soon as possible after the cardiac arrest. • The author suggests that the findings were from one debriefing session, although it is not clear if this is the case as there were a large number of people from different areas invited to participate. • It is not clear when the transcripts were transcribed and when the nurses were given the opportunity to reflect on the issues and identify learning needs.
Sequence generation	NIL	NIL
Allocation sequence concealment	N/A	N/A
Blinding	Not blinded	Not blinded
Others concerns about bias		
Participants:		
Total number	<ul style="list-style-type: none"> • 43 hospital employees attended debrief that was reported 	Not defined <ul style="list-style-type: none"> • <i>Example:</i> Nurses from a large medical unit comprising a medical assessment unit, cardiac care unit and eight medical wards were invited to participate.
Setting	Wesley Hospital, QLD, Australia <ul style="list-style-type: none"> • not information on demographics of the hospital 	<ul style="list-style-type: none"> • Nurses from a large medical unit comprising a medical assessment unit, cardiac care unit and eight medical wards were invited to participate. • No description of where the research was

		<p>conducted</p> <ul style="list-style-type: none"> No demographic details of hospital or participants.
Diagnostic criteria	<p>Nil stated</p> <ul style="list-style-type: none"> Using Impact of Events Scale 	<p>Nil stated</p> <ul style="list-style-type: none"> One of the aims was to measure the degree of stress generated by an ALTE but no description of how this would be measured.
Age	<p>Nil defined</p> <ul style="list-style-type: none"> hospital workers 	<p>Nil defined</p> <ul style="list-style-type: none"> Nurses who work in a hospital
Sex	<p>Nil defined</p> <ul style="list-style-type: none"> hospital workers 	<p>Nil defined:</p> <ul style="list-style-type: none"> Nurses who work in hospital
Country	Australia	<p>Not stated:</p> <ul style="list-style-type: none"> Author works at the University Hospitals of Leicester NHS Trust
Co-morbidity	Nil stated	Nil stated
Soci-demographics	Nil stated	Nil stated
Ethnicity	Nil defined	Nil defined
Date of study	Not defined	Not defined
Ethical approvals	Not stated in article	Not stated in article
Interventions:		
Total number of intervention groups	<p>Nil defined</p> <ul style="list-style-type: none"> No total number of participants for debriefing in general 43 participants for evaluated intervention One further group described but no details on participants 	<p>Not defined:</p> <ul style="list-style-type: none"> Did not define the number of participants who took part in the initial debrief The second section of the study indicates that the debrief sessions was transcribed and the issues raised by the nurses was identified. The nurses were then asked to reflect on these issues and to identify learning needs – does not state when this was done, or if done by the same group of nurses. The fact that the interviews were transcribed indicates that the sessions were run separately. Not sure if it was run with the same group of

		nurses.
Content of intervention: who delivered it, format, timing of delivery	<ul style="list-style-type: none"> • <i>Who delivered:</i> does not state who specifically delivered the interventions specifically (member of the CIS Team) • <i>Format:</i> Seven phase CIS debriefing format listed in the article, however it is not clear if this has been adapted by the CIS team. • 43 hospital employees attended a debriefing session 7 hours after the incident • Session lasted for 90 minutes at handover time • Team members then saw 12 individuals on a diminishing-needs bus for 3 months (lasting 45-60 minutes) 	<p><i>Who delivered it:</i></p> <ul style="list-style-type: none"> • The researcher delivered/facilitated the debriefing session. • Presume the researcher facilitated the session to identify learning needs (if run separately). <p><i>Format:</i></p> <ul style="list-style-type: none"> • Semi-structured session which was tape-recorded using the debriefing process as a format: introduction, facts, feelings, symptoms, teaching, re-entry phase. <p><i>Timing of delivery:</i></p> <ul style="list-style-type: none"> • Debrief session was held as soon as possible after the cardiac arrest – no time stated • Unclear if the session to identify learning needs was held at a different time.
<i>Outcomes</i>		
Outcomes and time points: collected, reported	<ul style="list-style-type: none"> • Ten days after the debriefing an Impact of Events Scale was sent to all of the participants • Asked to state whether they were affected by the incident – never, rarely, sometimes, often • Six weeks after the debriefing the scale was sent out again (repeated – to be completed in addition to the 1st scale) • Three months after all 43 contacted by phone or in person – all reported no further symptoms 	<p>Issues identified from the paper from the debrief sessions included:</p> <ul style="list-style-type: none"> • Stress response – physiological response to stress interpreted as a lack of practical and manual skills • Emotional response – knowing the patient, getting upset • Laughter – way of coping • Guilt – perceived lack of skills, relationship with patient, emotions from death • Leadership – less stress if there was a team leader • Experiential learning – don't necessarily learn from all situations, shared reflection <p>Does not state at what time points this information was collected after the debrief</p>

<i>For each outcome of interest:</i>		
Outcome definition (with diagnostic criteria if relevant)	Not defined • Results reported at as percentage	Not defined
Unit of measurement (if relevant)	Percentage of respondents	N/A
For scales:		
Upper & lower limits	Nil stated	N/A
Whether high or low score is good	Nil stated	N/A
Adverse outcomes	Nil reported	Nil reported
Timing	10 days, 6 weeks then follow up conversation	Does not state timing
Results:		
Number of participants allocated to each intervention group	<ul style="list-style-type: none"> • 43 hospital employees attended a debriefing session • 13 returned the scale sent at 10 days • 18 returned the scale sent at 6 weeks • All were followed up at three months 	<ul style="list-style-type: none"> • Does not state the number of participants in the debrief • Does not state the number of participants in the group that identified the learning needs or indeed if they were the same nurses who took part in the debrief.
	<p><i>10 days after:</i></p> <ul style="list-style-type: none"> • 13(30%) returned scale • 6(46%) stated event sometimes affected them • 7(54%) stated often affected <p><i>6 weeks after:</i></p> <ul style="list-style-type: none"> • 18(42%) returned scale • 9(50%) sometimes affected • 4(21%) rarely affected <p><i>3 months after:</i></p> <ul style="list-style-type: none"> • 43 reported no further symptoms 	
For each outcome of interest:	• 43 reported no further symptoms	Nil stated
Sample size	43 participants in debriefing session	Nil stated
Missing participants	No reason for not returning scale at 10days and 6 weeks	Nil stated
Summary data for each intervention group	Nil	Summary from overall group that identified learning needs from the transcripts: • Stress response – physiological response to

		<p>stress interpreted as a lack of practical and manual skills</p> <ul style="list-style-type: none"> • Emotional response – knowing the patient, getting upset • Laughter – way of coping • Guilt – perceived lack of skills, relationship with patient, emotions from death • Leadership – less stress if there was a team leader • Experiential learning – don't necessarily learn from all situations, shared reflection
Estimate affect with confidence intervals	Nil	N/A
Subgroup analysis	Nil	Nil
Miscellaneous:		
Funding source	<p>No source of funding stated</p> <ul style="list-style-type: none"> • CIS Team does not receive any funding, however there is an understanding within the hospital complex that where possible the CIS team member and hospital employees will be released for sessions (where possible). • No source of over-time funding for CIS on call team, however can negotiate time in lieu 	No source of funding stated
Key conclusions of the study authors	<ul style="list-style-type: none"> • Authors debriefing experience is a beneficial process • More research to ascertain why some individuals appear to experience exacerbated or delayed symptoms afterwards. • Outcome studies on post incident debriefing required to explore issues that affect the success of debriefing including individual's general coping mechanisms, stressors operating before the incident and actual and perceived social support 	<ul style="list-style-type: none"> • Nurses, particularly those who are inexperienced benefited from a debriefing session following a cardiac arrest. • Debriefing needs to be available following a resuscitation • If debriefing not available then nurses may not know that they have been affected by the experience, nor will they have the opportunity to identify learning needs. • Need to evaluate the affects of stress and

	<p>systems.</p> <ul style="list-style-type: none"> • Nurses experience acute and accumulative stress as an ongoing everyday occurrence. Important that there are resources available for individual expression (not just CIS). 	<p>coping, not enough to just acknowledge that it is stressful to care for a patient who has an ALTE.</p> <ul style="list-style-type: none"> • Need further research into the after-effects of an ALTE. • Senior staff should be encouraged to create an atmosphere of understanding and acceptance. • Managers need to promote support and not see it as a sign of weakness (when someone needs support). • The success of debriefing will depend on the individual perceptions of the staff involved, the expertise of the group facilitator and when the identified learning needs are addressed.
Miscellaneous comments from the study authors		
Reference to other relevant studies	Mitchell (1983, 1988) CIS in emergency workers Spitzer&Burke (1993) etc	Mitchell (1984), Coombes (1988), Jimmerson (1988)
Correspondence required		

11 Appendix 3 – Summary of excluded articles from systematic literature review

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Ashcraft, 2004)				✓
(Attree, 2007)			✓	✓
(Aust, Rugulies, Skakon, Scherzer, & Jensen, 2007)			✓	✓
(Back, 1992)	✓			✓
(Joseph A. Balogun, Victoria Titiloye, Adetutu Balogun, Adetoyeje Oyeyemi, & Joanne Katz, 2002)		✓	✓	✓
(Barstow, 2000)			✓	✓
(Bayer, 2000)	✓	✓	✓	✓
(Beall, 1986)	✓	✓	✓	
(Bell, 1995)			✓	✓
(Bench, 2007)			✓	✓
(Bendersky et al., 2001)			✓	✓
(Bisson & Kitchiner, 2003)		✓	✓	
(Bliss-Holtz, 2008)				✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(J. E. Bormann, 2005)		✓	✓	
(Jill E. Bormann et al., 2006)		✓	✓	
(Boswell, 2006)			✓	✓
(Bourke, 1991)		✓	✓	✓
(Boyle, 2004)		✓	✓	✓
(Brosche, 2007)			✓	✓
(Brown, 1995)				✓
(Brunero & Stein-Parbury, 2008)			✓	✓
(Butrej, 2001)				✓
(Randy M. Caine & Ter-Bagdasarian, 2003)				✓
(Cannon & Walker, 2007)			✓	
(Carey & Colby, 2009)		✓		✓
(Chaikin, 2003)				✓
(Chan et al., 2006)		✓	✓	
(Chiffer, Buen, Kibler, Bohan, & Maye, 2008)			✓	

