

School of Nursing and Midwifery

Do midwives possess the knowledge, skills and confidence to care for acutely ill women within the tertiary maternity hospital setting?

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for an award of any other degree or diploma in any university.

A handwritten signature in black ink, appearing to be a stylized name.

Signature:

Date: August 2013

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For my parents, who have always encouraged me.

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‘Education is the most powerful weapon which you can use to change the world’

–Nelson Mandela

Abstract

Background

Changes in the demographic profile of childbearing women, including delayed age of initial and subsequent pregnancies, the ability of women with significant medical comorbidity to conceive and sustain a pregnancy to viability, increasing morbid obesity and the unpredictable risks of conditions such as pre-eclampsia and massive blood loss associated with birth, have contributed to increased maternal mortality and morbidity in the developed world. As a result the demand for maternity high-dependency care has increased significantly. The rapid progression of this subspecialty of obstetrics has challenged the capacity of the midwifery profession in Australia to develop suitably prepared midwives as the predominant care providers for women with complex health issues during pregnancy and labour. There have been no specialised educational programs for midwives in Australia that expand the knowledge, skills and expertise required to care confidently for acutely-ill women in the tertiary maternity high-dependency setting.

Aim

This project assesses midwives' background knowledge, skills and confidence in core components of maternity high-dependency care both before and after attendance at a maternity high-dependency course. It also aims to provide a qualitative perspective of midwifery confidence in providing high-dependency care to acutely-ill women and their babies within a stand-alone, tertiary, public, metropolitan women's hospital in Australia.

Methods

The project was approved by the university Institutional Human Research Ethics Committee and registered with the participating hospital. Fourteen midwives who provided care for acutely-ill women, and who attended a maternity high-dependency course within the hospital, consented to participate in the study. A mixed methodology design incorporating quantitative description and analysis of midwifery knowledge, skills and confidence was undertaken, both pre- and post-course. Knowledge was assessed using a pre-course, post-course knowledge test. Clinical skill was self-assessed through a pre-course, post-course skills evaluation. Confidence was evaluated by completing a general self-efficacy scale. Each of the assessments was completed prior to attending the maternity high-dependency course, immediately after course completion, and 12 months post-course completion. Focus group interviews were conducted immediately after course completion to explore the effects of the education upon participants' knowledge, skill and confidence in a clinical setting. A thematic analysis was conducted on the material from the interviews to identify relevant themes and sub-themes associated with the course experience.

Results

No statistically significant improvement was seen immediately after course completion in any category, but a trend towards overall improvement was evident. Pearsons's chi-square analysis indicated a statistically significant improvement in midwifery knowledge ($p = < 0.001$), skills ($p = 0.005$), and confidence ($p = < 0.004$) 12 months after course completion. Thematic analysis of the focus group interview transcripts revealed three core themes that influenced confidence in clinical practice.

Conclusions

A maternity high-dependency theory-based course improves the knowledge, skill and confidence of midwives providing care to acutely ill women. This should better equip midwives to care for women experiencing significant maternal morbidity in a maternity high dependency unit. Importantly, this may obviate the need to transfer a pregnant or recently birthed woman to an intensive care unit or general adult hospital, enabling continuity of midwifery care for women and their babies within the maternity hospital setting whilst also ensuring their acute care needs can be met.

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Chapter One: Do Midwives Possess the Knowledge, Skills and Confidence to Care for Acutely Ill Women within the Tertiary Maternity Hospital Setting?

Background

The involvement of the midwife in the field of maternity high-dependency care has become necessary as women with pre-existing complex co-morbidities can now conceive, and sustain their pregnancy to viability or term. Advancing maternal age during pregnancy, ethnicity, obesity and pre-existing medical disorders have been cited as risk factors linked to increased maternal morbidity within the developed world (Say & Pattinson, 2008). The emerging discipline of maternity high-dependency care in obstetrics is creating a parallel need for an expanded, specialised area of midwifery practice and expertise.

The international definition of the midwife describes midwives as experts within the realm of the normal, healthy childbearing paradigm, with the midwifery philosophy viewing childbearing as a normal and natural life event for most women (ICM, 2011). The expectation of midwives is that they will care for predominantly healthy women, and refer to a suitable health professional when care falls outside this normal, healthy paradigm; and the concept of the healthy childbearing woman has traditionally been the primary focus for initial midwifery registration programs and the predominant context of midwifery practice.

Midwives working in tertiary maternity hospitals within Australia are increasingly being challenged to provide care for women who do not fit this paradigm, and who are experiencing serious co-morbidities during pregnancy. Although midwives may not be the primary decision makers in this setting, they are expected to possess a suitable level of knowledge and expertise to care for women experiencing the serious complications that may arise during pregnancy, labour or the postpartum period, and who may require high-dependency care. These complications are not exclusively pregnancy-related, but may also include pre-existing illness or disease exacerbated by pregnancy.

Whilst the nursing profession has developed and refined its expertise as a nursing specialty in the field of high-dependency care, the midwifery profession has not been required to pursue this as a specific area of practice. The clinical expertise of specialist nurses and their mastery of high-dependency care has enabled them as a professional group to care for many different patients across a number of clinical settings. However, the unique underlying physiology of pregnancy and care of the acutely ill childbearing woman has been considered outside the normal scope of practice for the general high-dependency nurse. In previous years, this care was also considered outside the scope of practice of the midwife, who might not have been prepared or required to care for an acutely unwell woman.

The demand for maternity high-dependency care and the rapid progression of this sub-specialty of obstetrics has challenged the capacity of the midwifery profession in

Australia to develop suitably prepared midwives as the predominant care providers for women with complex health issues during pregnancy and labour. There have been no specialised educational programs for midwives in Australia that enable them to attain the knowledge, skills and expertise to confidently care for acutely ill women in the tertiary maternity high-dependency setting. This research sought to determine whether midwives working in tertiary hospitals had the knowledge, skill and confidence to care for acutely ill childbearing women who might require maternity high-dependency care.

Significance and Purpose

This study is significant as the knowledge and skill of midwives already providing high-dependency maternity care in tertiary hospitals is not well described. Nor has the confidence of midwives in providing such care been studied previously. This project will identify inconsistencies between theoretical and practical knowledge within the area of high-dependency maternity care, and whether these affect the confidence of midwives to work in this area.

The increasing incidence of maternal morbidity in Australia has increased the demand for midwives who are able to care for women with complex needs; however, midwives may not always feel able to provide this level of care with confidence unless they have had previous critical care training or experience as a nurse. This study sought to investigate whether midwives attending a four-month maternity–high-dependency course, and working within the tertiary hospital setting, had the knowledge and skill to care confidently for acutely ill childbearing women who might require high-dependency care.

Research Objectives

1. Determine the level of midwifery knowledge surrounding the theoretical principles of high-dependency maternity care.
2. Explore the level of confidence midwives have in caring for acutely ill women within the tertiary hospital setting.
3. Consider the level of clinical skill and proficiency midwives have in providing technical aspects of high-dependency maternity care.
4. Examine the demographic details of midwives working in this field to make associations between their knowledge, confidence, skills and clinical background.

To achieve these research objectives a mixed methodological approach was used. All participants in a pilot program for high-dependency midwifery were invited to participate in the collection of quantitative data that compared course participants' background, knowledge, skills and attitudes to core components of maternity high-dependency care, as well as providing a qualitative perspective of their confidence in providing this care, gained through focus group interviews. Quantitative data collection occurred both pre-course and at two intervals following course

completion. Qualitative data was collected immediately after course completion and analysed using a constant comparative approach to thematic discovery.

In Chapter Two a review of the literature contextualising the current state of maternity high-dependency care is outlined, along with contemporary issues across the developed world. Methods of classifying and reporting maternal mortality and morbidity are explained along with the rates and distribution of maternal death, in order to reveal the increasing demand for high-dependency midwifery care. Chapter Three describes and rationalises the methods used to conduct the research, which include a mixture of quantitative and qualitative techniques. Chapter Four outlines the results generated from the quantitative component of the research and includes both descriptive statistical summaries and basic inferential statistical findings. Chapter Five discusses the qualitative themes and sub-themes that arose from the focus group interviews, and the process of thematic discovery. Chapter Six examines and discusses the findings of the study and makes recommendations for future practice and further research, as well as identifying the recognised limitations of the research.

Chapter Two: Literature Review

The need to ensure that maternity health professionals working in hospitals, such as midwives, obstetricians, and obstetric trainees, have the skills to provide high-dependency care is well recognised internationally (Lewis & de Swiet, 2007). The United Kingdom Confidential Enquiry into Maternal and Child Health (CEMACH) 2007 recommended that health professionals should undertake training in the management of medical and mental health problems that might not be directly related to pregnancy but might affect pregnant women (Lewis, 2007). These recommendations were made in response to the increase in the number of maternal deaths exacerbated by medical conditions unrelated to pregnancy, which were not always recognised or treated appropriately by health professionals (Lewis, 2007).

Having found that many health professionals were not proficient in managing care outside their basic scope of expertise, the inquiry called for improvements to be made to basic, immediate and advanced life support skills. It also recommended that health care professionals expand their existing theoretical knowledge and improve their clinical skills in order to care for sick childbearing women. The report alluded to the need for establishing specific maternity high-dependency units staffed by suitably trained midwives able to provide critical care whilst upholding the philosophy of midwifery, which embodies woman-centred care (Lewis, 2007).

This chapter will present a review of the literature concerning the need for and emergence of maternity high-dependency care both globally and within the Australian context. In order to do this effectively the Australian data will be juxtaposed with reports from the United Kingdom, the Netherlands and South Africa, where confidential maternal mortality investigations have established the need and context for high-dependency maternity care services. The education and training of midwives, as relevant to high-dependency maternity care, will also be examined in order to gain an understanding of how best to prepare midwives to provide these services to acutely ill women in tertiary hospitals.

Definitions

The following definitions of maternal mortality/death, maternal morbidity and high-dependency maternity care have been included to provide clarity for the purposes of this study.

Maternal death is defined in the tenth revision of the International Classification of Diseases (ICD 10) as

the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related or aggravated by the pregnancy or its management but not from accidental or incidental causes. (WHO, 2004)

The maternal mortality ratio (MMR) is classified as one maternal death per 100 000 live births (Bodker et al., 2009). Severe acute maternal morbidity, also classified as a 'near miss', occurs when 'a woman nearly dies but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy' (Say, Souza & Pattinson, 2009, p. 288).

Whilst there is no consensus on a definition for maternity high-dependency care, it has been described as an intermediate level of care that encompasses all midwifery care which cannot be provided in an ordinary ward setting, and excludes intensive care (Audit Commission, 1999; James, Endacott & Stenhouse, 2009).

Maternal Mortality: Global Rates and Distribution of Maternal Death

Maternal mortality ratios within the developed world have remained relatively low and stable for the past 20 years (Drife, 2008). With rapid advancements made in modern health care in terms of the technology and facilities available, maternal death is now very rare in high-income nations such as Australia, New Zealand, the United Kingdom, Canada and the United States, and across Northern Europe (Schutte et al., 2009). Global maternal mortality ratios in the developed world have been estimated at 14 per 100 000 pregnancies, a stark contrast to 290 per 100 000 pregnancies in the developing world in 2008 (WHO, 2010). Because these statistics cannot be guaranteed, WHO has also adopted a range of values which may encompass the maternal death rate. These have been reported in the developed world as 13–16 per 100 000 pregnancies, and in the developing world as 220–410 per 100 000 pregnancies (WHO, 2010). Efforts to report the MMR throughout the world reliably have been confounded by poor reporting mechanisms and a lack of civil registration systems (WHO, 2010).

Interpreting Maternal Mortality Rates at an International Level

International maternal mortality data is readily accessible, but is notoriously difficult to interpret and measure as no clear international consensus has been reached over the past three decades on how to measure and report maternal death consistently (Hogan et al., 2010). For instance, American authors have mentioned that maternal mortality may have been under-reported by as much as 30–50% during the 1990s when using vital statistics data alone, as opposed to using ICD codes, intensive care admissions, quality improvement sources and other local sources which are now readily available (Berg, Atrash, Koonin & Tucker, 1996; Goffman, Madden, Harrison, Merkatz & Chazotte, 2007; Horon, 2005; Panting-Kemp et al., 2000). Discrepancies in American maternal death reporting were still occurring in 2005, with one study claiming that 38% of maternal deaths were inadvertently omitted from death certificates (Horon, 2005).

A further difficulty with the interpretation of international maternal mortality ratios is that different nations, states and organisations report these rates based upon their own classification data, death registration and notification systems (Khan, Wojdyla,

Say, Gulmezoglu & Van Look, 2006). The comparison of data from one nation to another is often a challenge. It is not always possible to compare like data and make assumptions and recommendations based upon it, although identifying emerging categories and trends may still be useful.

Classification of Maternal Death

Direct maternal deaths occur from complications which arise only from pregnancy. The causes of these deaths can be attributed to conditions such as haemorrhage, eclampsia, venous thromboembolism (VTE) or sepsis (Lewis & de Swiet, 2007). In comparison, indirect maternal deaths occur from disease or illness that developed prior to or during pregnancy, but was not caused by the pregnancy although it may have been exacerbated by it (Lewis & de Swiet, 2007). Examples include cardiac disease, epilepsy, asthma, diabetes and HIV/AIDS (Lewis & de Swiet, 2007).

In the developing world, direct causes of maternal death are steadily rising as indirect causes of maternal death slowly decline and reach a plateau (Lewis & de Swiet, 2007). Cardiovascular disease has become the predominant cause of indirect maternal death in nations such as Australia, the United Kingdom and the Netherlands (Centre for Maternal and Child Enquiries [CMACE], 2011; Schutte et al., 2010; Sullivan, Hall & King, 2008). An increase in indirect maternal mortality has been attributed to advancing maternal age during pregnancy, pre-existing medical disorders such as hypertension and obesity, ethnicity (particularly in migrant sub-Saharan African and Indigenous women) and the substandard provision of maternity care by trained health professionals (CMACE, 2011; de Swiet, 2008; Lewis, 2007; Schutte et al., 2010). The term 'substandard' was chosen by the authors of these reports to mean that care provided was at times insufficient or inadequate and did not meet the required standard.

The International Confidential Enquiry Approach

Since 1952 the United Kingdom has consistently reported maternal mortality through a standardised national confidential triennial enquiry. No other nation has such a comprehensive record of investigation of maternal mortality (Lewis & de Swiet, 2007). A similar, although less comprehensive, process is utilised in the Netherlands, South Africa and Australia.

The confidential enquiry process is useful in attaining, analysing and disseminating information, so that lessons may be learned from each woman's death (CMACE, 2011; Drife, 2008, Lewis, 2007). These messages have some applicability not only for clinicians but also for managers, politicians, policy makers, consumer groups and the general public (Drife, 2008). The recommendations from the United Kingdom confidential enquiries are often applicable to the Australian maternity population, as the Australian maternity care system has been based upon models operating in the United Kingdom. Furthermore, Australia contains the largest population of English-born migrants outside the United Kingdom: one fifth of the total Australian migrant

population (n=1 192 878) who were born outside Australia were migrants from the United Kingdom, Channel Islands and Isle of Man (Australian Bureau of Statistics, 2008). The homogeneity of the English and Australian populations make the applicability of the recommendations especially relevant.

The United Kingdom's eighth confidential enquiry, which reported on the triennium 2006–2008, identified 261 maternal deaths, with a calculated maternal mortality ratio of 11.39 per 100 000 births. For the first time in the enquiry's history indirect causes were the leading category of maternal death (n=154), as opposed to direct causes (n=107) (CMACE, 2011). These figures reflect some of the most serious incidences of severe disease and illness within the childbearing population of the United Kingdom during the last triennium. Cardiac disease was the leading cause of death (n=53), with pre-existing neurological disease such as epilepsy also claiming many lives (n=36), followed by other indirect causes of death from pre-existing illnesses such as diabetes or asthma (n=49). The leading direct cause of maternal death was from sepsis (n=26) followed by eclampsia, pre-eclampsia (n=19) and VTE (n=18). Of those women who died, 73% had experienced pre-existing illness or disease (CMACE, 2011).

What is not revealed through these reports is the level of pre-existing illness within the cohort of women who did not die, or those women who died after a prolonged period of illness exceeding 42 days from birth or the end of her pregnancy (CMACE, 2011). Whilst the international definition of maternal mortality is useful, one criticism is that it does not take into consideration the causes of death which may be directly, indirectly or incidentally related to maternal death, or which occur up to one year after the pregnancy is completed or terminated (CMACE, 2011). The consequences of this in relation to the under-reporting of maternal mortality, whether from pre-existing illness exacerbated by pregnancy, or from prolonged acute illness such as severe sepsis, postpartum cardiomyopathy and cerebral haemorrhage, are potentially significant (Austin, Kildea & Sullivan 2007; Das, 2009).

Confidential maternal mortality reporting began in the Netherlands in the 1980s with the nation's first confidential enquiry into maternal deaths conducted over almost a decade from 1983 to 1992. The maternal mortality ratio reported from the findings of this first enquiry was 9.7 per 100 000 live births (Schutte et al., 2009). 'Substandard' care was singled out as a leading cause of death in women with pre-eclampsia in this report. Direct causes of maternal death were identified as the category claiming the highest number of women's lives. In the second confidential enquiry, the maternal mortality ratio rose to 12.1 per 100 000, which was statistically significant. The direct causes of maternal death were led by pre-eclampsia and venous-thromboembolism (VTE). Maternal death from the indirect cause of cardiovascular disease rose from 0.6 to 1.6% in 1993–2005, which equalled thromboembolic disease as the second highest cause of maternal death in the Netherlands during that period (Schutte et al., 2009). The rise in the indirect causes of mortality reflects the change in risk profile and demographic characteristics of childbearing women in the

Netherlands. It is likely that the rise in indirect maternal deaths will continue, although a more recent mortality report is yet to be released.

Traditionally the Netherlands, and the United Kingdom to a lesser degree, has had a high uptake of midwifery-led services and midwifery models of care amongst a population of relatively low-risk women. Approximately 41% of births in the Netherlands are considered low risk, with three quarters conducted at home under the care of a midwife (Zwart, Dupis, Richters, Ory & van Roosmalen, 2010). The changes within maternal demography such as advancing age, the presence of pre-existing illness and risk profile are noteworthy. They can be extrapolated to other developed nations such as Australia, New Zealand and Canada who share similar characteristics amongst their populations of childbearing women (Zwart et al., 2009).

In contrast to the developed world, the causes of maternal death in developing nations such as South Africa are significantly different. This is in part associated with the HIV/AIDS epidemic, the leading cause of indirect maternal death at 22.4% followed by tuberculosis (5.6%), malaria (2.6%) and cardiac disease (2.4%). In 2008, hypertension was the leading direct cause of death in South African women (15.7%), followed by post partum haemorrhage (9.7%) and sepsis (5.6%). The maternal mortality ratio reported in South Africa in the most recent confidential enquiry was categorised into two groups: women who had human immunodeficiency virus (HIV) and women who did not. HIV negative women had a MMR of 34/100 000 live births, HIV positive women had a MMR of 328/100 000 live births and women who were not tested for HIV had a MMR of 275/100 000 live births. The impact of HIV upon maternal deaths in South Africa is presented clearly by these statistics (Every Death Counts Working Group [EDCWG], 2008).

In the *Every Death Counts* report, 38.4% of the maternal deaths that occurred were classified as avoidable. The predominant factor cited for the avoidable deaths was poor resuscitation practices (20%) with the inappropriate management of circulatory collapse cited as the largest cause of mortality. In part this was due to a lack of available blood products, inadequate facilities and limited transportation between facilities. Nineteen percent of cases in which women died were attributed to inadequate management and care, a significant increase from the previous triennium (EDCWG, 2008).

Maternal Mortality Reporting in Australia

Australian maternal mortality reporting, which commenced in the triennium of 1973–1975 (Sullivan et al., 2008), has traditionally followed a similar framework to the United Kingdom. This has changed recently, with each maternal death now being recorded as a sentinel event at a state level, through clinical incident reporting and investigated by local state and territory maternal mortality committees (Department of Health, 2012). In Australia, the review and notification of maternal mortality varies across health services and is entirely dependent upon professional obligations

and work practices, resources, policies and statutory requirements. This has led to inconsistent maternal mortality reporting across Australia (Royal Australasian College of Surgeons, 2008).

The most recent Australian maternal mortality report was published in 2008, and covered the triennium 2003–2005 inclusive (Sullivan et al., 2008). In this report, there were 65 maternal deaths noted in Australia across the triennium, giving a maternal mortality ratio of 8.4 per 100 000 births (Sullivan et al., 2008). Table 1 demonstrates the distribution and causes of direct and indirect maternal deaths during that period.

Table 1
Causes of Direct and Indirect Maternal Death in Australia

Direct causes of maternal death 2003–2005	Number of deaths	Indirect causes of maternal death 2003–2005	Number of deaths
Amniotic Fluid Embolism	8	Cardiac Conditions	10
Hypertensive disorders	5	Psychiatric causes	6
Thromboembolic disease	5	Non-obstetric haemorrhage	5
Obstetric haemorrhage	4	Infection	4
Cardiac conditions	3	Hypertension	1
Infection	1	Other indirect causes	10
Deaths related to anaesthesia	1		
Non-genital tract haemorrhage	1		
Thrombotic thrombocytopenic purpura	1		
TOTAL	29	TOTAL	36

Note. Adapted from Sullivan, Hall and King, 2008.

The leading category of maternal deaths, similar to the United Kingdom, was as a result of indirect causes (n=36) with cardiac conditions (n=10) the leading cause of death in Australian women during that period (Sullivan et al., 2008) followed by psychiatric conditions (n=6) and non-obstetric haemorrhage (n=5) such as intracranial haemorrhage. Amniotic fluid embolism claimed the lives of eight women in the direct category of maternal death, with an equal number of women dying from hypertensive disorders (n=5) and VTE (n=5) (Sullivan et al., 2008). This report revealed that there were a relatively small number of maternal deaths in Australia during this period, with some notable similarities but also some differences in the causes of death in comparison to the other nations previously discussed.

In Australia, maternal mortality ratios have remained low and stable since maternal mortality reporting commenced. The relatively low levels of maternal deaths during this time have made it very difficult to identify emerging trends and make

meaningful conclusions from the data captured (Pollock, Harley & Nelson, 2011). Instead of focusing on the causes of maternal mortality at a national level, Commonwealth funding has been directed at investigating rare and serious complications of pregnancy and childbirth, which are suspected to occur more frequently than maternal death, through the Australasian Maternity Outcomes Surveillance System (AMOSS).

Maternal Morbidity: Rates and distribution

The incidence of maternal morbidity cannot be determined reliably. Prior to 2008, the absence of a global working definition of maternal morbidity allowed researchers to develop their own definitions, which varied from study to study (Cecatti et al., 2007; Gandhi, Welz & Ronsmans, 2004; Jayaratnam, de Costa & Howarth, 2011). The actual incidence rates of maternal morbidity presented in research prior to 2008 are confusing and difficult to analyse. What is beginning to emerge from current research is that there is an increasing level of illness amongst the childbearing population (Say & Pattinson, 2008).

Maternal morbidity occurs more frequently than maternal death in developed countries such as Australia. Health care services in the developed world are generally more available, accessible and capable of responding to the health-related needs of childbearing women than those of the developing world (Say & Pattinson, 2008). Some causes of morbidity for childbearing women in the developed world may be unpreventable such as with pre-existing congenital cardiac disease, as girls experiencing these conditions who may now survive into adulthood become pregnant. Alternatively, illness such as sepsis may be misinterpreted or overlooked, and conditions such as pre-eclampsia cannot be prevented (Say & Pattinson, 2008).

The demographics of childbearing women in Australia are also changing. More women are now delaying pregnancy until their later years, at which time they may also have pre-existing medical illnesses such as hypertension, and are more likely to be overweight or obese. Improved management of chronic illness and in-vitro fertilisation techniques have led to women becoming pregnant and sustaining a pregnancy when previously this was not possible. Contemporary influences affecting when and how women give birth has also increasingly led to midwives caring for women whose needs are acutely complex. These risk factors have all been linked to maternal morbidity within the developed world and are applicable to the Australian context (Say & Pattinson, 2008).

Changing levels of morbidity across the childbearing continuum pose many challenges for developed nations, including Australia. Health care systems are increasingly confronted with the task of providing specialised services. Examples of these within Western Australia include a specialised drug and alcohol service during pregnancy, a diabetes clinic, peripartum cardiomyopathy service, high-risk clinic, and maternal–fetal medicine service. Personnel must be adequately trained and

equipped to deliver these services and operate equipment for the women who require it (Say & Pattinson, 2008).

As maternal morbidity reportedly occurs 50 times more frequently than maternal mortality in developed nations, it is a more consistent and reliable benchmark for examining and exploring maternal health and well-being than maternal mortality ratios (CMACE, 2011; Homer, Kurinczuck, Spark, Brockelhurst & Knight 2010; Ronsmans, 2009). The causes of maternal death can be rare and uncommon, and may have limited applicability and relevance for the entire obstetric population (Say & Pattinson, 2008); in contrast, an investigation of maternal morbidity can explain common complications within the childbearing period, providing a broader picture of maternal health within the local context (Drife, 2008). In a recent Australian study, the non-obstetric causes of maternal morbidity were as high as 36% (Jayaratnam, de Costa & Howart, 2011). A similar percentage (33%) of non-obstetric morbidity has been found amongst critically ill women in the Netherlands (Zwart, Dupuis, Richters, Ory & van Roosmalen, 2009).

The Australasian Maternity Outcomes Surveillance System (AMOSS) has been developed to investigate rare disorders which may lead to significant morbidity or mortality during pregnancy, childbirth and the postpartum period. Data is entered electronically using a nation-wide database, on a monthly basis, using a prospective, negative reporting system by a designated data collection co-ordinator at each participating hospital. The initial conditions for investigation included antenatal pulmonary embolus, amniotic fluid embolism, eclampsia, morbid obesity (BMI >50), placenta accreta, peripartum hysterectomy and influenza in pregnancy requiring ICU admission. Additional funding was provided to investigate rheumatic heart disease in 2012. The key objectives of AMOSS are to develop and foster a national network of collaboration and to translate research findings into evidence-based practice (Perinatal and Reproductive Epidemiology Research Unit, 2012). The reporting system is based upon a similar model operating in the United Kingdom, known as the United Kingdom Obstetric Surveillance System (UKOSS).

The benefits of the AMOSS system for developed nations such as Australia and New Zealand, who do not engage in confidential enquiries into maternal death and have relatively low rates of maternal mortality, are significant. This system offers a national mechanism for reporting, classifying and accounting for factors contributing to maternal morbidity, which can be used to develop clinical guidelines, policy and multi-disciplinary educational resources, for audits and for the monitoring of patient safety (Homer et al., 2010).

Data-linkage systems have also been offered as an alternative method of monitoring maternal morbidity, predominantly within the developed world. Research from the United Kingdom suggests that data-linkage systems can play a vital role in risk assessment, prevention and detection (Austin, Kildea & Sullivan, 2007; Lewis, 2007). Such a system currently exists in Western Australia, enabling all health-

related information for the state's population to be linked to an individual's single medical record number. This enables comprehensive research, planning and evaluation of the state's health care system. Some drawbacks of the system are that the data generated is specific to Western Australia only, can only be collected retrospectively and is non-specific to the individual's medical circumstances and particular clinical outcomes (Holman, Bass, Rouse & Hobbs, 1999).

Pollock et al. (2011) have advocated the use of a severity of illness scoring system, such as a modified Acute Physiology and Chronic Health Evaluation version II (APACHE II) score, to be utilised in the maternity population as a method of monitoring, capturing and predicting the characteristics of maternal morbidity within Australia. An APACHE II score allocates a weighted numerical value to 12 physiological parameters, age and health status. The corresponding scores have been validated as prognostic indicators of mortality. Possible scores range from 0–71, with scores of >35 associated with >80% chance of mortality (Knaus, Draper, Wagner & Zimmerman, 1985). Appendix A provides an example of an APACHE II scoring system.

In Pollock, Harley and Nelson's 2011 study, women (n=33) admitted to a tertiary intensive care unit (ICU) experienced APACHE II scores higher than the overall Victorian state mean, with a greater proportion of these women than the average Victorian ICU population requiring mechanical ventilation. The APACHE II scores for this population ranged from 3 to 39 (Pollock et al., 2011). Women cared for in the birth suite setting (n=58) and high-dependency unit (n=46) experienced APACHE II scores of 2–18. The highest APACHE II score in these two groups was for a woman cared for in the birth suite (Pollock et al., 2011).

This study revealed that a large proportion of acutely ill women who have APACHE II scores that meet admission criteria for intensive care units in other countries are cared for in birth suites and maternity high-dependency units in Australia (Pollock et al., 2011). This research has managed to quantify the severity of maternal illness outside the intensive care environment within Australia for the very first time, and reveals that many women cared for within the maternity sector experience quantifiable levels of severe illness (Pollock et al., 2011). This research provides a strong argument for the use of modified APACHE II scoring systems within the maternity sector, to identify women with severe illness and ensure that they are cared for in a suitable environment by adequately skilled professionals.

The Emergence of Maternity High-dependency Care

An extensive search using key words such as high-dependency, critical care, maternity care, acutely ill, obstetric, and pregnancy in three scientific databases (PubMed, Science Direct and CINAHL) was unable to determine a precise definition of maternity high-dependency care or a maternity high-dependency unit within published literature. Maternity high-dependency care can be described as, and

considered to include, close monitoring or observation, which is often unable to be given in an ordinary ward setting because of resource, safety and personnel factors (Audit Commission, 1999). Women receiving this care may not require artificial ventilation; however, their condition may warrant inotropic support or haemodynamic monitoring, as in the instances of major haemorrhage or of severe sepsis, and their sequelae (Baskett, 2008). A general high-dependency unit can be defined as a purposively staffed and resourced division of an intensive care complex, providing an intermediate level of care to patients at risk of developing further complications from an initial episode of single organ failure (Victorian Government, 2009). Clarke (1996) regards high-dependency care as a geographically separate service from the intensive care unit, providing intensive nursing care without mechanical ventilation.

Without any standardised or clear guidance on what maternal high-dependency care comprises, or what maternity high-dependency admission and discharge criteria include, maternity high-dependency care has become fragmented and highly variable from one institution to another (Wheatley, 2010). The lack of a clear consensus surrounding the definition of this care has inhibited the ability of researchers accurately to determine the prevalence of admissions to maternity high-dependency units. High-dependency admissions should be a reliable indicator of the clinical standard of maternal care, severity of maternal illness and maternal morbidity. Assessing both the number and nature of maternal admissions to a high-dependency unit may prove useful in health care services in countries such as Australia, in explaining maternal morbidity, where the number of maternal deaths is very low (Baskett, 2008; Pollock et al., 2011).

In the United Kingdom, the term ‘critical care’ has been adopted to incorporate intensive and high-dependency care, and is described as comprising four levels: Level 0, described as Normal Ward Care; Level 1, requiring additional monitoring or intervention; Level 2, requiring single organ support; and Level 3, involving advanced respiratory or other organ support. These levels reflect severity of illness, as opposed to the location in which the care is received, and have been accepted for use in the maternity population within the United Kingdom (Intensive Care Society, 2009; Wheatley, 2010). Appendix B expands upon these terms, and how they may apply to the maternity population.

James, Endacott and Stenhouse (2009) support the use of a modified version of this classification system for maternity units to enhance uniformity of care across the United Kingdom. Pollock et al. (2011) have offered a similar argument recently in Australia, where there are broadly defined levels of adult intensive care which do not encompass high-dependency care. Intensive care units are defined according to the nature of the facility, the care provided, and its staffing requirements. These classifications are reflected in the National Health Data Dictionary and are outlined in Appendix C (Australian Institute of Health and Welfare, 2006; Victorian Government, 2009).

Maternity high-dependency care has emerged predominantly in relation to clinical need, but also in response to the recommendations of a number of authors who have advocated the expansion of this obstetric sub-specialty. It has been emphasised by the Royal College of Obstetricians and Gynaecologists (RCOG, 2007) in the Safer Childbirth Report. The recommendations from this report state that all obstetric units be able to provide some high-dependency care. It is proposed that 10 high-dependency admissions may be anticipated for every 1000 births per annum. The organisation of high-dependency maternity care services is not made clear in the Report, and is left to the discretion of individual hospitals. Some health services provide this care within the labour and birth suite, whilst others prefer to provide a separate high-dependency unit adjacent to the labour and birth suites.