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Chlan, Engeland, Anthony, & Guttormson, 2006)		✓	✓	
(Cioffi, 2000)				✓
(Clark, Bardwell, Arsenault, DeTeresa, & Loscalzo, 2009)		✓	✓	✓
(Clark et al., 2010)		✓	✓	✓
(Clements & Bradley, 2005)			✓	✓
(Cole, Slocumb, & Muldoon Mastey, 2001)				✓
(K. Collins, 2007)			✓	✓
(Colucci et al., 2007)			✓	
(Coutts, 1996)				✓
(Cox, Norwood, & Duncan, 1985)		✓	✓	
(Cronqvist, Lützén, & Nyström, 2006)			✓	✓
(Cronqvist & Nyström, 2007)			✓	✓
(Cudmore, 1998)			✓	✓
(Derish & Vanden Heuvel, 2000)		✓	✓	✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Devencenzi & O'Keefe, 2006)			✓	✓
(Díaz Hernández, Hernández Rodríguez, Cilleros Pino, García Irimia, & Díaz Pérez, 2003)	✓		✓	✓
(Dominguez-Gomez & Rutledge, 2009)			✓	
(C. M. Dougherty, Johnson-Crowley, Lewis, & Thompson, 2001)		✓		✓
(E. Dougherty et al., 2009)			✓	✓
(C. M. Dougherty, Pyper, & Benoliel, 2004)		✓		✓
(C. M. Dougherty & Thompson, 2009)		✓	✓	✓
(Dracup, Moser, Taylor, & Guzy, 1997)		✓		✓
(Drescher, Warren, & Norton, 2004)			✓	✓
(Duffy, 2008)			✓	✓
(Edelson et al., 2008)				✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Farrington, 1997)			✓	
(Fok, Chair, & Lopez, 2005)		✓	✓	✓
(Fong, 1993)			✓	✓
(Franklin & Mathew, 1994)				✓
(Gaber, Barnett, Planchant, & McGavin, 2004)		✓		✓
(Galhotra et al., 2006)				✓
(J. Gamble et al., 2005)		✓	✓	
(Gamper et al., 2004)		✓		✓
(Garmany, Ketron, Hall, Wilhoit, & King, 1998)				✓
(Gavaghan & Carroll, 2002)		✓	✓	✓
(Gelfand et al., 2004)			✓	
(Ginzburg, 2006)		✓		✓
(Gold, Kant, & Kim, 2008)		✓	✓	✓
(Gonzalez et al., 2008)			✓	✓
(Guillaume & McMillan, 2002)			✓	✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Gunes & Zaybak, 2009)				✓
(Halbesleben, Wakefield, Wakefield, & Cooper, 2008)			✓	
(Hallgrimsdottir, 2000)			✓	✓
(Hanna & Romana, 2007)	✓		✓	✓
(Harkness, Anthony, Arthur, & McKelvie, 2010)		✓	✓	
(Hayes, Hardie, Bucher, & Wimbush, 1998)			✓	✓
(Hayhurst, Saylor, & Stuenkel, 2005)			✓	✓
(Herschel, Khoshnood, & Lass, 2000)				✓
(Hess, Sun, & Golinski, 2008)			✓	✓
(Howard, 2008)	✓		✓	✓
(Ronda Hollister, 1996)	✓	✓	✓	✓
(Hunt, Walker, Shaffner, Miller, & Pronovost, 2008)				✓
(Hyer & Brown, 2008)		✓	✓	✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Iacono, 2002)			✓	✓
(Ireland, Gilchrist, et al., 2008)				✓
(Irving & Long, 2001)	✓	✓	✓	
(Jackson, 1999)			✓	✓
(Jacobs, Horne-Moyer, & Jones, 2004)		✓	✓	
(Jain et al., 2007)			✓	✓
(D. Jenkins & Palmer, 2003)		✓	✓	
(Johal & Bennett, 1999)			✓	
(Keene, Hutton, Hall, & Rushton, 2010)			✓	
(Kim, Sherman, & Taylor, 2008)			✓	✓
(Kingdon & Halvorsen, 2006)			✓	✓
(Kinsaul, 2008)				✓
(Knight, Lutzky, & Macofsky-Urban, 1993)		✓	✓	
(Kroll, Singleton, Collier, & Rees Jones, 2008)			✓	✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Kupchik & Balmer, 2006)				✓
(Lane, 1993)			✓	✓
(Lavele, Denning, Ihnken, Benney, & Loberg, 2006)	✓		✓	✓
(Laws, 2001)				✓
(T. Laws & C. Hawkins, 1995)				✓
(Lee, 1994)	✓		✓	✓
(Lees & Ellis, 1990)			✓	✓
(Lenart, Bauer, Brighton, Johnson, & Stringer, 1998)			✓	✓
(T. Lewis, 1990)			✓	✓
(I. Lewis, 2008)			✓	✓
(Loftus, 1998)				✓
(Lim, Childs, & Gonsalves, 2000)			✓	✓
(Linck, Wilson, Rock, & Henderson, 2006)				✓
(Litz, 2008)	✓	✓	✓	✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Loscalzo et al., 2010)		✓	✓	✓
(Luce, 2000)				✓
(Lynch, Happell, & Sharrock, 2008)			✓	✓
(MacPherson, 2008)			✓	
(Manojlovich, 2006)			✓	✓
(Martin, Lewin, & Thompson, 2003)		✓		✓
(Martin & Thompson, 2000)		✓		✓
(Marcus et al., 1991)		✓	✓	✓
(K. R. Martin, 1993)				✓
(Mason, 2003)			✓	✓
(Mauro, 2010)		✓	✓	✓
(Mayr et al., 2006)		✓	✓	✓
(McBrien, 2010)		✓	✓	✓
(McClement, Fallis, & Pereira, 2009)				✓
(McEwen, McDonough, &		✓	✓	✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
Bloom, 2007)				
(McMahon-Parkes, Moule, Bengler, & Albarran, 2009)				✓
(J. McKenna, Oritt, & Wolff, 1981)			✓	✓
(McKillop-Duffy, 1997)	✓	✓	✓	✓
(McRae, 1996)		✓	✓	✓
(Melanie A. Greenberg, 1996)		✓	✓	
(Mian, Warchal, Whitney, Fitzmaurice, & Tancredi, 2007)				✓
(Mikkelsen, Pugh, Hansen-Flaschen, Woo, & Sager, 2007)		✓		✓
(Milstein, Gerstenberger, & Barton, 2002)			✓	✓
(Mings, 1995)			✓	✓
(Montagnino & Mauricio, 2004)		✓	✓	✓
(Moody, Slakey, & LaVelle, 2007)				✓
(Moola, Ehlers, & Hattingh, 2008)				✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Morrow, 2001)	✓		✓	✓
(Morse et al., 2000)		✓	✓	✓
(Mortelmans, Cas, Van Hellemond, & De Cauwer, 2009)	✓			✓
(Moulaert, Wachelder, Verbunt, Wade, & van Heugten, 2010)		✓		✓
(Murdach, 1995)			✓	✓
(Musselman et al., 2008)			✓	✓
(Nelson, 1997)			✓	✓
(Nijenhuis, Van der Hart, & Kruger, 2002)		✓	✓	✓
(Noyes, Hartmann, Samuels, & Southall, 1999)		✓	✓	✓
(R. Nolan et al., 1999)				✓
(Norbeck, 1985)			✓	✓
(Norbeck & Resnick, 1986)	✓	✓	✓	
(Nyamathi, Jacoby, Constancia, & Ruvevich, 1992)		✓	✓	✓
(L. E. O'Connor, Berry, Weiss,		✓	✓	

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
& Gilbert, 2002)				
(J. O'Connor & Jeavons, 2003)			✓	✓
(Oman, Hedberg, & Thoresen, 2006)			✓	
(Opiyo et al., 2008)				✓
(Orner, Avery, & Boddy, 1997)			✓	✓
(P. Parker & Kulik, 1995)			✓	✓
(J. Parker, 2001)			✓	✓
(L. Parker, Clark, Patterson, Ulrich, & Caldwell, 2006)			✓	✓
(A. Pearson, Robertson-Malt, Walsh, & Fitzgerald, 2001)			✓	✓
(Pelletier, 1992)		✓	✓	✓
(Pennebaker J.W, 1988)	✓	✓	✓	
(Petrucka & Wagner, 2003)		✓	✓	✓
(Phillips, 2001)			✓	✓
(Piquette, Reeves, & Leblanc, 2009)			✓	✓
(Price, Germain, Wyncoll, &		✓	✓	✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
Nelson-Piercy, 2009)				
(Provis-Vincent & Moynihan, 1999)				✓
(Pups et al., 1997a)				✓
(Quinal, Harford, & Rutledge, 2009)			✓	✓
(Rank, Carsten, Unger, & Spector, 2007)		✓	✓	✓
(Redley, Botti, & Duke, 2004)	✓			✓
(Regel, 2007)		✓		✓
(Regel, 2010)		✓	✓	✓
(Rheingans, 2008)			✓	✓
(Rho & Page, 2007)	✓	✓	✓	✓
(Richards, Oman, Hedberg, Thoresen, & Bowden, 2006)			✓	
(Richmond et al., 2006)		✓	✓	✓
(Robbins, 1999)				✓
(Robinson & Tracey, 1998)			✓	✓
(Robroek, Brecht, & Burdorf,		✓	✓	

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
2007)				
(Rodham & Bell, 2002)			✓	✓
(Roesler, Ward, & Short, 2009)				✓
(Ronsten, Andersson, & Gustafsson, 2005)			✓	✓
(J. Rose, 2006)		✓	✓	✓
(E. Rose, 2007)			✓	✓
(Rowan, Bick, & Bastos, 2007)		✓	✓	✓
(M. Michelle Rowe, 2000)			✓	✓
(M. M. Rowe, 2006)		✓	✓	
(Rushton, 2009)			✓	✓
(J. Ruzek, 2008)	✓	✓	✓	✓
(J. I. Ruzek & Zatzick, 2000)	✓	✓	✓	✓
(Ryan et al., 2005)		✓	✓	
(Rybak et al., 2008)			✓	
(Roesler et al., 2009)				✓
(Ryndes, 1997)			✓	✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Sacks, Clements, & Fay-Hillier, 2001)			✓	✓
(Santos et al., 2008)		✓	✓	✓
(F. Schaefer, 2007)			✓	✓
(Jeanne A. Schaefer & Moos, 1993b)			✓	✓
(Jeanne A. Schaefer & Moos, 1993a)		✓	✓	✓
(J. A. Schaefer & Moos, 1996)		✓	✓	✓
(Scheans, 2009)				✓
(Schelling et al., 2003)		✓	✓	✓
(Scherwitz, McHenry, & Herrero, 2005)		✓	✓	✓
(Schiavone, 2009)			✓	✓
(Schmieder & Smith, 1996)			✓	✓
(Scollan-Koliopoulos & Koliopoulos, 2010)				✓
(D. Scott et al., 2010a)				✓
(S. D. Scott et al., 2008a)				✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Seely, 2007)		✓	✓	✓
(Serwint & Nellis, 2005)	✓	✓	✓	✓
(Sgoutas-Emch, Fox, Preston, Brooks, & Serber, 2001)			✓	
(J. Shaw & Huth, 2006)			✓	✓
(Siegel, Chan, Willies-Jacobo, & Stein, 2009)			✓	✓
(Sloan & Watson, 2001)			✓	✓
(M. Smith, 2001)		✓	✓	✓
(Smyth, 1998)			✓	
(Spencer, 2007)	✓		✓	✓
(William J. Spitzer & Laurie Burke, 1993)			✓	✓
(Stallard et al., 2006)		✓	✓	
(Stapleton, Lating, Kirkhart, & Everly Jr, 2006)		✓	✓	
(Starr, 1998)	✓	✓		
(Starkweather, 2006)			✓	✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Stichler, 2009)			✓	✓
(Steen, 2010)				✓
(Stiell et al., 1999)			✓	✓
(Sundin-Huard & Fahy, 1999)			✓	✓
(Swanson, 2002)			✓	✓
(Tan, 2005)			✓	✓
(Taylor & Ferszt, 1998)			✓	✓
(Teasdale, Brocklehurst, & Thom, 2001)			✓	
(Tehrani & Westlake, 1994)	✓	✓	✓	
(Torjuul, Elstad, & Sørli, 2007)			✓	✓
(Turcato & Faut-Callahan, 2008)			✓	✓
(N. M. Turner, 2009)				✓
(J. Turner & Kelly, 2000)			✓	✓
(Van Dover & Bacon, 2001)		✓	✓	✓
(Valdez, 2008)			✓	✓
(Vanezis & McGee, 1999)		✓	✓	✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
(Varon & Nanlohy)		✓		✓
(Vernarec, 2001)			✓	✓
(Vincent, 2006)			✓	✓
(Walker, 2009)			✓	
(Walsh, 2008)			✓	✓
(Weinger et al., 2000)			✓	✓
(Weinland, 2009)	✓	✓	✓	✓
(Wessely et al., 2008)		✓	✓	
(Peter Weinstock & Louis P. Halamek, 2008)				✓
(Westphal, Rustom, Schwartz, Daly, & Decamillo, 2006)		✓	✓	
(Whitfield, 2010)		✓	✓	✓
(Williams, 1994)				
(Wilson, Anderson, Toms, Fleetwood, & Phelps, 2006)				✓
(E. Wong, 2009)			✓	✓
(E. Wong, Scott, Briseno,			✓	✓

Authors	Events that occur out of hospital	Non-hospital worker	Not an ALTE	Does not evaluate the effectiveness of an intervention
Crawford, & Hsu, 2009)				
(Wolfe, 2008)				
(Ye & Wang, 2007)			✓	
(Zander, Hutton, & King, 2010)			✓	✓
(Zebuhr et al., 2012)				✓
	25	90	191	209

12 Appendix 4 – Survey of Practice



International survey of practice to identify psychological interventions that prepare or support clinical staff that have cared for a child who has had an unexpected acute life threatening event (ALTE) in hospital.