High-dependency care has been an established area of nursing practice in Australia since the early 1990s, but is relatively new within the field of midwifery. It has been increasingly utilised within the nursing profession as an element of critical care outreach into clinical areas outside the intensive care unit (Leslie, 2005). The notion of critical care ‘without walls’ has also been discussed in the literature, and as Pollock et al. (2011) find in their study, acutely ill childbearing women may be cared for within a specific high-dependency unit, but also in the labour and birth suite environment (Crocker, 2007).

Maternity High-dependency Care versus Intensive Care

The availability of maternity high-dependency care is very important for both women and health care providers. It is important that women are not transferred to a higher level of care such as intensive care without clinical need or justification. It has been postulated amongst clinicians that intensive care units can provide a better quality of care for acutely ill patients, or are more sufficiently resourced than high-dependency units (Wagner, Iwashyna & Kahn, 2013). However for the majority of maternity patients, high-dependency care is both suitable and desirable in managing maternal complications and enabling closer observation and monitoring, allowing any further deterioration to be recognised and responded to quickly.

For health care services, resourcing and staffing intensive care units is both challenging and expensive (Coombs & Lattimer, 2007). One reported benefit of intensive care unit staffing is the capacity to provide care to one patient by one registered nurse. However, this may not always be achievable, and is rarely offered for non-ventilated patients (Ball & McElligot, 2003; Coombs & Lattimer, 2007). Further, the experience and expertise of the individual nurse may influence the effectiveness of the care provided (Coombs & Lattimer, 2007). This is particularly relevant for maternity patients, who are unlikely to receive care from a dual-qualified nurse-midwife in the intensive care setting; therefore, their ‘maternity’ care needs may be overlooked, or be provided infrequently by a visiting maternity health professional.

The words 'intensive care' and the intensive care milieu itself may have a negative connotation to or impact upon childbearing women. Physical factors such as sleep deprivation, environmental noise and bright lighting, and psychological factors like anxiety, fear, and panic were reported as elements invoking stress and compounding suffering amongst childbearing women admitted to an intensive care unit in Jordan (Zeilani & Seymour, 2010). The unwanted side-effects of intensive care admission should also be considered; they may include nosocomial infection, challenges to women in establishing breastfeeding and breast milk supply, as well as the 'hidden' costs of post-traumatic stress disorder and post-natal depression, which may be either precipitated or exacerbated by admission to an intensive care unit (Mnatzaganian et al., 2005; Zeilani & Seymour, 2010).

Mother–baby attachment may also be influenced by the physical separation of mother and baby that follows with an intensive care unit admission. The separation of mother and baby experienced in neonatal intensive care unit admission has been well described in recent literature. The separation of babies from their mothers can have a negative impact upon both in the long and short term: babies have been shown to have longer periods of prolonged crying, to be more irritable and less likely to thrive, and to experience developmental delay, separation anxiety and personality disorders as children (Korja et al., 2008; Kulkarni, Kaushik, Gupta, Sharma & Agrawal, 2010; Valizadeh, Ajoodaniyan, Namnabati, Zamanzadeh & Layegh, 2013; Wolke, Eryigit-Madzwamuse & Gutbrod, 2013), while the mothers of pre-term infants are more likely than other mothers to experience separation anxiety or postnatal depression, and to appear emotionally distant (Bystrova et al., 2009; Flacking et al., 2012; Martini, Knappe, Beesdo-Baum, Lieb & Wittchen, 2010). The prolonged effects of mother–baby separation for sick mothers has not been explored in depth in the literature; however, the experiences of mothers within the neonatal intensive care environment demonstrate that separation may be detrimental for both parties.

The Safer Childbirth Report (UK) of 2007 discussed the concept of maternity high-dependency care and the need for maternity high-dependency units in tertiary maternity hospitals. It recommended that a core of midwives be trained and adequately skilled in the provision of maternity critical care, and recognised that the skills required by these midwives would be 'additional' to their usual midwifery role, and closely linked with the critical care nursing profession.

The United Kingdom Seventh Confidential Enquiry into Maternal and Child Health (CEMACH) of 2007 made key recommendations about the training of all clinical staff within the maternity sector, including midwives. The authors recommended that all clinical staff undertake regular, audited training for the management of serious medical and mental health issues affecting pregnant women, that improvements be made to their basic, immediate and advanced life support skills, and that they be trained to recognise and manage severely ill pregnant women and impending maternal collapse. For the first time in the history of the confidential enquiry system, considerable deficiencies within the clinical practices of health care professionals

were revealed and discussed. A significant number of maternal deaths were found to have occurred from preventable causes which were not recognised or remedied sufficiently by health care providers (Lewis, 2007).

Capabilities of Midwives

Midwives working in the birth suite may be required to care for women experiencing severe morbidity and illness. The ability of midwives to cater confidently for such needs in the birthing environment remains unclear (Pollock et al., 2011). Bench (2007) argues that midwives can experience considerable anxiety when caring for these women, particularly if they are inexperienced in caring for women who may be 'ill'. This re-enforces the need for the provision of maternity high-dependency care, and of suitably skilled midwives who are experienced in caring for acutely ill patients within the maternity hospital environment.

The inability of midwives, obstetricians and general practitioners to recognise general medical problems adequately, and the tendency to overlook them, was identified in consecutive United Kingdom confidential enquiries as an area requiring priority action for ongoing professional development (CMACE, 2011; de Swiet, 2008; Lewis, 2007). This has led to the most recent confidential enquiry advocating a back-to-basics approach in the identification and treatment of general medical problems in pregnancy (CMACE, 2011). Compounding this further are the difficulties surrounding inter-professional communication, and the timely, and also suitable, referral of women to an appropriate expert or service. Inadequacies in these areas led to women receiving inconsistent care which ultimately claimed their lives (CMACE, 2011; Lewis, 2007).

The Midwife and High-dependency Maternity Care

The role and scope of practice, according to the International Confederation of Midwives (ICM, 2011), requires midwives to promote normal birth, adequately detect complications in women and their babies, provide suitable assistance for women including emergency care, and facilitate referral to a medical (or other) health care practitioner as required. The global focus of the midwifery profession has traditionally been upon the normal childbearing experience. Appendix D provides the formal definition of a midwife, as developed by the ICM. In Australia, midwives are required to identify women whose needs are beyond their customary role and scope of practice, and ensure that they are referred to an appropriate health professional (ANMC, 2006; Bench, 2007).

Midwives working within the tertiary hospital setting are now, increasingly, faced with the challenge of providing midwifery care to women who are acutely ill. This is especially relevant for midwives working in Western Australia, as there is only one centrally located tertiary women's hospital in the state. Midwives working across other sites within the state may also be required to care for acutely ill women until they can be transferred to another health service, which in some instances may take

many hours. In a population study conducted by Zwart, Dupis, Richters, Ory and van Roosmalen (2010) in the Netherlands, two thirds of all women experiencing severe maternal morbidity were not cared for in a Level 3 intensive care setting. The majority of care provided to these women occurred in Level 1 and Level 2 settings. No mention is made as to whether this care was given by a nurse or midwife.

In an exploratory study undertaken by Bench (2007) in the United Kingdom, midwives who had been involved in caring for acutely ill women voiced their limitations when required to do this, and felt under-prepared to recognise and manage non-obstetric related problems. This is not surprising, as the care required by highly dependent women does not feature within the traditional preparation, philosophy and definition of the role of the midwife (ANMC, 2006; Pollock et al., 2011). Despite this, it is often midwives who are required to provide acute or high-dependency care within the maternity sector in Australia and the United Kingdom, as opposed to countries such as North America which predominantly employ maternity and obstetric nurses. Suggestions have been made to upskill and equip midwives suitably so they may work within the high-dependency field, through collaboration and clinical work experience with intensive care nurses, multi-disciplinary training in the management of obstetric emergencies, and inter-professional training specifically within the field of obstetric and maternity high-dependency care (RCOG et al., 2007). Such a training course is available now in Western Australia, the setting for the research conducted.

The nursing profession in Australia has reported that >50% of all registered nurses have completed some form of critical care training, with the highest percentage (73%) of critical care-trained nurses working in Victoria (Victorian Government, 2009). The percentage of midwives in Australia who have undertaken critical care training, and the recency and applicability of such training within the maternity sector, are unknown. There are 40 324 dual-registered nurses and midwives currently working in Australia, which equates to 13.9% of the total nursing and midwifery workforce (Australian Health Practitioner Regulation Agency [AHPRA], 2010). In Western Australia, dual-registered nurses and midwives comprise 11.3% of the state's total nursing and midwifery workforce (AHPRA, 2010).

Midwives working in high-dependency maternity settings in Australia are placed in a unique position as they require a combination of midwifery and critical care nursing skills (James et al., 2009). High-dependency midwives require a sound understanding of the complex physiology of general illness and deterioration in pregnancy, and the expertise to monitor and respond to it adequately whilst maintaining a supportive environment responsive to the needs of the woman, her newborn and family (James et al., 2009).

It is not known whether the pathway taken to attain midwifery registration in Australia, or the nature of previous work or clinical experience undertaken prior to midwifery registration, influences the theoretical knowledge and clinical skills of

midwives in caring for acutely ill women (Hammond, Gray, Smith, Fenwick & Homer, 2011). The knowledge, skills and confidence of midwives in Australia who are working within the field of maternity high-dependency care are also unknown, as it has not been previously researched. Many authors, predominantly within the United Kingdom, have called for midwives to develop additional skills and expertise to care for highly-dependent women in the tertiary hospital capably and confidently (Commonwealth of Australia, 2009; CMACE, 2011; James et al., 2009; Lewis, 2007; RCOG et al., 2007; Wheatly, 2010).

Initial Education and Continuing Preparation for Practice

The education of Australian midwives and their preparation for clinical practice has been a source of much debate in Australia, with constant comparisons made to alternative educational models operating in New Zealand, the United Kingdom, Northern Europe and Canada (Leap, 2002). In Australia there are now three distinct pathways through which midwifery registration can be attained: an undergraduate Bachelor of Midwifery degree, a combined undergraduate Bachelor of Nursing and Bachelor of Midwifery double degree, and a Graduate/Postgraduate Diploma/Master of Midwifery for Registered Nurses. Bachelor of Midwifery programs commenced in Australia in 2002, at four universities across South Australia and Victoria (Carolan, Kruger & Brown, 2007; Leap, 2002; Leap & Barclay, 2002).

The ANMC competency standard number six for the midwife requires midwives to be able to assess, plan, provide and evaluate safe and effective midwifery care for women and babies with complex needs (ANMC, 2006). Whilst the knowledge that midwives require for initial registration in regard to the care of women with complex needs has been adopted into midwifery curricula and is included in standard midwifery texts, the complex clinical skills required in caring for these women has not (Pairman, Tracy, Thorogood & Pincombe, 2010). The need for specialised continuing professional development within the field of maternity high-dependency care can be addressed through initiatives such as a maternity high-dependency course, which will provide midwives with the complex clinical skills and theoretical framework to care for acutely ill maternity patients.

The ANMC Standards and Criteria for the Accreditation of Midwifery Courses Leading to Registration in Australia (2009) states that ‘The principal standards for determining competent practitioners are the ANMC National Competency Standards (2006) documents and ... these establish the national benchmark for entry to practice’ (pv). The document further states that ‘The competency standards establish the required graduate outcomes for education courses and the minimum standards expected for the protection of the public’ (pv). The notion of a beginning level of practice assumes that the knowledge and skill of the practitioner will develop over time and with further education and clinical experience. At the point of registration with the Nursing and Midwifery Board of Australia, all midwives possess this

minimum level of competence: the skills of newly qualified midwives are those of a novice (Steele, 2009).

The transition from a novice or beginning level to proficient then expert practitioner occurs over time, as mentioned previously, and is highly dependent upon continuing professional development (Benner, 1984; Steele, 2009). In order to maintain their registration to practise, midwives must complete and be able to demonstrate at least 20 hours of continuing professional development relevant to their clinical practice each year (Nursing and Midwifery Board of Australia, 2010). They may practise across a variety of clinical settings such as hospitals, birthing centres, within private practice or group midwifery practice, in partnership with private obstetricians or in specialised areas such as maternal fetal medicine, maternity high-dependency units, sexual health, fertility, or diabetes clinics (ICM, 2011). The professional role of midwives has changed and developed over time in response to the needs of women, the requirements of their employers and the growth and advancement of obstetric medicine (Larsson, Aldegarmann & Aarts, 2009).

The challenge for the providers of continuing professional development for midwives is the nature and diversity of current practice. This includes the need to equip midwives with the appropriate knowledge, skills, and confidence that they may require to work in a number of specialised areas. Whilst some of the knowledge and skills of midwives working in the field of high-dependency is known, their professional confidence, or general self-efficacy when caring for highly-dependent women, remains largely unknown. Bench (2007) has alluded to the feelings and level of support midwives experience when managing the care of critically ill women; however, the published literature provides no data that seeks to quantify this.

Self-efficacy is an integral component of the professional competence of midwives, in conjunction with theoretical knowledge and clinical skills (Eraut, 1998).

Appendices E and F provide the competency standards for midwives and critical care nurses. These standards demonstrate that competency incorporates the three elements of knowledge, skills and confidence. Midwives working within the field of maternity high-dependency care must possess the competencies reflected within their own professional standards, but may also possess many of the skills reflected in the standards for the critical care nursing profession.

Summary

The increased incidence of maternal morbidity within the developed world has presented complex challenges to maternity care providers. These challenges include a lack of consistent maternal mortality and morbidity reporting; no consensus on the appropriate classification of illness and the clinical care each may require; inadequate preparation and ongoing education of health care professionals caring for acutely ill women; and lack of suitable facilities to provide clinical care to acutely ill childbearing women.

The emergence of maternity high-dependency care as a discrete obstetric sub-specialty is a response to the need to have appropriately prepared midwives who can provide this level of care to women. The midwifery profession is faced with the challenge of responding to this change by embracing the role of a midwife capable of supporting high-dependency care. The high-dependency midwife requires unique skills, knowledge and confidence to care for these women, and the support of the profession and regulatory authorities. These factors all contribute to the need for Australian midwives to access a comprehensive, post-registration maternity high-dependency course.

Chapter Three: Method

This chapter will describe and provide the rationales for the methods chosen to conduct this study. The context is a maternity high-dependency course, delivered as an internal tertiary hospital-based initiative for midwives. The components of the research design, including the study setting, sample and sampling method, instrument design and methods of data analysis, are outlined in this chapter. A mixed methods research design was chosen that included the collection of quantitative data that compared course participants' background, knowledge, skills and attitudes, as well as a qualitative perspective gained through focus group interviews. This enabled the researcher to obtain a suitable and comprehensive range of information from a small yet representative sample of midwives. The quantitative and qualitative components of this study will be discussed separately, in the sequence in which they occurred.

It has already been noted that the extent of midwifery knowledge, skills and confidence in caring for acutely ill women requiring high-dependency care has not been described in the literature. This study examined these characteristics in a group of midwives prior to and following attendance at a maternity high-dependency course. The educational initiative itself was not the subject of this research, but its timing and content were central to the conduct of this research and it provided an opportunity for the participants' theoretical knowledge and skills to be measured, compared and contrasted.

In order to contribute to the body of evidence in this area, the following research proposition was generated: that midwives working within the tertiary maternity hospital setting will increase their confidence in caring for acutely ill women as a result of being provided with additional knowledge and skills through a formal education course.

Research Design

This research study utilised a descriptive mixed methods approach combining qualitative and quantitative research techniques. A descriptive design was suitable for this research as the elements under investigation were unknown. It enabled the midwives' professional characteristics to be explored, identifying inconsistencies in midwifery knowledge, personal professional confidence and practice (Burns & Grove, 1995). In a single method qualitative descriptive research design, confidence in a cohort of critical care nurses working in Canada was studied (Evans, Bell, Sweeney, Morgan & Kelly, 2010); the omission of quantitative data, such as an analysis of self-efficacy, provided only one perspective of confidence. This current study sought to avoid this limitation to achieve a more comprehensive and balanced perspective.

A mixed method approach has traditionally been associated with nursing and midwifery research, and is also utilised by a number of other professions in health

and behavioural sciences, such as psychology, physical therapy, occupational therapy and speech pathology. It offers a greater depth of understanding in health-related research than one exclusive approach can provide (Pluye, Gagnon, Griffiths & Johnson-Lafleur, 2009). The merit of this approach is now being recognised among other professional groups such as business and accounting, who are now conducting similarly styled research that has both theoretical and social relevance for their respective disciplines (Ahrens, 2008; Modell, 2010).

In this study, the quantitative research method was useful for obtaining raw data in relation to midwifery knowledge, skills and confidence (Johnson & Onwuegbuzie, 2004). Trends were identified through changes in numerical data, enabling conclusions to be drawn. Greater priority was given to the quantitative data, as it was able to provide the most information in relation achieving the research aims (Creswell, 2009).

However quantitative methodology alone does not explain the personal meaning and significance behind the data. The benefit of the qualitative component of the study was that a richer depth of meaning, enquiry, clarification and reflection could be added to the quantitative data (Lewis, 2011). This overcame the limitations of using a single methodological approach and provided an understanding of the professional experiences and feelings of the midwives who participated in the study, which could be added to the data which demonstrated changes in their knowledge, skills and confidence (Burns & Grove, 1995).

The sample was unique, as the maternity high-dependency course is currently the only program of its kind in Australia. It offered a suitable intervention and independent variable for this study. The dependent variables in this study included midwifery knowledge, skills and confidence as tested by validated instruments and explored through thematic analysis from qualitative interview transcripts.

Setting and Participants

The sample of participants was drawn from a group of Registered Midwives from one stand-alone, tertiary, metropolitan public women's hospital, who attended a maternity high-dependency course. The midwives worked in a variety of clinical areas, including the high-dependency unit, labour and birth suite, maternal-fetal assessment unit and emergency centre. Each midwife in the sample was involved in the direct provision of clinical care to women with complex pregnancies who had experienced acute illness during their pregnancy. Women from this centre requiring intensive or coronary care services, diagnostic CT, MRI, interventional radiologic imaging or general medical care not associated with pregnancy are transferred to a general, tertiary, metropolitan, public adult hospital via ambulance. The health service is the only tertiary women's referral centre within the state and oversees approximately 6000 births per year. It also contains a large neonatal special care nursery and neonatal intensive care unit.

Purposive sampling techniques were used to recruit these midwives into the study. Prior to course commencement, the midwives were contacted by the course facilitator by an email which provided information about the proposed study and requested their voluntary participation. An information sheet was provided (Appendix G), together with a consent form (Appendix H), which the participants returned on arrival on the first day of the course. Each of the midwives attending the course consented to become involved in the research project.

Inclusion Criteria

The participants for this study were required to have current midwifery registration with the Nursing and Midwifery Board of Australia (NMBA), to be currently employed and working within a tertiary women’s hospital in a midwifery role that included direct patient contact, and to be enrolled in the high-dependency course.

Quantitative Data Collection

Quantitative data was gathered using a variety of instruments, some of which were developed for the purpose of this research. These included a participant characteristics survey, pre- and post-course knowledge tests, a participant skills evaluation and a general self-efficacy scale. Two concurrent focus group interviews were conducted immediately following course completion, to obtain qualitative data.

Data was collected on 25 February 2011, 24 June 2011 and 22 June 2012. These dates reflect the commencement and completion of the course, and a 12-month period following course completion. A chronological representation of this information is provided in Figure 1 below.

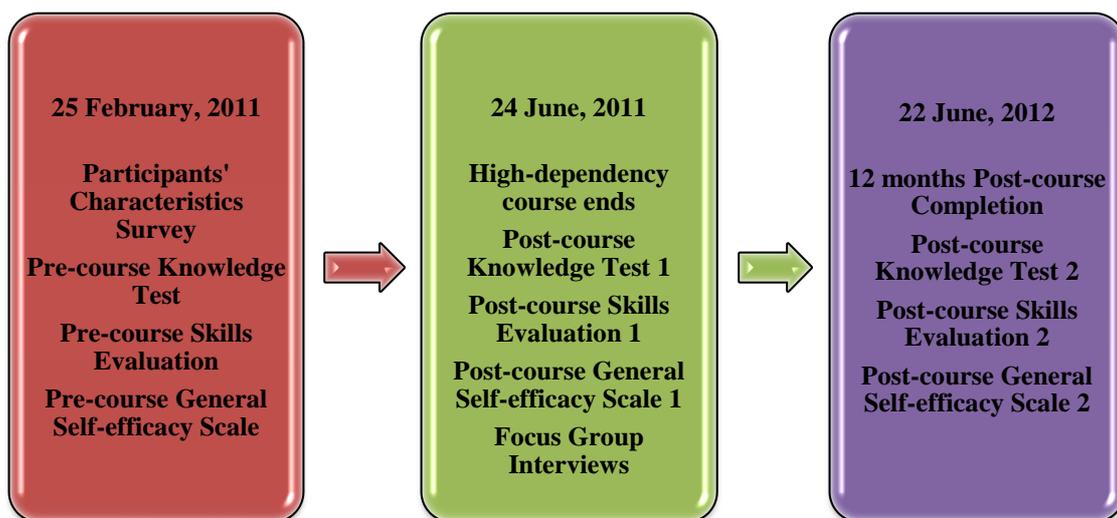


Figure 1 Chronological sequence of quantitative data collection

Instruments and Rationale

Participant characteristics survey.

Demographic data was obtained from each of the midwives through the Participant Characteristics Survey (Appendix I). The survey contained 18 questions including age, country of birth, number of years of nursing and midwifery experience, educational preparation, and the nature of their professional experience. The purpose of the survey was to determine if these midwives had dual registration as Registered Nurses and Midwives, and if they had any professional experience or post-graduate qualifications within the field of critical care nursing. The justification for the choice of these questions came from the researcher's desire to explore the research question and determine if additional knowledge and skills could increase the level of confidence of midwives working in high-dependency maternity care.

Pre-course and post-course knowledge test.

A 30-item peer-reviewed multiple choice test (Appendix J) was developed in order to evaluate existing (pre-course) knowledge of key high-dependency maternity care principles and theory. The same test was administered to the midwives immediately after course completion to evaluate cognitive learning (Harris, 1998), and again after 12 months to assess changes in long-term cognitive learning.

Pre- and post-course testing is frequently used in medicine and within the health sciences to assess a learner's knowledge before and after attending an educational or training program. The philosophy underpinning this method of assessment is that it provides a tangible or concrete measurement of the acquisition of knowledge from a training environment (Taylor, 2003). Pre- and post-course multiple choice testing places an emphasis on detailed, factual knowledge acquisition, ideal for medicine and health sciences which require intricate and specialised knowledge and concepts to be learned (Struyven, Dochy, Janssens, Schelfhout & Gielen, 2006). It also provides clear, tangible data that is easy to interpret and analyse (Armitage et al. 2007).

There are however also a number of limitations of this form of assessment. Pre- and post-course testing is not a precise predictor of knowledge acquisition (Rovithis et al., 2001). Even when there is a positive improvement in the level of knowledge demonstrated in post-test assessment scores, there is no certainty that the training program alone generated the positive change (Buckley & Caple, 2009). Pre-course testing has the potential to sensitise the learners, creating recall bias when the test is re-administered at the conclusion of the training course (Buckley & Caple, 2009). Different learning styles, fatigue and preference or proficiency in one form of assessment can also impinge on the results (Armitage et al., 2004; Cooper, Johnston & Priscott, 2004).

The Australian Nursing and Midwifery Council National Competency Standards for the Midwife (2006) do not make reference to the term 'high-dependency maternity care'. However, they do refer to women whose care needs fall outside the usual scope of midwifery practice as 'complex'. The absence of a tangible definition made it difficult to determine which areas of high-dependency maternity care should have been considered 'core' areas warranting pre-and post-course knowledge assessment. A theoretical framework for the test questions used in this survey was developed by reviewing the domains and elements of midwifery practice outlined in the ANMC competency standards for midwives and nurses, in addition to the Australian College of Critical Care Nurses Competency Standards. (Australian College of Critical Care Nurses, 2002; Australian Nursing and Midwifery Council, 2006).

Expert opinion was also sought from the Western Australian Principal Midwifery Advisor, two obstetric anaesthetists and one midwifery researcher, to determine the relevance and suitability of the test content. These four experts reviewed the questions and answers, validating the content prior to administration. The pre-course test itself was conducted in a supervised, exam-like setting; each participant completed it well within the allotted time frame of forty-five minutes. A reduced time frame of thirty minutes was subsequently allowed for completion of the post-course tests. The difference in timing for the assessments was used to counteract the possibility of recall bias (Buckley & Caple, 2009).

Pre-and post-course skills evaluation.

A pre-and post-course skills evaluation tool was developed specifically for this research (Appendix K). It comprised 16 skill statements. Each statement required a four point Likert-style response from the participant in relation to how confidently they felt they could perform that particular skill. The four response categories ranged from strongly disagree to strongly agree. In order to elicit a definite response from the participants, no neutral category was given. The participants were required to complete this three times: after the knowledge test and prior to commencing the course; immediately following the knowledge test after the course; and after a 12-month interval following completion of the course.

The rationale for developing this tool was to evaluate midwives' confidence in performing a wide range of midwifery skills commonly associated with high-dependency maternity care. The content validity of the instrument was determined by a group of experts in high-dependency maternity care including a clinical midwife, obstetrician, obstetric anaesthetist and midwifery researcher. Many of the knowledge questions asked in the pre-and post-course tests were re-worded as a clinical skill statement in this tool. For example, question 13 of the skills evaluation tool provides the statement 'I can independently identify atrial fibrillation on a ECG monitor most of the time', to which agreement or disagreement was sought. Question 8 of the pre-and post-course knowledge test asked, 'What is the most common feature of atrial fibrillation as recognized on an ECG?', to which the correct theoretical answer had to

be selected from four responses. If a participant felt confident in recognising atrial fibrillation but could not demonstrate in the knowledge test what the theory of atrial fibrillation was, then the researcher could identify a deficit between clinical practice and theoretical knowledge in that participant at each testing interval: prior to attending the course, immediately following it, and 12 months after course completion, and could see if any long-term change in confidence had occurred.

The midwives' proficiency in performing or mastering these skills could not be verified objectively, through demonstration or observation, at the time of assessment. However, adult learners should be able to reflect upon their own learning capabilities, skills and needs and identify these clearly: in this instance through the use of a simple instrument (Harris, 1998).

General self-efficacy scale.

A comprehensive literature search did not uncover a validated research tool available for use in this study that specifically addressed the self-efficacy of midwives, and therefore a validated and contextualised general self-efficacy scale was selected to meet this purpose (Appendix L). The instrument chosen was the general self-efficacy scale developed by Schwarzer and Jerusalem (1995); it comprises ten items. Its authors report widespread validation of this instrument in a number of health-related contexts such as psychology (Luszczynska & Schwarzer, 2005; Mittag & Schwarzer, 1993; Schwarzer, Babler, Kwiatek, Schroder & Zhang, 1997), medicine (Boehmer, Luszczynska & Schwarzer, 2007), and education (Schwarzer & Schmitz, 2004). The psychometric properties of the tool have been investigated extensively, and its accuracy, reliability and homogeneity have been demonstrated in a range of cultures and languages, as reported by Scholz, Gutierrez Dona, Sud, and Schwarzer (2002). Further, the general self-efficacy scale has been correlated using Pearson's R, and validated with a number of personality traits (Luszczynska, Gutierrez-Dona & Schwarzer, 2004).

In order to contextualise the tool, a statement was provided as an introduction, asking the participants to answer the questions as a midwife caring for an acutely ill woman within the workplace. Expert opinion was sought from a statistician and researcher about the content validity of this approach, and it was deemed satisfactory. The scale was completed by the participants at the commencement of the course, after the participant characteristics survey, knowledge test and skills evaluation. The same scale was administered immediately at the conclusion of the course and at a 12-month interval after course completion.

Qualitative Data Collection: Focus Group Interviews

At the completion of the high-dependency course, each midwife consented to participate in a focus group interview, in which they explored their self-efficacy responses and clinical skill-based confidence. Focus group interviews are a semi-structured, informal research method moderated by an interviewer, utilised to attain

accounts, experiences and perceptions of the lives of individuals being studied (Cousin, 2009). Focus group interviews are often recorded and subsequently transcribed, and the transcribed interview data summarised into themes which categorise the information provided by the group (Cousin, 2009).

Focus groups are useful as they enable the interviewer some flexibility to adapt, modify and expand upon prepared questions to clarify points and respond to the interviewees as the conversation flows throughout the interview (Cousin, 2009). The ideal group size for this type of research has been debated, but ranges from 6–10 participants (Kennedy, Kools & Krueger, 2001; Murray, 1997). Actual or perceived inequalities between the interviewer and interviewee can affect the dynamic of the conversation and influence the veracity of the information obtained (Cousin, 2009). Adequate steps should be taken to address any power inequality and to make the interviewees feel comfortable (Strubert Speziale & Rinaldi Carpenter, 2007). Focus groups should be conducted in a comfortable setting, at a time suitable for the interviewee (Strubert Speziale & Rinaldi Carpenter, 2007).

A focus group interview can be less intimidating than a one-on-one interview, is less time consuming and enables individuals to interact within a group environment. Group discussions can lead to a greater richness of data, if new ideas are shared that had not been considered by the interviewer (Shaha, Wenzel & Hill, 2011). The role of the interviewer is critical to ensure that each individual is given an opportunity to add to the discussion and that dominant personalities do not exert too much verbal control over the group (Strubert Speziale & Rinaldi Carpenter, 2007). Interviewers should have a consistent plan for the interview, have a clear understanding of the topic being covered, demonstrate a neutral perspective, and the ability to lead the interview and direct the interviewees to enhance group discussion as required (Shaha et al., 2011). Recording equipment should also be checked to ensure it is in working order and that enough time is allocated to conduct the interviews for the number of questions provided without pressure or interruption (Shaha et al., 2011).

Two focus group interviews in this study were conducted simultaneously. The groups were chosen by the participants themselves; one held seven participants and the other held six, as one participant was absent. It was felt that the researcher's involvement in the high-dependency course as the overall course facilitator and researcher might skew the participants' responses to the interview questions, and to avert this possibility, neutral interviewers were chosen: two research midwives, each completing a six-month hospital-based research internship. Both had experience in conducting focus group interviews, but had no direct involvement with the course.

The interviews were conducted in separate classrooms and tape recorded, and the tapes were transcribed by a professional data transcription service. Six open-ended questions were provided to the interviewers (Appendix M). A consistent strategy and interview plan was developed by the researcher and interviewers about the conduct of the interviews. Thirty minutes was allocated for each focus group interview, but

the interviewers were encouraged to continue if the participants required extra time. The timing of the interviews was chosen for the convenience of the interviewees and to minimise recall bias.

Data Analysis

Participant characteristics survey.

Responses to the participant characteristic surveys were categorised into groups such as age and country of birth, and the number of responses in each group were then converted into a percentage and represented graphically. This provided valuable demographic data about the midwives under study, which could be cross-referenced with their individual knowledge tests, skills assessments and self-efficacy scores. It also enabled trends to be identified within the group, as the demographic data of the cohort, such as previous working history, could explain a lack of confidence or knowledge in a particular area of clinical practice.

Pre- and post-course knowledge test.

The knowledge tests were marked using a marking key. Each participant's test was marked out of 30 and then converted into a percentage. Basic statistical analysis including descriptive statistics and frequency tables were run on the data using the Statistical Package for the Social Sciences Student Version 18 for Windows (SPSS v18) (2009). This enabled the identification of trends within the group, such as minimum and maximum scores, mean (average), standard deviation and variance, for the purposes of comparison. Individual scores were rounded up to whole number when scored at 0.5 or above, and reduced to the lower number when less than 0.5. Pearson's chi-square tests were performed on the data to determine statistical significance.

Pre- and post-course skills evaluation.

The midwives' responses to the skills evaluation were collected and represented graphically according to the response received. Pearson's chi square tests were performed on the data to determine statistical significance.

General self-efficacy responses.

General self-efficacy responses were collected and coded according to the instructions for use provided by Schwarzer and Jerusalem (1995). Each participant's self-efficacy score was recorded. Descriptive statistics were run on the scores received to determine minimum and maximum scores, mean (average), standard deviation and variance, for the purposes of comparison. Pearson's chi square tests were performed on the data to determine statistical significance.

Focus group interviews.

The focus group interviews were analysed by the researcher using the constant comparative method advocated by a number of authors (Burns & Grove, 1995; Polit & Tatano Beck, 2010; Streubert Speziale & Rinaldi Carpenter, 2007). The benefit of this method of analysis is that each piece of new data is compared with the preceding data. The similarities and differences within the data are constantly evaluated in order to generate categories and themes which conceptualise the meanings and relationships within the data (Strubert Speziale & Rinaldi Carpenter, 2007, Thorne, 2000).

The researcher individually analysed the transcribed interviews using the constant comparative method to develop preliminary themes and sub-themes within the data. These themes were then compared with the analysis undertaken by members of the research team. The researcher documented the discussion within the research team and referred to the original notes taken, which provided clarification as to how the themes had been identified. After further refinement, discussion and a secondary review of the interview transcripts, these themes were collapsed into three distinct categories (Hauck, Summers, White & Jones, 2008, Polit & Tatano Beck, 2010). These categories were agreed to by all members of the research team; they are discussed in Chapter Five.

Validity and Reliability Issues

Instruments.

All of the instruments used in this study underwent review for content validity through expert opinion or scientific rigor.

Ethical issues.

Approval to conduct this research was obtained from the School of Nursing and Midwifery's Research Ethics Committee at Curtin University (Appendix N) and from King Edward Memorial Hospital's Obstetric and Gynaecology Quality Improvement Committee. This was considered to be a low risk study, with no detrimental effects on course participants expected. An information sheet with a description of the study's purpose and requirements (Appendix G) was provided to each participant and consent was obtained to participate in the study (Appendix H). A second consent form to participate in recorded and transcribed focus group interviews was also completed (Appendix O).

Participation was voluntary, no coercion was undertaken and participants were free to withdraw their consent to participate at any time. An opportunity was given for participants to ask questions relating to the research project prior to consenting to participate. One participant who did not meet the required criteria was excluded from the study. Anonymity and confidentiality were maintained at all times during the

study. Name-identified data was excluded from published results by coding data in a way that protected the identity of the participants.

Data storage.

All data collected, in electronic and hard copy, and taped recordings are kept securely in a locked office filing cabinet at Curtin University, and after a period of five years will be destroyed according to the Australian Code for the Responsible Conduct of Research (National Health and Medical Research Council, 2007). During the period of storage, only the researcher and project supervisors will have access to the data.

Chapter Four: Quantitative Results

The results have been divided into two distinct chapters for simplicity of reporting. Chapter Four details the results obtained from the quantitative data and Chapter Five reports the qualitative findings. This chapter includes the results generated from the data obtained from the following instruments: participant characteristics survey, pre- and post-course knowledge tests, pre- and post-course skills evaluations and general self-efficacy scales.

Participant Characteristics

The study recruited 14 Registered Midwives from a tertiary, metropolitan, public women's hospital, who were currently employed in a midwifery role that included direct patient contact (see Figure 2). One participant was excluded from the research as she was not a midwife. The participants worked within a variety of clinical areas including the high-dependency unit, labour and birth suite, maternal-fetal assessment unit and the emergency centre. A schematic diagram outlining the study recruitment and follow-up process is detailed in Figure 2. Prior to commencing the maternity high-dependency course (the intervention), participant characteristics were collected in order to describe the cohort (see Tables 2, 3 and 4). Most participants (57%) were aged over 44 (n=8). Only one participant had undertaken university study beyond the level required to attain registration as a midwife. All were female, with the majority born in Australia. Most had previous work experience as a nurse within the field of critical care (n=5) or high-dependency (n=7). Over half of the midwives had attained promotion to the level of Clinical Midwife, which is distinct from the Registered Midwife within the Australian context (n=8). The average length of service within the current organisation as a midwife was 15 years, with a broad range of service stretching from 2–32 years.

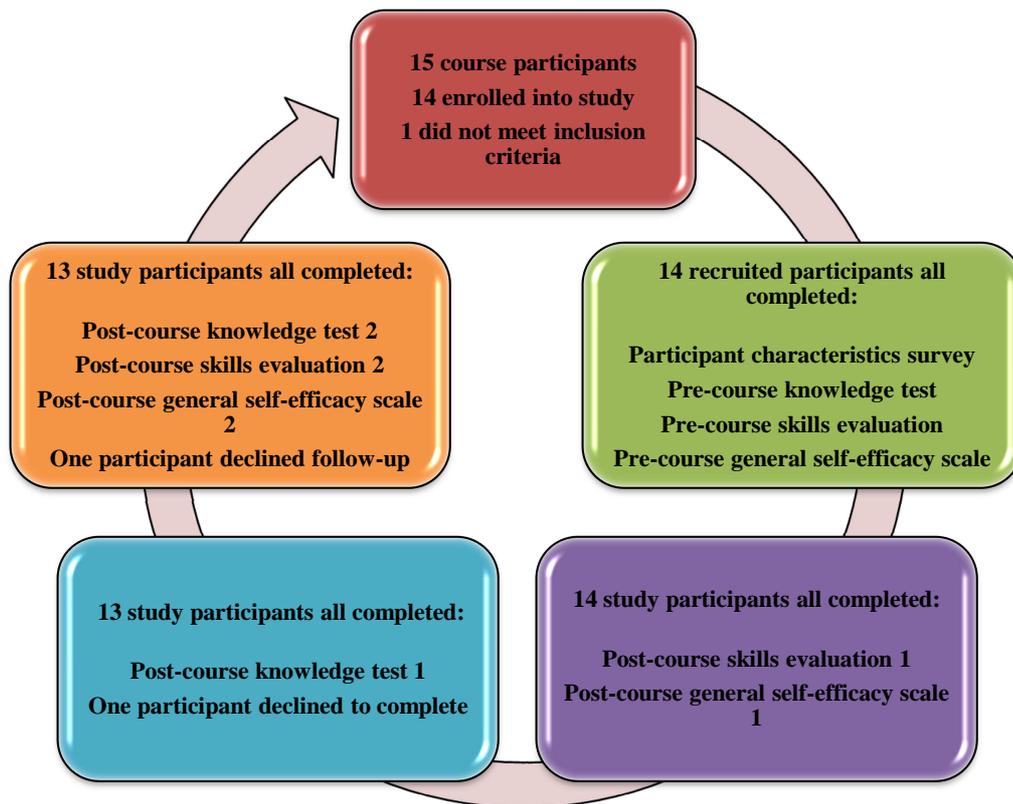


Figure 2 Study recruitment and follow-up process

Table 2
Participant characteristics

	Characteristic	Number	Percentage
Age group	25-34 years	3	21
	35-44 years	3	21
	45-54 years	7	50
	55-64 years	1	7
Country of birth	Australia	11	79
	England	1	7
	New Zealand	1	7
	Scotland	1	7
Professional registration	Registered Midwife	14	100
	Registered Nurse	14	100
	Hospital-based nursing and midwifery certificates	3	21
Highest level of any education	Bachelor degree	4	29
	Post-Graduate diploma	6	43
	Masters degree	1	7

Table 3
All Previous Settings and Roles in which Study Participants Have Worked

Characteristic	Number	Percentage
Settings worked in as a Registered Nurse in Australia*		
Tertiary Public Hospital	14	100
Secondary Public Metropolitan Hospital	3	21
Regional Hospital	2	14
Remote Area	1	7
Private Hospital	2	14
Clinical areas worked in as a Nurse or Midwife Overseas		
Paediatrics and PICU	1	7
Medical	1	7
General Surgery/Urology	1	7
CCU/ICU	1	7
Labour and Birth Suite	2	14
Clinical areas worked in as a Registered Nurse in Australia*		
Surgical	10	71
Medical	10	71
High Dependency	7	50
Critical Care	5	36
Emergency Department	3	21
Community	2	14
Current job title		
Registered Midwife	5	36
Clinical Midwife	8	57
Graduate Midwife	1	7
Previous midwifery job titles		
Registered Midwife Rotational	3	21
Research Midwife	1	7
Registered Midwife	7	50
Casual Midwife	3	21
Graduate Midwife	2	14
Clinical Facilitator	1	7
After Hours Hospital Manager	2	14

* Participants may have worked in multiple areas.

Table 4

Characteristics of Participants: Minimum, Maximum and Mean Values

Characteristic	Minimum	Maximum	Range	Mean
Years worked as a midwife in Australia	1	30	29	14
Years worked as a nurse in Australia	0	34	34	14
Years worked as a midwife in current organisation	2	32	30	15
Years worked as a midwife overseas	2	14	13	8
Years worked as a nurse overseas	1	12	11	5

Knowledge Test

Prior to commencing the high-dependency course, the study participants completed a 30-item baseline multiple-choice knowledge test to assess knowledge related to aspects of high-dependency maternity care. The same test was readministered at course completion, and again 12 months later. The overall results of the tests, with an expected pass mark of 50%, are presented in Figure 3; individual scores are represented in Figure 4. The mean score for the pre-course test was 18/30 (60%). Two of the participants did not achieve the required pass mark of 15/30 (50%) for this test. Relevant characteristics of the participants who did not pass the initial knowledge test are presented in Table 5. This data can be contrasted with the characteristics of the five participants who scored the highest results, in Table 6. Three of these participants had more than 20 years of combined nursing and midwifery experience, and were currently working within the high-dependency setting. The midwives who scored <50% for the test had either never worked within the field of critical care, or had not done so in the past ten years.

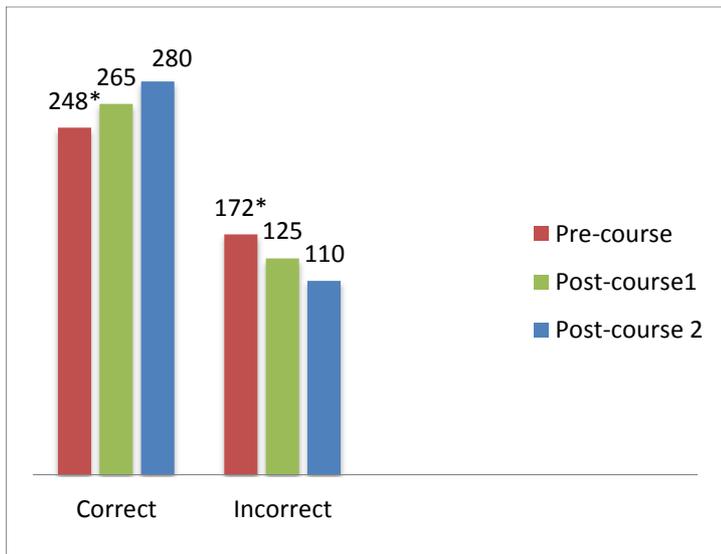


Figure 3 Combined pre-course and post-course knowledge test responses.

Note. Attrition of one course participant after the pre-course test led to the reduction in number of possible responses from 420 to 390.

* Possibility of 420 responses.

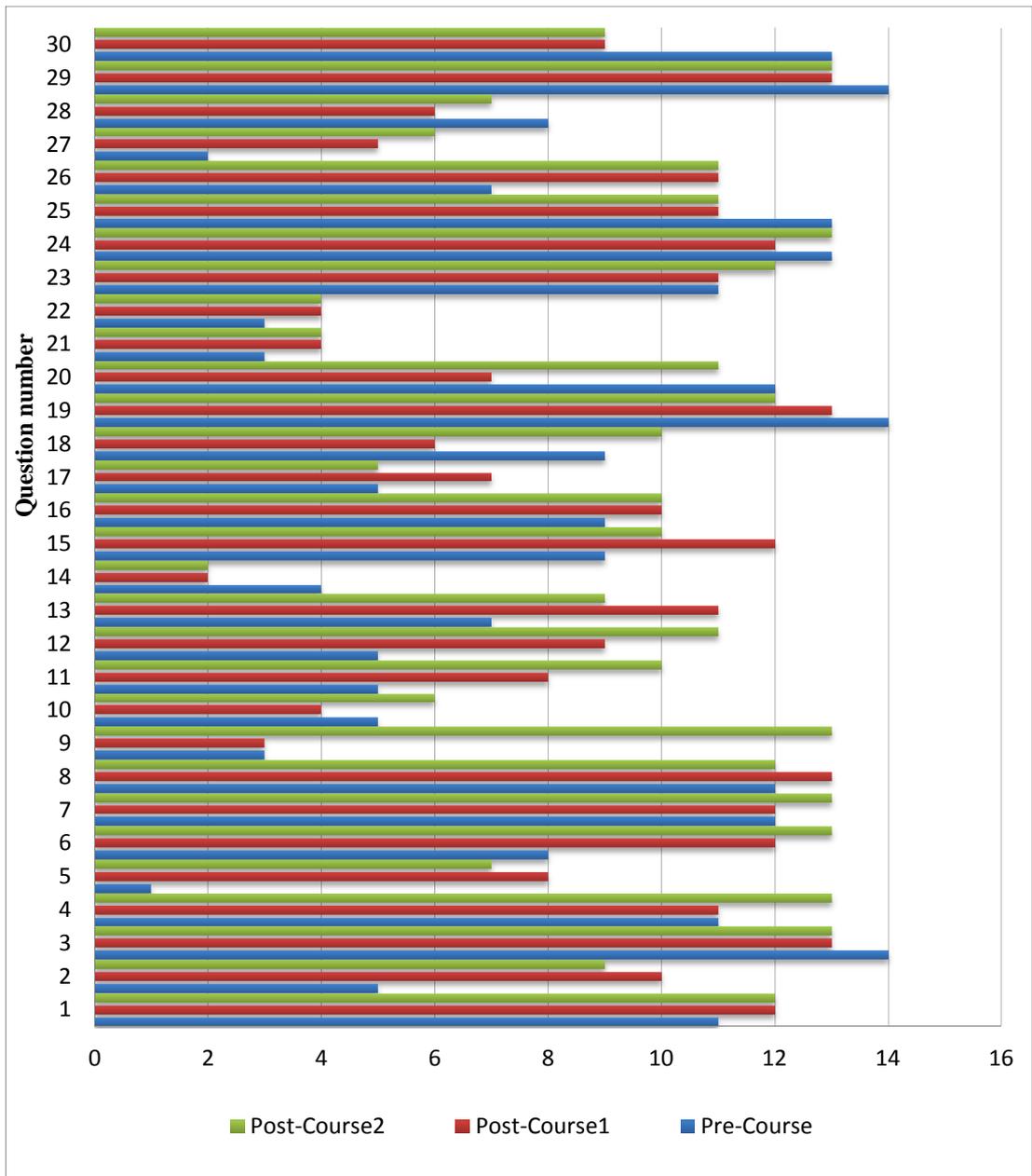


Figure 4 Accurate number of pre-and post-course knowledge test responses to each knowledge test question

*n =14 pre-course test responses, n= 13 post-course test responses

Table 5

Characteristics of Midwives who did not Pass the Pre-Course Knowledge Test

Code #	Pre-course & post-course knowledge test result	Years worked as a midwife	Years worked as a nurse	Years in current organisation	Pre-course & post-course GSE score	CC/ICU/HD Experience
3	13/30 Did not sit	14	18	14	30/30	Y (>10 yrs. since)
14	13/30 19/30	24	2	26	29/28	N

Table 6

Characteristics of Midwives with the Highest Scores in the Pre-Course Knowledge Test

Code #	Pre-course knowledge test result	Years worked as a midwife	Years worked as a nurse	Years in current organisation	Pre-course GSE score	CC/ICU/HD experience
2	20/30	4	20	5	33/32	Y (current)
4	20/20	30	1	30	29/30	N
8	21/30	17	24	17	34/38	Y (current)
9	20/30	5	0	5	30/30	N
11	22/30	22	22	8	33/36	Y (current)

The mean score for the first post-course knowledge test was 20/30 (66%), a test score improvement on average of six percentage points, with all participants achieving a result of 50% or more. Three participants' scores improved by five points (16.6%), and one participants' score by six (20%). One participant scored one point less than their pre-course test, and two participants' test results remained the same. Participant three was absent for the first post-course test, and declined to complete it at an alternative time.

The greatest improvement in knowledge immediately post-course was seen in question five, in which the participants were required to understand the method of calculating mean arterial pressure, followed by question two which related to an understanding of capnography. Question six, which asked how cardiac output might be measured, was the third most improved question. The remaining questions that were answered well in the pre-course test (questions 3, 19, 29, 24, 25, 30, 7, and 8) continued to be answered well immediately post-course.

Question 20, which related to an understanding of chest auscultation for women with pulmonary oedema, was initially answered well by participants prior to the course with 12/14 correct responses given. Immediately after the course, only half of the participants (n=7) could provide a correct answer. Some (n=6) appeared to be confused between the clinical manifestations of pulmonary oedema and atelectasis in this question. Question 30 similarly was answered well pre-course, with 13/14 responses given being accurate. In both of the subsequent post-course tests, only 9/13 correct responses were given. Questions 9, 10, 21, 22, 27 and 28 were consistently answered poorly pre-and immediately post-course.

Question four, which asked about the possible uses of a central line, was consistently answered well both pre-and immediately post-course, with 11 correct answers given at each interval. Question 14 was ascribed two correct answers on the post-course marking guide, as two different expert presenters from within the high-dependency course provided conflicting answers and information in relation to this question. Despite one answer being 'more' accurate than the other, this may have confused the participants and skewed the research results; therefore, if either of the 'correct' answers was provided, the participants received a mark.

Overall, the majority of participants (n=10) improved their knowledge in the immediate post-course test, whilst the remainder (n=1) maintained their original score or achieved a lesser score (n=2). The improvement in scores ranged from 3–20 percentage points (the equivalent of 1–6 questions) and the reduction in scores changed by 6–10 percentage points, or 2–3 questions. One participant did not complete the subsequent post-course knowledge testing and therefore was excluded from data analysis. This gave a revised total of correct pre-course knowledge test answers of 234, and incorrect answers of 156 out of a possible 390.

The second post-course test, conducted 12 months after the completion of the first post-course test with 13 participants, showed that the majority of participants improved (n=7) or maintained (n=4) their mark from the first post-course test. The mean score from the second post-course test was 21/30 (70%). This reflected an increase over the pre-course test of ten percentage points, and an increase over the first post-course test score of four percentage points. One participant did not receive a score of 50% or greater in the second post-course test, but the remaining twelve participants did. A Pearson chi-square analysis of the pre-course test results versus the 12-month post-course test results $X^2(1, N=13) = 12.07, p = < 0.001$ indicated a statistically significant improvement in results. When a chi-square test was performed on both sets of post-course test results, $X^2(1, N=13) = 1.37, p = 0.241$ the small improvement in test results was not statistically significant.

The improvement in scores from the first to the second post-course test ranged from 3–17 percentage points (the equivalent of 1–5 questions), with the reduction in scores ranging from 7–10 percentage points or 2–3 questions. However, when

compared to the pre-course test scores, the improvement in the second post-course test results ranged from 4–20 percentage points or–6 questions.

A significant improvement in question nine [treatment of bradycardia] was seen at the 12-month post-course interval. Accurate responses improved by six, or 20 percentage points. The correct answer to this question pre-course was atropine. However, a change in clinical practice and updating of the Australian Resuscitation Council Guidelines necessitated a change to the 12-month post-course test marking guide. Participants were awarded a correct mark if they answered either atropine or adrenaline after 12 months, as the use of atropine has been de-emphasised (Australian Resuscitation Council, 2011).

Question 20 [chest auscultation] improved 12 months after course completion with only two incorrect answers provided, indicating the earlier confusion generated by the differing views of the lecturers had been resolved. Question 18 [action of heparin] improved from the first to second post-course test by 4 marks (13 percentage points) with ten accurate responses given. Pre-course, nine correct responses were given to this answer.

Questions 10, 14, 21, 22, 27 and 28 were consistently answered poorly at every testing interval, with question 28 the only one of these questions to be answered accurately by half of the course participants pre-course and 12 months post-course.

Skills Evaluation Data Analysis

Pre-course overview

The pre-course skills evaluation required the participants to self-assess their ability to perform 16 common clinical skills associated with high-dependency maternity care, as described in Chapter Three. For each question, the participants could strongly agree, agree, disagree or strongly disagree. For the purpose of data analysis, an affirmative response or agreement is seen as a positive response and disagreement is classified as a negative response. The majority of the responses given to the skills questions pre-course were positive (strongly agree or agree) totalling, 177/224 (79%). The remaining 47 (21%) responses were negative (strongly disagree or disagree); see Table 6 for the response numbers in each category. Immediately post-course, the positive responses improved to 191/224 (85%) with the negative responses declining to 33/224 (15%).

Table 7

*Skills responses reported by number in each response category**

Category	Strongly agree	Agree	Sub-total	Disagree	Strongly disagree	Sub-total	Grand Total
Pre-course	88	79	167	33	8	41	208
Post-course	117	64	181	22	2	24	208
12 months post-course	132	55	187	15	6	21	208

* *Note.* One participant who did not complete all follow-up testing was excluded from these results. Her exclusion affects the percentages calculated.

The greatest improvement in reported overall clinical skill immediately post-course was demonstrated in the strongly agree category, with the number of responses given increasing by 29. The number of positive skill responses given to each question is illustrated in Figure 5. The number of disagree responses decreased by 11 immediately post-course, and the strongly disagree responses declined by 6. An overall improvement was seen in a positive direction for every question in which improvement was possible immediately post-course. A Pearson 2x2 chi square analysis, $X^2(1, N=13) = 2.98, p = 0.084$ showed no statistical significance between the change in overall agreement responses pre-course and immediately post-course. When a 2x4 analysis was performed on the combined agreement and disagreement categories, $X^2(3, N=14) = 9.97, p = 0.018$, no statistical significance was shown in the change in the self-reported skill responses from the pre-course to immediate post-course test. In order to conduct this analysis, the responses from the participant who did not complete any of the second post-course testing were excluded from all of the data analysis.

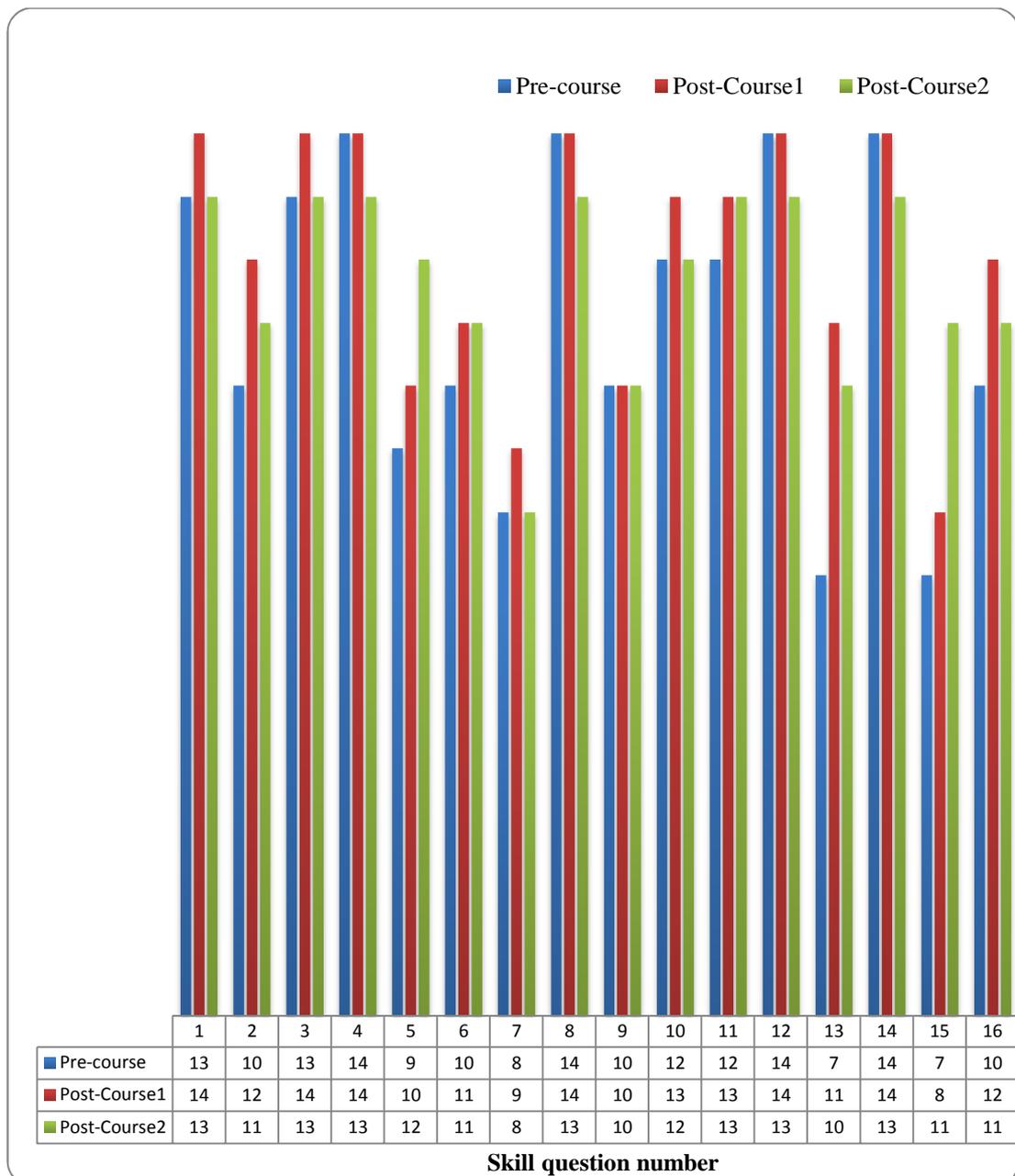


Figure 5 Number of positive skill responses by question number pre-and post-course.

Complete agreement was provided by the participants pre-course, to four skill questions: four [assess patella reflexes] (SA n=7, A n=7); eight [confidence to manage hypertensive crisis] (SA n=5, A n=9); 12 [communicate under stress] (SA n=7, A n=7); and 14 [initiate CPR] (SA n=9, A n=5).

The highest levels of disagreement amongst the participants pre-course were for skill questions numbers seven [titrate inotropes] (SD n=3, D n=3, SA n=4, A n=4), 13 [identify atrial fibrillation] (D n=7, SA n= 4, A n=5), and 15 [measure CVP], with half of the midwives not feeling confident to perform CVP measurement pre-course (D n=7, SA n=5, A n=2).

There was an overall improvement in the positive skills responses provided immediately post-course by the participants. Six questions received complete agreement: 1, 3, 4, 8, 12 and 14. Questions one [loading dose magnesium] and three [perform ECG] improved each by one response. Question seven [titrate vasopressors] saw the greatest improvement in positive responses, from seven pre-course to eleven immediately post-course. Questions two [blood from arterial line] and 16 [3 lead ECG] both improved by two points, which was the second highest level of improvement. Question 15 [measure CVP], remained as the skill with the least number of positive responses (n=8), followed by questions seven [titrate vasopressors] (n=9) and question five [chest auscultation] (n=10).

Chi square pre-course to post-course.

Twelve months after course completion, limited changes were observed in the self-reported clinical skills of the individual midwives. The percentage of positive responses rose to 89% 12 months post-course (181/208). Seven questions received complete agreement: 1, 3, 4, 8, 11, 12 and 14. Question eleven [bag and mask ventilation] now also received complete agreement, an improvement from the previous assessments. The other skill responses that improved from the first to the second post-course test included question five [chest auscultation] (n =2) and question 15 [measure CVP] (n=3). The participants' skills responses remained the same for both post-course tests in three questions: 6, 9 and 11.

A 2x2 chi-square analysis was conducted on the change in participant skill agreement responses from the pre-course skills evaluation to the 12-month post-course evaluation. The result $X^2 (1, N=13) = 7.58, p = 0.005$ suggests a statistically significant change. When the changes in both post-course test results were compared using the same technique, $X^2 (1, N=13) = 0.06, p = 0.806$, the changes were not statistically significant. Whilst in both post course analyses there was a marked improvement over the pre-course levels of skills confidence, the small participant numbers may explain the failure to achieve statistical significance.

Links between knowledge and skill.

The integration of new theoretical knowledge and clinical skills into professional practice is a process that occurs over time. New clinical expertise is refined and developed with practical experience (Benner, 1984). This concept will be elaborated upon in Chapter Six; however, it is also relevant to this chapter when seeking to understand the results reported here.

The participants in this study self-assessed their confidence to perform certain clinical skills through the participant skills evaluation. The theoretical knowledge that provided the foundation for these clinical skills was also assessed separately, in the pre-and post-course knowledge tests. The results attained from this cohort of midwives appears to support Benner's theory (1984) in part, demonstrating that the possession of accurate theoretical knowledge does not always compare positively

with the confidence to perform the skill associated with the theory. The length of time that is required for each individual to develop this expertise confidently is highly variable. Table 8 below reports some of the connections between theoretical knowledge and clinical skill that were demonstrated in this study. The relevance of these findings and their significance will be explored in Chapter Six

Table 8

Knowledge test responses provided compared with their corresponding clinical skill item responses.

Knowledge item	Responses pre-course	Responses post-course 1 & 2	Clinical skill item	Skill responses Pre-course	Skill responses post-course 1 & 2
Question 7 'A p wave on an ECG relates to...'	12/14 correct	PC 1 13/13 correct PC 2 13/13 correct	Question 13 'I can independently identify atrial fibrillation on an ECG most of the time'	4/14 strongly agree 3/14 agree 7/14 disagree	PC 1 4/14 strongly agree 7/14 agree 3/14 disagree PC 2 4/13 strongly agree 6/13 agree 3/13 disagree
Question 10 'An inotrope is a drug which...'	9/14 incorrect 5/14 correct	PC 1 9/13 incorrect 4/13 correct PC 2 5/13 correct	Question 7 'I can independently titrate a ... inotropic infusion according to BP and MAP'	4/14 strongly agree 4/14 agree 3/14 disagree 3/14 strongly disagree	PC 1 1/14 strongly agree 7/14 agree 5/14 disagree 1/14 strongly disagree PC 2 7/13 strongly agree 2/13 agree 1/13 disagree 3/13 strongly disagree
44 Question 30 'Which of the following	13/14 correct	PC 1 10/13 correct	Question 8 'I can respond appropriately when a	5/14 strongly agree 9/14 agree	PC 1 8/14 strongly agree

medications should be avoided in women with severe pre-eclampsia'

PC 2
9/13 correct

woman has a hypertensive crisis'

6/14 agree
PC 2
11/13 strongly agree
1/13 agree
1/13 disagree

Question 1
'A factor affecting the accurate measurement of CVP is'

11/14 correct
PC 1
12/13 correct
PC 2
12/13 correct

Question 15 'I can independently measure CVP using a transducer'

5/14 strongly agree
2/14 agree
7/14 disagree

PC 1
6/14 strongly agree
2/14 agree
6/14 disagree
PC 2
9/13 strongly agree
2/13 agree
1/13 disagree
1/13 strongly disagree

Question 20
'Chest auscultation of a patient with acute pulmonary oedema should reveal...'

12/14 correct
PC 1
7/13 correct
PC 2
11/13 correct

Question 5
'I can assess a woman's breath sounds through auscultation'

3/14 strongly agree
6/14 agree
5/14 disagree

PC 1
3/14 strongly agree
7/14 agree
4/14 disagree
PC 2
6/13 strongly agree
6/13 agree
1/13 strongly disagree

The relationship between knowledge and skill twelve months after course completion showed some small improvement in participant responses to the clinical skill questions. Questions one [factors affecting CVP] and twenty [chest auscultation] saw the greatest positive improvement in self-reported clinical skill between the pre-course and 12-month post-course tests, as presented in Table 7. The participants reported an improvement in perceived clinical skill in both of the post-course test intervals, which linked more strongly with their theoretical knowledge surrounding the topic. The correct number of answers to question 20 also improved at the 12 month post-course interval from n=7 to n=11.