Background:

Caring for a child who had an unexpected acute life-threatening event (ALTE) in hospital can be very stressful for healthcare professionals. An ALTE may include a cardiac arrest, respiratory arrest or call for immediate assistance e.g. a prolonged seizure or an unplanned admission from the ward to the Paediatric Intensive Care Unit.

Healthcare professionals who care for children who have an ALTE in ward areas often report that there is no process in place to talk through decisions, management and responses in order to learn from this experience and improve performance for next time. Despite ward staff caring for children with increasingly complex needs, they are not frequently exposed to these events. Support mechanisms are often not in place to prepare these staff for these events or deal with the resulting potential psychological distress leaving this group of staff particularly vulnerable.

You are being asked to participate in this survey as you have been identified as a lead clinician in this area. At times you may feel as though you are being asked the same question. You are being asked to answer the questions from four different perspectives: the Trust perspective, the experience of healthcare professionals in your institution, your own experience and your opinion. The survey makes it clear from which perspective you are being asked to answer the questions.

Aims:

This aims of this survey are to determine the following:

1. Describe "normal" practice in each institution when it comes to preparing staff or providing psychological support after caring for a child who has had an ALTE.
2. Determine if any interventions (which may include training, education or information) have been developed to prepare clinical staff for the potential psychological effects of caring for a child who has an ALTE.
3. Determine if any interventions have been developed to provide support for clinical staff that have cared for a child who has had an ALTE in hospital to reduce the potential psychological effects of these events on staff.
4. Please note that the aims of this survey are in relation to the psychological aspects of these events, as opposed to the clinical skills.

Methods

An international telephone survey will be conducted with clinicians in paediatric hospitals that have >500 Paediatric Intensive Care Unit admissions per year in England, Scotland, Wales and Northern Ireland as identified by PICANet, 2009 (see appendix 1). The clinician may include: Ward Managers, Rapid Response / Outreach Team Leads, Resuscitation Training Officers, Clinical Co-ordinators, Hospital at Night nurses or Paediatric Intensive Care Sisters, depending on what resources are available within the institution participating in the survey.

The survey will be conducted with adult hospitals in the United Kingdom identified as having both a rating of excellent by the Care Quality Commission and a 5* rating in the Dr Foster Quality Accounts (see appendix 2). The aims of surveying the adult institutions are similar to the paediatric aims; to identify whether any interventions have been developed that can be adapted to the paediatric setting.

The survey will be completed with the seven Children's Hospitals in Australia (see appendices 3) and the one children's hospital in New Zealand (see appendices 4)

The survey will also be conducted with children's hospitals in the US and Canada. These hospitals will likely be identified using similar principles to the UK children's hospital e.g. greater than 500 PIC admissions per year.

The survey has been piloted amongst the Paediatric Intensive Care Society Nursing Research Sub-Group for refinement.

Analysis:

The survey will yield both quantitative and qualitative data which will help identify the range of practices currently in place as well as your experiences of them. Quantitative data will be aggregated and presented in tabular or diagrammatic form and qualitative data will be analyzed thematically and anonymised verbatim extracts will be reported to give an indication of the breadth of experience in this area.

Dissemination:

This survey is being conducted as part of a programme of work for a PhD. The results will be included in the PhD thesis. In addition, the results will be written up for publication in a scientific journal and submitted for conference presentation.



International survey of practice to identify psychological interventions that prepare or support clinical staff that have cared for a child who has had an unexpected acute life threatening event (ALTE) in hospital.

Caring for a child who had an unexpected acute life threatening event (ALTE) in hospital can be very stressful for clinical staff. An ALTE may include a cardiac arrest, respiratory arrest, call for immediate assistance e.g. a prolonged seizure or an unplanned admission to the Paediatric Intensive Care Unit. Clinical staff that care for children who have an ALTE often report that there is no process in place to talk through decisions, management and responses in order to learn from this experience and improve performance for next time.

This survey aims to determine what interventions (which may include training, education or information) have been developed to prepare and/or provide support for clinical staff that have cared for a child who has had an ALTE in hospital to reduce the psychological effects of these events on staff.

At times the questions may seem repetitive, however you are being asked to answer the questions from four different perspectives. Therefore the questionnaire has been divided into four different sections:

- Section 1 – Trust perspective
- Section 2 – Ward nurses perspective
- Section 3 - Your own perspective
- Section 4 – Your opinions

Name:

Institution:

Job Title:

SECTION 1 – TRUST PERSPECTIVE

Can you please answer these questions with regard to what happens in your own Trust when a nurse on the paediatric wards is caring for a child who has an unexpected acute life threatening event (ALTE). **Please circle the answer that applies:**

Question 1. When a staff members identifies that a child is having an ALTE who do they call for help?

- A. Outreach, Medical Emergency Team, or Rapid Response Team
- B. Resuscitation Training Officers
- C. "Crash Team" – 2222
- D. Paediatric Intensive Care Unit
- E. Other (please specify):

Question 2. Does your Trust provide any interventions to prepare staff for the potential psychological impact of caring for a child who has an ALTE in hospital?

YES NO

If yes, please describe: _____

Question 3. Are there any interventions that provide support for staff to reduce the potential psychological impact after they have cared for a child who has an ALTE (post event)?

YES NO

If yes, please describe all provision that you are aware of: _____

Question 4. Is there a formal Trust policy or program of work for the above interventions training or information?

YES NO Not Applicable/ No Interventions

Question 5. If the answers to Questions 3 and 4 is NO, then please describe what normally happens within your Trust to when there is a call for an ALTE?

SECTION 2 – WARD NURSES PERSEPCTIVE

Please answer the following questions with regard to the ward nurses experience of caring for a child who has had an ALTE in your hospital. You are being to ask to answer these questions because as a senior clinician you are likely to have an overview of what is happening in your hospital and you are the most likely person to be called to provide support to healthcare professionals who have cared for a child who has had an ALTE.

Question 6. Do the ward nurses receive any interventions that help to prepare them for the potential psychological impact of caring for a child who has an ALTE?

YES NO

If yes, please describe all provision that you are aware of: _____

Question 7: Do the ward nurses receive any interventions to support them for the potential psychological impact after they have cared for a child who has an ALTE?

YES NO

If yes, please describe e.g. what support was provided, who provided the support and how long after the event did the support occur:

SECTION 3 – YOUR OWN EXPERIENCE

Question 8. In your current job or any other job you have previously done, have you ever received any interventions that have helped you to prepare staff for the potential impact of caring for a child who has an ALTE?

YES NO

If yes, please describe: _____

Question 9: Have you ever received any interventions to help you provide support for staff that have cared for a child who had had an ALTE?

YES NO

If yes, please describe e.g. what support was provided, who provided the support and how long after the event did the support occur:

6

SECTION 4 – YOUR OPINIONS

Question 10. What support do you think might be helpful to ward staff to prepare for the psychological impact of an ALTE?

Question 11. How do you think this support could be provided?

Question 12. What support do you think might be helpful to ward staff to provide support after an ALTE has occurred to minimise the psychological impact of this event?

Question 13. How do you think this support could be provided?

Question 14. Who do you think would be the best person to provide interventions to prepare staff members for the psychological impact of caring for a child who has an ALTE in hospital?

- A. Doctor
- B. Nurse
- C. Rapid Response Team / Outreach Team
- D. Resuscitation Training Officer
- E. Clinical coordinators
- F. Ward Managers
- G. Staff counsellor
- H. Psychologist
- I. Allied Health Worker
- J. Chaplain
- K. Other (please specify)

Question 15. What interventions do you think would be beneficial to provide psychological support/feedback for staff after they have cared for a child who has had an ALTE?

Question 16. Who do you think would be the best person to provide interventions to support staff after they have cared for a child who has had an ALTE? You may circle more than one answer.

- A. Doctor
- B. Nurse
- C. Rapid Response Team / Outreach Team
- D. Resuscitation Training Officer
- E. Clinical coordinators
- F. Ward Managers
- G. Staff counsellor
- H. Psychologist
- I. Allied Health Worker
- J. Chaplain
- K. Other (please specify)

Question 17. When would be the best time to provide interventions to support staff after an ALTE?

- A. Immediately
- B. Soon (within 24-72hrs)
- C. 3-7 days
- D. Wait for them to ask for it
- E. Other (please specify)

Question 18. Should the support be provided by someone who attended the ALTE?

- Yes
- No
- Unsure

Thank you very much for taking the time to complete this survey.

Appendices 1

UK Paediatric Hospitals with >500 PIC admissions

PICANET Reference	Hospital Name
D	Central Manchester & Manchester Children's University Hospitals NHS Trust
E	Great Ormond Street Hospital for Children NHS Trust
F	Guy's & St. Thomas' NHS Foundation Trust
I	Leeds Teaching Hospitals NHS Trust
K	Newcastle upon Tyne Hospitals NHS Foundation Trust K1 Newcastle General Hospital K2 Newcastle Freeman Hospital K3 Newcastle Royal Victoria Infirmary
O	Royal Brompton & Harefield NHS Trust
P	Royal Liverpool Children's NHS Trust
Q	Sheffield Children's NHS Foundation Trust Q1 Sheffield Children's Hospital (NICU) Q2 Sheffield Children's Hospital (PICU)
R	Southampton University Hospitals NHS Trust
V	Birmingham Children's Hospital NHS Trust
W	University Hospitals Bristol NHS Foundation Trust
X	University Hospitals of Leicester NHS Trust X1 Leicester Glenfield Hospital X2 Leicester Royal Infirmary
ZA	NHS Greater Glasgow and Clyde – Women and Children's Division

Appendices 2

UK Adult Hospitals

Cross section of hospitals that rated Excellent on the Care Quality Commission rating and 5* on the Dr Foster quality accounts:

CQC website: http://healthdirectory.cqc.org.uk/findcareservices/informationabouthealthcareservices/summaryinformation/technicalcomparison.cfm?trust_type=AS&workstream=2&component=&indicator=&sha=&trulist=&widCall1=customWidgets.compareorgs_part_4b&previous_years=0&orderby=score2009%20DESC accessed 21.09.2010

Dr Foster Quality Accounts: <http://www.drfoosterhealth.co.uk/quality-accounts/> accessed 21.09.2010

Hospital Name
University College London Hospitals NHS Foundation Trust
Guys and St Thomas' NHS Foundation Trust
Chelsea and Westminster Hospitals NHS Foundation Trust
South Tee's Hospitals NHS Foundation Trust
Airedale NHS Foundation Trusts

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Appendices 3

Australian Children's Hospitals

Hospital Name
The Royal Children's Hospital, Melbourne, RCH
Sydney Children's Hospital, Randwick
The Children's Hospital, Westmead
Women's' and Children's Hospital, Adelaide
Princess Margaret Hospital for Children (PMH)
Mater Children's Hospital, Brisbane
Royal Children's Hospital, Brisbane

Appendices 4

New Zealand Children's Hospitals

Hospital Name
Starship Children's Hospital, New Zealand

Appendix 4 – PIL for the IPA interviews

Participant Information Leaflet

Prepare[®]
blebble[®]

PREPARE: Can preparation for unexpected acute life threatening events (ALTE) reduce the impact of stress on nursing staff caring for children in hospital?

Part 2



Version 2
12.08.2010

NHS
West Midlands




Aston University
Birmingham

Title of the proposed research

PREPARE: Can preparation for unexpected acute life threatening events (ALTE) reduce the impact of stress on nursing staff caring for children in hospital?

Invitation to participate

You are being invited to participate in a PhD research project aimed at exploring the experience of nurses and doctors who have recently cared for a child who has had an unexpected acute life threatening event (ALTE).