General self-efficacy score.

Schwarzer and Jerusalem's tool (1995) was utilised to capture the general self-efficacy responses of the midwives participating in the research. The tool enables a minimum GSE score of 10 and a maximum of 40 to be attained. Each of the ten items in the scale is attributed a score from 1–4. A score of 1 is given for answers to 'not at all true', 2 for 'hardly true', 3 for 'moderately true' and 4 for 'exactly true'. The authors report that the mean general self-efficacy score in a population of adult Americans, using their tool, equals 29.48 with a standard deviation of 5.13 (Schwarzer & Jerusalem, 1995). They do not advocate the practice of categorising respondents as more or less efficacious than others: instead, they direct that a median split be used to divide the sample into groups above or below the median result (Schwarzer & Jerusalem, 1995). Using this method, the number of participants who reported a GSE less than the median was the same (n=8) both pre-and immediately post-course. After 12 months, the median split differed slightly, with more participants (n=7) reporting a GSE score at or above the median value than below (n=6).

Descriptive statistics were run on the general self-efficacy scores provided by the course participants. The mean pre-course GSE score was 31.6, median 30.5 and standard deviation 3.0. The range of values differed by 10 points from 29–39/40. Immediately post-course, the mean GSE increased to 32.57, median 31.2 and standard deviation 3.4. The range of values differed by 11 points from 28–39. Twelve months after course completion, the mean GSE score increased further to 34.46, median 34 and standard deviation of 3.7. The range of values differed by 10 points from 30–40.

These scores fall within the expected standard deviation of the tool and are reflected in the histograms below, Figures 6, 7 and 8.

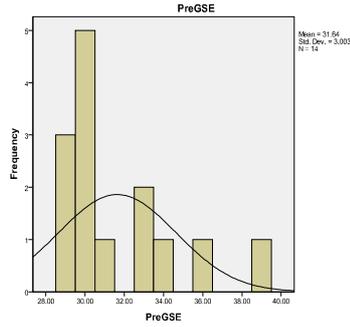


Figure 6 Pre-course GSE score.

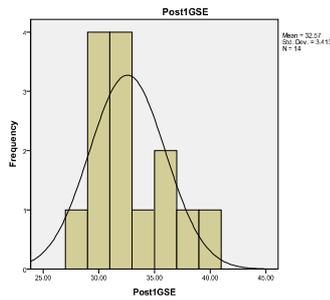


Figure 7 Immediate post-course GSE score.

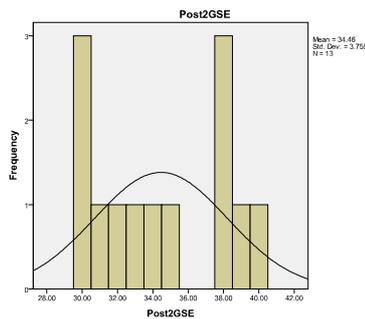


Figure 7 Twelve months post-course GSE score.

Chi square analysis using a 2x2 chi-square calculator generated $X^2(1, N=13) = 1.04$, $p = 0.307$ when the pre-and immediate post-course GSE scores were compared to the shortfall in the possible result. This indicated that the change in overall result was not statistically significant at this time interval. The same calculation was performed for the pre-course and 12-month post-course GSE scores, excluding the results of the participant who did not complete the final post-course testing, from each GSE score test interval $X^2(1, N = 13) = 8.27$, $p = 0.004$. The p value 0.004 suggests statistical significance, with the general trend indicating a positive improvement in scores occurring at each test interval. It was not possible to evaluate the statistical significance of the positive change for each individual participant.

Overall, the changes in GSE scores immediately post-course increased by 1–4 points for half of the participants ($n=7$), some ($n=5$) stayed the same, and a minority ($n=2$) decreased by 1–2 points. After 12 months, the changes in GSE scores improved by

1–6 points for the majority of participants ($n=9$), with some remaining the same ($n=3$) and one declining by one point.

Chapter Five: Qualitative Results

This chapter presents the qualitative research findings developed from the focus group interviews of the midwives, and the themes that unfolded through an analysis of the interview transcripts. The qualitative component of this research aimed to explore the midwives' perceived levels of professional confidence in relation to caring for acutely ill women, the support and training that they required to work confidently with acutely ill women, and the impact that attending a maternity high-dependency course had upon their level of professional confidence.

The pre-determined focus group questions to which the participants responded are outlined in Appendix M. Focus Group One has been denoted within the text as FG1, and Focus Group Two, FG2. Participants are identified by a code prefix of FG1 or FG2, and unique participant number of P1–P4 for focus group one, and P5–P9 for focus group two. The focus groups contained a total number of 13 participants (six in FG1 and seven in FG2). Four participants did not provide any specific, individual verbal comments during the focus group sessions although they were included in the discussions, and contributed through head nodding or agreeing 'yes' with the entire group when applicable; these non-verbal participants were not allocated a participant number. Participant quotes within each focus group are provided in italics to distinguish them as the personal views and experiences of individual midwives. The use of summary statements and the observation of body language by the interviewers identified agreement from all participants, including the non-responders within the focus groups, to selected or key statements prior to moving forward with the interview and on to the next question.

Thematic discovery occurred as the participants responded to each of the six interview questions, and interacted with one another in a synergistic way. Questions two, four and five sought information from the participants about themselves as individuals, their own attributes and professional experiences. Questions one and six encouraged discussion about support structures and resources within the workplace, and question three led the midwives to engage in personal reflection on their own clinical practices, and to describe the insights that this gave them. This process generated three distinct or core themes, which have been labelled 'who am I', 'need to feel supported' and 'thinking differently'. Two of the core themes contained sub-themes, which have been bulleted and italicised in Figure 9.

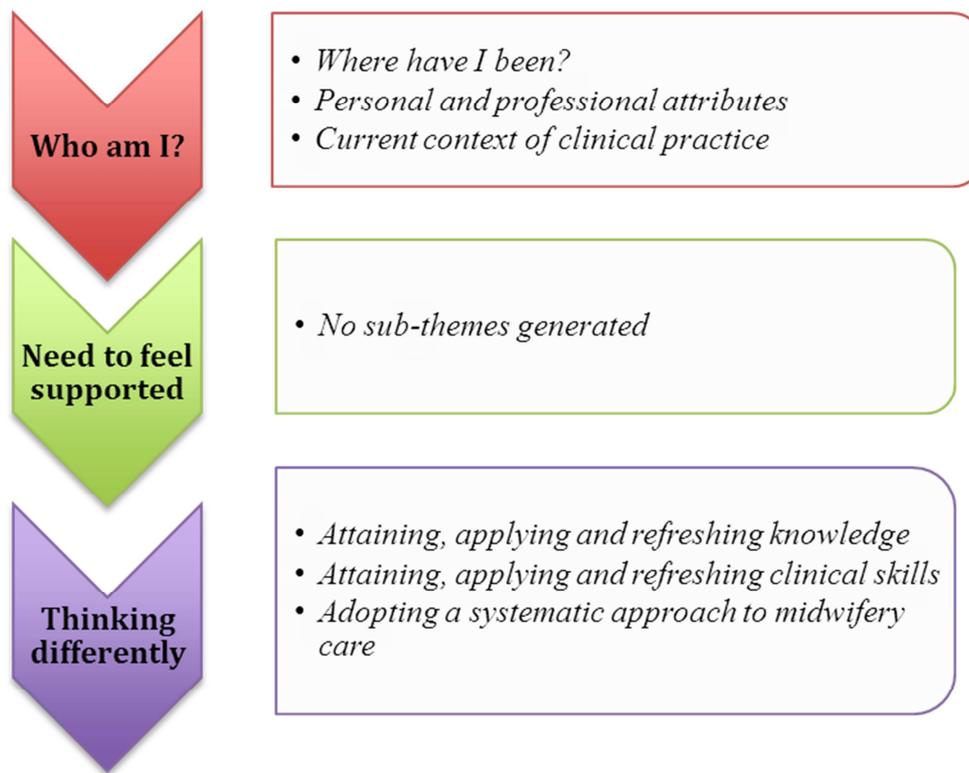


Figure 8 Themes and sub-themes generated from focus group interviews.

Who am I?

The first core theme, ‘who am I’, emerged strongly from the midwives, who identified the contribution of their working history, personal and professional characteristics, and the context of their current clinical practice, to their ability to care for acutely ill women. The midwives talked about their previous professional experiences as well as current opportunities to be involved with women requiring maternity high-dependency care. They reflected upon how these experiences made them feel both as an individual and a professional, and how they managed to provide the clinical care required. This was predominantly through the application of their knowledge and skills, and drew upon previous experiences as well as utilising resources. This theme contained three sub-themes: ‘where have I been’, ‘personal and professional attributes’ and ‘current context of clinical practice’.

Where have I been?

The first sub-theme, ‘where have I been’, was derived from the midwives’ discussion of their previous working history and experience, and how they perceived it to affect their ability to provide confident care for acutely ill women in the maternity setting. Some of the midwives revealed that they were also registered nurses, and had worked in critical care nursing. Others had current nursing registration but had not worked as nurses recently, or since initially becoming registered. One midwife who did not have an intensive care or critical care nursing background commented that

the high-dependency course provided new information which had not been learned in initial pre-registration midwifery education or subsequently through continuing professional development. For this particular midwife, the high-dependency course was able to bridge some of the gaps in her clinical skills and theoretical knowledge:

I've no previous history of working in ICU or in a general sense, in general nursing. We were never taught chest x-ray, ECG, anything that was taught in this course, that's all very new to me. (FG1P1).

Midwives who had previously worked within the field of critical care also appeared to benefit from attending the course. They mentioned that the course enabled them to revise and update their theoretical knowledge, and to understand the theoretical rationales that underpinned clinical practice in the maternity setting. This provided them with a framework for existing knowledge that had formed through personal experience, as opposed to evidence-based theory. For these midwives, the course gave them a sense of authority that they felt they did not have previously:

I suppose it's given us some, what's the word, legitimate credibility you know. We do know what we're talking about. (FG2P8).

Personal and professional attributes.

The second sub-theme, 'personal and professional attributes', included some of the individual personal and professional characteristics of the midwives, and how they perceived them to influence their judgement, decision-making and knowledge in a clinical setting. One midwife described her tendency to doubt her clinical judgement and knowledge, which negatively impacted upon her confidence in providing clinical care to women in the high-dependency unit. Completing the high-dependency course gave some of the midwives both a personal and professional sense of validation, confidence, credibility, and empowerment"

I think possibly, I may be a bit more assertive in the future, and not to doubt myself, you know, which I have done on occasion. I think doing the course is giving us power and the strength to be able to, to not just stand back... (FG2P7).

Attending the high-dependency course enabled the midwives to engage in critical thinking, and to reflect upon current clinical practices and protocols insightfully. Visiting speakers from outside the health service were able to confirm that elements of the midwives' current clinical practice were consistent both with other health services and existing research findings.

Current context of clinical practice.

The third sub-theme, 'context of clinical practice', included the clinical areas in which the midwives were currently working and the nature of their work, which from the comments they made were perceived to influence their confidence in caring for

acutely ill women. Midwives who were currently working in the high-dependency unit discussed the level of expertise required in the current context of their clinical practice. These midwives viewed their work as complex and challenging. Despite this, they embraced the challenges that they faced enthusiastically:

I think it's very hard to, you know in our role particularly in [high dependency] to be an expert in midwifery, to be an expert in gynaecology and an expert in oncology and high dependency as such. I mean, I think we all feel the same, you know, there's a huge amount to learn because it's become a new speciality.

(FG2P6)

Midwives working exclusively within the labour and birth suite commented that the dynamic, acute and unpredictable nature of their working environment enabled them to develop autonomy and leadership skills, which they felt were transferrable to the high-dependency and critical care setting. One midwife commented that the course provided her with the theoretical foundation to move forward in her career as a midwife within the tertiary hospital setting. For others, attending the course consolidated many elements of previous working experiences and practices across expansive careers.

Need to feel supported.

The second core theme arising from the focus group interviews was 'need to feel supported'. This affirmed the support structures that midwives required in order to feel confident in their work with acutely ill women. The predominant support structure that the midwives spoke of was one another, or peer resources. Other important factors affecting their confidence included clinical leadership, level of clinical skill, networks, decision-making capabilities, scope of practice, perspective, and the accessibility and availability of colleagues.

One other key support structure that the midwives said affected their confidence in caring for acutely ill women was their organisation. Particular elements or factors within the hospital such as communication processes, policies and guidelines, professional development opportunities, departmental structure and physical resources, and the midwives' perceptions or attitudes towards all these, were also significant. Appendix P outlines all of the factors affecting midwifery confidence.

The peer support networks that midwives expected from within their own profession and from their medical colleagues, to enable them to work confidently with acutely ill women, were also discussed. The discussion revealed how some of the midwives built confidence within their working 'team' or 'group', and how they reflected on not only their own but also their colleagues' professional working practices:

we probably need our colleagues all to do this course as well then you'd feel comfortable with who you're working with that they can assist you in a crisis situation (FG1P3).

The challenges presented by working in a busy health service meant that midwives were not always able to support each other as much as they would like, even when willing to do so:

I think generally everyone, especially in special areas like [high-dependency] and theatres and recovery, everyone seems to be quite ready to help ... the problem is whether they would be allowed to [leave the clinical area] or ... whether we are available to. (FG1P1).

One midwife reported that her 'eyes were opened' (FG2P6), and others commented that they were challenged by the course to look closely at the practices, systems and processes in place in their individual clinical working areas. There was much agreement, discussion and engagement amongst the focus group participants, as the midwives shared their experiences. Their perceived or actual improvement in knowledge and confidence facilitated a process of questioning, the airing of frustrations and of a growing sense of powerlessness at their apparent inability to effect change among their colleagues and within the health service, leaving one particular midwife feeling 'unsupported':

We have very limited clinical support ... we don't have a midwifery consultant or medical advocate that we can go to. (FG2P7)

Some midwives perceived that there were challenges between themselves and midwifery and medical leaders, who did not have the same current level of knowledge as they did in relation to acutely ill women. They commented that this had the potential to affect the continuity and consistency of clinical care provided to women by midwifery and medical staff. This was particularly relevant for the midwives working in the labour and birth suite and high-dependency unit, where the treating consultant and medical team rostered on duty changed every 24 hours. Some midwives mentioned an inconsistent process of assessment, consultation referral and transfer for acutely ill women, which they believed could lead to delays in diagnosis and treatment:

it always seems to take a long time to transfer out somebody who's really sick ... it seems to be more at the push of the midwifery staff than the doctors. (FG2P5)

The midwives noted that the high-dependency course provided an opportunity to progress collaborative professional relationships and better understand the working practices of their peers in different clinical areas, and helped to break down some of the barriers that led to 'silo-based care'. They also felt that the sense of familiarity

and personal connection developed throughout the course made a positive difference in their working environment:

It's quite a good team building exercise isn't it because you are exposed to people that usually sort of live in their own little areas so we've all got to know people that we can call on. It's quite useful, apart from anything else it helps the hospital run along better 'cause if you know somebody in that area you're always more sympathetic to their need, aren't you? (FG1P4)

Some of the midwives identified potential areas for improvement, and were challenged to update and review current clinical guidelines and discuss the purchase of additional equipment with their line manager. The majority, however, recognised that their clinical practice was based upon current evidence, reflected in their organisation's clinical guidelines and also those of other health services; they found that

it was good to hear that probably what our practice was, was what was accepted in other hospitals. (FG1P2)

Thinking differently.

The final core theme, 'thinking differently', reflects the knowledge and skills newly attained or refreshed for the majority of midwives who attended the course. Many spoke of a new outlook or attitude, in being able to see the 'big picture', think critically, find a new desire to always question, and to adopt a systems-based process of assessment as part of their clinical practice:

it makes me think more when I'm doing some things of why I'm doing it. (FG2P6)

Three sub-themes emerged: 'attaining, applying and refreshing knowledge', 'attaining, applying and refreshing clinical skills', and 'adopting a systematic approach to midwifery care'.

Attaining, applying and refreshing knowledge.

The majority of midwives reportedly gained new theoretical knowledge by attending the course. For some, previous learning was refreshed and contextualised to the maternity/midwifery setting. However, it was the ability of the midwives to apply the theoretical knowledge learned to their clinical practices that indicated a significant shift. Some of the midwives had worked in their current health service and clinical area for over ten years. Over that time, they commented, they had developed a significant level or body of knowledge, and proficiency in undertaking their work, but often did not think beyond the immediate clinical context and 'task at hand', remaining unaware of the rationales that supported the theory that underpinned the clinical practice. The high-dependency maternity course provided an opportunity for

them to develop a new perspective, gain new insight and reflect on previous practice. It enabled them to 'broadened my outlook on things' (FG1P3) and 'look at it from a different angle from the first time ... and it has made me aware that maybe I've been a bit narrow minded' (FG2P8).

Attaining, applying and refreshing clinical skills.

The course provided midwives with the opportunity to learn new clinical skills, or to refresh skills that had not been utilised recently and apply them in the clinical setting. Two midwives commented that they would incorporate new physical assessment skills into their clinical practice, and intended to become proficient in using them and in incorporating a body systems-based approach to their work. Some expressed a desire to rotate to other clinical areas, to improve links between theory and clinical practice and have an opportunity to consolidate skills that had been learned:

you wanted to practice what you have actually learnt [otherwise] it just sits in the back of your brain and it will just go rotten because it hasn't been used. (FG1P2)

Adopting a systematic approach to midwifery care.

The participants felt as though the course content expanded their professional outlook, promoted critical thinking, insight and reflection upon current clinical practice:

It's broadened my outlook on things, rather than just worry about the pregnancy we're also looking at other things that you know might present. I can look for other signs and symptoms of things that I've learnt about, during this course really. (FG1P3)

The comprehensive 'systems-based' content, and the focus of the maternity high-dependency course, challenged some participants to examine their own clinical practice and implement changes. For some of the midwives, the course provided an opportunity to integrate prior general nursing practice and knowledge with current midwifery practice and knowledge, and strengthen the links between theory and practice:

because I haven't done general nursing for a very, very long time and I don't even remember during my training relating those sort of things to practice, and looking at the big picture, and now I suppose because you have experience as a midwife, and you go back to those general nursing type things, it really clicks in your brain and you can recognise things very quickly. (FG1P1)

One midwife was able to see how a maternity high-dependency course could benefit women and their babies, by keeping them together. This demonstrated her systematic approach to providing family-centred midwifery care:

Well, we have to look at the fact why the women are here. They don't want to be separated from their babies. A lot of [the women] are able to stay [in the hospital] and hopefully with all the staff getting trained and doing the course, then the women won't have to go elsewhere. (FG2P7)

The 'broadened' professional outlook described by a number of midwives reflected a change in professional and personal attitude. They spoke of looking at their work in a new and systematic way, to care for their women comprehensively and holistically, as confident professionals equipped with the relevant knowledge to work in a specialised sphere of midwifery practice.

Chapter Six: Discussion

Midwives have traditionally provided expert care to women who are experiencing a normal, healthy pregnancy, with clear boundaries and guidelines in place for referral to a medical practitioner when complications are identified and care falls outside the 'normal risk' paradigm. In Australia women who have pre-existing medical conditions which may be exacerbated by pregnancy, or who experience pregnancy-related complications prior to, during or immediately after labour which necessitate a higher level of care than can be provided in the routine ward environment, may be transferred to a maternity high-dependency unit and cared for by midwives. The provision of high-dependency maternity services in Australia varies considerably, with little evidence that specialist midwives are available in most health settings. Furthermore there have been no formal training programs in Australia to enable midwives to develop and expand their knowledge and skills in the field of maternity high-dependency care.

The primary aim of this study has been to explore whether midwives working with acutely ill women in a tertiary, metropolitan, public women's hospital in Western Australia possess the knowledge, skills and confidence to care for acutely ill women. The objectives were to determine the level of midwifery knowledge surrounding the core principles of maternity high-dependency care, the technical skill and confidence midwives possessed to provide the care, and the demographic details of the midwives working in maternity high-dependency care. The study assessed their existing and subsequent theoretical knowledge, clinical skill and professional confidence by gathering quantitative data before and after course attendance, and qualitative data immediately after course attendance.

The primary findings of this research reveal that midwives' knowledge of the theoretical principles of maternity high-dependency care, and their confidence in providing such care, could be improved after attending a maternity high-dependency course. Clinical skills could also be improved, along with cognitive capabilities such as critical thinking and problem-solving.

Theoretical Knowledge

Pre-course knowledge assessment.

Midwives knowledge of the theoretical principles of maternity high-dependency care have not been formally reported prior to this research. An extensive literature search (PubMed, ScienceDirect, Medline) did not provide any data or discussion of midwives' knowledge in the field of high-dependency care. In order to determine the level and nature of midwives' high-dependency knowledge, a 30-item multiple-choice test based upon the general theoretical principles of high-dependency care

applicable to both the nursing and midwifery professions, and of complex midwifery care, was administered at three distinct intervals, both before and after attendance at a maternity high-dependency course. The main issues identified in the results suggest that two factors come into play in the development of knowledge in this field: current experience in the field, and a history of work in the field of maternity high-dependency care or critical care. Current experience in maternity high-dependency care appeared to be the factor contributing to the highest pre-course knowledge test results in this study.

The mean pre-course knowledge test score was 18/30 or 60%, with 12/14 of the midwives attaining a score of 50% or more. Two of the midwives who gained the highest scores (22/30 and 21/30) in the pre-course knowledge test were currently working in the field of maternity high-dependency care, and each had over 16 years' clinical experience as a midwife. The length of time in years spent working as a nurse or midwife also seemed to positively influence the pre-course test results of four of the other midwives. The second highest score was 20/30, which three midwives shared. Two of these midwives had over 20 years of combined nursing and midwifery experience. However, the third midwife, who did not have any clinical nursing or maternity high-dependency care experience, and had worked as a midwife for only five years, achieved a similar score. Her years of experience had been attained in a tertiary maternity hospital. The recent development of post-graduate studies may have played a role in this midwife's level of baseline theoretical knowledge. Further, one of the most experienced midwives (over 24 years of midwifery experience) did not achieve 50% in the initial knowledge test. It seems that the nature of experience gained may be just as valuable as the length of time spent working as a nurse and midwife for some of the midwives in this study. The two midwives who did not pass the initial knowledge test each had over 13 years of midwifery experience in a tertiary maternity hospital, and both had also worked as registered nurses. One of these midwives had worked in critical care nursing, although not in the last ten years. These midwives both trained in the hospital-based system, and had not undertaken any university-level education since initial registration.

Only three of the course participants lacked a Bachelor level degree, with the remaining eleven all prepared at a university level. In the initial pre-course knowledge test, two of the three hospital-trained midwives did not attain a score of 50% or greater. It is difficult to identify specifically why this may have occurred in such a small sample, without over-emphasising the results attained. However, one possible explanation is the theoretical differences in preparation for practice, and the recency of university-level studies within the group.

The attributes of university graduates, and the skills that they are equipped with at the time of initial professional registration, are distinctly different from those of the midwifery graduates from the hospital-based training system. The integrated learning

approach adopted by universities is designed to produce graduates with the ability to think critically, problem-solve, communicate effectively, and interpret and use evidence to inform their clinical practice (Williams et al., 2012). Previously, hospital-based midwifery programs emphasised a task-oriented approach to learning, focusing on practical skill acquisition and learning information by rote. This task-oriented approach to midwifery training produced graduates who were capable at 'doing', as opposed to 'knowing' (Benner, 1984). The transfer of nursing and midwifery education to the tertiary sector was implemented for a number of reasons, including the desire to produce critical thinking skills in graduates that would enable them to make sound decisions and solve problems in the clinical setting. However, critical thinking and sound decision making have not always correlated with one another, and have not been studied extensively within the profession of midwifery (Holzmer & McLaughlin, 1988; Spencer, 2006). Some of the most experienced midwives in the course did not perform strongly in the knowledge testing, or initially did not pass it. However, the clinical expertise, capabilities and experience of these midwives requires them to make sound decisions, often under pressure, in order to function as midwives in a tertiary hospital. It could be argued that their clinical roles entail critical thinking which is applied to clinical practice, as opposed to critical thinking in a theoretical context. These midwives do not lack the ability to think critically or to solve problems, but they have not had the same exposure to academic-styled assessments and therefore have not developed the same skills or expertise in answering multiple-choice tests as university-trained midwives.

The areas of strength, or questions that were answered well in the pre-course test, surrounded core areas of maternity high-dependency care such as understanding the components of an ECG (question 7), understanding the features of atrial fibrillation (question 8), knowing what arterial lines measure (question 3), recognising non-obstetric, surgical causes of morbidity in pregnancy (questions 24, 25), knowing which medications to avoid in severe pre-eclampsia (question 30) and identifying causes of iron-deficiency anaemia (question 29). The attendees' roles, past or current, as nurses or midwives in a tertiary maternity hospital or critical care setting may explain why these questions were answered well. The questions that were not answered well required a more detailed level of knowledge surrounding the pathophysiology of illness in pregnancy, and of general physiological concepts such as how to calculate mean arterial pressure and cardiac output (questions 5, 6), knowledge of treatments for coagulopathy (question 27) and the fraction of inspired oxygen administered with a non-rebreather mask at different flow rates (questions 21, 22). These were difficult questions, and it was not expected that they would be answered accurately at the pre-course assessment. They were designed to test the depth of knowledge acquisition gained in the maternity high-dependency course, as this type of theoretical knowledge is not a part of usual midwifery practice.

Immediate post-course knowledge.

Midwives' knowledge improved immediately post-course, with ten midwives achieving a higher score in the post-course test, one midwife maintaining the same score, and two achieving a lesser score. The mean score improved to 20/30 or 66%. The greatest improvement in knowledge immediately post-course was seen for the physiology-based questions (questions 5, 6, 26) and for a question addressing haemodynamic monitoring (question 1). The answers to these questions had been deliberately incorporated into the course curriculum, with presenters asked to ensure that they provided this information in their lecture. It was agreed by the content reviewers that the content of the test consisted of essential theory relevant to the clinical practice of maternity high-dependency care. Certain deficiencies were anticipated between theoretical knowledge and clinical practice, which had led to the implementation of the high-dependency course. The improvement in post-course test scores could be attributed to the recency of attending the high-dependency course and the ability to recall information.

The information provided in each lecture was supplemented by providing pre-reading from an obstetric intensive care textbook, and relevant peer-reviewed journal articles, which outlined the evidence and rationale surrounding the topic being taught. The students were encouraged to complete the pre-reading prior to attending the lecture so that the concepts introduced during the lecture could be better understood.

Student motivation may have had an impact upon the immediate post-course test results. Some students mentioned in the qualitative interviews that they were not motivated to complete their pre-reading or to read through lecture notes, given the pressures of their work and private lives. Others were highly motivated to complete pre-reading and to undertake further reading as part of their professional development and career progression. Motivation and personal attitude have been cited within the literature as factors affecting learning, in professional development and in the workplace (Lawton & Whimpenny, 2003; Munro, 2008; Spencer, 2006). There was consensus amongst the midwives in the focus group interviews that developing a professional body of knowledge was a life-long process, regardless of the length of professional experience, and that this learning could take place within the clinical setting or in a more formal education styled setting.

12 months post-course.

Midwifery knowledge continued to improve (n=6) or remained at the same level as the immediate post-course test (n=5), with only two midwives achieving a lesser score 12 months post-course completion. It is not known why the attendees continued to improve their knowledge after course completion. It is possible that over time they developed a greater understanding of the theoretical principles and concepts introduced in the course, as they applied their knowledge in a meaningful

way in the clinical setting (Struyven, Dochy, Janssens, Schelfhout & Gielen, 2006). Furthermore, it is not known in which settings or roles these midwives continued to work after completing the course. Ongoing professional development may have re-enforced the theory learned within the course as well as providing opportunities to consolidate theoretical principles with clinical practice post-course completion.

It was encouraging to see that the majority of very experienced midwives within the study were both motivated and receptive towards learning, as revealed in the focus group interviews. Some midwives commented, 'it's the best course that I've ever been on' (FG1P1); and 'It's really interesting, even on my days off, I don't mind coming in for it' (FG1P3). Factors that may have positively influenced this include the support for course attendance provided by the midwives' immediate line managers, and an additional 16 hours of paid study leave granted to encourage and remunerate them for attending. Creating a positive organisational culture around learning is a critical component to the success of educational programs (Schulz & Stamov Robnagel, 2010). The assistance that the midwives received from their managers through flexible rostering to enable course attendance, and in supporting their initial application to attend the course, may have also helped to create an environment conducive to successful learning (Munro, 2008). The development and introduction of the course was also supported and facilitated by the hospital executive and the medical directors of both obstetrics and anaesthesia. Support from medical staff was crucial, as their expertise was required to teach the complex theoretical principles of deterioration and illness in pregnancy. The midwives reported that engaging in multi-disciplinary teaching and learning enabled them to develop a greater respect for their medical colleagues and to understand the challenges and pressures that their colleagues were faced with when caring for acutely ill women.

Midwives' Perspectives of Knowledge Gained

The professional role of midwives in Australia has changed and developed, in response to the needs of women, the requirements of their employers and the growth and advancement of obstetric medicine (Larsson, Aldegarmann & Aarts, 2009). The focus group interviews with the midwives attending the course reiterated the notion of gaps within their theoretical knowledge and clinical practice, and the value of a specific maternity high-dependency course in addressing ongoing professional educational needs. The concept of gaps between theory and clinical practice has been discussed extensively in nursing and midwifery literature (Corlett, Palfreyman, Staines & Marr, 2003; Moss, Grealish & Lake, 2010; Scully, 2011; Vedam, Goff & Marnin, 2007). It is theorised to occur due to the 'hands-on' nature of these professions, which tends to distance theoretical knowledge from the practical elements of nursing and midwifery clinical practice (Corlett, Palfreyman, Staines & Marr, 2003). The attendees added that previously there had been no way for them to obtain this theory, and learning had occurred 'on the job' without always providing

the theoretical foundation for the clinical practice being undertaken. They felt that the course helped them to consolidate various elements of their working careers, giving them a sense of credibility and authority in the field of maternity high-dependency care. One midwife described this as 'putting the pieces together'. It enabled them to recognise inconsistencies in their own clinical practices, and in those of their peers, which they felt facilitated an opportunity for change, regardless of their years of experience, job title or position. This is consistent with the argument proposed by Edwards (2008), that length of service does not always ensure competency. For one midwife, an improvement in her theoretical knowledge led to greater situational awareness and the ability to identify and act on potential problems quicker than she had previously.

The level of theoretical knowledge in relation to maternity high-dependency care pre-course was slightly above average, with a mean result of 60%. Post-course knowledge either improved for the majority of midwives, or stayed the same throughout the post-course testing intervals. These results are encouraging, and demonstrate predominantly that in this group of midwives, theoretical knowledge could be maintained and improved over time after attending a maternity high-dependency course.

The link between previous clinical practice and the recency of that practice had a positive impact on the midwives in this study. Midwives with recent experience in the field of maternity high-dependency care had a greater level of theoretical knowledge than those without that experience. Despite this, there was room for improvement in knowledge for all the midwives. Investing in a course of this nature may be useful for other tertiary maternity health care providers, in order to build and retain a competent workforce within the field of maternity high-dependency care.

Clinical Skill

Pre-course skills.

The participants were required to self-assess and report their proficiency in undertaking 16 clinical skills which were performed frequently in the maternity high-dependency unit in their health service. There were no objective observational assessments undertaken of the midwives to determine if their level of proficiency in performing a particular skill was consistent with what they reported. However, midwives as accountable professionals are required to practice in a safe and competent manner, and as adult learners should be able to recognise and report their own educational needs, or limitations in practice. Based on this principle, the information reported by the midwives in the skills assessments should be reliable (James & Francis, 2011).