Description of the proposed study

Nurses and doctors who care for children in hospital are routinely exposed to stressful situations by the very nature of the work that they do. Caring for a child who has an unexpected acute life threatening event (ALTE) can be particularly stressful. An ALTE may include a cardiac arrest, respiratory arrest, call for immediate assistance or an unplanned Paediatric Intensive Care Unit admission.

The purpose of this study is to explore the experience of caring for a child who has an ALTE, with nursing and medical staff.

The results of this study coupled with a systematic literature review will go on to inform the development of intervention(s) that aim to prepare staff to care for children who have ALTE's and to provide support after an ALTE has occurred.

What will happen if I take part/ what will I have to do?

If you agree to take part in the research project you will be asked

to participate in a semi-structured interview. The interview will take approximately 45 -90 minutes depending on how much you have to say and will be audio-taped.

The interview will be scheduled during work time at a time that is least disruptive for you, your colleagues and your patients for example toward the end of your shift.

The interview aims to explore your experience of caring for a child who has an ALTE. You will be asked to describe how you were feeling before, during and after the event, and how you feel that experience may have affected you as a practitioner and as a person.

What are the benefits of taking part?

By participating in this study, you will have the opportunity to talk about your experience of caring for a child who has an unexpected ALTE. Talking through the event may be helpful to you. The researcher will use this information to develop an intervention that will help to prepare staff for these events and a supportive intervention to provide support after these events have occurred.

What are the possible disadvantages of taking part?

The disadvantages or risks of you taking part in this research are minimal. There is the possibility that taking part may stir up some distressing memories for you. If this does happen then the researcher can put you in contact with BCH staff for further support. If you feel that you would like someone to speak to after the interview has been completed please contact the Observation and Monitoring Team (Heather Steele ext 8608 for unplanned PIC admissions, Helen Cope ext 8651 for arrest calls) or the staff counselors on 0121 678 2790.

Should I take part?

Participating in this research project is voluntary, so it is your choice to decide whether or not you want to take part. If you decide to take part you will be given this information leaflet and be asked to sign a consent form. If you do not wish to take part then you can tell the researcher you do not want to take part without giving a reason.

If you take part in the interview and then change your mind, you may withdraw from the study up to 5 days after the interview has taken place. After five days the researcher will have transcribed and anonymised your data and will use the anonymised data in the analysis and it be included in written and oral reports.

Is there any reward or reimbursement for taking part in this research project?

There will be no rewards or reimbursement for taking part in this research project. The interviews will be conducted during work time or a time to suit you.

Will my taking part in the study be kept confidential?

Yes, your participation will be kept confidential. It is entirely up to you if you want to tell colleagues that you have taken part in this research study.

During the interview, if any concerns with under-performance, negligence or breach of professional conduct are identified then the researcher will need to report this to the Observation and Monitoring Team. The Observation and Monitoring team routinely review all cases where a child has had an unexpected acute life threatening event and will review any concerns. If the researcher feels there are any issues

that need to be reported to the Observation and Monitoring Team they will discuss this with you first.

Once the interviews are complete the researcher will transcribe the interviews from the audio-tapes to a written transcript. The researcher will anonymise the interview as it is being transcribed. If any names are used during the interviews then the researcher will use pseudonyms instead of real names. Similarly, any other identifying information such as ward names, places or organisations will be removed.

The only people who may read the anonymised written transcripts will be the researcher (Adrienne McCabe), Academic Supervisor (Dr Rachel Shaw), Associate Academic Supervisor (Dr Helen Pattison) and Clinical Supervisor (Dr Heather Duncan).

The audio-tapes and transcripts will be kept in a locked filing cabinet in a locked office. Only the researcher will have access to the audio-recorded data. The data will be collected and stored according to the Data Protection Act 1998.

Results of the study

The researcher plans to publish the results of this study in several ways: a PhD thesis, publications in peer review journals and conference presentations. Any data used from the interviews will be anonymised.

Who is organizing the study?

The Chief Investigator for this study is Adrienne McCabe. Adrienne is completing this research as part of her PhD.

The sponsor organization for this study is Aston University.

The host organisation is the Birmingham Children's Hospital NHS Foundation Trust.

Who is funding the study?

The Chief Investigator, Adrienne McCabe is funded by the West Midlands Nursing, Midwifery and Allied Health Research Fellowship (PhD) to undertake this research.

Who can I contact if I have any concerns about this study?

If you have any concerns about this research project or want any independent advice about how this study is being conducted please contact the Patient Advice and Liaison Service at BCH on 0121 333 8430 or Gareth Evans, the Deputy University Secretary, g.a.evans@aston.ac.uk at Aston University.

Contact details

For further information on this research project or if you would like to withdraw please contact Adrienne McCabe on **07966 164131** or email: **Adrienne.McCabe@nhs.net**

Alternatively, you can contact the following members of the research group for further information:

Dr Rachel Shaw – r.l.shaw@aston.ac.uk, **0121 204 4050**

Dr Helen Pattison – h.m.pattison@aston.ac.uk , **0121 204 4073**

Dr Heather Duncan – Heather.Duncan@bch.nhs.uk, **0121 333 9654**

CONSENT FORM



Title of the proposed study

PREPARE: Can preparation for unexpected acute life threatening events (ALTE) reduce the impact of stress on nursing staff caring for children in hospital?

Fair Processing Statement

The interview is being conducted as part of a research project concerned with exploring your experience of caring for a child who has an unexpected acute life threatening event (ALTE). The interviews will be audio-taped and the anonymised transcripts will be reviewed by the Chief Investigator (Adrienne McCabe), Academic Supervisor (Dr Rachel Shaw), Associate Academic Supervisor (Dr Helen Pattison) and Clinical Supervisor (Dr Heather Duncan).

In addition to the interviews giving insight into the experience of caring for a child who has an ALTE, the data will go on to inform the development of intervention(s) aimed at preparing staff for caring for a child who has an ALTE and providing support after the event.

Anonymised quotes from your interview will be used during the write up of a PhD thesis, abstract submission for conferences and publication in peer review journals. Using your exact words helps us to clarify your experience. No identifiable personal data will be published.

The information from the interviews will be stored in accordance with the Data Protection Act 1998.

Statements of understanding/consent (please initial the boxes)

- I confirm that I have read and understand the participant information leaflet for this study. I have had the opportunity to ask questions and have had these answered satisfactorily.
- I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. If I withdraw within 5 days of the interview my data will be removed from the study and will be destroyed.
- I understand that my personal data will be processed for the purposes detailed above, in accordance with the Data Protection Act 1998.
- I understand that relevant sections of my research notes and data collected during the study, may be looked at by individuals from Aston University, from regulatory authorities or from the NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.
- I give consent for the researcher to audio-tape the interviews.
- Based upon the above, I agree to take part in this study.

Name, signature and date

Name of participant Date Signature

Name of researcher Date Signature

Funding:

West Midlands Nursing, Midwifery and Allied Health Professions Research Training Fellowship (PhD)

Chief Investigator:

Miss Adrienne McCabe

Academic Supervisor:

Dr Rachel Shaw

Associate Academic Supervisor:

Dr Helen Pattison

Clinical Supervisor:

Dr Heather Duncan



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Appendix 6 – Interview schedule for nurses

INTERVIEW SCHEDULE - NURSE

AIM: To gain an insight into the experience of a nurse/doctor who cares for a child who has an acute life threatening event.

Breakdown of what I would like to learn/know more about:

- Experience leading up to the event
- Experience of the event i.e. calling for help, when the team arrives, the ongoing event, outcome of event (live or die),
- After event – transfer of care (PICU), coming back to the ward, going home, coming back to work
- Support post event – did they get support, who from, the timing of the support.

With these aims/outcomes in mind I propose the following interview schedule:

Potential questions, rationale for asking questions, potential prompts (bracket my own pre-conceptions):

Question	Rationale for asking the question	Prompts
1. Could you describe to me what made you want to be a nurse? Could you tell me how you came to being a nurse?	Ideally want to start with a question that gives the participant an opportunity to describe – gives the researcher a chance to teach the interviewer how to be interviewed and starts the flow of the interview. The interviewer can use their active listening skills and paraphrase what the participant is saying. May also give us an insight into why they became a nurse and get to know what that role means to them i.e. how the event may conflict with their role or helps them to understand the event.	What did you do before becoming a nurse? What made you decide/ influenced you to become a nurse? Parents? Family? Friends? An experience?
2. You have been asked to participate in the interview today because you cared for a child who had an ALTE. I would like to focus on this event but before we go into this in more detail can you tell me a bit about the day it happened in general?	Following on from the previous question it gives the participant the opportunity to describe – the researcher has the opportunity to develop a rapport with the participant and give the participant a further opportunity to engage in the interview process.	Was there anything about the day that made it unusual? Were you on a long or short shift? Did you have other patients?
3. Can you describe for me what happened leading up to the event?	I want to get a feel for their experience leading up to the event (did they recognise the patient was becoming unwell, was it sudden/unexpected, did they recognise but couldn't get help, whom did they report their concerns to). I want to know how they were feeling in this lead up. When they look back on this event now how did they feel during this period? I expect during this question there will be lots of times when I ask for more detail and further explanations: "Could you tell me more about that"?	How did this make you feel? What were you feeling? What did you do about that feeling i.e. if you were not happy with a response did you say something (without being judgemental that they should have said something)? Could you tell me more about that?

4. Can you please tell me/ describe to me what happened when you made the call for help?	I want to know what was it that made them make the decision to call for help (in their experience they knew they needed help, panic, fear of getting in trouble). How did they feel when they called for help?	What made you decide to call for help? How did you feel when you made the call for help (were you confident in your decision, were you worried about causing a fuss, was this the first time you have ever had to do this)? What happened when the team arrived? How did you feel?
5. Can you describe to me how you were feeling during the event?	(Staff in the PEWS interviews were often critical of themselves during the event for fumbling/dropping/ forgetting things and interpreted this as a lack of skills?) In order to develop interventions to help prepare and support we need to understand their feelings/experiences/thoughts during the event.	Your performance? Knowing what to do? Interactions with others?
6. What was the outcome of the event?	I know this may seem like a closed question, but the outcome may have a bearing on the experience i.e. did the child survive? (Often the frustration during the PEWS interviews was not at the event it's self but more the lack of help they were getting leading up to the event. This may be my own pre-conception)	Did the child survive? Did they stay on the ward or need to be transferred to PICU? How did you feel? Could you tell me more about that?
7. Tell me what happened immediately after the event? How did you feel?	I want to know how they felt once the event itself was over (many staff describe the patient being taken away and they have not feedback of how the child is going, the feeling that they did something wrong to make this happen and not getting any feedback, did they feel lonely or part of a team on the ward who has just experienced something extraordinary, are they unhappy with someone in the team for something that happened during the event)?	Was the child transferred out of the ward? Did they stay on the ward? Did you go with the patient? What was it like coming back to the ward? What was it like going home after the event? What was it like coming back to the ward on your next shift? How did it make you feel? Can you tell me more about that?
8. We have talked about how you felt immediately after the event – can you tell me how you felt in the hours and days after the event ?	I do not want this to be a closed question: Did they feel supported after the event? (Who might have provided support and who might they liked to have provided the support. Did they want to talk to someone or be left alone to process it themselves? (Maybe they don't want someone who has no idea what they are feeling after having been through this experience?))	Can you tell me if you were given an opportunity /offered any support after the event? Did anyone speak to you afterwards about the event i.e. the clinical co-ordinator, ward managers, doctors, fellow nurses)? When did they speak to you? Did you find it helpful/insightful/ worthwhile? Did you want to talk to anyone? If no, one talked to you would you have liked them to? If so, who and when would be the best times? How did it make you feel? Can you tell me more about that?

<p>9. Has this event had any influence on you as a practitioner? Has this event changed you as a practitioner?</p>	<p>I am trying not to use assumptions that this will have influenced them. I want to get an insight into how this event may have affected them (positive or negative). How do they interpret what happened surrounding the event in relation to their role as a professional (if at all).</p>	<p>Has it changed/affected your approach/interactions to your day to day work? Has it changed/affected your approach/interactions to families? Has it changed/affected your approach/interactions to fellow staff? Has it affected your confidence? (May have made them more confident)</p>
<p>10. Has this event had any influence on you as a person/ in your personal life /in your personal relationships? Has this event changed you as a person?</p>	<p>I want to get an insight on how they feel the event may have affected them as a person (thinking about their different roles in life: professional, wife, mother, and daughter). Do they have children's themselves – has this event had any influence on the way they behave/interact with them (this one worries me slightly because I do not want people without children to think that I am saying that this event is any less significant for them.....that may well be my bias as someone without children).</p>	<p>Has it changed/affected your approach/interactions with people outside of work? Family? Friends? Partner? Children?</p>
<p>11. Given your experience of caring for a child who has an ALTE do you feel as though you are given support to prepare for this type of event or to support you after the event?</p>	<p>One of the aims of the interview is to find out about their particular experience but it would be ideal to get the participants opinion on what interventions are/are not in place and what they would suggest to be helpful.</p>	<p>Do you think it is possible to prepare for these events? If so, what suggestions might you have? What support (If any) did you most want after the event? How would you change practise if you could?</p>

13 Appendix 7 – Interview schedule with doctors

INTERVIEW SCHEDULE - DOCTOR

AIM: To gain an insight into the experience of a nurse/doctor who cares for a child who has an acute life threatening event.

Breakdown of what I would like to learn/know more about:

- Experience leading up to the event
- Experience of the event i.e. calling for help, when the team arrives, the ongoing event, outcome of event (live or die),
- After event – transfer of care (PICU), coming back to the ward, going home, coming back to work
- Support post event – did they get support, who from, the timing of the support.
- Experience of interacting with/supporting/managing/debriefing with nurses

With these aims/outcomes in mind I propose the following interview schedule:

Potential questions, rationale for asking questions, potential prompts (bracket my own pre-conceptions):

Question	Rationale for asking the question	Prompts
1. Could you describe to me what made you want to be a doctor? Could you tell me how you came to being a doctor?	Ideally want to start with a question that gives the participant an opportunity to describe – gives the researcher a chance to teach the interviewer how to be interviewed and starts the flow of the interview. The interviewer can use their active listening skills and paraphrase what the participant is saying. May also give us an insight into why they became a doctor and get to know what that role means to them i.e. how the event may conflict with their role or helps them to understand the event.	What did you do before becoming a doctor? What made you decide/ influenced you to become a doctor? Parents? Family? Friends? An experience?
2. You have been asked to participate in the interview today because you cared for a child who had an ALTE. I would like to focus on this event but before we go into this in more detail can you tell me a bit about the day it happened in general?	Following on from the previous question it gives the participant the opportunity to describe – the researcher has the opportunity to develop a rapport with the participant and give the participant a further opportunity to engage in the interview process.	Was there anything about the day that made it unusual? Were you on a long or short shift? Did you have other patients? Did any of your other patients appear unwell/ competing for your time?
3. Can you describe for me how you were alerted to the ALTE? How were you feeling during this time?	Were they called to review the patient or did they respond to an emergency call? i.e. if they were called to review the patient did they recognise the patient was becoming unwell, did they recognise but couldn't get help, whom did they report their concerns to) or was it sudden/unexpected I want to know how they were feeling in this lead up. When they look back on this event now how did they feel during this period? I expect during this question there will be lots of times when I ask for more detail and further explanations: "Could you tell me more about that"?	Were you called to review the patient before the emergency call for help went out? or Did you respond to the emergency call? How did this make you feel? What were you feeling (especially if they were the one who made the call for help)? Could you tell me more about that?

<p>4. Can you please tell me/ describe to me what happened when you were alerted to the ALTE?</p>	<p>If they were the ones who asked for the call to be put out - I want to know what was it that made them make the decision to call for help (in their experience they knew they needed help, panic, fear of getting in trouble). How did they feel when they called for help? If they were called for help (2222)- who called them i.e nursing staff, ward doctors. When they arrived to the ward, who did they interact with i.e. did the nursing staff hand over, did ward doctors hand over?</p>	<p>What made you decide to call for help? How did you feel when you made the call for help (were you confident in your decision, were you worried about causing a fuss, was this the first time you have ever had to do this)? What happened when the team arrived? How did you feel? Talk about your interaction with the nursing staff, did they provide you with the information/equipment you needed?</p>
<p>5. Can you describe to me how you were feeling during the event?</p>	<p>(Staff in the PEWS interviews were often critical of themselves during the event for fumbling/ dropping/forgetting things and interpreted this as a lack of skills?) In order to develop interventions to help prepare and support we need to understand their feelings/experiences/ thoughts during the event.</p>	<p>Your performance? Knowing what to do? Interactions with others – expand on your interaction with the nursing staff? Describe how you interacted (roles) with the nurses during the ALTE? Is this different to your usual day to day interaction with the nurses?</p>
<p>6. What was the outcome of the event?</p>	<p>I know this may seem like a closed question, but the outcome may have a bearing on the experience i.e. did the child survive? (Often the frustration during the PEWS interviews was not at the event it's self but more the lack of help they were getting leading up to the event. This may be my own pre-conception)</p>	<p>Did the child survive? Did they stay on the ward or need to be transferred to PICU? How did you feel? Could you tell me more about that?</p>
<p>7. Tell me what happened immediately after the event? How did you feel?</p>	<p>I want to know how they felt once the event itself was over (many staff describe the patient being taken away and they have not feedback of how the child is doing, the feeling that they did something wrong to make this happen and not getting any feedback, did they feel lonely or part of a team on the ward who has just experienced something extraordinary, are they unhappy with someone in the team for something that happened during the event)? Did you interact with the other members of the arrest "team" ie, the nurses?</p>	<p>Was the child transferred out of the ward? Did they stay on the ward? Did you go with the patient? What was it like coming back to the ward? What was it like going home after the event? What was it like coming back to the ward on your next shift? How did it make you feel? Can you tell me more about that?</p>

<p>8. We have talked about how you felt immediately after the event – can you tell me how you felt in the hours and days after the event?</p>	<p>I do not want this to be a closed question: Did they feel supported after the event? (Who might have provided support and who might they liked to have provided the support. Did they want to talk to someone or be left alone to process it themselves? (Maybe they don't want someone who has no idea what they are feeling after having been through this experience?)</p>	<p>Can you tell me if you were given an opportunity /offered any support after the event? Did anyone speak to you afterwards about the event i.e. the clinical co-ordinator, ward managers, nurses)? When did they speak to you? Did you find it helpful/ insightful/worthwhile? Did you want to talk to anyone? If no, one talked to you would you have liked them to? If so, who and when would be the best times? How did it make you feel? Can you tell me more about that?</p>
<p>11. Given your experience of caring for a child who has an ALTE do you feel as though you are given support to prepare for this type of event or to support you after the event?</p>	<p>One of the aims of the interview is to find out about their particular experience but it would be ideal to get the participants opinion on what interventions are/are not in place and what they would suggest to be helpful.</p>	<p>Do you think it is possible to prepare for these events? If so, what suggestions might you have? What support (If any) did you most want after the event? How would you change practice if you could?</p>
<p>Given your experience of caring for a child who has had an ALTE, can you describe to me your experience of interacting with the nursing staff before, during and after the event?</p>	<p>Although nurses and doctors come together and work as a team during an ALTE it is important to get a feel for how the doctors perceive their relationship/interactions with the nursing staff. In the future is it appropriate to develop interventions that are aimed at both or can be delivered at the same time?</p>	<p>Do you think you have the same needs? If not, how do you think your needs may differ? (in terms of support and preparation). Think about the similarities and differences?</p>
<p>Do you know anything about the preparation and support nurses receive for dealing with a child who has had an ALTE?</p> <p>As you know, this project is focusing on the preparation and support nurses receive for dealing with these events. Is there anything from your own training or experience that you think nurses might benefit from?</p>	<p>Gives us an insight into any experience the doctor's may have had providing support with nurses i.e. debrief after an incident and allows us to draw from their own experience.</p>	<p>Debriefing? Clinical Supervision? Simulation Training?</p>

14 Appendix 8 – Example of transcript analysis

What's important to him:
 → then what was going on
 → structure - clear in mind what is going on
 → T.L
 → L228 → structure L158 L155 hierarchy -

71 the patient that had been involved in the arrest and erm
 72 .. said that you know, the saturations were a little bit
 73 lower than they had been previously during the day and
 74 she had done a blood gas and she was taking it off
 75 down to intensive care and asked if I would have a little
 76 look so I went and had a look at this patient first before
 77 going to do the bloods 'cos they were going to need
 78 some bloods as well.
 79
 80 A: And so you went and saw him and then what kind of
 81 happened in terms of the sequence of events leading up
 82 to //
 83
 84 P: Ah Okay, like I said well, basically he was a patient
 85 who has almost all of his blood flow through a BT shunt
 86 .. he hadn't very well saturated previously um and
 87 during the afternoon, maybe over the previous hour or
 88 two his saturations had got a little bit lower sort of from
 89 ninetyies down to high seventies or something like this
 90 and when I was examining him yeah, he crashed, his
 91 sort of his saturation went to zero his heart rate
 92 plummeted at a sort of rate of about twenty or so (phone
 93 rings) I'm sorry I need to get this.
 94 Continues: So basically, he had a precipitous drop in
 95 saturations and his heart rate plummeted as well, and
 96 basically, yeah accordingly, what happened he just
 97 occluded his shunt.
 98
 99 A: So from when you first came onto the ward when
 100 the SHO said to you can you have a look at him we're a
 101 bit worried, //yeah // did he then crash when you were
 102 sort of reviewing him // yeah//
 103
 104 P: From the time the SHO asked until the time he
 105 crashed would have been a number of minutes, maybe

if I would have a little look
really accurate
low of deterioration
CRASHED
high PLUMMETED
ical terms
PLUMMETED in clinical
term.
CRASHED

Accurate clinical description
Methodical
STRUCTURED
TERMS
CRASHED
PLUMMETED
Language less detailed &
structured to reflect "unintentional"
nature of event

CRASHED

What's important to him:
 → then what was going on
 → structure - clear in mind what
 going on
 → T.L. *structure L158 L155
 → L228 - structure L158 L155
 hierarchy -

71 the patient that had been involved in the arrest and erm
 72 .. said that you know, the saturations were a little bit
 73 lower than they had been previously during the day and
 74 she had done a blood gas and she was taking it off
 75 down to intensive care and asked if I would have a little
 76 look so I went and had a look at this patient first before
 77 going to do the bloods 'cos they were going to need
 78 some bloods as well.

79
 80 A: And so you went and saw him and then what kind of
 81 happened in terms of the sequence of events leading up
 82 to //

83
 84 P: Ah Okay, like I said well, basically he was a patient
 85 who has almost all of his blood flow through a BT shunt
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 89 nineties down to high seventies or something like this
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 91 sort of his saturation went to zero his heart rate
 92 plummeted at a sort of rate of about twenty or so (phone
 93 rings) I'm sorry I need to get this.
 94 Continues: So basically, he had a precipitous drop in
 95 saturations and his heart rate plummeted as well, and
 96 basically, yeah accordingly, what happened he just
 97 occluded his shunt.

98
 99 A: So from when you first came onto the ward when
 100 the SHO said to you can you have a look at him we're a
 101 bit worried, //yeah // did he then crash when you were
 102 sort of reviewing him // yeah//
 103

104 P: From the time the SHO asked until the time he
 105 crashed would have been a number of minutes, maybe

asked if I would have a little look

very clinically accurate
 description of deterioration
 then he CRASHED
 his heart rate PLUMMETED
 (less clinical terms)

Heart rate PLUMMETED in clinical
 description.