There is no agreement or consensus within the literature as to what core clinical skills midwives require when working in maternity high-dependency care. Skill

requirements are often determined by the nature of the patients being cared for, the availability of suitably trained and skilled staff and access to equipment and technology that enables the provision of high-dependency care (James et al., 2009). One health service within the United Kingdom has outlined the role of the critical care midwife as someone who is able to manage invasive monitoring devices, interpret and understand biochemistry results, understand the physiology of pregnancy and the effects of disease in pregnancy, perform, analyse and interpret ECG traces, administer intravenous medications, interpret maternal arterial blood gas results, identify and correctly manage the need for fluid replacement therapy, and provide a 24-hour midwifery outreach service to the health service (Simpson & Barker, 2008). The skills required by midwives working within the high-dependency unit of the health service in this study were similar. Additionally, the midwives in this study were expected to manage inotropic infusions, intrauterine balloon tamponade catheters, hypertensive crises, non-invasive cardiac output monitors, and provide care to the well neonate, or pre-term baby <35 weeks of gestation, and facilitate breastfeeding and rooming-in as appropriate with the baby's mother.

Many of the skills required by midwives in high-dependency are learned and refined through repetition, interaction, frequency and experience (Simpson & Barker, 2008). Midwives who do not use these specific clinical skills regularly may experience challenges in maintaining their proficiency. This has implications for staff who do not work in high-dependency maternity care frequently, or on a permanent or regular rotational basis. It is important that adequately skilled midwives are regularly exposed to the clinical maternity high-dependency environment if they are to retain their clinical knowledge and skills.

Skills such as the recognition of cardiac arrhythmias, and interpreting a 12-lead electrocardiograph (ECG) take time to learn and consolidate. They require high-order skills such as critical thinking and reasoning, in the changing context of each patient's medical history, physical assessment and clinical presentation.

Pre-course skill results.

The qualitative research findings from this research indicate that the midwives required an opportunity to consolidate the skills that they had attained during work experience and rotation into different clinical areas. Contextualising learning can promote knowledge retention and new skill acquisition. This is consistent with discussions in the literature (Wilson, 2012; Gijbels et al., 2010) that also advocate practice, or increased frequency of clinical skill performance, to improve proficiency in performance. In order to maintain a suitably skilled workforce in maternity high-dependency care, it is important that midwives are given regular opportunities to utilise, demonstrate and refine their clinical skills.

The majority of the responses that the midwives gave to the skills evaluation at each testing interval were positive (that is, they agreed or strongly agreed that they could

perform them). The skills that the midwives did not feel that they possessed, or felt less confident in using, were predominantly skills utilised in critical care nursing, not often required by midwives caring for healthy childbearing women. These skills included titrating vasopressors, identifying atrial fibrillation on an ECG, or measuring central venous pressure with a transducer. However, in contrast, the results from the knowledge testing revealed that the majority of midwives did possess the theoretical knowledge which formed the foundation for these clinical skills. There was a discrepancy between having the knowledge, and being able to apply and interpret it critically. Previously these skills were taught on the job, where an emphasis was placed upon 'doing' or attaining a skill versus 'knowing' or 'understanding' the theory and rationale guiding its use.

The increasing use and application of technology in obstetrics also has an impact on the skills required or expected of midwives, depending on the context of their clinical practice. Technology features heavily in critical care nursing, and technological competence and mastery is equally relevant in midwifery: it is an integral component of maternity high-dependency care. The ability to integrate new technology into clinical practice is a skill in itself, in addition to the capabilities required to be familiar with, operate and or interpret devices or equipment (Little, 2000).

Little research has been undertaken that explores the changes within clinical practice and skills amongst midwives over time, as their careers progress from new graduate to proficient expert. Midwives in Australia graduate with a broad range of initial skills or minimum competency (Fullerton, Thompson & Severino, 2011; ANMC, 2006); their core skills are a distinguishing feature of the profession. As graduates evolve into experienced midwives, they attain proficiency in using these clinical skills. Frequency in the use of clinical skills has been demonstrated to improve confidence in using them (Wilson, 2012). Cognitive skills such as the ability to reflect upon clinical practice, make decisions, solve problems and exercise judgement and reason are just as essential as the physical clinical skills used in midwifery practice. Developing and using these skills is dependent upon many factors, and midwives may not always be aware of how they have been learned and developed over the course of their career (Lake & McInnes, 2012). The focus group interviews used in this research revealed that some midwives were able to develop and refine their cognitive skills through reflective practice, and by analysing clinical case studies throughout the course. Their ability to 'think differently' after course attendance was described as an important and useful skill that would enable them to change their own clinical practice in a positive way. It seems that undertaking the course was an important catalyst for this to occur; and further experience in the clinical setting would affirm the development of clinical competence.

Studies have demonstrated that with experience and promotion, some midwives develop and refine their academic skills to undertake clinical audits, research, and publication (Hardwick & Jordan, 2002; Lawton & Whimpenny, 2003). The

development of these skills is often necessary for midwives to be promoted to more senior, expert positions. Sometimes the motivation for learning and attaining these skills can be driven by the work context of the individual midwife, or by a desire for career progression and or job satisfaction (Lawton & Whimpenny, 2003). The results from the quantitative chapter of this thesis show that in the cohort of midwives studied, clinical skills could improve after attending a maternity high-dependency course. Thematic analysis from the quantitative research undertaken reveals 'thinking differently' to be a core theme, signifying an improvement within the midwives' cognitive skills such as critical thinking and problem-solving.

There is increasing pressure on health services to provide critical care services for their patients beyond the usual context of the intensive care or high-dependency unit (Crocker, 2007). Acutely ill women may require care in a variety of clinical areas in maternity hospitals, such as the operating theatre, recovery room, labour ward, emergency centre, and antenatal or postnatal wards. It is important that midwives who have the theoretical knowledge and clinical skills to care for acutely ill women are employed throughout maternity services, not just in a specific high-dependency unit. This enables the sharing of knowledge and clinical expertise amongst staff who may not have any critical care expertise, and in some cases may not be midwives. There is considerable value for health services in providing maternity high-dependency care courses, as nursing and midwifery staff from different clinical areas can be trained simultaneously. The collaborative nature of such a course also provides benefits to the wider organisation by encouraging and facilitating team work and allowing participants to learn from the clinical expertise and insight of one another.

Confidence.

The confidence of midwives in caring for acutely ill women in the tertiary maternity hospital and maternity high-dependency settings has not been explored previously. It is important to understand confidence, as it is an integral component of professional competence. A contextualised and validated general self-efficacy scale was administered to the midwives at three intervals to determine baseline levels of confidence and any changes in confidence over time once they had completed a maternity high-dependency course. Qualitative focus group interviews after course completion added further insight into the factors affecting midwives' confidence within the clinical setting, which could not be explained effectively using quantitative research methods alone.

General self-efficacy is an important component of competence, and affects the ability of midwives to perform their duties within the workplace (Brown et al., 2003; Eraut, 1998). There is a lack of available data that explores the development of midwives' general self-efficacy over time and how it is affected by knowledge, skill and clinical experience. Much of the research that explores confidence has focused

upon the experiences of undergraduates, new graduates or those receiving precepting (Brown et al., 2003; Farnell & Dawson, 2006; Rowan, McCourt & Beake, 2009). It is difficult to apply the findings of such research to the cohort studied here, as almost all the midwives studied had many years of clinical experience. Some research has explored self-efficacy amongst obstetric nurses in North and South America after simulated educational activities (Christian & Krumwiede, 2012; Cohen, Cragin, Wong & Walker, 2012), but participants were followed for short periods: eight weeks or four months. Their self-efficacy did improve immediately after their training, and decreased after four months, but remained higher than the pre-course levels. It is debatable how much an individual's general self-efficacy could change within the timeframes used in these studies, although, self-efficacy did improve after educational interventions.

Self-efficacy has been described as the capability to organise and perform a specific action to attain a desired effect with a sense of authority and control (Perrewe et al., 2002). It is a representation of an individual's beliefs about her ability to achieve a particular goal (Klassen & Chiu, 2010). Self-efficacy influences an individual's thoughts, feelings and actions (Scholz Gutierrez Dona, Sud & Schwarzer, 2002). In the workplace, self-efficacy can affect employee motivation, ability, persistence and mastery of the working environment (Perrewe et al., 2002). Self-efficacy can vary according to a specific situation: general self-efficacy refers to a broader notion of confidence in individual coping abilities in a variety of situations (Boyd, Lewin & Sager, 2009; Perrewe et al., 2002).

The effect of confidence upon professional practice has been explored in some detail in critical care nursing research (Chaboyer, Dunn, Theobald, Aitken & Perrott, 2001; Evans, Bell, Sweeney, Morgan & Kelly, 2010; Farnell & Dawson, 2006). The similarities between critical care and maternity high-dependency care enable some conclusions from this research to be applied to the maternity high-dependency setting. Farnell and Dawson (2006) report the improvement in confidence of new critical care nurses to be directly proportional to improvements in knowledge and skill over time. A similar pattern was found in this research, with midwifery confidence levels slowly improving over time and reaching statistical significance 12-months after the educational intervention.

Evans et al (2010) illustrated the importance of confidence in enabling novice critical care nurses to develop new knowledge and skills successfully. Chaboyer et al. (2001) described confidence as an important skill in effective communication with colleagues, patients and families within the field of critical care.

During the qualitative interviews, the midwives studied as part of this research mentioned that having the confidence to question medical staff and advocate on behalf of women in their care was an important skill, and that it was bolstered by attending the course. The improvement in midwifery confidence after attending the

high-dependency course facilitated a process of questioning and an airing of frustrations; it also led to a sense of powerlessness at their inability to effect change for some of the midwives in this study. The powerlessness stemmed from job status or level, and also from the perceived disparity in competency between the midwives who had attended the course and their colleagues who had not. The midwives who had learned to 'think differently' and become more confident in their clinical decision-making, reasoning and problem-solving mentioned that they became frustrated with colleagues whose practices had not changed. It was not anticipated that midwives would feel this strongly; however it was encouraging that their solution to the problem was to encourage their colleagues to also complete the high-dependency course.

Factors that may either promote or inhibit confidence building within health services can include peer support (of staff and preceptors), knowledge and skills, experience, communication, exposure, resources and working culture (Bench, 2007; Farnell & Dawson, 2006; Gallagher, Rice, Tierney, Page & McKinney, 2011; Munro, 2008). These elements were all discussed or mentioned in some way by the midwives in this research, but the need for and nature of peer support was reiterated many times throughout the focus group interviews. It was a critical determinant in how confident they felt in a variety of situations when caring for acutely ill women.

The general self-efficacy levels of the majority of midwives in this study improved gradually over each of the study periods. Such an improvement is consistent with the notion of general self-efficacy as a stable, universal construct (Scholz et al., 2002). This study found that midwifery confidence can improve slowly over time, in combination with midwifery skill and knowledge, after attending a high-dependency course. It is not possible, however, to determine whether the course precipitated or contributed to the improvement in midwifery confidence, without undertaking further research.

Confidence is an integral component of competence, particularly for midwives caring for acutely ill women. Confidence is an essential skill for high-dependency midwives, who need to advocate for women's choices, and to seek medical review and care escalation for women who are deteriorating. Confidence is as important for the high-dependency midwife as theoretical knowledge and clinical skills. Without confidence, a midwife may doubt her judgement or question her abilities, which may potentially adversely affect the care provided to patients.

The value of a maternity high-dependency course for health care providers is that there is the potential to improve midwives' knowledge, skills and confidence simultaneously. Midwives who have clinical skills, without a theoretical framework for practice and the confidence to identify and act upon unsafe practice, or to manage a deteriorating woman, may not be effective practitioners in an acute setting. Conversely, confident midwives who do not recognise their limitations, or who do

not have suitable clinical skills and theoretical knowledge, can encounter similar challenges in the provision of care to acutely ill women. It is essential that educational initiatives such as a high-dependency courses seek to provide a suitable balance between knowledge, skill and confidence, to maintain patient safety and provide effective midwifery care relevant to current professional practice.

Recommendations

1. Professional development.

Accessible continuing professional development for midwives in the context of maternity high-dependency care should be made available through tertiary study or hospital-based programs.

It is important that both novices, and experienced midwives have an awareness of the needs of the acutely ill childbearing woman. Midwives should be able to recognise and respond to deteriorating women, and understand the management of both medical and obstetric conditions affecting maternal health. Both the Safer Childbirth Report (2007) and the two most recent confidential enquiries into maternal death in the United Kingdom (CMACH, 2007; CMACE, 2011) have recommended additional training for midwives to become adequately skilled in the provision of maternal critical care.

In order to adopt the recommendations from the United Kingdom, specific maternity high-dependency-focused programs must be provided for midwives in Australia, to meet their unique learning needs. Course content should be relevant to the maternity population cared for in tertiary maternity hospitals, and the mode of delivery should include both theoretical and practical clinical components which may be completed in a variety of flexible formats. Maternity high-dependency courses may be provided by the university sector, or alternatively administered through local hospital-based programs.

Currently there are no tertiary programs available within Australia for midwives to develop either theoretical or clinical expertise in maternity high-dependency care. A similar challenge exists for obstetricians, intensivists, emergency physicians and critical care nurses, who may all encounter acutely ill childbearing women, but do not have access to a suitable training program which specifically provides ongoing education in relation to the care of this cohort.

Introducing maternity high-dependency care as an elective unit for registered nurses undertaking masters-level study, and who may care for critically ill women or their babies in general hospitals or neonatal intensive care units, could be useful, and generate a broader appeal and pool of potential students for enrolment. Neonatal intensive care unit nurses may be familiar with the pathophysiology and management of illness in the unwell or pre-term neonate, but may not appreciate or understand the

complexities of maternal health that contribute to neonatal illness or prematurity. Having a balanced perspective of both maternal and neonatal factors affecting health may be useful in applying a holistic perspective to neonatal nursing practice, and providing family-centred care. Intensive care nurses likewise are trained to provide care to a variety of critically ill adults, but may not be aware of the complex physiological changes of pregnancy that are relevant to the critically-ill parturient. The lack of exposure of undergraduate and existing general and critical care nurses to pregnant patients compounds the problem. Enabling critical care nurses to gain greater insight into the nuances of the critically ill pregnant patient through ongoing professional development or post-graduate study may also improve their confidence and clinical skills.

2. Midwives and maternity high-dependency care.

Midwives who have undertaken specific training in the provision of maternity high-dependency care should provide such care.

Midwives who have been trained to care for maternity high-dependency patients should provide their care, as opposed to those who have not been trained or are not midwives. The expertise of suitably trained high-dependency midwives is substantial, and developing both a clinical and theoretical framework for practice takes a significant amount of time to achieve. Midwives who work in a rotational capacity within high-dependency units should spend a continuous period of time, regularly, in the clinical area to ensure that clinical knowledge and skills are retained and suitably refreshed. There is no consensus within the literature as to the length of time required to maintain clinical skills.

Given the level of acuity of the maternity high-dependency patient, and the expertise required to care for her suitably, maternity high-dependency units should be staffed with a core group of midwives. Roster deficits and leave replacements should ideally be provided by suitably skilled rotational midwives, as opposed to unskilled, casual midwives. Reports from the United Kingdom indicate that ‘untrained’ midwives are more likely to miss clinical signs of deterioration or fail to understand the management of medical problems in pregnancy (CMACE, 2011; RCOG, et al., 2007). Given this, it is of paramount importance that women who are acutely ill and require a high level of midwifery care should be cared for by suitably qualified and capable midwives. Health care services in Australia should also ensure that there are suitable facilities to provide an intermediate level of care for acutely ill women, as well as a sufficient number of adequately skilled midwives to care for women requiring high-dependency maternity care.

Whilst it is important that novice midwives are given opportunities and exposure in caring for acutely ill women, they require adequate supervision and extensive mentorship to work effectively in the high-dependency setting. The length of time that graduates may take to become competent and then proficient in the provision of

high-dependency care varies. It is unlikely that midwifery graduates would accomplish significant expertise in less than 14 weeks unless they also worked in critical care nursing; but no firm evidence exists to support or contradict this assertion.

Midwives, as opposed to registered nurses, should be the sole providers of maternity high-dependency care in maternity hospitals. The midwifery profession is required to accept the challenge presented by the acutely ill maternity patient that she be the recipient of the same comprehensive and holistic midwifery care that a healthy woman would receive. All parturient women in developed nations like Australia, which are adequately equipped with personnel and resources, deserve the right to be cared for by a midwife regardless of the level of care required. Tertiary maternity hospitals that are equipped with learning and development facilities and midwifery educators should invest in upskilling the midwifery workforce to meet the needs of all women cared for within their health care facilities.

3. Future course design and development.

Future courses should adopt mandatory assessments, with practical styled workshops and simulations. An internal, or face-to-face course style is the preferred method of course delivery. If theoretical knowledge assessment is to be undertaken through the use of multiple choice testing, then a modified Angkoff or Nedelsky method should be used to determine pass and fail scores or percentages.

The implementation of a maternity high-dependency course in a tertiary maternity hospital requires an enthusiastic and suitably qualified midwife to co-ordinate the program, collaborate with medical colleagues and gain support from the hospital's department of anaesthesia, to present the complex course content relating to the physiological changes of pregnancy and fluid and electrolyte regulation. Support from the health service's executive is crucial to ensure that midwives can be released from patient care to attend the course during working hours.

Anecdotal evidence has indicated that course students highly value interaction with their lecturers in face-to-face styled presentations, particularly as questions may be answered immediately by the lecturer, and content clarified. This is an important consideration as the level of complexity of the concepts covered may be difficult for learners to grasp, and the opportunity for questions in the classroom enables further learning to occur within the group. Administering the course across a semester will enable the content to be taught in a logical sequence. Shift work and family commitments can interfere with a participant's capacity to attend the course, so by providing sessions once a fortnight participants are more likely to be able to attend, and are more likely to be able to obtain release from their clinical duties. For those students who are unable to attend a session, lecture material could be provided in an online lecture format. Online lectures would provide the absent students access to the

same information as those who attended the lecture, and ensure important concepts can still be learned.

It is important that mandatory assessments are integrated into the program if it is administered outside the tertiary sector. Participants were not required to complete mandatory assessments within the original 2011 high-dependency course. In hindsight, it is felt that this did not encourage the attendees to strive to 'pass' the course and complete the required pre-reading. In subsequent courses (2012 and 2013), clinical case studies in a short-answer format have been used for assessment, enabling the clinical application of learned concepts.

The greatest challenge with the provision of maternity high-dependency education is in determining how and where future courses should be provided. There is great benefit in offering the course as a unit within a post-graduate university program, potentially enabling a greater number of participants to access the course material. However, given the average age of midwives, specifically within Western Australia, those who require the education the most may be the most reluctant to undertake tertiary studies, particularly if they have never done so previously. The cost of university studies may also deter potential students.

Regardless of the sector administering the course, the course content should combine theoretical and practical workshop-styled teaching sessions and simulations. Core curricula should include physiological changes of pregnancy, fluid and electrolyte regulation, replacement and treatments for haemorrhage, haemodynamic monitoring, vasoactive drugs, management of pre-eclampsia and hypertension in pregnancy, sepsis, cardiac disease and mental illness. A continual process of evaluation should be utilised to identify areas for improvement and future learning needs. Course content should also reflect the most recent causes of maternal morbidity and mortality in Australia, which can be applied to our population from maternal mortality reports and supplemented by findings from the United Kingdom confidential enquiries into maternal death.

Limitations of the Study

Sample.

It is important to place the findings from this research into context. The cohort of midwives studied was small, and came from one health service within the state of Western Australia. It is not possible to guarantee that they are representative of all midwives working in maternity high-dependency in Australia. However, it is anticipated that there are some similarities: in the nature of work undertaken, the cohort of patients cared for, and the challenges faced by other midwives working in comparable settings. In contrast, the heterogeneity of the sample in terms of their age, and diversity of working experiences may provide some reflection of the general midwifery population in Western Australia.

The inability to explore the factors influencing the midwives' improvement in theoretical knowledge 12 months after course completion was a limitation of the study. Because of this lack, knowledge improvement cannot be solely linked to course attendance, It would be useful to have an understanding of other factors contributing to improvements in the midwives' theoretical knowledge, so that they may be incorporated into future programs where possible. The impact of the midwives' changed clinical practices and improved cognitive thinking about clinical outcomes for their patients, career progression and satisfaction, would also be useful to know, although they are outside the scope of this research.

Instruments.

Content validity of the instruments designed for this research was not quantified through the use of a content validity index, which was a limitation of the research. The instruments designed or adapted for this research to assess knowledge acquisition did not enable the participants to give a neutral response. Some of the participants mentioned that in the knowledge test they were forced to guess, as opposed to admitting that they did not know the correct answer. Including an 'unsure' category on the marking guide would have been useful. It is not possible to ascertain how many participants knowingly gave an accurate response, and how many made a lucky guess. However, the improvement in knowledge over time, and the repeated test intervals, were designed to demonstrate that not all the accurate answers given were randomly selected: rather, they were chosen based on the knowledge of the participants.

The participant skills evaluation was a self-evaluation of each midwife's own competency and performance; their proficiency in actually performing, or their mastery of these skills, could not be verified objectively through demonstration or observation at the time of assessment. Despite this, the midwives' in this study were treated as adult learners, who could reflect upon their own learning capabilities, skills and needs, and identify these clearly in this instance through the use of a simple skills evaluation instrument (Harris, 1998). For this reason, objective observation was not considered to be necessary.

Consistency of teaching.

The lecturers chosen to present at the high-dependency course were given a list of objectives for their presentations to enable them to cover the theory assessed in the knowledge test. Each lecturer was considered a subject-matter or clinical expert in the area that they were asked to teach. The lecturers came from a broad cross-section of health professionals, with varied levels of skill and expertise in the presentation of educational material. Unfortunately, not all the lecturers presented their information clearly, or met the objectives that they were given for their presentation. Unforeseen circumstances such as sickness or clinical needs prevented some lecturers from presenting their session as planned, and last minute changes to the timetable had to

be made. However, supplementary reading material in the form of journal articles was given to the participants to ensure they had an opportunity to meet their learning needs.

Recommendations for Further Research

- Exploring the provision of maternity high-dependency care across Australia may reveal more about the care of the acutely ill maternity patient within tertiary maternity hospitals.
- A qualitative study focusing on the experiences of midwives providing care to highly-dependent women in other health services across Australia could reveal more about midwives' professional confidence to practise in the maternity high-dependency setting, and the experiences that they have encountered. The perceptions of women receiving such care during their pregnancy would also be useful.
- A prospective, longitudinal cohort study that identified women experiencing morbidity within their pregnancy, outlined the care that they received and followed them over the next five years, would provide a comprehensive insight into the consequences of severe maternal morbidity and the impact on maternal health and well-being into the future. Research of this magnitude would also highlight the need for midwives to undertake continued professional development within the field of maternity high-dependency care.

Conclusions

It appears, from the literature review and the results of this study, that midwives in Western Australia have not been specifically trained or prepared to work within the specialised field of maternity high-dependency care. This project has demonstrated that the theoretical knowledge, clinical skills and confidence in professional practice that midwives require can be developed, learned and retained by their attending a maternity high-dependency course. Providers of ongoing professional development for midwives are increasingly challenged to provide educational programs to a diverse midwifery workforce. In this case, the need of women to be cared for by capable midwives who are equipped to meet their needs, regardless of where in the tertiary setting they require care, should encourage the profession to continue to develop the role of the high-dependency midwife in caring for the acutely-ill childbearing woman.

The expertise of high-dependency trained midwives should be recognised by maternity service providers, and acutely ill women should be transferred to a maternity high-dependency unit when a higher level of care is required. The advantage of maternity high-dependency care is for mother and baby to remain together, and supportive midwifery care to be provided, which nurtures the woman and her newborn by providing woman- and family-centred care. The key recommendations from this research are that all midwives working in maternity

high-dependency care complete an education program specifically designed for that area of work. Further, all women admitted to maternity high-dependency units should be cared for by suitably trained midwives.

References

- Ahrens, T. (2008). Overcoming the subjective-objective divide in interpretive management accounting research. *Accounting, Organizations and Society*, 33, 292–297.
- Armitage, A., Bryant, R., Dunnill, R., Flanagan, K., Hayes, D., Hudson, A., Kent, J., Lawes, S., & Renwick, M. (2007). *Teaching and training in post-compulsory education* (3rd ed.). Berkshire: McGraw-Hill Open University Press.
- Audit Commission. (1999). Critical to success: The place of efficient and effective critical care services within the acute hospital. Retrieved from <http://www.archive.audit-commission.gov.uk/auditcommission/sitecollectiondocuments/AuditCommissionReports/NationaStudies/CriticalToSuccess.pdf>
- Austin, M., Kildea, S. & Sullivan, E. (2007). Maternal mortality and psychiatric morbidity in the perinatal period: Challenges and opportunities for prevention in the Australian setting. *Medical Journal of Australia*, 186(7), 364–367.
- Australian Bureau of Statistics. (2008). *2007-2008 Migration Australia*. Retrieved from http://www.ausstats.abs.gov.au/Ausstats/subscriber.../34120_2007-08.pdf
- Australian College of Critical Care Nurses. (2002). *Competency standards for specialist critical care nurses*. Retrieved from <http://www.acccn.com.au/content/view/119/150/>
- Australian Health Practitioner Regulation Agency. (2010–2011). *Annual Report 2010–2011*. Retrieved from <http://www.ahpra.gov.au/News/2011-11-1-AHPRA-annual-report-released.aspx>
- Australian Institute of Health and Welfare (2006). *Intensive care unit*. Retrieved from <http://meteor.aihw.gov.au/content/index.phtml/itemId/327234>
- Australian Nursing and Midwifery Council. (2006). *National competency standards for the midwife*. Retrieved from http://www.anmc.org.au/professional_standards/index.php
- Australian Resuscitation Council. (2011). Guideline 11.5: Medications in adult cardiac arrest. Retrieved from http://www.resus.org.au/policy/guidelines/section_11/guideline-11-5dec10.pdf
- Ball, C., & McElligot, M. (2003). ‘Realising the potential of critical care nurses’: An exploratory study of the factors that affect and comprise the nursing contribution to the recovery of critically ill patients. *Intensive and Critical Care Nursing*, 19, 226–238.

- Bandurra, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.
- Baskett, T. (2008). Epidemiology of obstetric critical care. *Best Practice & Research in Clinical Obstetrics and Gynaecology*, 22(5), 763–774.
- Bench, S. (2007). Recognition and management of critical illness by midwives: Implications for service provision. *Journal of Nursing Management*, 15, 348–356.
- Benner, P. (1984). *From novice to expert: Excellence and power in clinical nursing practice*. Menlo Park, CA: Addison-Wesley Publishing Company.
- Berg, C. J., Atrash, H. K., Koonin, L. M., & Tucker, M. (2006). Pregnancy-related mortality in the United States, 1987–1990. *Obstetrics and Gynecology*, 88(2), 161–167.
- Bodker, B., Hvidman, L., Weber, T., Moller, M., Aarre, A., Nielsen, K. M., & Sorensen, J. L. (2009). Maternal deaths in Denmark 2002–2006. *Acta Obstetrica et Gynecologica*, 88, 556–562.
- Boehmer, S., Luszczynska, A., & Schwarzer, R. (2007). Coping and quality of life after tumour surgery: Personal and social resources promote different domains of quality of life. *Anxiety, Stress and Coping*, 20, 61–75.
- Boyd, N., Lewin, J., & Sager, J. (2009). A model of stress and coping and their influence on individual and organizational outcomes. *Journal of Vocational Behaviour*, 75, 197–211.
- Brown, B., O'Mara, L., Hunsberger, M., Love, B., Black, M., Carpio, B., Crooks, D., & Noesgaard, C. (2003). Professional confidence in baccalaureate nursing students. *Nurse Education Today*, 3, 163–170.
- Buckley, R., Caple, J. (2009). *The theory and practice of training* (6th ed.). London: Kogan Page.
- Burns, N. & Grove, S. K. (1995). *Understanding nursing research*. Philadelphia, PA: W B Saunders Company.
- Bystrova, K., Ivanova, V., Edhborg, M., Matthiesen, Ransjo-Arvidson, A., Rifkat, M., Uvnaas-Moberg, K., & Widstrom, A (2009). Early contact versus separation: Effects on mother–infant interaction one year later. *Birth* 36(2) 97–109. doi: 10.1111/j.1523-536X.2009.00307.x.
- Carolan, M., Kruger, G., & Brown, V. (2007). Out of the ashes: The new bachelor of midwifery curriculum at Victoria university. *Women and Birth*, 20(3), 127–130.

- Cecatti, J., Souza, J., Parpinelli, M., de Souza, M., & Amaral, E. (2007). Research on severe maternal morbidities and near-misses in Brazil: What we have learned. *Reproductive Health Matters*, 15(30), 125–133.
- Centre for Maternal and Child Enquiries. (2011). Saving mothers' lives: Reviewing maternal deaths to make motherhood safer 2006–2008. Retrieved from <http://www.onlineLibrary.wiley.com/doi/10.1111/j.1471-0528.2010.02847.x/abstract>
- Chaboyer, W., Dunn, S. V., Theobald, K., Aitken, L., & Perrott, J. (2001). Critical care education: An examination of students' perspectives. *Nurse Education Today*, 21, 526–533.
- Christian, A., & Krumwiede, N. (2012). Simulation enhances self-efficacy in the management of pre-eclampsia and eclampsia in obstetrical staff nurses. *Clinical Simulation in Nursing*. doi:10.1016/j.ecns.2012.05.006
- Cianciolo, A. T., Grigorenko, E. L., Jarvin, L., Gil, G., Dredbot, M. E., & Sternberg, R. J. (2006). Practical intelligence and tacit knowledge: Advancements in the measurement of developing expertise. *Learning and Individual Differences*, 16, 235–253.
- Clarke, T. (1996). A quality review of high-dependency patient care. *Australian Critical Care*, 9(3), 96–101.
- Cohen, S., Cragin, L., Wong, B., and Walker, D. (2012). Self-efficacy change with low-tech, high-fidelity obstetric simulation training for midwives and nurses in Mexico. *Clinical Simulation in Nursing*, 8, e15 – e24.
- Commonwealth of Australia. (2009). Improving maternity services in Australia: The report of the maternity services review. Retrieved from [http://www.health.gov.au/internet/main/publishing.nsf/Content/64A5ED5A5432C985CA25756000172578/\\$File/Improving%20Maternity%20Services%20in%20Australia%20%20The%20Report%20of%20the%20Maternity%20Services%20Review.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/64A5ED5A5432C985CA25756000172578/$File/Improving%20Maternity%20Services%20in%20Australia%20%20The%20Report%20of%20the%20Maternity%20Services%20Review.pdf)
- Coombs, M., & Lattimer, V. (2007). Safety, effectiveness and costs of different models of organising care for critically ill patients: literature review. *International Journal of Nursing Studies*, 44(1), 115 – 129.
- Cooper, S., Johnston, E., & Priscott, D. (2004). *Immediate life support (ILS) training; Impact in a primary care setting*. Plymouth, UK: Resuscitation Council.

- Corlett, J., Palfreyman, J., Staines, H., & Marr, H. (2003). Factors influencing theoretical knowledge and practical skill acquisition in student nurses: An empirical experiment. *Nurse Education Today* (23)3, 183–190.
- Cousin, G. (2009). *Researching and learning in higher education*. New York, NY: Taylor and Francis.
- Creswell, J.W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. California: Sage publications.
- Crocker, C. 2007. The development of critical care in England. *Intensive and Critical Care Nursing*, 23, 323–330.
- Das, S. (2009). Risk factors associated with postpartum suicide attempt: The chilling story. *American Journal of Obstetrics and Gynecology*.
doi: 10.1016/j.ajog.2008.11.012
- Department of Health, Western Australia (2012). *Critical Incident Management Policy*. Retrieved from
www.safetyandquality.health.wa.gov.au/docs/aimsCIMS_Policy_2012.pdf
- de Swiet, M. (2008). Maternal mortality in the developed world: Lessons from the UK confidential enquiry. *Obstetric Medicine*, 1, 7–10.
doi: 10.1258/om.2008.080020
- Drife, J. (2008). Maternal mortality in well-resourced countries: Is there still a need for confidential enquiries? *Best Practice & Research in Clinical Obstetrics and Gynaecology*, 22(3), 501–515. doi: 10.1016/j.bpobgyn.2007.10.005
- Edwards, L. (2008). How prepared are midwives to provide high-dependency care? *MIDIRS*, 18(2), 224–230.
- Eraut, M. (1998). Concepts of competence. *Journal of Interprofessional Care*, 12(2), 127–139.
- Evans, J., Bell, J., Sweeney, A., Morgan, J., & Kelly, H. (2010). Confidence in critical care nursing. *Nursing Science Quarterly*, 23(4), 334–340.
doi: 10.1177/0894318410380253
- Every Death Counts Writing Group (2008). Every death counts: Use of mortality audit data for decision making to save the lives of mothers, babies, and children in South Africa. *The Lancet*, 371, 1294–1304.
- Farnell, S., & Dawson, D. (2006). ‘It’s not like the wards’: Experiences of nurses new to critical care: A qualitative study. *International Journal of Nursing Studies*, 43, 319–331.