Time he CRASHED

Accurate clinical description
 methodical
 structured
 Terms
 CRASHED
 PLUMMETED
 Language less clinical
 structure to reflect "u
 nature of event

CRASHED

Appendix 9 – Evaluation form for PREPARE

Prepare simulation session					
Date of session:					
Job title:					
Years experience:	<12 months	1-5 years	>5 years	(circle one)	
<p>The learning outcomes for this session are reflected in the statements which follow:</p> <p>Please tick the box for each statement that most accurately reflects your response:</p>					
			Completely Agree	Mainly Agree	Mainly Disagree
					Completely Disagree
					N/A
1. The duration of the session was appropriate to meet my learning needs					
2. The number of learners/participants was appropriate to meet my learning needs					
3. The simulation technology and equipment facilitated my learning experience					
4. I felt engaged in this session					
5. The scenario was useful /relevant to my clinical area					
6. The session increased my confidence in my ability to handle similar situations in the clinical environment					
7. I feel more prepared for an ALTE as a result of participating in this session					
What parts of the session's length, design, facilitation and equipment should we keep:					
What improvements or changes could we consider making to future sessions to make them more valuable for participants:					
Are there any particular scenarios we you would like us to run in your clinical area?					

Appendix 10 Medication overdose scenario

Session	Medication incident	Drug overdose
Duration	Set up = 5 - 10 min Scenario = 10 - 15 min Debrief = 10 min Close/evaluation = 15 - 20 min Total = approx 60 minutes	Preceding anxiety Present during event Had to call nurse Wants investigation
Equipment	<p>Simbaby (with full monitoring capabilities)</p> <p><u>Airway/Breathing:</u> Oxygen mask with reservoir bag Oxygen source (wall or cylinder) BVM + mask Anaesthetic bag 1-4 cannula in place:</p> <ul style="list-style-type: none"> • for cardiac scenario need NCA, Milrinone, Heparin • Non cardiac scenario – NCA + IVT <p>Resuscitation trolley Full intubation equipment</p> <p><u>Circulation:</u> Syringe, needle Bag of saline Flush SpO2, ECG monitoring (iPad monitor with SiMon) ECG leads SpO2 probe BP cuff CRT picture Thermometer picture</p> <p><u>Disability:</u> Glucometer + pictures of low and normal glucose reading Dummy phone</p> <p><u>Miscellaneous:</u> PEWS chart and fluid chart Medication chart with prescribed Morphine Scribe form Facilitators notes + palm cards Colour indicator that she is cyanosed Nalaxone</p>	
Detail	<p>Key Elements / Aims: This is a scenario to prepare for team working and simultaneous management of:</p> <ul style="list-style-type: none"> • concerned/ blaming parents • Concerned/ feeling guilty/anxious nurse who has made a medication error. 	<p>ringers:</p> <ol style="list-style-type: none"> 1. MTL / NTL 2. Anaesthetist to intubate and transfer 3. Mother anxious, wants to stay, asks for investigation

<p>on time.</p>	<p>for this patient include saturations in the mid 80's.</p> <ul style="list-style-type: none"> You think that she is probably in pain and needs a bolus through her NCA. Her parents are/are not in attendance You give a bolus as per the prescription chart. <p><u>Non-Cardiac:</u></p> <ul style="list-style-type: none"> 1 month old baby (Jasmine) is a term baby with hernia repair/sickle cell crisis She is on an NCA with a background infusion of 0.2ml/hr and can have bolus' of 0.5ml every 20 minutes. Her observations have been stable – she is on routine sats and ECG monitoring), but at present she is more tachycardic, tachypnoeic and very unsettled. You think that she is probably in pain and needs a bolus through her NCA. Her parents are/are not in attendance You give a bolus as per the prescription chart. <p><u>If parents present:</u></p> <ul style="list-style-type: none"> Need to communicate with the parents Allocate someone to look after them during the event. <p><u>Patient is 3kg:</u> Normal NCA dose in the syringe is 1mg/kg This pt is 3kg – the correct dose should be 3mg of Morphine. A 10x overdose = 30mg of Morphine in the syringe.</p> <p>N1: Pt becomes apnoeic and cyanosed</p> <p><u>N1:</u></p> <ul style="list-style-type: none"> Oxygen facemask + RB 15l/min Pulse is good volume Started BVM Calls for N2 help or pulls buzzer Stays by the bedside with patient to handover history and access to newcomers. Can become NTL if feels able/support airway/deliver drugs – AT BEDSIDE <p><u>N2/N3/N4</u></p> <ul style="list-style-type: none"> One of these will be a ringer who falsely reassures that the syringe is 	<p><u>BT Shunt observations post NCA bolus:</u> Sim baby apnoeic, HR 70/min, RR 0 SpO2 55-60%</p> <p>Requires Naloxone or respiratory support</p> <p><u>Requires respiratory support and then Naloxone</u> <i>Medicine to be achieved:</i></p>
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	<p>correct.</p> <ul style="list-style-type: none"> • Role model a colleague who has made a mistake and the guilt associated with that • Put out 2222 call - if needed • Negotiate nursing team leader - if needed • Airway - if needed • Monitoring/observations - if needed • Get resus trolley - if needed • Drawing up drugs - if needed • Scribe - if needed • Support parents - if needed • Running for equipment - if needed • Overview of rest of the ward - if needed • Clearing bed space - if needed • Crowd control - if needed <p><i>Mother anxious and crying, 'what's happening'.</i> <u>NTL:</u></p> <ul style="list-style-type: none"> • allocates someone to be with the mother <p>2222 team arrive</p> <p><u>RMO2/PIC SpR/ PIC Consultant/</u></p> <ul style="list-style-type: none"> • Negotiates to become Medical Team Leader (if they feel able) • Requests patient history from N1 <p><i>If not MTL:</i></p> <ul style="list-style-type: none"> • Support MTL – if needed • Airway support – if needed • IV access/circulation - if needed • Prescribe medication – if needed <p>Anaesth SpR:</p> <ul style="list-style-type: none"> • Takes over airway from whomever is supporting the airway • Does not require intubation for this scenario • If requires intubation - asks for T-piece (ringer)and supports breathing with PEEP, asks to intubate, and does so quickly and successfully <p><i>Mother: ' I want to stay with my son, I have seen him intubated before'</i></p> <p><u>ODP/RTO/ PIC Tech:</u></p> <ul style="list-style-type: none"> • Assist with intubation if required • Help with monitoring, ETCO2 and intubation equipment, prepare for transfer <p><u>CSP:</u></p> <ul style="list-style-type: none"> • Negotiate who will be nursing TL 	<ol style="list-style-type: none"> 1. Recognise apnoea 2. 15L O2 via RB mask 3. Airway manoeuvres 4. BVM 5. Call for help 6. Recognise overdose 7. Naloxone (0.01mcg/kg) 8. Hand-over history 9. Plan for follow up – Naloxone infusion, pain relief <p><u>BT Shunt observations:</u></p> <ul style="list-style-type: none"> • Simbaby responds to BVM with ↑HR 120 and ↑ SpO2 to 88% • still apnoeic • Requires ongoing BVM and or Naloxone <p><u>Non cardiac observations:</u></p> <ul style="list-style-type: none"> • Simbaby responds to BVM with ↑HR 140 and ↑ SpO2 to 100% • still apnoeic • Requires ongoing BVM and or Naloxone <p><i>PIC consultant clearly takes over Med TL, later will support RMO2 Med TL. Asks N1 for patient history</i></p> <p>Allocates PIC SpR to assist with intubation (until assistant arrives) and then stand back in case further IV access needed.</p> <p>Roles required:</p> <ol style="list-style-type: none"> 1. Team Leader 2. Airway + airway assistant 3. Compressions/pulses 4. Cannula – <ol style="list-style-type: none"> a. Insert access b. give drugs/fluids (2) 5. Resuscitation Officer 6. Nursing TL 7. Drawing up drugs + checker 8. Clinical co-ordinator - crowd control, organise resources required, liaise with specialties/PIC for transfer 9. Scribe 10. Runner/monitoring/equipment
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	<ul style="list-style-type: none"> • If NTL – role model good communication and leadership in own role • If not TL then assume assigned role (likely to be drugs) <ul style="list-style-type: none"> • Airway - if needed • Monitoring/observations - if needed • Get resus trolley - if needed • Drawing up drugs - if needed • Scribe - if needed • Support parents - if needed • Running for equipment - if needed • Overview of rest of the ward - if needed • Clearing bed space - if needed • Crowd control - if needed • Role model how you would support a colleague who has made a medication error – keep them in a role or get someone to support them. <p><u>Clinical Coordinator:</u></p> <ul style="list-style-type: none"> • Check /negotiate NTL • Overview, crowd control, get resources needed eg Ketamine, Rocuronium, escalation to other Specialities, PIC bed, CT, Radiology, can also check drugs • Role model how you would support a colleague who has made a medication error – keep them in a role or get someone to support them. <p><u>RMO's/SHO's/:</u></p> <ul style="list-style-type: none"> • Airway support – if needed • Circulation, pulses, CPR - if needed • IV access check- if needed • Administer drugs - if needed • Prescribe medication – if needed • send away/ stand back <p><u>Porter :</u></p> <ul style="list-style-type: none"> • Door • Retrieve monitor from PIC <p><u>Security:</u></p> <ul style="list-style-type: none"> • Keep doors open • Direct Team to bed 	11. Parents 12. Watching rest of ward 13. Porter – door, monitor for transfer 14. Security <p>[PIC consultant does a brief AAR, acknowledges concerns preceding events and invites team to co-investigate]</p>
Debrief Keep the focus on the 2 aspects you've chosen	<ol style="list-style-type: none"> 1. Shake off: 'how did that feel?' 2. It was quite tricky with mum wasn't it? 3. Lets quickly review the medical facts: 'what happened' [N1 and team respond, Instructor reinforces: Small baby, dose of IV morphine 4. Ok, let's talk about the team 	Acknowledge fear Get the medicine out of the way and answer any factual questions briefly (including consideration of naloxone)

<p>Change/move people where an error of bad decision was made</p>	<p>allocation and roles: how did they work?</p> <ol style="list-style-type: none"> 5. Team leaders: effective? changing? 6. Communication: what went well? 7. Parents? 8. Crowd control? 9. 'I noticed that you did x, I am concerned because it could have caused y. Help me understand why you did that'. Wait for the 'I believe', 'I think', 'so in future I will...' 10. Recommendation? (as a result of the error or bad decision is there any further action that is required eg training, education etc 11. Need to address the stress response – normal to have fumbling, shaking, increased heart rate – normal stress response rather than a lack of manual skills 	<p>Negotiation of leadership roles Closed loop?</p> <p>Acknowledge 'blame' Let them explain and guide them to offering future modification of behaviour.</p>
<p>Close</p>	<p>Thank you all for participating in this scenario. This scenario focused on:</p> <ol style="list-style-type: none"> 1. brief briefing 2. role negotiation and allocation <ol style="list-style-type: none"> a. allocation of staff member to parents 3. communication <ol style="list-style-type: none"> a. particularly dealing with the parents who "blame" or allege the missed opportunity b. future investigation of the event 4. acknowledge fear/unfamiliarity <ol style="list-style-type: none"> a. Particularly of the staff who gave the medication 5. team safety (physical and psychological) 6. crowd control <p>Rather than being focused on the medicine or the technical skills.</p> <p>Adrienne's interviews with our staff have identified that if we have the opportunity to watch or be involved in these events, we have clear roles with effective team work and receive feedback then we are more likely to be prepared for future events. Involvement in one event is preparation for a future event. This will hopefully reduce the stress of being involved in these events and help us as a team to provide better care for each other and for our patients.</p> <p>Adrienne's PhD aims to work out how to prepare and support us all for an ALTE and measuring if this works. We're</p>	<p>Evaluation forms</p>

	<p>developing the preparation and supportive aspects through scenarios which will run alongside PEWS and PILS scenarios. We would appreciate your feedback to make these sessions clinically relevant and useful to you. We need you to fill in some questionnaires so we can find the best way to test whether this works.</p> <p>Thank you!</p>	
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Appendix 11 – PIL for the feasibility study

Participant Information Leaflet

Prepare[©]

Can bespoke simulation training improve nurses' self-efficacy and prepare them for caring for children who have unexpected acute life threatening events (ALTE) in hospital?

Support[©]

Should support for nurses who care for children who have an acute life-threatening event (ALTE) in hospital focus on stress, distress, anxiety or coping skills?

Part 3



Draft or Version Number:
Version 2 - 21.09.2012

NHS
West Midlands



Aston University
Birmingham

This participant information leaflet outlines two pilot studies (running in parallel) that will inform the development of a larger intervention study aimed at reducing the impact of stress on nurses who care for children who have an Acute Life Threatening Event (ALTE) in hospital.

Title of the proposed research

PREPARE: Can bespoke simulation training improve nurses' self-efficacy and prepare them for caring for children who have unexpected acute life threatening events (ALTE) in hospital?

SUPPORT: Should support for nurses who care for children who have an acute life-threatening event (ALTE) in hospital focus on stress, distress, anxiety or coping skills?

Part 3

Invitation to participate

You are being invited to participate in a PhD research project that will pilot interventions that aim to prepare and support nurses who care for children who have an ALTE in hospital. It is believed that preparation and support can reduce the impact of stress on the nurses caring for children who have these events.

You can participate in either one or both pilot studies as many times as you would like.

Description of the proposed study

Caring for a child who has an ALTE can be stressful for nursing staff. An ALTE may include a cardiac arrest, respiratory arrest, call for immediate assistance or an unplanned admission from the ward to the Paediatric Intensive Care Unit (PICU). The pilot studies are part of a PhD program of work. A systematic literature review, international survey of practice and interviews conducted with nurses and doctors who have cared for children who have had an ALTE at the Birmingham Children's Hospital NHS Foundation Trust (BCHNHSFT) conducted as part of the PhD have demonstrated a need for interventions to prepare and support nurses who care for children who have an ALTE in hospital. The PhD research has also informed the development of both interventions.

The researcher has developed two interventions that will be piloted in your ward area:

PREPARE involves the use of simulation training that addresses both clinical skills and addresses how you might feel during and after an ALTE.

SUPPORT includes the provision of clinical feedback for nurses after they have cared for a child who has had an ALTE.

What will happen if I take part/ what will I have to do?

If you agree to take part in the pilot studies you will be asked to do the following:

1. Complete a baseline data collection booklet with questionnaires on preparation and support for an ALTE that will take approximately 30 minutes. You will be asked to complete this baseline data several weeks before participating in both the PREPARE and SUPPORT pilot interventions.
2. PREPARE - You will be invited to participate in a group simulation training session held in your ward area at a time that is convenient for you, your colleagues and your patients. The session will take approximately 45-60 minutes and will be held just after handover period.
3. SUPPORT – You will be invited to participate in a group clinical feedback session after being involved in an ALTE in your ward area. The session will take approximately 15-30 minutes.
4. After either the PREPARE and SUPPORT pilot interventions you will be asked to complete an evaluation form for the session so that we can continue to refine and improve them. This will take approximately 5 minutes.
5. After both the PREPARE and SUPPORT pilot interventions you will be asked to complete a further data collection booklet with questionnaires so that your responses can be compared before and after the intervention. This will take up to 30 minutes.
6. Baseline data on staff activity data will be collected throughout the study period from the ward which includes staff sickness, staff turnover, staff retention (this is all anonymised data and not specific to you).
7. If you are on sick leave during the study you will be asked in your return to work interview if your sickness was related to the ALTE.

What are the benefits of taking part?

The potential benefit to you taking part in this study is that you should feel more prepared to care for a child who had an ALTE and feel more supported after these events. In addition, you will be helping to refine these interventions and will hopefully benefit from using them in the future.

What are the possible disadvantages of taking part?

The disadvantages or risks of you taking part in this research are minimal. There is the possibility that taking part may stir up some distressing memories for you. If this does happen then the CI (Adrienne Hudson) can put you in contact with BCH staff for further support. If you feel that you would like someone to speak to after the intervention has been completed please contact the Observation and Monitoring Team (Heather Steele ext 8608 for unplanned PIC admissions, Paul McVittie ext 8651 for arrest calls) or the staff counselors on 0121 678 2790.

Should I take part?

Participating in this research project is voluntary, so you are free to decide whether or not you want to take part. If you decide to take part you will be given this information leaflet and asked to sign a consent form. If you do not wish to take part then you can tell the researcher you do not want to take part without giving a reason.

If you take part in the project and then change your mind, you may withdraw from the study at any time. Your questionnaire and inventory data will be removed from the study and not included in the results.

Is there any reward or reimbursement for taking part in this research project?

There are no rewards or reimbursement for taking part in this research project. The data collection and interventions will be conducted during work time.

Is there any reward or reimbursement for taking part in this research project?

As a token of appreciation, once you have completed and handed in both the baseline and post intervention questionnaires you will be offered a voucher to get a beverage at the Coffee Cart in the conservatory at the Birmingham Children's Hospital.

Will my taking part in the study be kept confidential?

Yes, your participation will be kept confidential. It is entirely up to you if you want to tell colleagues that you have taken part in this research study.

The questionnaires and inventories will be compared at baseline and after participation in the interventions. You will be given a unique code so that the researcher can identify the before and after data. The researcher will be the only other person who knows the code, so you can not be identified from the forms. The forms will be kept in a locked filing cabinet in a locked office. Only the researcher will have access to the forms. The data will be stored according to the Data Protection Act 1998.

During the pilot interventions, if any concerns with under-performance, negligence or breach of professional conduct are identified then the researcher will need to report this to the Observation and Monitoring Team. The Observation and Monitoring Team routinely review all cases where a child has had an unexpected acute life-threatening event and will review any concerns. If the researcher feels that there are any issues that need to be reported to the Observation and Monitoring Team they will discuss this with you first.

Any data that is presented will be anonymised prior to dissemination so no one will ever know who participated in the study.

Results of the study

The researcher plans to publish the results of this study in several ways: in a report outlining recommendations for the use of the interventions to the BCHNHSFT, as part of a PhD thesis, publications in peer review journals and conference presentations.

Who is organizing the study?

The CI for the study is Adrienne Hudson. Adrienne is completing this research as part of her PhD and has received ethics approval from Aston University and Research and Development approval from BCHNHSFT.

Who is funding the study?

The CI, Adrienne Hudson is funded by the West Midlands Nursing, Midwifery and Allied Health Research Fellowship (PhD) to undertake this research.

Who can I contact if I have any concerns about this study?

If you have any concerns about this research project or want any independent advice about how this study is being conducted please contact the Patient Advice and Liaison Service at BCH on 0121 333 8430 or Gareth Evans, the Deputy University Secretary, g.a.evans@aston.ac.uk at Aston University.

Contact details

For further information on this research project or if you would like to withdraw please contact Adrienne Hudson on 07966 164131 or email: Adrienne.McCabe@nhs.net

Sponsored by:
Aston University, Birmingham

Hosted By:
Birmingham Children's Hospital NHS Foundation Trust

Funding:
West Midlands Nursing, Midwifery and Allied Health Professions Research Training Fellowship (PhD)

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Appendix 12 – Baseline Data Collection Pack

Prepare®

Support®

Baseline Data Collection Booklet

Version 1 - 07.01.2012

 **Aston University**
Birmingham

 **Birmingham Children's Hospital**

NHS
West Midlands

Baseline Data Staff Questionnaire

You are being asked to complete this questionnaire as part of the PREPARE and SUPPORT pilot studies. The answers that you give will be collected prior to taking part in the pilot studies and then after completing the simulation sessions (PREPARE) or the clinical debrief (SUPPORT).

Your responses are confidential - the questionnaires will be stored in accordance with the Data Protection Act (1998).

An ALTE (2222) can be a cardiac arrest, respiratory arrest or a call for immediate assistance.

Section 1 - Demographic Data:

1. Participant Identification code:
2. Age:
3. Gender (please circle): M / F
4. Banding (please circle): CSW / Nursery Nurse / Band 5 / Band 6 / Band 7 / other (please specify)
5. Years experience as a nurse:

Section 2 – Experience:

6. Have you ever witnessed an ALTE before: YES / NO
7. Have you ever been involved in an ALTE before: YES / NO
8. If the answer if yes, how many ALTE have you been involved in:

Section 3 – Preparation:

9. Do you feel prepared to care for a child who has an ALTE: YES / NO / UNSURE
10. If you do not feel prepared for an ALTE, please rank in order what aspects you feel most unprepared for (1 being the least prepared and 6 being the most prepared):
 - ___ What your role might be
 - ___ How to perform a certain clinical skills or role (please list)
 - ___ Being asked to do something I don't know how to do
 - ___ How you might feel during and after the event?
 - ___ Wondering if I "missed" something and could have prevented this happening?
 - ___ How to deal with the fumbling, shaking, dropping or forgetting things
 - ___ Getting upset during or after the event
 - ___ How to support the family of a child who has an ALTE
 - Other:
11. Have you ever experienced the following:
 - a. Not knowing what my role at the ALTE was?
 - b. Not knowing how to perform a particular clinical skill i.e. scribe, drawing up medications, finding equipment
 - c. Ask to do something that you did not know how to do?
 - d. Fumbling, shaking, dropping things or forgetting how to do things?
 - e. Getting upset during or after the event?
 - f. Questioning if you had done something wrong to cause the event?
12. Please circle which aspects of an ALTE that you would like further training/information on:
 - g. Chest compressions
 - h. Bag valve mask
 - i. Drawing up medications
 - j. Drawing up fluids
 - k. Equipment needed for intubation
 - l. Scribe
 - m. Equipment needed during the event
 - n. Transferring a patient to PIC
 - o. How to support the families of the patient
 - p. How to deal with the shaking, fumbling and dropping things that I experience during an event
 - q. How to manage if I get upset or cry after an ALTE
 - r. Who can I talk to after an ALTE has occurred
 - s. Other:

13. From Question 12 – please list the top three things you would like further training or information on?

- a.
- b.
- c.

Section 3 – Support:

14. Do you currently feel supported after caring for a child who has an ALTE: YES / NO / UNSURE

15. What support is available to you after caring for a child who has an ALTE?

- a.
- b.
- c.
- d.

16. What support have you used in the past:

- a.
- b.
- c.

17. What support do you think would be useful to yourself or your colleagues:

- a.
- b.
- c.

Section 4 – Staff Outcomes:

18. Have you ever taken time off work as a result of being involved in an ALTE: YES / NO

19. Have you ever experienced the following after caring for a child who has had an ALTE:

- a. Shaking, fumbling
- b. Mind racing
- c. Getting upset or crying after an event
- d. Having trouble sleeping
- e. Flashbacks
- f. Felt like you had no-one to talk to after the event
- g. Felt like you had no-one to talk to at home
- h. Didn't feel like you could face coming back to work on the next shift
- i. Worried about coming back to work
- j. Feel over-protective of other children you look after
- k. Considered working on another ward
- l. Considered working in a different hospital
- m. Considered leaving nursing
- n. Other

20. Have you ever come to work after being involved in an ALTE and felt you were not working as effectively as "normal": YES / NO.