- Flacking, R., Lehtonen, L., Thomson, G., Axelin, A., Ahlqvist, S., Moran, V. H., Edwald, U., & Dykes, F. (2012). Closeness and separation in neonatal intensive care. *Acta Paediatrica*, 101(10), 1032–1037. doi: 10.1111/j.1651-2227.2012.02787.x
- Fullerton, J. T., Thompson, J. B., & Severino, R. (2011). The International Confederation of Midwives essential competencies for basic midwifery practice: An update study 2009–2010. *Midwifery*, 27(4), 399–408.
- Gallagher, P. J., Rice, B., Tierney, P., Page, K., & McKinney, A. (2011). An evaluation of a critical care course for undergraduate nursing students. *British Association of Critical Care Nurses*, 16(5), 261–269.
- Gandhi, M. N., Welz, T., & Ronsmans, C. (2004). Severe acute maternal morbidity in rural South Africa. *International Journal of Gynecology and Obstetrics* 87, 180–187.
- Gijbels, H., O’Connell, R., Dalton-O’Connor, C. & O’Donovan, M. (2010). A systematic review evaluating the impact of post-registration nursing and midwifery education on practice. *Nurse Education in Practice*, 10(2), 64–69. doi: 10.1016/j.nepr.2009.03.011
- Goffman, D., Madden, R. C., Harrison, E. A., Merkatz, I. R., & Chazotte, C. (2007). Predictors of maternal mortality and near-miss maternal morbidity. *Journal of Perinatology*, 27, 597–601.
- Hammond, A., Gray, J., Smith, R., Fenwick, J., & Homer, C. S. (2011). Same but different: Expectations of graduates from two midwifery education courses in Australia. *Journal of Clinical Nursing*, 20, 15–16. doi: 10.1111/j.1365-2702.2011.03774.x
- Hardwick, S., & Jordan, S. (2002). The impact of part-time post-registration degrees on clinical practice. *Journal of Advanced Nursing*, 38(5), 524–535.
- Harris, D. (1998). Assessment. In J. W. R. Peyton (Ed.), *Teaching and learning in medical practice* (pp. 69–90). London: Manticore Europe Ltd.
- Hauck, Y., Summers, L., White, E., & Jones, C. (2008). A qualitative study of Western Australian women’s perceptions of using a Snoezelen room for breastfeeding during their postpartum hospital stay. *International Breastfeeding Journal*, 3(20), 1–9.
- Hogan, M., Foreman, K., Naghavi, M., Ahn, S., Wang, M., Makela, S., Lopez, A., Lozano, R. & Murray, C. (2010). Maternal mortality for 181 countries, 1980–2008: A systematic analysis of progress towards millennium development goal 5. *The Lancet*, 375, 1609–1623. doi: 10.1016/S0140-6736(10)60518-1

- Holman, C. D., Bass, A., Rouse, I., & Hobbs, M. (1999). Population-based linkage of health records in Western Australia: Development of a health services research linked database. *Australian and New Zealand Journal of Public Health, 23*, 453–459.
- Holzmer, W. L., & McLaughlin, F. E. (1988). Concurrent validity: A clinical situation. *Western Journal of Nursing Research, 10*, 78–83.
- Homer, C., Kurinczuk, J. J., Spark, P., Brockelhurst, P., & Knight, M. (2010). A novel use of a classification system to audit severe maternal morbidity. *Midwifery, 26*, 532–536.
- Horon, I. (2005). Underreporting of maternal deaths on death certificates and the magnitude of the problem of maternal mortality. *American Journal of Public Health, 95*(3), 478–482.
- Intensive Care Society. (2009). *Levels of critical care for adult patients*. London: Intensive Care Society.
- International confederation of midwives (2011). Definition of the Midwife. Retrieved from: www.internationalmidwives.org/who-we-are/policy-and-practice/icm-international-definition-of-the-midwife/
- James, A., Endacott, R., & Stenhouse, E. (2009). Identifying women requiring maternity high-dependency care. *Midwifery 27*(1), 60–66. doi: 10.1016/j.midw.2009.09.001
- James, A., & Francis, K. (2011). Mandatory continuing professional education: What is the prognosis? *Collegian, 18*, 131–136.
- Jayarathnam, S., de Costa, C., & Howat, P. (2011). Developing an assessment tool for maternal morbidity ‘near-miss’: A prospective study in a large Australian regional hospital. *Australian and New Zealand Journal of Obstetrics and Gynaecology, 51*, 421–425. doi: 10.1111/j.1479-828X.2011.01330.x
- Johnson, R.B., & Onwuegbuzie, A. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher, 33*(7), 14–26.
- Kennedy, C., Kools, S., & Krueger, R. (2001). Methodological considerations in children’s focus groups. *Nursing Research, 50*(3), 184–187.
- Khan, K., Wojdyla, D., Say, L., Gulmezoglu, A., & Van Look, P. (2006). WHO analysis of causes of maternal death: A systematic review. *The Lancet, 367*, 1066–1074.

- Klassen, R., & Chiu, M. (2010). Effects on teacher's self-efficacy and job satisfaction: Teacher gender, years of experience and job stress. *Journal of Educational Psychology, 103*(3), 741–756.
- Knaus, W., Draper, E., Wagner, D., & Zimmerman, J. (1985). APACHE II: A severity of disease classification system. *Critical Care Medicine, 13*(10), 818–829.
- Korja, R., Maunuc, J., Kirjavainene, J., Savonlahti, E., Haataja, L., Lapinleimu, H., Manninen, H., Piha, J., Lehtonen, L., & the PIPARI Study Group (2008). Mother–infant interaction is influenced by the amount of holding in preterm infants. *Early Human Development, 84*, 257–267.
doi: 10.1016/j.earhumdev.2007.06.006
- Kulkarni, A., Kaushik, J. S., Gupta, P., Sharma, H., & Agrawal, R. (2010). Massage and touch therapy in neonates: The current evidence. *Indian Pediatrics 47*(9), 771–776.
- Lake, S., & McInnes, R. J. (2012). Exploring cognitive skill development in midwifery education. *Nurse Education in Practice, 12*, 264–268.
- Larsson, M., Aldergarmann, U., & Aarts, C. (2009). Professional role and identity in a changing society: Three paradoxes in Swedish midwives' experiences. *Midwifery, 25*(6), 373–381.
- Lawton, S., & Whimpenny, P. (2003). Continuing professional development: A review. *Nursing Standard, 17*(24), 41–45.
- Leap, N. (2002). Identifying the midwifery practice component of Australian midwifery education programs: Results of the Australian midwifery action project (AMAP) education survey. *The Australian Journal of Midwifery, 15*(3), 15–23. doi: 10.1016/s1031-170x(02)80004-6
- Leap, N., & Barclay, L. (2002). *National review of nursing education: Midwifery education final report*. Retrieved from http://www.dest.gov.au/archive/highered/nursing/pubs/midwifery_032002/NR_NE_0302_contents.htm
- Leslie, G. (2005). High-dependency units: Hybrid intensive care unit or distinct specialty unit? *Australian Critical Care, 18*(3), 91.
- Lewis, G. (2007). *Saving mothers' lives: Reviewing maternal deaths to make motherhood safer 2003–2005*. The Seventh Report on Confidential Enquiries into Maternal Deaths in the United Kingdom. Retrieved from <http://www.publichealth.hscni.net/sites/default/Files/Saving%20Mothers'%20Lives%202003-05%20.pdf>

- Lewis, G., & de Swiet, M. (2007). Maternal mortality: The global picture. In I. Greer, C. Nelson-Piercey, and B. Walters (Eds.), *Maternal medicine: Medical problems in pregnancy* (pp. 1–6). Edinburgh: Churchill Livingstone.
- Little, C. V. (2000). Technological competence as a fundamental structure of learning in critical care nursing: A phenomenological study. *Journal of Clinical Nursing, 9*, 391–399.
- Luszczynska, A., Gutiérrez-Doña, B., & Schwarzer, R. (2004). General self-efficacy in various domains of human functioning: Evidence from five countries. *International Journal of Psychology, 40*(2), 80–89.
- Luszczynska, A., & Schwarzer, R. (2005). Multidimensional health locus of control: Comments on the construct and its measurement. *Journal of Health Psychology, 10*(5), 633–642.
- Martini, J., Knappe, S., Beesdo-Baum, K., Lieb, R., & Wittchen, H. U. (2010). Anxiety disorders before birth and self-perceived distress during pregnancy: Associations with maternal depression and obstetric, neonatal and early childhood outcomes. *Early Human Development, 86*(5), 305–310.
- Mittag, W., & Schwarzer, R. (1993). Interaction of employment status and self-efficacy on alcohol consumption: A two-wave study on stressful life transitions. *Psychology and Health, 9*, 77–87.
- Mnatzaganian, G., Galai, N., Sprung, C. L., Zitser-Gurevich, Y., Mandel, M., Ben-Hur, D., Gurman, G., Klein, M., Lev, A., Levi, L., Bar-Lavi, Y., Zveibil, F., & Simchen, E. (2005). Increased risk of bloodstream and urinary infections in intensive care unit (ICU) compared with patients fitting ICU admission criteria treated in regular wards. *Journal of Hospital Infection, 59*, 331–324.
- Modell, S. (2010). Bridging the paradigm divide in management accounting research: The role of mixed methods approaches. *Management Accounting Research, 21*(2), 124–129.
- Moss, C., Grealish, L., & Lake, S. (2010). Valuing the gap: A dialectic between theory and practice in graduate nursing education from a constructive educational approach. *Nurse Education Today, 30*, 327–332.
- Munro, K. (2008). Continuing professional development and the charity paradigm: Interrelated individual, collective and organizational issues about continuing professional development. *Nurse Education Today, 28*, 953–961.
- Murray, P. J. (1997). Using virtual focus groups in qualitative research. *Qualitative Health Research, 7*(4), 542–549.

- National Health and Medical Research Council (2007). *National statement on ethical conduct in human research*. Retrieved from <http://www.nhmrc.gov.au/book/purpose-scope-and-limits-document>
- Nursing and Midwifery Board of Australia. (2010). *Continuing professional development registration standard*. Retrieved from www.nursingmidwiferyboard.gov.au/Registration-Standards.aspx
- Pairman, S., Tracy, S., Thorogood, C., & Pincombe, J. (2010). *Midwifery preparation for practice*. (2nd ed.). Sydney, NSW: Churchill Livingstone.
- Panting-Kemp, A., Geller, S. E., Nguyen, T., Simonson, L., Nuwayhid, B., & Castro, L. (2000). Maternal deaths in an urban perinatal network, 1992–1998. *American Journal of Obstetrics and Gynecology*, *183*, 1207–1212.
- Perinatal and Reproductive Epidemiology Research Unit (PRERU), School of Women and Children's Health, University of New South Wales. (2012). Retrieved from: <http://www.amoss.com.au/>
- Perrewe, P., Hochwarter, W., Rossi, A., Wallace, A., Maignan, I., Castro, S., Ralston, D., Westman, M., Vollmer, G., Tang, M., Wan, P., & Van Deusen, C. (2002). Are work stress relationships universal? A nine-region examination of role stressors, general self-efficacy, and burnout. *Journal of International Management*, *8*, 163–187.
- Pluye, P., Gagnon, M., Griffiths, F., & Johnson-Lafleur, J. (2009). A scoring system for appraising mixed methods research, and concomitantly appraising qualitative, quantitative and mixed methods primary studies in mixed studies reviews. *International Journal of Nursing Studies*, *46*(4), 529–546. doi: 10.1016/j.ijnurstu.2009.01.009
- Polit, D., & Tatano Beck, C. (2010). *Essentials of Nursing Research: Appraising evidence for nursing practice* (7th ed.). Philadelphia, PA: Wolters Kluwer Health.
- Pollock, W. E., Harley, N. S., & Nelson, S. M. (2011). Maternal severity of illness across levels of care: A prospective, cross-sectional study. *Australian Critical Care*, *24*(4), 218–28. doi: 10.1016/j.aucc.2011.03.002
- Ronsmans, C. (2009). Severe acute maternal morbidity in low-income countries. *Best Practice & Research in Clinical Obstetrics and Gynaecology*, *23*, 305–316. doi: 10.1016/j.bpobgyn.2009.01.001
- Rovithis, E., Lionis, C., Schiza, S., Bouros, D., Karokis, A., Vlachonikolis, I., & Sifakas, N. (2001). Assessing the knowledge of bronchial asthma among primary health care physicians in Crete: A pre-and post-test following an

educational course. *Biomedical Central Medical Education*, 1(2).
doi: 1472-6920/1/2

Rowan, C., McCourt, C., & Beake, S. (2009). Midwives' reflections on their educational programme: a traditional or problem based learning approach? *Midwifery* 25, 213 – 222.

Royal Australasian College of Surgeons. (2010). *Western Australian Audit of Surgical Mortality: Annual Report 2010*. Retrieved from:
http://www.surgeons.org/media/18782994/rpt_2010-09-22_waasm_ar_2010.pdf

Royal College of Obstetricians and Gynaecologists, Royal College of Midwives, Royal College of Paediatrics and Child Health, & Royal College of Anaesthetists. (2007). *Safer childbirth: Minimum standards for the organisation and delivery of care in labour*. Retrieved from Royal College of Obstetricians and Gynaecologists website: <http://www.rcog.org.uk/files/rcog-corp/uploaded-files/WPRSaferChildbirthReport2007.pdf>

Say, L., & Pattinson, R. C. (2008). Maternal mortality and morbidity. In K. Heggenhougen (Ed.), *International encyclopedia of public health* (September 2008). Retrieved from <http://www.elsevier.com/books/international-encyclopedia-of-public-health-six-volume-set/quah/978-0-12-227225-7>

Say, L., Souza, J. P., & Pattinson, R. C. (2009). Maternal near-miss: Towards a standard tool for monitoring quality of maternal health care. *Best Practice and Research in Clinical Obstetrics and Gynaecology*, 23(3), 287–296.

Scholz, U., Gutierrez Dona, B., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *Journal of Psychological Assessment*, 18, 242–251.

Schulz, M., & Stamov Robnagel, C. (2010). Informal workplace learning: An exploration of age differences in learning competence. *Learning and Instruction*, 20, 383–399.

Schutte, J., Steegers, E., Schuitemaker, N., Santema, J., de Boer, K., Pel, M., Vermeulen, G., Visser, W., van Roosmalen, J., & the Netherlands Maternal Mortality Committee. (2009). Rise in maternal mortality in the Netherlands. *British Journal of Obstetrics and Gynaecology*, 399–406.
doi:10.1111/j.1471-0528.009.02382.x

Schwarzer, R., Bäßler, J., Kwiatek, P., Schröder, K., & Zhang, J. X. (1997). The assessment of optimistic self-beliefs: Comparison of the German, Spanish, and Chinese versions of the General Self-Efficacy Scale. *Applied Psychology: An international review*, 46(1), 69–88.

- Schwarzer, R., & Jerusalem, M. (1995). The generalized self-efficacy scale. In J. Weinman, S. Wright, and M. Johnson (Eds.), *Measures in health psychology: A user's portfolio, causal and control beliefs* (pp. 35–37). Windsor, UK: Nfer-Nelson.
- Schwarzer, R., & Schmitz, G. S. (2004). Perceived self-efficacy and teacher burnout: A longitudinal study in ten schools. In H. W. Marsh, J. Baumert, G. E. Richards, & U. Trautwein (Eds.), *Proceedings: Self concept, motivation and identity: Where to from here?* Sydney, NSW: University of Western Sydney.
- Scully, N. (2011). The theory–practice gap and skill acquisition: An issue for nursing education. *Collegian, 18*, 93–98.
- Shaha, M., Wenzel, J., & Hill, E. (2011). Planning and conducting focus group research with nurses. *Nurse Researcher, 18*(2), 77-88.
- Simpson, H., & Barker, D. (2008). Role of the midwife and the obstetrician in obstetric critical care: A case study from the James Cook University Hospital. *Best Practice & Research in Clinical Obstetrics and Gynaecology, 22*(5), 899–916.
- Spencer, R. L. (2006). Nurses', midwives' and health visitors' perceptions of the impact of higher education upon professional practice. *Nurse Education Today, 26*(1), 45–53.
- Steele, R. (2009). Gaining competence and confidence as a midwife. *British Journal of Midwifery, 17*(7), 441–447.
- Struebert Speziale, H., & Rinaldi Carpenter, D. (2007). *Qualitative research in nursing: Advancing the humanistic imperative* (4th ed.). Philadelphia, PA: Lippincott, Williams & Wilkins.
- Struyven, K., Dochy, F., Janssens, S., Schelfhout, W., & Gielen, S. (2006). The overall effects of end of course assessment on student performance: A comparison between multiple choice testing, peer assessment, case-based assessment and portfolio assessment. *Studies in Educational Evaluation, 32*, 202–222.
- Sullivan, E., Hall, B., & King, J. (2008). Maternal deaths in Australia 2003–2005. Retrieved from [http://www.preru.nsw.edu.au/preruweb.nsf/resources/MD3/\\$file/md3a.pdf](http://www.preru.nsw.edu.au/preruweb.nsf/resources/MD3/$file/md3a.pdf)
- Taylor, P. (2003). *How to design a training course*. London: Continuum International Publishing Group.
- Thorne, S. (2000). Data analysis in qualitative research. *Evidence-Based Nursing, 3*(3), 68–70.

- Valizadeh, L., Ajoodaniyan, N., Namnabati, M., Zamanzadeh, V., & Layegh, V. (2013). Nurses' viewpoint about the impact of kangaroo mother care on the mother-infant attachment. *Journal of Neonatal Nursing, 19*(1), 38 – 43.
- Vedam, S., Goff, M., & Marnin, V. (2007). Closing the theory-practice gap: Intrapartum midwifery management of planned homebirths. *Journal of Midwifery and Women's Health, 52*(3), 291–300.
- Victorian Government Department of Human Services. (2009). *Victoria's intensive care services: Future directions*. Retrieved from: http://www.health.vic.gov.au/criticalcare/future_directions.pdf
- Wagner, J., Iwashyna, T.J., & Khan, J.M. (2013). Reasons underlying interhospital transfers to an academic medical intensive care unit. *Journal of Critical Care, 28*(2), 243 – 247.
- Wheatly, S. (2010). Maternal critical care: What's in a name? *International Journal of Obstetric Anesthesia, 19*, 353–355.
- WHO. (2004). *Maternal mortality in 2000: Estimates developed by WHO, UNICEF and UNFPA*. Geneva: Department of Reproductive Health and Research, World Health Organization. Retrieved from World Health Organization website: http://www.who.int/whosis/mme_2005.pdf
- WHO. (2010). Trends in maternal mortality: 1998–2008: Estimates developed by WHO, UNICEF, UNFPA and The World Bank. Geneva: World Health Organization. Retrieved from World Health Organization website: http://whqlibdoc.who.int/publications/2010/9789241500265_eng.pdf
- Williams, B., Spiers, J., Fisk, A., Richards, L., Gibson, B., Kabotoff, W., McIlwraith, D., & Sculley, A. (2012). The influence of an undergraduate problem/context based learning program on evolving professional nursing graduate practice. *Nurse Education Today, 32*, 417–421.
- Wilson, A. (2012). Effectiveness of an educational programme in perineal repair for midwives. *Midwifery, 28*, 236–246. doi: 10.1016/j.midw.2011.02.011
- Wolke, D., Eryigit-Madzwamuse, S., & Gutbrod, T. (2010). Very preterm/very low birthweight infants attachment: Infant and maternal characteristics. *Archives of Disease in Childhood* doi: 10.1136/archdischild-2013-303788
- Zeilani, R., & Seymour, J. E. (2010). Muslim women's experiences of suffering in Jordanian intensive care units: A narrative study. *Intensive and Critical Care Nursing, 26*, 175–184.

Zwart, J., Dupuis, J., Richters, A., Ory, F., & van Roosmalen, J. (2010). Obstetric intensive care unit admission: A 2-year nationwide population-based cohort study. *Intensive Care Medicine*, 36(2), 256–263.

Zwart, J., Jonkers, M., Richters, A., Ory, F., Bloemenkamp, K., Duvekot, H., & van Roosmalen, J. (2009). Ethnic differences in pregnancy-related severe maternal morbidity: A nationwide cohort study in the Netherlands. *International Journal of Gynecology and Obstetrics*, 107 S2, S396.

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Appendix A APACHE II Scoring System

A: acute physiological score

APACHE II SCORING SYSTEM

Variable	+4	+3	+2	+1	0	+1	+2	+3	+4
Temperature	≥ 41	39–40.9		38.5–38.9	36–38.4	34–35.9	32–33.9	30–31.9	≤ 29.9
Mean Arterial BP	≥ 160	130–159	110–129		70–109		50–69		≤ 49
Heart Rate	≥ 180	140–179	110–139		70–109		55–69	40–54	≤ 39
Respiratory Rate	≥ 50	35–49		25–34	12–24	10–11	6–9		≤ 5
A-aPO ₂ (If FiO ₂ > 50%)	≥ 500	350–499	200–349		< 200				
PaO ₂ (If FiO ₂ < 50%)					> 70	61–70		55–60	< 55
Arterial pH	≥ 7.7	7.6–7.69		7.5–7.59	7.33–7.49		7.25–7.32	7.15–7.24	< 7.15
¹ Serum HCO ₃ ⁻	≥ 52	41–51.9		32–40.9	23–31.9		18–21.9	15–17.9	< 15
Serum Na ⁺	≥ 180	160–179	155–159	150–154	130–149		120–129	111–119	≤ 110
Serum K ⁺	≥ 7	6–6.9		5.5–5.9	3.5–5.4	3–3.4	2.5–2.9		< 2.5
Serum Creatinine	≥ 3.5	2–3.4	1.5–1.9		0.6–1.4		< 0.6		
Hematocrit	≥ 60		50–59.9	46–49.9	30–45.9		20–29.9		< 20
WBC Count	≥ 40		20–39.9	15–19.9	3–14.9		1–2.9		< 1

Score = 15–Actual GCS = (Glasgow Coma Score (GCS)=)

¹Use only if no ABGs

B: Age adjustment

Age (Yrs) Points	
< 44	0
45–54	2
55–64	3
65–74	5
> 75	6

C: chronic health adjustment

Points can be added if the patient has a history of the following,

1. Biopsy proven cirrhosis
2. New York Heart Association Class IV
3. Severe COPD (e.g., hypercapnia, home O₂, pulmonary hypertension)
4. Chronic dialysis
5. Immune compromised

If any of above are present, ADD: 2 points for elective surgery or for nonsurgical patients. 5 points for emergency surgery.

Total APACHE II = A () + B () + C () =

Appendix B Levels of Maternal Critical Care within the United Kingdom

Level 0	Normal ward care
Level 1	Additional monitoring or intervention Step down from a higher level of care Eg. Syntocinon infusion Neuraxial analgesia Mild pre-eclampsia on oral anti-hypertensive medication
Level 2	Single organ support such as; Cardiovascular support through an intravenous infusion such as hydralazine or labetalol, with an arterial line used for blood pressure monitoring Neurological support through the intravenous infusion of magnesium sulphate to control seizures 50% or more of oxygen via facemask to maintain oxygen saturations
Level 3	Advanced respiratory support alone OR the support of two or more organ systems For example; Invasive mechanical ventilation

Note. Table adapted from Wheatly, 2010.

Appendix C Levels of Adult General Intensive Care in Australia

Level of care	Description of nature of care
Level 1	Must be able to provide multi-system life support usually for less than 24 hours. Must be able to provide mechanical ventilation, and simple invasive cardiovascular monitoring.
Level 2	Must be capable of providing multi-system organ support including mechanical ventilation, extracorporeal renal support and invasive cardiovascular monitoring for several days.
Level 3	Must be capable of providing complex multi-system organ support including mechanical ventilation, extracorporeal renal support and invasive cardiovascular monitoring for an indefinite period. Must be a tertiary referral centre for intensive care services and have laboratory and clinical services to support this role indefinitely.

Note. Adapted from Australian Institute of Health and Welfare, 2006.

Appendix D International Confederation of Midwives International Definition of the Midwife

ICM International Definition of the Midwife

A midwife is a person who has successfully completed a midwifery education programme that is duly recognised in the country where it is located and that is based on the ICM Essential Competencies for Basic Midwifery Practice and the framework of the ICM Global Standards for Midwifery Education; who has acquired the requisite qualifications to be registered and/or legally licensed to practice midwifery and use the title ‘midwife’; and who demonstrates competency in the practice of midwifery.

Scope of Practice

The midwife is recognised as a responsible and accountable professional who works in partnership with women to give the necessary support, care and advice during pregnancy, labour and the postpartum period, to conduct births on the midwife’s own responsibility and to provide care for the newborn and the infant. This care includes preventative measures, the promotion of normal birth, the detection of complications in mother and child, the accessing of medical care or other appropriate assistance and the carrying out of emergency measures. The midwife has an important task in health counselling and education, not only for the woman, but also within the family and the community. This work should involve antenatal education and preparation for parenthood and may extend to women’s health, sexual or reproductive health and child care. A midwife may practise in any setting including the home, community, hospitals, clinics or health units.

Revised and adopted by ICM Council June 15, 2011

Due for review 2017

Adapted from International Confederation of Midwives, 2011.

Appendix E Australian National Competency Standards for the Midwife, 2006



National Competency Standards for the Midwife

INTRODUCTION

DESCRIPTION OF
THE MIDWIFE

DOMAINS

NATIONAL COMPETENCY
STANDARDS

GLOSSARY
OF TERMS

Introduction

The Australian Nursing and Midwifery Council Incorporated (ANMC) is a peak national nursing and midwifery organisation established in 1992 with the purpose of developing a national approach to nursing and midwifery regulation. The ANMC works in conjunction with the state and territory nursing and midwifery regulatory authorities (NMRAs) to produce national standards which are an integral component of the regulatory framework to assist nurses and midwives to deliver safe and competent care.

The standards include national competency standards for registered nurses, enrolled nurses, midwives and nurse practitioners, codes of professional conduct and ethics, and a range of position statements and guidelines. The full list of standards, position papers and guidelines produced by the ANMC can be viewed on the website.

In 2004, the ANMC commissioned research to develop and validate national competency standards for midwives, the scope of practice of midwives, and a generic description of the midwife on entry to practice. This research, which was undertaken by a team of expert midwifery consultants, included extensive consultation with midwives around Australia. The resulting standards are broad and principle based so that they are sufficiently dynamic for practising midwives and the NMRAs to use as a benchmark to assess competence to practice in a range of settings.

What are the standards used for?

The national competency standards for the midwife are the core competency standards by which your performance is assessed to obtain and retain your license to practice as a midwife in Australia.

As a midwife, these core competency standards provide you with the framework for assessing your competence, and are used by your state/territory NMRA to assess competence as part of the annual renewal of license process, to assess midwives educated overseas seeking to work in Australia, and to assess midwives returning to work after breaks in service. They are also used to assess midwives involved in

professional conduct matters. The NMRAs may also apply the competency standards in order to communicate to consumers the standards that they can expect from midwives.

Universities also use the standards when developing midwifery curricula, and to assess student and new graduate performance.

These are YOUR standards – developed using the best possible evidence, and using information and feedback provided by midwives in a variety of settings. Included also are the principles of assessment which will assist you in understanding how these standards may be used to assess performance. We believe you will find them easy to understand, and user friendly.

ANMC would like to thank midwives throughout Australia for their willing input to the development of these standards.

Description of the midwife on entry to practice

On entry to practice, a midwife is a person who:

... having been regularly admitted to a midwifery educational program, duly recognised in the country in which it is located, has successfully completed the prescribed course of studies in midwifery and has acquired the requisite qualifications to be registered and/or legally licensed to practise midwifery.

The midwife is recognised as a responsible and accountable professional who works in partnership with women to give the necessary support, care and advice during pregnancy, labour and the postpartum period, to conduct births on the midwife's own responsibility and to provide care for the newborn and the infant. This care includes preventative measures, the promotion of normal birth, the detection of complications in mother and child, the accessing of medical care or other appropriate assistance and the carrying out of emergency measures.

The midwife has an important task in health counselling and education, not only for the woman, but also within the family and the community. This work should involve antenatal education and preparation for parenthood and may extend to women's health, sexual or reproductive health and child care.

A midwife may practise in any setting including the home, community, hospitals, clinics or health units. (ICM 2005)



The midwife will be able to demonstrate competence in the provision of midwifery care as specified in the ANMC's National Competency Standards for the Midwife.

The four domains in the provision of woman-centred midwifery care include legal and professional practice; midwifery knowledge and practice; midwifery as primary health care and ethical and reflective practice.

Legal and professional practice

The graduate midwife has a sound knowledge of the Australian health care system, relevant legislation and the role of the midwifery profession both locally and internationally. She practises within legislation and common law. Thus she complies with policies and guidelines that have legal implications and fulfil the duty of care. The graduate midwife is able to identify unsafe practice and act appropriately. She works in partnership with women and collaborates with other members of the health care team. The ability to reason, whilst being able to justify practice within legal, professional, ethical and reflective frameworks are characteristic of the graduate midwife. She accepts accountability and responsibility for her actions, whilst recognising her own knowledge base and scope of practice. She is able to identify complications with appropriate and timely consultation and referral as needed. She delegates when necessary, always providing the appropriate supervision.

The graduate midwife documents practice according to legal and professional guidelines and procedures. She demonstrates competence in oral and written communication and technological literacy. She understands and values the imperative to base practice on evidence; is able to access relevant and appropriate evidence; recognise when evidence is less than adequate to fully inform care and identify areas of practice that require further evidence.

Midwifery knowledge and practice

The graduate midwife appreciates the centrality of the relationship with women to the practice of midwifery, which she can demonstrate through working in partnership and communicating effectively. She works with women to plan and evaluate care whilst providing learning opportunities that facilitate decision-making by the woman.

The graduate midwife has the knowledge, skills and attitudes to practise midwifery according to the international definition of the role and scope of practice of the midwife. This is informed by other disciplines such as biological, physical, social and behavioural sciences; nursing; primary health care; ethics and law. The graduate midwife will be able to provide safe and effective care across the interface between hospital and community; in any setting, including the home, the community, hospitals, or in any other maternity service. She is able to comprehensively and accurately assess the needs of women and their babies and to plan, implement and evaluate midwifery care. This includes the antenatal period, during labour and birth and in the postnatal period. She supports, and may practise in, continuity of care models. The graduate midwife is versatile, adaptable and able to

respond in a range of situations including emergencies.

When women or babies have complex needs and require referral, the graduate midwife will provide midwifery care in collaboration with other health professionals. The graduate midwife protects, promotes and supports breastfeeding while respecting each woman's choice in infant feeding. She is able to initiate, supply and administer relevant pharmacological substances in a safe and effective manner within legislation.

Midwifery as primary health care

The graduate midwife practises within a woman centred, primary health care framework and is committed to seeing midwifery as a public health strategy that encompasses a broad social context. The graduate midwife understands that health is a dynamic state, influenced by particular sociocultural, spiritual and politico-economic environments. The graduate midwife has an important advocacy role in protecting the rights of women, families and communities whilst respecting and supporting their right to self determination. A graduate midwife has a commitment to cultural safety within all aspects of her practice and acts in ways that enhance the dignity and integrity of others.

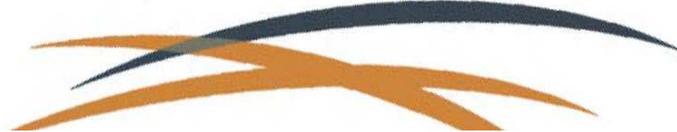
Midwifery practice involves informing and preparing the woman and her family for pregnancy, birth, breastfeeding and parenthood and includes certain aspects of women's health, family planning and infant well-being. The graduate midwife has a role in public health that includes wellness promotion for the woman, her family and the community.