Thank you for taking the time to complete this questionnaire

Perceived Stress Scale

Think about your life in general when answering these questions:

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

- | | | | | | |
|---|---|---|---|---|---|
| 1. In the last month, how often have you been upset because of something that happened unexpectedly?..... | 0 | 1 | 2 | 3 | 4 |
| 2. In the last month, how often have you felt that you were unable to control the important things in your life?..... | 0 | 1 | 2 | 3 | 4 |
| 3. In the last month, how often have you felt nervous and "stressed"? | 0 | 1 | 2 | 3 | 4 |
| 4. In the last month, how often have you felt confident about your ability to handle your personal problems?..... | 0 | 1 | 2 | 3 | 4 |
| 5. In the last month, how often have you felt that things were going your way?..... | 0 | 1 | 2 | 3 | 4 |
| 6. In the last month, how often have you found that you could not cope with all the things that you had to do? | 0 | 1 | 2 | 3 | 4 |
| 7. In the last month, how often have you been able to control irritations in your life?..... | 0 | 1 | 2 | 3 | 4 |
| 8. In the last month, how often have you felt that you were on top of things?..... | 0 | 1 | 2 | 3 | 4 |
| 9. In the last month, how often have you been angered because of things that were outside of your control? | 0 | 1 | 2 | 3 | 4 |
| 10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?..... | 0 | 1 | 2 | 3 | 4 |

Please feel free to use the *Perceived Stress Scale* for your research. The PSS Manual is in the process of development, please let us know if you are interested in contributing.

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References

The PSS Scale is reprinted with permission of the American Sociological Association, from Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 386-396.

Cohen, S. and Williamson, G. Perceived Stress in a Probability Sample of the United States. Spacapan, S. and Oskamp, S. (Eds.) *The Social Psychology of Health*. Newbury Park, CA: Sage, 1988.

The Work Self-Efficacy Inventory Survey

Instructions: There are 30 statements in this inventory that reflect your confidence in your ability to perform a variety of workplace activities. Using the scale indicated, circle the number that most applies to you. The survey should take no more than ten to fifteen minutes of your time.

Thinking about your most recent work experience, how confident are you in your ability to:	Not	A			
	at all	Little	Moderate Amount	Lot	Completely
1 Know what is expected of you as a worker.	1	2	3	4	5
2 Help build a team as a working unit.	1	2	3	4	5
3 Determine what is expected of you on the job.	1	2	3	4	5
4 Know how things "really work" inside an organization.	1	2	3	4	5
5 Be clear when presenting your ideas.	1	2	3	4	5
6 Work under pressure.	1	2	3	4	5
7 Master an organization's slang and special jargon.	1	2	3	4	5
8 Manage conflict among group members.	1	2	3	4	5
9 Understand what all of the duties of your role entail.	1	2	3	4	5
10 Solve new and difficult problems.	1	2	3	4	5
11 Work under extreme circumstances.	1	2	3	4	5
12 Understand the politics in the organization.	1	2	3	4	5
13 Continue to learn once you're on the job.	1	2	3	4	5
14 Develop cooperative working relationships with others.	1	2	3	4	5
15 Invent new ways of doing things.	1	2	3	4	5
16 Solve most problems even though no solution is immediately apparent.	1	2	3	4	5
17 Find out exactly what a problem is when first becoming aware of it.	1	2	3	4	5
18 Listen effectively to gain information.	1	2	3	4	5
19 Know an organization's long-held traditions.	1	2	3	4	5
20 Work well in situations that other people consider stressful.	1	2	3	4	5
21 Understand the behavior appropriate to your role.	1	2	3	4	5
22 Challenge things that are done by the book.	1	2	3	4	5
23 Learn from your mistakes.	1	2	3	4	5
24 Solve problems no matter how complex.	1	2	3	4	5
25 Coordinate tasks within your work group.	1	2	3	4	5
26 Learn to improve on your past performance.	1	2	3	4	5
27 Be sensitive to others' feelings and attitudes.	1	2	3	4	5
28 Function well at work even when faced with personal difficulties.	1	2	3	4	5
29 Concentrate on what someone is saying to you even though other things could distract you.	1	2	3	4	5
30 Listen effectively to understand opposing points of view.	1	2	3	4	5

Professional Quality of Life Scale (ProQOL)

*Compassion Satisfaction and Compassion Fatigue
(ProQOL) Version 5 (2009)*

When you [help] people you have direct contact with their lives. As you may have found, your compassion for those you [help] can affect you in positive and negative ways. Below are some-questions about your experiences, both positive and negative, as a [helper]. Consider each of the following questions about you and your current work situation. Select the number that honestly reflects how frequently you experienced these things in the *last 30 days*.

1=Never 2=Rarely 3=Sometimes 4=Often 5=Very Often

- _____ 1. I am happy.
- _____ 2. I am preoccupied with more than one person I [help].
- _____ 3. I get satisfaction from being able to [help] people.
- _____ 4. I feel connected to others.
- _____ 5. I jump or am startled by unexpected sounds.
- _____ 6. I feel invigorated after working with those I [help].
- _____ 7. I find it difficult to separate my personal life from my life as a [helper].
- _____ 8. I am not as productive at work because I am losing sleep over traumatic experiences of a person I [help].
- _____ 9. I think that I might have been affected by the traumatic stress of those I [help].
- _____ 10. I feel trapped by my job as a [helper].
- _____ 11. Because of my [helping], I have felt "on edge" about various things.
- _____ 12. I like my work as a [helper].
- _____ 13. I feel depressed because of the traumatic experiences of the people I [help].
- _____ 14. I feel as though I am experiencing the trauma of someone I have [helped].
- _____ 15. I have beliefs that sustain me.
- _____ 16. I am pleased with how I am able to keep up with [helping] techniques and protocols.
- _____ 17. I am the person I always wanted to be.
- _____ 18. My work makes me feel satisfied.
- _____ 19. I feel worn out because of my work as a [helper].
- _____ 20. I have happy thoughts and feelings about those I [help] and how I could help them.
- _____ 21. I feel overwhelmed because my case [work] load seems endless.
- _____ 22. I believe I can make a difference through my work.
- _____ 23. I avoid certain activities or situations because they remind me of frightening experiences of the people I [help].
- _____ 24. I am proud of what I can do to [help].
- _____ 25. As a result of my [helping], I have intrusive, frightening thoughts.
- _____ 26. I feel "bogged down" by the system.
- _____ 27. I have thoughts that I am a "success" as a [helper].
- _____ 28. I can't recall important parts of my work with trauma victims.
- _____ 29. I am a very caring person.
- _____ 30. I am happy that I chose to do this work.

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Impact of Event Scale

List Today's Date _____

List the Date of the Event _____

Describe the Event _____

Think of an acute life-threatening event (ALTE - 2222 call) that is significant to you. You may have been actively involved in it or witnessed it. If you have never seen an ALTE, think of any other stressful event that you have been involved in at work. Below is a list of comments made by people after stressful life events. Regardless of when the event occurred for you, indicate how frequently you might have experienced any of these thoughts or feelings in the last seven days. If they did not occur during that time, please mark the "not at all" column.

Select only one answer per row.

		Not at all	Rarely	Sometimes	Often
1.	I thought about it when I didn't mean to.	0	1	3	5
2.	I avoided letting myself get upset when I thought about it or was reminded about it.	0	1	3	5
3.	I tried to remove it from memory.	0	1	3	5
4.	I had trouble falling asleep or staying asleep because of pictures or thoughts about it that came to my mind.	0	1	3	5
5.	I had waves of strong feelings about it.	0	1	3	5
6.	I had dreams about it.	0	1	3	5
7.	I stayed away from reminders about it.	0	1	3	5
8.	I felt as if it hadn't happened or was un real.	0	1	3	5
9.	I tried not to talk about it.	0	1	3	5
10.	Pictures about it popped into my mind.	0	1	3	5
11.	Other things kept making me think about it.	0	1	3	5
12.	I was aware that I still had a lot of feelings about it, but I didn't deal with them.	0	1	3	5
13.	I tried not to think about it.	0	1	3	5
14.	Any reminder brought back feelings about it.	0	1	3	5
15.	My feelings about it were kind of numb.	0	1	3	5

Brief COPE

Think back to the significant event you discussed in the Impact of Event Scale - these items deal with ways you've been coping with the stress in your life since you were involved in this event. There are many ways to try to deal with problems. These items ask what you've been doing to cope with this one. Obviously, different people deal with things in different ways, but I'm interested in how you've tried to deal with it. Each item says something about a particular way of coping. I want to know to what extent you've been doing what the item says. How much or how frequently. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Use these response choices. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

- 1 = I haven't been doing this at all**
- 2 = I've been doing this a little bit**
- 3 = I've been doing this a medium amount**
- 4 = I've been doing this a lot**

- 1. I've been turning to work or other activities to take my mind off things.
- 2. I've been concentrating my efforts on doing something about the situation I'm in.
- 3. I've been saying to myself "this isn't real."
- 4. I've been using alcohol or other drugs to make myself feel better.
- 5. I've been getting emotional support from others.
- 6. I've been giving up trying to deal with it.
- 7. I've been taking action to try to make the situation better.
- 8. I've been refusing to believe that it has happened.
- 9. I've been saying things to let my unpleasant feelings escape.
- 10. I've been getting help and advice from other people.
- 11. I've been using alcohol or other drugs to help me get through it.
- 12. I've been trying to see it in a different light, to make it seem more positive.
- 13. I've been criticizing myself.
- 14. I've been trying to come up with a strategy about what to do.
- 15. I've been getting comfort and understanding from someone.
- 16. I've been giving up the attempt to cope.
- 17. I've been looking for something good in what is happening.
- 18. I've been making jokes about it.
- 19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
- 20. I've been accepting the reality of the fact that it has happened.
- 21. I've been expressing my negative feelings.
- 22. I've been trying to find comfort in my religion or spiritual beliefs.
- 23. I've been trying to get advice or help from other people about what to do.
- 24. I've been learning to live with it.
- 25. I've been thinking hard about what steps to take.
- 26. I've been blaming myself for things that happened.
- 27. I've been praying or meditating.
- 28. I've been making fun of the situation.

Citation: Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, 4, 92-100.

Hospital Anxiety and Depression Scale (HADS)



Name: _____ Date: _____

Clinicians are aware that emotions play an important part in most illnesses. If your clinician knows about these feelings he or she will be able to help you more.

This questionnaire is designed to help your clinician to know how you feel. Read each item below and **underline the reply** which comes closest to how you have been feeling in the past week. Ignore the numbers printed at the edge of the questionnaire.

Don't take too long over your replies, your immediate reaction to each item will probably be more accurate than a long, thought-out response.

FOLD HERE

A D
3
2
1
0

I feel tense or 'wound up'

- Most of the time
- A lot of the time
- From time to time, occasionally
- Not at all

0
1
2
3

I still enjoy the things I used to enjoy

- Definitely as much
- Not quite so much
- Only a little
- Hardly at all

3
2
1
0

I get a sort of frightened feeling as if something awful is about to happen

- Very definitely and quite badly
- Yes, but not too badly
- A little, but it doesn't worry me
- Not at all

0
1
2
3

I can laugh and see the funny side of things

- As much as I always could
- Not quite so much now
- Definitely not so much now
- Not at all

3
2
1
0

Worrying thoughts go through my mind

- A great deal of the time
- A lot of the time
- Not too often
- Very little

3
2
1
0

I feel cheerful

- Never
- Not often
- Sometimes
- Most of the time

0
1
2
3

I can sit at ease and feel relaxed

- Definitely
- Usually
- Not often
- Not at all

FOLD HERE

A D
3
2
1
0

I feel as if I am slowed down

- Nearly all the time
- Very often
- Sometimes
- Not at all

0
1
2
3

I get a sort of frightened feeling like 'butterflies' in the stomach

- Not at all
- Occasionally
- Quite often
- Very often

3
2
1
0

I have lost interest in my appearance

- Definitely
- I don't take as much care as I should
- I may not take quite as much care
- I take just as much care as ever

3
2
1
0

I feel restless as if I have to be on the move

- Very much indeed
- Quite a lot
- Not very much
- Not at all

0
1
2
3

I look forward with enjoyment to things

- As much as I ever did
- Rather less than I used to
- Definitely less than I used to
- Hardly at all

3
2
1
0

I get sudden feelings of panic

- Very often indeed
- Quite often
- Not very often
- Not at all

0
1
2
3

I can enjoy a good book or radio or television programme

- Often
- Sometimes
- Not often
- Very seldom

Now check that you have answered all the questions

A D
3
2
1
0

This form is printed in green. Any other colour is an unauthorized photocopy.

TOTAL

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