Whilst the graduate midwife has the skills "to do" they also have an ability to develop relationships with the women for whom they care as well as others with whom they interact in their professional lives. The graduate midwife works collaboratively with health care providers and other professionals referring women to appropriate community agencies and support networks.

Reflective and ethical practice

The graduate midwife practises in accordance with the endorsed code of ethics, professional standards and relevant state and commonwealth privacy obligations. Through reflective processes developed during the program, the graduate midwife respects diverse values, beliefs and sociocultural structures. Integral to this process is the ability to understand and identify the impact of her own culture, values and beliefs on the provision of midwifery care, whilst recognising the power relations that exist within the health system and the community.

The graduate midwife has the ability and skills to analyse and reflect in, on, and about practice. She maintains competence through continual professional development. The graduate midwife is able to assess the effectiveness of her work and regards lifelong learning as a key to continuing professional and personal development. The graduate midwife demonstrates a lively, questioning perspective that enables her to actively contribute to the development of midwifery as a discipline. She also demonstrates both computer and



information literacy which is reflected in her capacity to derive information from multiple sources. The graduate midwife has the capacity to transform this into meaningful information that impacts on practice and interactions with women and the health care system as a whole. The graduate midwife has developed both a capacity and a desire to learn from experiences in the workplace and through more formal educational opportunities. She is able to contribute to, and evaluate, the learning experiences and professional development of others, particularly through mentoring. She is able to support students to meet their learning needs and objectives in collaboration with others, and contributes to orientation and ongoing education programs.

The graduate midwife uses research to inform midwifery practice. This includes interpreting evidence as a basis to inform practice, policy, guidelines and decision-making. This implies an understanding about the way that knowledge and evidence are continuously created, applied and recreated. The development of a critical self-awareness is essential to this reflective process and is a defining characteristic of a graduate.

National Competency Standards for the Midwife

The National Competency Standards for the Midwife provide the detail of the skills, knowledge and attitudes expected of a midwife to work within the midwifery scope of practice. The definition and scope of practice provides the broad boundaries of midwifery practice, whereas competency standards provide the detail of how a midwife is expected to practise and his/her capacity to practice. These will be minimum competency standards required of all midwives who seek authority to practise as a midwife in Australia. It is expected that all midwives should be able to demonstrate that they are able to meet the competency standards relevant to the position they hold.

Overarching framework

The competency standards have an overarching framework – woman centred care. Woman-centred care is a concept that implies that midwifery care:

- is focused on the woman's individual, unique needs, expectations and aspirations, rather than the needs of institutions or professions
- recognises the woman's right to self determination in terms of choice, control, and continuity of care
- encompasses the needs of the baby, the woman's family, significant others and community, as identified and negotiated by the woman herself
- follows the woman between institutions and the community, through all phases of pregnancy, birth and the post natal period
- is 'holistic' – addresses the woman's social, emotional, physical, psychological, spiritual and cultural needs and expectations

The competency standards are underpinned by primary health care principles. These principles encompass equity, access, the provision of services based on need, community participation, collaboration and community based care. Primary health care involves using approaches that are affordable, appropriate to local needs and sustainable. These principles are outlined in the Ottawa Charter (1986).

Organisation of the National Competency Standards for the Midwife

The competency standards include domains, competencies, competency elements and cues. A domain is as an organised cluster of competencies that characterise a central aspect of midwifery practice. Within each of the domains are competencies. A competency represents a stand-alone function or functional area underlying some aspect of professional performance. Within each competency are elements. An element is a sub-section of the competency unit. The elements contain examples of competent performance known as cues. The cues are examples and prompts. These are neither comprehensive nor exhaustive and assist in assessment, self reflection and curriculum development.

Domains

The competencies which make up the National Competency Standards for the Midwife are organised in four domains. The order of the domains does not reflect their diminishing order of importance.

Legal and professional practice

This domain contains the competencies that relate to legal and professional responsibilities including accountability, functioning in accordance with legislation affecting midwifery and demonstration of leadership.

Midwifery knowledge and practice

This domain contains the competencies that relate to the performance of midwifery practice including assessment, planning, implementation and evaluation. Partnership with the woman is included in this domain.

Midwifery as primary health care

This domain contains the competencies that relate to midwifery as a public health strategy. Included are the notions of self determination and the protection of individual and group rights.

Reflective and ethical practice

This final domain contains the competencies relating to self appraisal, professional development and the value of research. The competencies, elements and cues are outlined in the following pages.



LEGAL AND PROFESSIONAL PRACTICE

COMPETENCY 1

Functions in accordance with legislation and common law affecting midwifery practice

Element 1.1 Demonstrates and acts upon knowledge of legislation and common law pertinent to midwifery practice.

- Cues
- Practises midwifery within the requirements of legislation and common law.
 - Identifies and interprets laws in relation to midwifery practice, including the administration of drugs; negligence; consent; report writing; confidentiality; and vicarious liability.
 - Recognises and acts upon breaches of law relating to midwifery practice.

Element 1.2 Complies with policies and guidelines that have legal and professional implications for practice.

- Cues
- Complies with legal policies and guidelines, for example, occupational Health and safety, child protection, Family violence.

Element 1.3 Formulates documentation according to legal and professional guidelines.

- Cues
- Adheres to legal requirements in all aspects of documentation.
 - Documentation is contemporaneous, comprehensive, logical, legible, clear, concise and accurate.
 - Documentation identifies the author and designation.

Element 1.4 Fulfils the duty of care in the course of midwifery practice.

- Cues
- Undertakes midwifery practice in accordance with professional Australian standards for midwives.

COMPETENCY 2

Accepts accountability and responsibility for own actions within midwifery practice.

Element 2.1 Recognises and acts within own knowledge base and scope of practice.

- Cues
- Recognises the midwife's role and responsibility for understanding, supporting, and facilitating pregnancy, labour, birth and the postnatal period.
 - Analyses strengths and limitations in own skill, knowledge and experience and addresses limitations.
 - Accepts professional responsibility and personal accountability for own practice.
 - Collaborates with other health care providers when care is outside the scope of practice.

Element 2.2 Identifies unsafe practice and takes appropriate action.

- Cues
- Identifies practices that compromise safe and effective care, or contravenes legislation, and takes appropriate action.
 - Utilises risk management and/or open disclosure policies in the follow-up of unsafe practice.

- Promotes and engages in ongoing development of the safety and quality improvement agenda to optimise health outcomes of women and their families.
- Supports other midwives or health care providers who report unsafe practice.

Element 2.3 Consults with, and refers to, another midwife or appropriate health care provider when the needs of the woman and her baby fall outside own scope of practice or competence.

- Cues
- Applies relevant guidelines or policies to ensure timely consultation and referral.
 - Develops and maintains collegial networks with midwifery colleagues and others to optimise outcomes for the woman.

Element 2.4 Delegates, when necessary, activities matching abilities and scope of practice and provides appropriate supervision.

- Cues
- Underpins delegation and supervision with knowledge of legal requirements and organisational policies.
 - Is accountable for actions in relation to the decision to educate, delegate and supervise other health care workers.
 - Uses a range of supportive strategies when supervising aspects of care delegated to others.
 - Ensures delegation does not compromise safety.

Element 2.5 Assumes responsibility for professional midwifery leadership functions.

- Cues
- Integrates leadership skills into practice.
 - Acts as a role model for other colleagues by exemplifying best practice in midwifery.
 - Provides advice and guidance in problem solving and decision making to midwifery colleagues and others as appropriate.

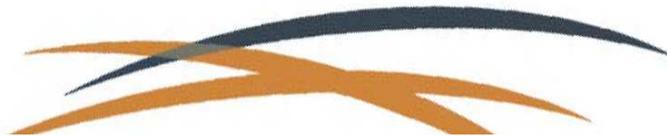
MIDWIFERY KNOWLEDGE AND PRACTICE

COMPETENCY 3

Communicates information to facilitate decision-making by the woman.

Element 3.1 Communicates effectively with the woman, her family and friends.

- Cues
- Actively listens to the woman and responds appropriately.
 - Assists the woman to identify her knowledge, feelings and thoughts about her pregnancy, labour, birth and the postnatal period.
 - Uses language that is readily understood.
 - Allows adequate time to meet the needs of the woman for information, advice and support.
 - Engages the assistance of a professional interpreter where appropriate.



- Element 3.2 Provides learning opportunities appropriate to the woman's needs.
- Cues
- Uses adult learning principles in the provision of information.
 - Incorporates learning opportunities into every facet of midwifery practice.

- Element 3.3 Plans and evaluates care in partnership with the woman.
- Cues
- Listens to the woman to identify her needs. Involves the woman in decision making.
 - Obtains informed consent for midwifery interventions.
 - Documents decisions, actions and outcomes including the woman's response to care.

COMPETENCY 4
Promotes safe and effective midwifery care.

- Element 4.1 Applies knowledge, skills and attitudes to enable woman centred care.
- Cues
- Participates in respectful partnerships with the woman and other members of the health care team.
 - Practises in ways that respects each woman's emotional, social, cultural and lifestyle needs.
 - Facilitates the involvement of family and friends as defined by the woman.

- Element 4.2 Provides or supports midwifery continuity of care.
- Cues
- Demonstrates an understanding of continuity of care and carer.
 - Supports models that provide continuity of carer.

- Element 4.3 Manages the midwifery care of women and their babies.
- Cues
- Organises workload to facilitate midwifery care for women and their babies.
 - Demonstrates appropriate time management and priority setting skills.
 - Ensures the effective use of resources including personnel.

COMPETENCY 5
Assesses, plans, provides and evaluates safe and effective midwifery care.

- Element 5.1 Utilises midwifery knowledge and skills to facilitate an optimal experience for the woman.
- Cues
- Promotes the understanding that childbirth is a normal, physiological process and a significant life event for most women.

- Element 5.2 Assesses the health and well being of the woman and her baby.
- Cues
- Carries out a comprehensive assessment of the woman and her baby.

- Interprets and acts upon information from the assessment.

- Element 5.3 Plans, provides, and is responsible for, safe and effective midwifery care.
- Cues
- Assists the woman to identify and plan her preferred pathway of care.
 - Orders (within relevant legislation) and interprets relevant investigative and diagnostic tests and screening procedures.
 - Attends and supports the woman and her baby and ensures appropriate, timely midwifery interventions are undertaken.
 - Assists with the transition to parenthood.

- Element 5.4 Protects, promotes and supports breastfeeding.
- Cues
- Proactively protects, promotes and supports breastfeeding, reflecting the WHO/UNICEF Ten Steps to Successful Breastfeeding.
 - Provides information to the woman, colleagues and community regarding breast feeding.
 - Respects and facilitates the woman's choice regarding infant feeding.
 - Assists the woman with her mode of infant feeding.

- Element 5.5 Demonstrates the ability to initiate, supply and administer relevant pharmacological substances in a safe and effective manner within relevant state or territory legislation.
- Cues
- Maintains up to date knowledge about pharmacological substances commonly used in midwifery practice.
 - Provides information to the woman.
 - Demonstrates safe administration including drug calculations, correct route of administration, side effects and documentation.
 - Demonstrates knowledge of pharmacological substances which are safe during pregnancy, birth and breastfeeding.

- Element 5.6 Evaluates the midwifery care provided to the woman and her baby.
- Cues
- Invites and acts upon constructive feedback on midwifery practice from the woman.
 - Demonstrates knowledge of the different ways in which midwifery practice can be evaluated.

COMPETENCY 6
Assesses, plans, provides and evaluates safe and effective midwifery care for the woman and/ or baby with complex needs.

- Element 6.1 Utilises a range of midwifery knowledge and skills to provide midwifery care for the woman and/or her baby with complex needs as part of a collaborative team.
- Cues
- Demonstrates a sound knowledge base of relevant disease processes and health complexities.



- Demonstrates an understanding of the particular psychosocial needs of the woman and her family where there are complexities.
- Continues to provide midwifery care when collaboration with a medical practitioner or other health care provider is required.
- Uses, justifies and interprets appropriate technology to achieve best health outcomes for the woman and her baby.

Element 6.2 Recognises and responds effectively in emergencies or urgent situations.

- Cues
- Recognises and responds to any urgent or emergency situations with timely and appropriate intervention, consultation and/or referral.
 - Maintains up to date skills and knowledge concerning emergency plans and protocols.

MIDWIFERY AS PRIMARY HEALTH CARE

COMPETENCY 7

Advocates to protect the rights of women, families and communities in relation to maternity care.

Element 7.1 Respects and supports women and their families to be self-determining in promoting their own health and well-being.

- Cues
- Articulates primary health care principles and acts accordingly.
 - Works with the woman to identify and develop appropriate sources of social and community support and health care.
 - Concludes the midwifery relationship in a timely and appropriate manner.
 - Involves women and communities in maternity service development, improvement and evaluation.

Element 7.2 Acts to ensure that the rights of women receiving maternity care are respected.

- Cues
- Acknowledges, respects and advocates for the rights of the woman to be involved as an active participant in her care including her right to make informed decisions and maintain dignity and privacy.
 - Takes into account the woman's individual preferences and cultural needs.

COMPETENCY 8

Develops effective strategies to implement and support collaborative midwifery practice.

Element 8.1 Demonstrates effective communication with midwives, health care providers and other professionals.

- Cues
- Adapts styles and methods of communication to maximise effectiveness.

- Uses a range of communication methods including written and oral.
- Liaises and negotiates with colleagues at all levels to build systems and processes to optimise outcomes for the woman.
- Discusses and clarifies with relevant health care providers interventions that appear inappropriate or unnecessary and negotiates a collaborative plan.
- Demonstrates effective communication during consultation, referral and handover.

Element 8.2 Establishes, maintains and evaluates professional relationships with other health care providers.

- Cues
- Recognises the role of other members of the health care team in the provision of maternity care.
 - Identifies and responds to factors that facilitate or hinder professional relationships.
 - Invites, acts upon, and offers, constructive feedback on midwifery practice from peers and colleagues.

COMPETENCY 9

Actively supports midwifery as a public health strategy.

Element 9.1 Advocates for, and promotes midwifery practice, within the context of public health policy.

- Cues
- Acknowledges the impact of social, economic and psychological factors on women's lives.
 - Acts to address public health issues, including the promotion of breastfeeding, smoking cessation, and responding appropriately in situations where there is domestic violence, drugs or alcohol use.
 - Plans, provides and evaluates care to ensure equity of access for women from marginalised communities.

Element 9.2 Collaborates with, and refers women to, appropriate community agencies and support networks.

- Cues
- Collaborates with, and refers to, other health care providers, community groups and agencies.
 - Provides women with clear information about accessing community support agencies during pregnancy and following birth.

COMPETENCY 10

Ensures midwifery practice is culturally safe.

Element 10.1 Plans, implements and evaluates strategies for providing culturally safe practice for women, their families and colleagues.

- Cues
- Incorporates knowledge of cross cultural and historical factors into practice.



- Demonstrates respect for differences in cultural meanings and responses to health and maternity care.
- Recognises the specific needs of Aboriginal and Torres Strait Islander women and their communities.
- Recognises and respects customary law.

REFLECTIVE AND ETHICAL PRACTICE.

COMPETENCY 11

Bases midwifery practice on ethical decision making.

Element 11.1 Practises in accordance with the endorsed Code of Ethics and relevant state/territories and commonwealth privacy obligations under law.

- Cues
- Demonstrates knowledge of contemporary ethical issues in midwifery.
 - Demonstrates ethical behaviour towards women, colleagues and communities.
 - Develops and assesses strategies to address ethical issues and breaches of confidentiality and privacy in collaboration with others.

COMPETENCY 12

Identifies personal beliefs and develops these in ways that enhance midwifery practice.

Element 12.1 Addresses the impact of personal beliefs and experiences on the provision of midwifery care.

- Cues
- Recognises own attitudes, biases and values and their potential impact on practice.
 - Evaluates own practice and its effect on women and others.

Element 12.2 Appraises and addresses the impact of power relations on midwifery practice.

- Cues
- Demonstrates an awareness of the impact of gender, race and social policies on women and maternity services.
 - Works towards addressing power imbalances between health care providers, childbearing women and others in the community.
 - Acts to eliminate harassment, victimisation and bullying in the work place.
 - Demonstrates a commitment to, and respect for, co-workers.

COMPETENCY 13

Acts to enhance the professional development of self and others.

Element 13.1 Assesses and acts upon own professional development needs.

- Cues
- Identifies own learning needs through reflective practice and self evaluation.

- Contributes to self appraisal and peer review activities as appropriate.
- Prepares and actions annual professional development plans using continuing professional development frameworks.
- Seeks and engages in opportunities to maintain or update skills, knowledge, attitudes and experience.
- Demonstrates and documents own professional development.

Element 13.2 Contributes to, and evaluates, the learning experiences and professional development of others.

- Cues
- Supports students to meet their learning needs and objectives.
 - Contributes to orientation and ongoing education programs.
 - Undertakes and critiques mutual sharing of experiences and knowledge with multidisciplinary colleagues.
 - Contributes to mentoring, peer support and/or clinical supervision.
 - Seeks and engages in opportunities to maintain or update skills, knowledge, attitudes and experience.
 - Demonstrates and documents own professional development.

COMPETENCY 14

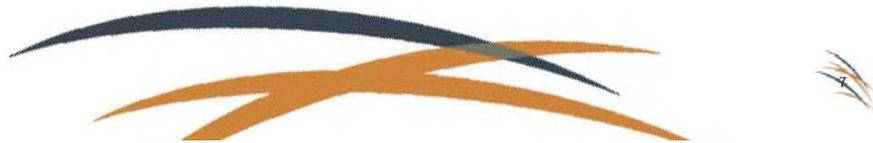
Uses research to inform midwifery practice.

Element 14.1 Ensures research evidence is incorporated into practice.

- Cues
- Values and acknowledges the importance of research and evidence.
 - Maintains current knowledge about relevant research.
 - Demonstrates skills in retrieving and understanding research evidence including levels of enquiry and forms of evidence.
 - Discusses the implications of evidence with the woman and colleagues.
 - Participates in reviews of practice and policies.
 - Supports research in midwifery and maternity care.

Element 14.2 Interprets evidence as a basis to inform practice and decision making

- Cues
- Underpins midwifery practice with current knowledge and best evidence.
 - Accesses evidence, shares and utilises to inform policy and practice.
 - Explains options while recognising the woman's right to choose.



Glossary of Terms

The ANMC acknowledges that the methods and processes in assessment of competencies will be further developed, and that the content of this document will be reviewed in three years. Comments should be addressed to:
The Chief Executive Officer
Australian Nursing and Midwifery Council
PO Box 873
DICKSON ACT 2602
Australia

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ANMC: Australian Nursing and Midwifery Council.

Appropriate: Matching the circumstances, meeting needs of the individual, groups or situation.

Attributes: Characteristics which underpin competent performance.

Core Competency Standards: Essential competency standards for registration or licensure.

Competence: The combination of skills, knowledge, attitudes, values and abilities that underpin effective and/or superior performance in a profession/occupational area.

Competent: The person has competence across all the domains of competencies applicable to the midwife, at a standard that is judged to be appropriate for the level of midwife being assessed.

Competency Unit: Represents a major function/functional area in the total competencies of a Registered Midwife in a midwifery context representing a stand-alone function which can be performed by the individual.

Competency Element: Represents a sub-function of the competency unit.

Competency Standards: Consists of competency units and competency elements.

Contexts: The setting/environment where competence can be demonstrated or applied.

Cues: Key generic examples of competent performance. They are neither comprehensive nor exhaustive. They assist the assessor when using their professional judgement in assessing midwifery practice. They further assist curriculum development.

Domain: An organised cluster of competencies in midwifery practice.

Exemplars: Concrete, key examples chosen to be typical of competence. They are not the standard but are indicative of the standard

Midwife: is a person who ...' has successfully completed the prescribed course of studies in midwifery and has acquired the requisite qualifications to be registered and/or legally licensed to practice midwifery' (ICM 2005).



Appendix F Australian College of Critical Care Nurses Competency Standards, 2002.

AUSTRALIAN COLLEGE OF CRITICAL CARE NURSES Competency Standards for Specialist Critical Care Nurses

ENABLING

The competencies in this domain relate to the practices essential for establishing and sustaining a nurse/patient relationship that is optimal for the well-being of the patient. This is based upon a holistic approach to patient care. Competencies include an ability to address the physiological, psychological, physical, emotional and spiritual needs of the patient, as well as to optimise the physical and non-physical environment. Care and support of the patients family and a recognition of the family/significant others as an integral part of the patient's environment and recovery are also acknowledged.

COMPETENCY 1

MAINTAINS A PHYSICAL AND PSYCHOSOCIAL ENVIRONMENT THAT PROMOTES SAFETY, SECURITY AND OPTIMAL HEALTH

Element 1.1 Consistently and accurately identifies situations of risk to individuals or groups, responds appropriately, achieving a safe outcome

Performance Criteria

- Implements specific planned nursing interventions to minimise possible complications identified by comprehensive nursing assessments, e.g. auscultates patient's chest and acts on findings; identifies those patients who are most at risk of infection and takes steps to protect them
- Recognises abnormal physiological parameters and implements appropriate actions, e.g. established patient's level of consciousness when respiratory function deteriorates; identifies cardiac arrhythmias promptly and instigates management strategies
- Alters the health care environment to promote optimal health, e.g. adjusts ambient temperature and humidity for open burn care; asks cleaners not to use noisy equipment when the patient is sleeping
- Consistently monitors the surrounding biomedical equipment to maintain a safe environment, e.g. ensures alarms are set at appropriate levels; ensures that pulmonary artery catheters are monitored and their waveforms continuously displayed to detect accidental wedging

- Uses relevant principles to ensure the safe administration of therapeutic substances, e.g. ensures medications are administered through the correct intravenous route; checks compatibilities of drugs administered together
- Eliminated and/or prevents environmental hazards where possible, e.g. checks that all equipment used in the delivery of care is functional and safe; demonstrates cognisance of principles of electrical safety in the critical care environment
- Contributes to quality improvement activities to facilitate risk reduction, e.g. reports and documents accidents and incidents promptly, accurately and appropriately
- Identifies actual and potential situations where occupational health and safety principles to prevent injury; utilised appropriate lifting devices to lift heavy patients

Element 1.2 Demonstrates an awareness of and sensitivity towards the comfort needs of individuals and effectively meets these needs

Performance Criteria

- Anticipates the comfort needs and takes into consideration the physical and psychological needs of the patient and the needs of the family/significant others, e.g. ensures family and significant others have adequate visiting access; provides an appropriate orientation to the unit for patients and their significant others; ensures that the ill child is able to see or touch his/her favourite toy
- Establishes a means to communicate effectively with patients, e.g. patients with neurological deficits and/or ventilated patients
- Accurately monitors and actively intervenes when physical/psychological needs of the patient may cause discomfort, e.g. changes in haemodynamic status
- Maintains privacy of individuals/groups throughout all aspects of care
- Anticipates and provides for the comfort needs of the individual who is unable to communicate own needs, e.g. maintains correct body alignment or changes in position where possible to enhance comfort of the patient who is unconscious, sedated or who has been given neuromuscular blocking agents
- Facilitates the comfort needs of the family/significant others, e.g. recognises the need for emotional and physical support; encourages the family/significant others to touch and hold the patient whenever appropriate

Element 1.3 Establishes, maintains and terminates effective caring and therapeutic interpersonal relationships with individuals and groups

Performance Criteria

- Interacts with individuals/groups in a supportive manner and initiates action to decrease stress and/or increase effectiveness of coping mechanisms, e.g. develops a rapport with patient/family/significant others; based on mutual trust and respect; explores and facilitates individual skills for coping with illness; informs patient and family of ongoing care at change of shift and when discharged from unit
- Establishes a relationship with the individual or group that enhances their ability to express thoughts and feelings and provides appropriate context for self expression

Element 1.4 Acts in a way which personalised or attempts to normalise the patient care environment

Performance Criteria

- Recognised the impersonal nature of the critical care environment and intervenes to normalise, e.g. provides day/night orientation; plays patient's preferred music; protects patient from direct bright lights
- Encourages significant others to participate in care as appropriate e.g. touch, foot massage; asks family/significant others to bring in familiar personal items, such as photographs
- Demonstrates a flexible approach to nursing care, e.g. wheels bed to window so patient can see outside world; arranges flexible visiting times

COMPETENCY 2

ACTS TO ENHANCE THE DIGNITY AND INTEGRITY OF INDIVIDUALS

Element 2.1 Appropriately involves the individual as an active participant in the process of care

Performance Criteria

- Facilitates an individual's understanding of his or her condition/problem, e.g. provides literature and undertakes to provide patient education
- Assists individual to be independent within physical and psychological limitations, e.g. self monitoring of progress in exercise program post cardiac surgery
- Provides the opportunity for individuals to express their opinions and be involved in all aspects of care

Element 2.2 Demonstrates respect for the values, customs and spiritual beliefs of individuals and appreciates the value of these in the healing process and incorporates into plan of care

Performance Criteria

- Demonstrates knowledge of the beliefs and social contexts of others
- Delivers nursing care for the individual without prejudice or judgement, e.g. speaks in non judgemental terms; respects the right of others to their opinions
- Incorporates cultural and spiritual customs of patients into care where appropriate, e.g. arranges for female doctor to perform gynaecological examination for aboriginal female patient; organises Halal diet for Muslim patient

Element 2.3 Implements strategies to promote self esteem, including identifying and using appropriate support networks for individuals

Performance Criteria

- Uses strategies which encourage independence and affirm the patient's individuality, e.g. identifies patient anxiety and provides opportunities for discussion of current and anticipated care
- Utilised therapeutic interventions to comfort others, e.g. assists the dying patient to have a dignified death
- Facilitates access to appropriate support mechanisms to maintain social integrity of individuals, e.g. arranges social worker to assist with financial problems, accommodation, etc.

Element 2.4 Identifies situations that may compromise the dignity and integrity of individuals and takes appropriate action to achieve safe and effective outcomes

Performance Criteria

- Protects the dignity of individuals at all times and encourages others to do likewise, e.g. ensures privacy of individuals; encourages other staff to talk to unconscious/sedated patient when performing care

COMPETENCY 3

FACILITATES INFORMED DECISION-MAKING BY INDIVIDUALS

Element 3.1 Consistently provides relevant, accurate and comprehensive information about health care to individuals that encourages and supports decision-making in critical care setting

Performance Criteria

- Implements strategies for ensuring that individuals receive information about health and health care
- Explains the rationale for all nursing activities and answers the patients questions appropriately
- Encourages the patient to ask questions and seek clarification when needed
- Establishes patient's current knowledge of condition and elaborates on previous information to enhance understanding
- Utilises strategies aimed at empowering individuals to be involved in decision making process by providing information and assisting in their communication to other members of the health care team, e.g. organises a family conference; provides written literature in appropriate language
- Respects patient's right to refuse treatment

COMPETENCY 4

EMPLOYS THE SKILLS OF EFFECTIVE COMMUNICATION TO GUIDE AND ACHIEVE OPTIMAL OUTCOMES

Element 4.1 Communicates appropriately and effectively with individuals and other members of the critical care team

Performance Criteria

- Communicates effectively with other members of the health care team
- Evaluates effectiveness of communication
- Encourages the use of non verbal/alternative communication techniques where appropriate, e.g. uses mime, symbols and touch
- Uses a range of communication strategies which have effective outcomes, e.g. active listening, reflective listening, paraphrasing; uses humour appropriately
- Utilises appropriate channels of communication, e.g. ensures accurate, updated information transfer between care provider and team coordinator
- Documents a plan of care for nursing interventions

COMPETENCY 5

EFFECTIVELY MANAGES AND COORDINATES THE CARE OF A VARIETY OF INDIVIDUALS

Element 5.1 Organises workload to ensure that planned nursing care for individuals is affected

Performance Criteria

- Determines priorities for care based on patient preferences, need, acuity and optimal time for intervention
- Assists others to re-evaluate priorities in emergency situations
- Identifies levels of care required according to patient's acuity
- Demonstrates ability to undertake a range of tasks simultaneously

Element 5.2 Delegates to other nurse's activities commensurate with their abilities and scope of practice, to ensure a safe outcome

Performance Criteria

- Assigns patients according to the nurse's capabilities and the learning needs of the nurse
- Identifies experienced human resources within the area to support less experienced colleagues
- Provides guidance in patient management to less experienced staff
- Supervises and evaluates the nursing care provided by less experienced nursing colleagues, e.g. assists a student to perform complex procedures safely

Element 5.3 Provides comprehensive supervision for aspects of care provided by other members of the health care team to ensure safe outcomes

Performance Criteria

- Ensures the activities of other members of the health care team do not unduly stress the patient or produce undesirable physiological effects
- Ensures that activities performed by other members of the health care team are in the best interests of the patient
- Monitors the effects of activities of other members of the health care team

Element 5.4 Implements appropriate human resource strategies to accommodate the skills, abilities and limitations of members of the critical care team

Performance Criteria

- Plans for actual and potential alterations in patient acuity and liaises with management for appropriate staffing

- Appropriately utilised support and counselling services available to staff

COMPETENCY 6

ANTICIPATES, PLANS FOR AND UTILISED HUMAN AND PHYSICAL RESOURCES

Element 6.1 Demonstrates effective and accurate knowledge in the safe use and application of technology

Performance Criteria

- Manages equipment in a way that optimises a safe patient outcome, e.g. utilises alarm settings
- Uses biomedical equipment in conjunction with clinical assessment appropriately
- Differentiates between changes in observations which represent physiological problems versus equipment malfunctions
- Troubleshoots problems with equipment rapidly and effectively
- Contributes to evaluation of biomedical equipment
- Recognises the limitations of biomedical equipment, e.g. rechecks blood pressure manually when monitors hypotension
- Uses information technology appropriately within the critical care setting

Element 6.2 Manages human and physical resources to optimise delivery of care

Performance Criteria

- Considers the implications of current health policy, e.g. case mix funding, and managed care
- Prepares environment and resources appropriately prior to anticipated events
- Utilised materials/equipment/time in a manner which conserves resources
- Coordinates resources for effective care by ensuring appropriate skill mix, staffing ratios and technology

COMPETENCY 7

MANAGES THERAPEUTIC INTERVENTIONS AND REGIMES

Element 7.1 Demonstrates a comprehensive knowledge of the effects and implications of evidence-based interventions and regimes

Performance Criteria

- Demonstrates an awareness of the actions of various medications and interventions and their physiological impact, e.g. makes appropriate judgement in titrating narcotic regime based on patient's condition
- Anticipates and prepares for the potential sequelae of the patient's condition and interventions, e.g. checks pedal pulses following removal of an intra-aortic balloon pump; ensures antiarrhythmic drugs and defibrillator readily available for potential arrhythmias associated with pulmonary artery catheter insertion; monitors closely for evidence of raised intracranial pressure during chest physiotherapy for head injured patients

Element 7.2 Acts on assessment findings to appropriately initiate, manage and monitor therapeutic interventions and regimes

Performance Criteria

- Identifies patient response to therapeutic interventions and acts appropriately, e.g. effectively titrates therapeutic infusion based on interpretation of patient assessment
- Withholds therapeutic agents where appropriate and arranges for review in response to assessment data

CLINICAL PROBLEM SOLVING

The competencies in this domain relate to the use of a well-developed and specialised knowledge base that has been derived from both education and experience. This knowledge base allows the nurse to effectively assess the patient's health status and make meaningful interpretations. It also allows the nurse to recognise potential complications and plan and instigate appropriate nursing actions in a way that will minimise the possibility of complications. Ongoing monitoring, problem identification and problem solving are also included.

COMPETENCY 8

INTEGRATES COMPREHENSIVE PATIENT ASSESSMENT AND INTERPRETIVE SKILLS TO ACHIEVE OPTIMAL PATIENT OUTCOMES

Element 8.1 Gathers, analyses and integrates data from a variety of sources and determines the significance of findings

Performance Criteria

- Utilises a wide range of strategies to gather relevant patient assessment data, e.g. physical assessment, patient interview, interview with family/significant others, diagnostic equipment data, laboratory results, old records

- Utilises a systematic approach to physical assessment to establish baseline observations
- Frequently performs physical assessment to detect deviations from baseline, e.g. observes for fluctuations in vital signs in relation to changes in patient's position
- Demonstrates an ability to maintain current, accurate data on patient's condition whilst performing a variety of other tasks
- Makes decisions relating to patient status based on data obtained, e.g. determines the need for arterial blood gas analysis according to appearance, oximetry readings, respiratory effort and other physiological parameters

COMPETENCY 9

EVALUATES AND RESPONDS EFFECTIVELY TO CHANGING SITUATIONS

Element 9.1 Initiates pre-emptive interventions in anticipation of potential patient complications

Performance Criteria

- Ensures all emergency equipment is regularly checked, available and in working order, e.g. ensures emergency trolley is appropriately equipped
- Utilises specialised knowledge base to anticipate potential patient complications, e.g. performs appropriate chest physical therapy to minimise the risk of respiratory complications; anticipates that hypotension may occur during line change associated with inotropic therapy and takes steps to prevent this

Element 9.2 Analyses alterations in physiological parameters and intervenes appropriately

Performance Criteria

- Recognises and responds to alterations in physiological status, e.g. identifies subtle but potentially significant changes in neurological status; recognises changes in urine output and undertakes further appropriate assessment
- Responds effectively to alterations in the patient's physiological status which are life threatening in nature, e.g. initiates defibrillation for patient in ventricular fibrillation; administers first line cardiac arrest drugs as per unit standing orders

Element 9.3 Effectively anticipates and manages emergency situations

Performance Criteria

- Adapts to changing situations and effectively prioritises care, e.g. delegates duties to other members of the health care team during an emergency situation

- Implements emergency/evacuation procedures when required, e.g. identifies in advance and initiates strategies in the event of gas or power failure
- Plans for appropriate material and human resources for emergencies, e.g. prepares intubation equipment for possible reintubation; reorganises staff to cover all patients during an emergency

COMPETENCY 10

DEVELOPS AND MANAGES A PLAN OF CARE TO ACHIEVE DESIRED OUTCOMES

Element 10.1 Formulates and implements a plan of care incorporating specialised knowledge to achieve desired outcomes

Performance Criteria

- Uses a comprehensive knowledge base to plan for potential adverse patient events, e.g. applies knowledge of mechanisms of injury to the assessment of a patient following multiple trauma; monitors the patient for signs of right ventricular failure following inferior myocardial infarction
- Recognises the uniqueness of the individual and modifies care accordingly
- Utilises sound rationales to justify planned interventions
- Integrates assessment data to formulate a plan of care

Element 10.2 Assesses effectiveness of nursing management in achieving desired outcomes and reviews plans in accordance with evaluated data

Performance Criteria

- Formulates criteria for evaluation of predicted outcomes
- Analyses patient status and compares this with predicted outcomes, e.g. assesses the effectiveness of a ventilator weaning program
- Adjusts plan when interventions fail to meet predicted outcomes, e.g. adjusts ventilator weaning plan after patient assessment reveals that the current plan is not well tolerated
- Recognises that the patient's illness and recovery are dynamic processes and adjusts plan of care accordingly

Element 10.3 Effectively plans for continuity of care

Performance Criteria

- Anticipates discharge and plans care in a way that will progress towards it, e.g. plans a rehabilitation program for a cardiac patient
- Anticipates potential for further therapeutic interventions and adjusts care accordingly, e.g. alters ventilator weaning plan in light of patient's possible return to theatre
- Ensures that plan of care is effectively communicated, using both written and verbal communication
- Ensures that information and advice obtained from other health professionals is documented and communicated
- Maintains the flow of information necessary for continuity of care, e.g. provides a comprehensive handover to relieving nurse; ensures that a patient requiring neurological assessment using the Glasgow Coma Scale is effectively handed over to the nurse on the subsequent shift and interpretation of the observations is consistent

PROFESSIONAL PRACTICE

Knowledge of legislative principles and ethical frameworks are fundamental to professional practice. The competencies in this domain relate to the legal and ethical responsibilities of critical care nurses and include knowledge of the legal implications of critical care nursing practice, demonstrated knowledge of legislation affecting nursing practice, accountability for practice and the ability to interpret unfamiliar situations in a legal and ethical sense. Competencies in this domain also include awareness and protection of the rights of individuals and groups and recognition of the differences between one's own beliefs and those of others, so that nursing care is carried out in a non-discriminatory way.

COMPETENCY 11

FUNCTIONS IN ACCORDANCE WITH LEGISLATIVE AND COMMON LAW AFFECTING CRITICAL CARE NURSING PRACTICE

Element 11.1 Demonstrates an accurate and comprehensive knowledge of the legislation pertinent to critical care nursing practice

Performance Criteria

- Identifies and understands the legal implications of legislation in relation to critical care nursing practice, e.g. trespass; restraint; confidentiality; custody; drug administration; human tissue/organ donation; cerebral death studies
- Discusses appropriate avenues to access legislative information, e.g. library; nurses registration boards; professional organisations

- Describes the concepts of negligence
- Conforms to legislative requirements in the critical care setting, e.g. ensures informed consent obtained from patient/family/guardian
- Explains the legal implications of the administration of pharmacological agents

Element 11.2 Promotes an accurate awareness of the legal implications of actions taken within the critical care team and fulfils the duty of care in the course of practice

Performance Criteria

- Ensures that other nurses are aware of their responsibilities and accountability in relation to the supervision of students and less experienced staff
- Effectively utilises incident reporting
- Acts as a role model within the health care team
- Assists less experienced staff to work within a legal and ethical framework, e.g. titration of therapeutic agents through supervision and reinforcing of the need to adhere to administration protocols
- Discusses the legal implications of nursing practice which may be considered an extension of the nurse's role
- Allocates staff according to level of competence and expertise, ensuring adequate staff throughout the duration of the shift
- Clarifies the orders of other members of the health care team when patient safety is at risk

Element 11.3 Recognises unsafe practices and responds by contributing to formation of policies and protocols to ensure safe outcomes in the area of practice

Performance Criteria

- Practices in accordance with policies and procedures of the health care setting
- Contributes to policy and protocol review and development
- Incorporates relevant current issues into the development of policies and protocols, e.g. legislation; changes in funding and hospital policies related to nursing practice
- Responds promptly to situations of inappropriate or unsafe practice from all health professionals, e.g. alerts other members of the health care team where

inadequate infection control practices may put either themselves or patients at risk

- Explores strategies to reduce the incidence of unsafe practice where problems occur frequently or have the potential to recur
- Demonstrates knowledge of quality management policies and critical incident reporting
- Initiates problem solving strategies with senior administration staff to resolve unsafe staffing levels

Element 11.4 Intervenes appropriately to ensure a safe outcome when policies or practices may impede or contravene the law

Performance Criteria

- Identifies when intervention is necessary to prevent patient care from being compromised, e.g. intervenes when another staff member does not appear to appreciate the significance of data relating to the patient in their care
- Takes appropriate action in situations where the law or institutional policies may contravene the best interests of the patient, e.g. ensures the patient has given informed consent; identifies situation where the patient is being restrained inappropriately
- Reflects on outcomes of practices and suggests changes to unit policies and procedures, e.g. development of standing orders for the administration of emergency medications or defibrillation by nurses

Element 11.5 Demonstrates effective and appropriate methods of documenting information in a comprehensive, clear manner within a legal and ethical framework

Performance Criteria

- Documents a plan for nursing interventions
- Systematically records information in an accessible and retrieval form
- Ensures written communication is clear, comprehensible and legally valid
- Undertakes report writing on behalf of the unit

COMPETENCY 12

PROTECTS THE RIGHTS OF PATIENTS AND THEIR SIGNIFICANT OTHERS

Element 12.1 Demonstrates a comprehensive and accurate knowledge of the rights of individuals in critical care settings

Performance Criteria

- Demonstrates an awareness of accepted practices that have a potential to impinge on patients rights, e.g. family and significant others' access to the patient
- Demonstrates a knowledge of the rights of unconscious patients or patients unable to advocate for themselves, e.g. adheres to policy regarding privacy and photography
- Recognises the rights of the patient to full and comprehensive information
- Acts to provide a therapeutic climate that respects the needs of the patient and significant others, e.g. interacts with the individual in a non judgemental and accepting manner; involves the patient and family/significant others in the planning of care
- Discusses the concepts of consent with members of the health care team

Element 12.2 Collaborates with appropriate members of the critical care team to ensure safe and effective outcomes and intervenes appropriately when policies or practices impinge on the rights of individuals

Performance Criteria

- Consistently demonstrates confidentiality in dealing with patient information, e.g. complies with the patient/family/significant others' wishes regarding disclosure of information; restricts discussion of patient information to therapeutic and learning situations; maintains confidentiality of patient records
- Consistently advocates for patients whose rights are overlooked, e.g. ensures pain relief tailored to patient requirements
- Ensures that verbal and non-verbal interactions with patient/family/significant others reflect respect for differing values and beliefs, e.g. uses appropriate physical contact with patient/family/significant others
- Discusses with the patient/family/significant others the granting of permission to be seen by nursing, medical and other students and supports any decision to refuse
- Liaises and coordinates care with other members of the health care team to ensure individual/group rights are not infringed
- Respects the individual rights of patients whose beliefs lead to the refusal of treatment

COMPETENCY 13

DEMONSTRATES ACCOUNTABILITY FOR NURSING PRACTICE

Element 13.1 Accepts responsibility for own actions

Performance Criteria

- Accepts responsibility for the consequences of own acts and omissions, e.g. provides sound rationale for all independent therapeutic interventions; identifies the need for further tests and acts accordingly; ensuring correct requests and documentation
- Takes full responsibility for the accurate interpretation of interventions prescribed by other members of the health care team
- Seeks further information or a second opinion when appropriate

Element 13.2 Clarifies unclear instructions and questions interventions, to ensure safe outcomes

Performance Criteria

- Collaborates with other members of the health care team in the discussion of management of strategies to ensure that ambiguity does not occur
- Clarifies the actions of other members to the health care team if they appear inappropriate

Element 13.3 Consistently makes complex and informed independent decisions within level of competence and scope of practice

Performance Criteria

- Makes and implements clinical decisions about patient care within the scope of competence and practice, e.g. adjusts and administers therapeutic interventions in response to clinical findings, based on desired parameters and within prescribes range; adjusts biomedical equipment to meet individual requirements; titrates oxygen in accordance with clinical status and desired oxygen and saturation; initiates 12 lead ECG in response to the patient's clinical condition
- Provides sound, logical rationale for all independent decisions and therapeutic interventions
- Demonstrates awareness that some clinical decisions have unpredictable outcomes and weighs the consequences of these against the decision, e.g. increases sedation to reduce increasing intracranial pressure but monitors patient closely, cognisant that sedation may mask neurological deterioration; makes decision to omit observations and allow patient to sleep, based on judgement that sleep may benefit the patient

- Uses information/assessment findings as a basis for both proactive and reactive interventions, e.g. increases analgesic infusions prior to painful intervention in anticipation of increased pain

COMPETENCY 14

DEMONSTRATES AND CONTRIBUTES TO EFFECTIVE, ETHICAL DECISION-MAKING

Element 14.1 Consistently and comprehensively complies with the profession's code of ethics and code of conduct

Performance Criteria

- Maintains a consistent standard of care when confronted by differing values, beliefs and biases, e.g. treats all patients with equal respect, compassion and care; refrains from allowing personal judgements to impinge on care
- Responds appropriately to situations of values conflict, e.g. respects patient's choice to refuse treatment or to use unconventional treatment
- Maintains confidentiality of patient information
- Identifies and adheres to ethical considerations when involved with health care research

Element 14.2 Demonstrates an accurate and comprehensive knowledge of contemporary ethical issues impinging on critical care nursing

Performance Criteria

- Analyses ethical dilemmas in the workplace, e.g. withdrawal of treatment; euthanasia
- Discusses contemporary ethical issues in a logical and reasoned manner
- Applies ethical principles to the analysis of relevant research

Element 14.3 Contributes to contemporary ethics by participating in ethical discussions in multidisciplinary settings

Performance Criteria

- Applies appropriate strategies to facilitate a team approach to ethical decision making, e.g. convenes family conferences
- Provides appropriate information to colleagues to aid effective and ethical decision making

- Assists less experienced colleagues to critically analyse events and relationships in the clinical setting from an ethical perspective
- Encourages the input of relatives and significant others and takes into account their beliefs and value systems in resolving ethical dilemmas

Element 14.4 Accurately identifies instances of unprofessional conduct and responds appropriately

Performance Criteria

- Provides a forum for staff to discuss issues related to professional conduct
- Identifies examples of unprofessional conduct by colleagues and manages situation appropriately, e.g. discourteous behaviours; inappropriate discussion in presence of patient
- Reports serious misconduct to appropriate authorities

COMPETENCY 15

RECOGNISED OWN ABILITIES AND LEVEL OF PROFESSIONAL COMPETENCE

Element 15.1 Assesses own abilities independently, comprehensively and accurately and practices within these limits and scope of practice

Performance Criteria

- Consults with nursing colleagues and other members of the critical care team when care requires expertise beyond own capabilities and scope of practice
- Functions independently using advanced knowledge and skills and consults with other staff as necessary
- Accepts case load based on competence and complexity of assignment
- Demonstrates awareness of local policies relating to nursing practice, e.g. explains rationale for local policy/protocols to colleagues when necessary
- Regularly reflects on own standard of practice and sets appropriate performance objectives

Element 15.2 Engages in activities to enhance own level of practice and quality outcomes for patients

Performance Criteria

- Utilised reflective practice strategies to facilitate own learning, e.g. participates in debriefing

- Seeks to maintain currency of practice, e.g. participates in in-service; has journal subscriptions; is a member of a professional organisation
- Participates at conferences and seminars
- Disseminates information from conferences to the clinical area
- Views self education as a part of professional practice

COMPETENCY 16

ENGAGES IN AND CONTRIBUTES TO EVIDENCE-BASED CRITICAL CARE PRACTICE

Element 16.1 Contributes to the application of evidence-based critical care nursing practice

Performance Criteria

- Seeks to improve professional practice through evidence based activities
- Demonstrates active involvement in approved research studies
- Applies ethical principles to research methodology

Element 16.2 Promote research to improve critical care nursing practice

Performance Criteria

- Identifies areas of practice for which further research is indicated
- Supports a positive climate for research within the practice setting
- Shares research findings with colleagues

Element 16.3 Participates in collaborative research within the multidisciplinary team

Performance Criteria

- Discusses possible research projects with other members of the health care team
- Participates in the development of collaborative research proposals, ensuring ethical principles are upheld
- Demonstrates an awareness of the purpose and methodology of all collaborative research projects being undertaken in the work area which affect the patient/family/significant other
- Assists the process of data collection for research purposes, e.g. ensures accuracy of data collection

Element 16.4 Incorporates research evidence into critical care nursing practice

Performance Criteria

- Critically evaluates the findings of research in the context of own practice setting
- Maintains currency of knowledge of relevant contemporary research findings, e.g. undertakes a literature search on a specified area of practice
- Suggests changes to policy/protocols based on awareness of recent research findings

TEAMWORK

The competencies in this domain relate to the practices essential for the maintenance of effective professional relationships. Competencies include the ability to establish and maintain effective relationships, communicate, and coordinate the activities of members of a multidisciplinary health care team. The coordination role relates to the nurse's ability to lead and direct others in a supportive and constructive manner. The critical care nurse develops these attributes through experience, continuing education and the acceptance of responsibility. Providing care and support for other members of the critical care team in a mature manner during difficult and challenging times is the hallmark of the advanced practitioner.

COMPETENCY 17

COLLABORATES WITH THE CRITICAL CARE TEAM TO ACHIEVE DESIRED OUTCOMES

Element 17.1 Recognised and respects the roles of members of the critical care team in the delivery of health care

Performance Criteria

- Communicates effectively with other members of the health care team, e.g. provides relevant information to colleagues, to assist them in determining patient management strategies
- Liaises with members of the health care team in order to coordinate an effective plan of care
- Facilitates an atmosphere in which a team approach to patient care can be established, e.g. maintains a friendly and supportive attitude towards other members of the health care team
- Initiates and maintains open communication with all members of the health care team

Element 17.2 Established and maintains collaborative and constructive relationships with colleagues in the critical care team

Performance Criteria

- Fosters a collegial relationship with other nurses, e.g. promotes the well being of new staff
- Respects the level of expertise of the other nurses in the team
- Provides support for the novice nurse experiencing difficulty within the health care team
- Identifies and responds rapidly to situations where nursing colleagues require assistance
- Guides and supports less experienced staff with decision making
- Promotes a team approach by encouraging all staff to be involved in planning care
- Demonstrates the ability to work as a team member/leader
- Initiates and maintains open communication with members of the health care team
- Participates in the orientation of new staff to the work environment

Element 17.3 Actively participates in patient care conferences with the critical care team

Performance Criteria

- Identifies situations that require patient care conferences
- Convenes patient care conferences and liaises with other members of the health care team
- Contributes nursing knowledge to decisions made in patient care conferences
- Acts as a patient advocate, to ensure that members of the health care team are aware of issues relevant to the patient
- Liaises with family and patient regarding their role in patient care conferences
- Monitors and evaluates outcomes of patient care conferences

Element 17.4 Collaborates with other members of the health care team in decision making

Performance Criteria

- Discusses clinical judgements and assessment findings with other members of the health care team
- Ensures the decision making process involves all members of the health care team

COMPETENCY 18

CREATES A SUPPORTIVE ENVIRONMENT FOR NURSING COLLEAGUES AND OTHER MEMBERS OF THE CRITICAL CARE TEAM

Element 18.1 Initiates strategies to support colleagues and facilitates resolution of situations that may threaten the dignity and integrity of colleagues and team members

Performance Criteria

- Supports the activities of other members of the health care team as learners
- Monitors staff morale and acts to improve morale when necessary
- Instigates appropriate debriefing after critical incidents
- Initiates counselling strategies when appropriate
- Provides positive feedback to promote self esteem
- Implements strategies to overcome conflict amongst members of the health care team
- Provides appropriate support for colleagues facing challenging or difficult patient care situations

LEADERSHIP

The competencies in this domain relate to the leadership and education role of the critical care nurse and the integral part played by experienced critical care nurses in the education and professional development of peers, students and less experienced staff.

COMPETENCY 19

ACTS TO ENHANCE THE PROFESSIONAL DEVELOPMENT OF SELF AND OTHERS

Element 19.1 Uses a professional approach to the assessment of self and others

Performance Criteria

- Demonstrates a responsible attitude towards self appraisal and that of others
- Maintains confidentiality during the process of appraisal
- Critically analyses feedback from others to assess practice standards, e.g. evaluated individual performance with observer following cardiac arrest

Element 19.2 Identifies deviations from appropriate standards of care and interventions using effective communication strategies to ensure optimal patient outcomes

Performance Criteria

- Uses a supportive method of helping others to recognise deviations from appropriate standards of care
- Leads by example
- Intervenes when standards of care are breached
- Initiates discussions relating to appropriate standards of care, e.g. utilised nursing handover to discuss aspects of patient's care and guide others; encourages multidisciplinary in-service

Element 19.3 Demonstrates a commitment to continuing education and ongoing professional development of self and others

Performance Criteria

- Identifies areas where professional growth can occur
- Identifies situations where learning needs of others are not being met, e.g. recognises situations where less experienced staff appear to lack familiarity with biomedical equipment
- Encourages others to undertake self education
- Acts as a role model for nursing colleagues, students and less experienced staff
- Acts as a consultant to other areas and staff within the hospital
- Demonstrates an awareness of current trends in health policy, e.g. case-mix funding

Element 19.4 Facilitates the identification of, and assists in meeting, the learning needs of peers, students and other critical care health professionals

Performance Criteria

- Assists with the learning needs of self, peers, students and other health professionals, e.g. instructs nurses and other members of the health care team in the use of haemodynamic monitoring techniques; engages in informal bedside teaching
- Assists students and less experienced colleagues in deciding upon priorities of care, e.g. assists with the interpretation of assessment data and identification of needs
- Disseminates information to other members of the health care team, e.g. discusses information obtained at conferences, seminars, in-service education; discusses relevant, recently published health care literature
- Participates in unit education and orientation of new staff, e.g. acts as a mentor to students and less experienced staff
- Fosters an environment in which education is shared and professional development of self and others is maintained
- Identifies the learning needs of others and facilitates the process of meeting those needs
- Recognises that the unit is a learning environment and facilitates time for colleagues to participate in learning activities

Element 19.5 Actively participates in critical care professional associations

Performance Criteria

- Participates in a professional organisation
- Participates in policy and decision making

Element 19.6 Mentors and precepts students and less experienced staff

Performance Criteria

- Contributes to the learning of students through effective preceptorship
- Contributes to the orientation of new staff members
- Provides informal education in the clinical setting
- Facilitates an environment conducive to learning
- Encourages less experienced staff to ask questions
- Maintains a positive attitude
- Provides clear and accurate feedback concerning clinical practice

COMPETENCY 20

DEMONSTRATES LEADERSHIP QUALITIES IN RELATIONSHIPS

Element 20.1 Acts as a positive role model for peers and other members of the critical care team

Performance Criteria

- Communicates in a non threatening manner
- Maintains an approachable and open minded attitude towards suggestions and critique
- Interacts with other members of the health care team in a collegial manner
- Maintains hospital and unit standards of self presentation and nursing care, e.g. punctuality; dress code
- Influences the practices of others in a positive way through the demonstration of effective nursing practice
- Influences the reactions of others by approaching issues and situations in a calm and professional manner
- Speaks in a courteous and professional manner at all times
- Acts in a respectful manner when addressing patients, families and staff

Element 20.2 Acts as a consultant outside critical care

Performance Criteria

- Demonstrates an ability to assist in the management of an 'at risk' patient
- Responds appropriately to arrange for 'at risk' patients to be transferred to critical care if assessment raises concerns about their condition
- Participates on committees within the hospital but outside critical care
- Provides phone consultation to any enquires regarding support/advice for ward or home patients, e.g. home Total Parental Nutrition or home ventilation
- Demonstrates an ability to give instructions in the use of biomedical equipment, e.g. Responds to a request to 'trouble shoot' telemetry monitoring in general ward

Appendix G Participant Information Sheet



Government of **Western Australia**
Department of **Health**
North Metropolitan Area Health Service
Women and Newborn Health Service

PARTICIPANT INFORMATION SHEET

Determining whether midwives have the confidence, knowledge and skill to care for acutely ill women within the tertiary hospital setting

Why are we doing the study?

Midwives are becoming increasingly involved in the provision of care to women who have the potential to become acutely and critically ill during and following their pregnancy. The confidential enquiry into maternal mortality in the UK revealed that pre-existing medical conditions indirectly contribute to 20% of all maternal deaths, with cardiac disease the leading cause of mortality in this category. It was recommended that midwives working within high-dependency maternity units should be suitably trained and equipped with the necessary skills to care for these women, whilst maintaining the core philosophy of midwifery care. We plan to investigate whether midwives working within a tertiary women's hospital in Western Australia possess the confidence, knowledge and skill to care for acutely and critically ill women prior to and after attending a maternity high-dependency care course.

Who is carrying out the study?

The research team will be led by Dr Gavin Leslie, Professor of Critical Care Nursing Curtin University of Technology and Janice Butt, Associate Director of Midwifery and Co-ordinator of Midwifery Education–King Edward Memorial Hospital. The principal investigator will be Emma Manolas, Clinical Midwife - King Edward Memorial Hospital.

What will the study tell us?

The study will reveal midwives confidence to practice in the high-dependency maternity setting, and their knowledge surrounding core concepts of high-dependency maternity care prior to and after attending a high-dependency maternity care course.

What will you be asked to do if you decide to take part in this study?

With your consent, we propose to assess your level of knowledge and confidence through the completion of a pre-and post-course test along with a self-efficacy scale,

and skills questionnaire. It should take you approximately an hour to complete, and will be repeated 12 months after the completion of the course.

Is there likely to be a benefit to other people in the future?

If the provision of a maternity high-dependency care course is shown to demonstrate an increase in midwifery knowledge and confidence to practice within the field of maternity high-dependency care, then a stronger argument can be put forward to secure funding to continue providing such a course, and expanding the program to all midwives at a state and national level. By improving midwifery knowledge, patient care may also improve and adverse patient outcomes occurring from inadequate midwifery knowledge may be reduced.

What are the possible risks and/or side effects?

Nil

What are the possible discomforts and/or inconveniences?

The inconvenience of completing a test and self-efficacy scale at a 12-month interval. You may also participate in an interview to discuss your confidence to practice as a midwife in high-dependency areas within King Edward after attending the high-dependency course. The interviews will be conducted at King Edward Memorial Hospital by the research interns. Interviews will take approximately 30 minutes to complete. Exploratory interview questions will be guided by participant responses. The interview questions will focus upon the participants perceived confidence to practice as a midwife after attending the course.

Where is your information kept?

De-identified information arising from this study will be kept within a locked filing cabinet within Curtin University.

What about my privacy?

Your confidentiality and privacy during this study will be respected. No information that discloses your identity will ever be published. You will not be a beneficiary of any commercial outcomes or developments arising from this study.

Who has approved the study?

This study has been approved by the Women and Newborn Health Obstetric and Gynaecology Quality Improvement Committee.

Who to contact for more information about this study:

If you would like more information about this study, please do not hesitate to contact Emma Manolas. She will be very happy to answer your questions.

Appendix H Participant Consent



Government of **Western Australia**
Department of **Health**
North Metropolitan Area Health Service
Women and Newborn Health Service

FORM OF CONSENT

PLEASE NOTE THAT PARTICIPATION IN RESEARCH STUDIES IS VOLUNTARY AND SUBJECTS CAN WITHDRAW AT ANY TIME WITH NO IMPACT ON CURRENT OR FUTURE CARE.

I

have read the information explaining the study entitled

Do midwives possess the knowledge, skills and confidence to care for acutely ill women within the tertiary hospital setting?

I have read and understood the information given to me. Any questions I have asked have been answered to my satisfaction. I understand I may withdraw from the study at any stage and withdrawal will not incur any penalty. I agree that research data gathered from the results of this study may be published, provided that names are not used.

Dated day of 20

Signature

I, have explained the above to the

(Investigator's full name)

signatory who stated that he/she understood the same.

Signature

Appendix I Participant Characteristics Survey

Participant Characteristics Survey



All the information that you provide in this questionnaire is strictly confidential and will not be used to identify any individual.

Participant Information

1.	What is your age?	Tick the box that applies to you
	Less than 25 years	<input type="checkbox"/>
	25–34	<input type="checkbox"/>
	35-44	<input type="checkbox"/>
	45-54	<input type="checkbox"/>
	55-64	<input type="checkbox"/>
	65 +	<input type="checkbox"/>

2.	In what country were you born?	Tick the box that applies to you	
	Australia	<input type="checkbox"/>	New Zealand <input type="checkbox"/>
	China	<input type="checkbox"/>	Scotland <input type="checkbox"/>
	England	<input type="checkbox"/>	South Africa <input type="checkbox"/>
	Greece	<input type="checkbox"/>	Sri Lanka <input type="checkbox"/>
	India	<input type="checkbox"/>	Vietnam <input type="checkbox"/>
	Ireland	<input type="checkbox"/>	Wales <input type="checkbox"/>
	Italy	<input type="checkbox"/>	Zimbabwe <input type="checkbox"/>
	Other: Please specify		

3.	For those who were not born in Australia, for how many years have you lived in Australia? Please write.	
	Number of years	

Registration

4.	Are you currently registered to practice as a Midwife in Australia?	Yes <input type="checkbox"/> No <input type="checkbox"/>
----	---	--

5. Are you currently registered to practice as a Nurse in Australia? Yes No

6. Have you ever been registered to practice as a Nurse in Australia? Yes No

Education and Training

7. Tick the statement that best describes the highest level of your educational training			
	Tick the box that applies to you		Tick the box that applies to you
Hospital-based nursing certificate	<input type="checkbox"/>	Graduate Certificate	<input type="checkbox"/>
Hospital based midwifery certificate	<input type="checkbox"/>	Post-graduate Diploma	<input type="checkbox"/>
Hospital based nursing and midwifery certificates	<input type="checkbox"/>	Masters degree of Nursing	<input type="checkbox"/>
Bachelor degree of nursing	<input type="checkbox"/>	Masters degree of Midwifery	<input type="checkbox"/>
Bachelor degree of midwifery	<input type="checkbox"/>	Masters degree of another discipline	<input type="checkbox"/>
Bachelor degree of nursing and post-graduate midwifery diploma	<input type="checkbox"/>	Doctoral degree of any discipline	<input type="checkbox"/>
Other: Please specify			

Nursing Experience

		Number of years
8.	How many years have you worked for as a midwife in Australia?	<input type="text"/>
9.	How many years have you worked for as a midwife in any other country?	<input type="text"/>
10.	How many years have you worked for as a nurse in Australia?	<input type="text"/>
11.	How many years have you worked for as a nurse in any other country?	<input type="text"/>
12.	For how many years have you worked at King Edward Memorial Hospital as either a midwife or a nurse?	<input type="text"/>

Work Experience

13. Please tick the boxes for the settings that you have worked in as a Registered Midwife in Australia				
	Tick the boxes that apply to you		Tick the boxes that apply to you	
Not applicable)	<input type="checkbox"/>	Regional Health Service (eg. Bunbury Regional, Kalgoorlie, Port Hedland)	<input type="checkbox"/>	
Tertiary Hospital (eg. KEMH)	<input type="checkbox"/>	Remote Area (eg. Indigenous Community)	<input type="checkbox"/>	
Secondary Metro Hospital (eg. Osborne Park, Joondalup, Kaleeya)	<input type="checkbox"/>	Community or School Health Service	<input type="checkbox"/>	
Private Maternity Hospital	<input type="checkbox"/>	Community Midwifery Practice	<input type="checkbox"/>	
Other: Please specify				

14. Please tick the boxes for the settings that you have worked in as a Registered Nurse in Australia			
	Tick the boxes that apply to you		Tick the boxes that apply to you
Not applicable	<input type="checkbox"/>	Regional Hospital eg. Bunbury, Geraldton, Albany, Kalgoorlie	<input type="checkbox"/>
Tertiary Hospital eg. SCGH, RPH, Fremantle	<input type="checkbox"/>	Remote Area Community Health	<input type="checkbox"/>
Secondary Hospital eg. Rockingham, Peel	<input type="checkbox"/>		<input type="checkbox"/>
Other: Please specify			

15. In which clinical areas have you worked as a Registered Nurse?			
	Tick the boxes that apply to you		Tick the boxes that apply to you
Not applicable	<input type="checkbox"/>	Critical Care Nursing (ICU, Coronary Care)	<input type="checkbox"/>
Surgical Nursing (eg. Orthopedics)	<input type="checkbox"/>	Emergency Department	<input type="checkbox"/>
Medical Nursing (eg. Geriatrics, General Medicine, Cardiovascular Medicine, Medical Oncology)	<input type="checkbox"/>	Community	<input type="checkbox"/>
High-Dependency nursing	<input type="checkbox"/>		

16.	Please write down your job title and the area or areas in which you <u>currently</u> work at KEMH.	
	Job Title	
	Area/s of current work	

17.	Please write down the areas and roles in which you have <u>previously</u> worked at KEMH.	
	Job Title	
	Area of previous work	
	Job Title	
	Area of previous work	
	Job Title	
	Area of previous work	

18.	Please write down any areas in which you have previously worked as a nurse or midwife in any country other than Australia.	
	Job Title	
	Area of previous work	
	Job Title	
	Area of previous work	
	Job Title	
	Area of previous work	

Appendix J Pre-Course and Post-Course Knowledge Test

PRE-COURSE TEST

PLEASE ANSWER ALL QUESTIONS ON THE ANSWER SHEET PROVIDED.
MARK CORRECT ANSWER CLEARLY WITH AN 'X'

1. A factor affecting the accurate measurement of central venous pressure can be:

- A. Transducer location
- B. Atmospheric pressure
- C. Catheter patency
- D. All of the above

2. Capnography is:

- A. The measurement of the partial pressure of oxygen in expired air
- B. The measurement of the partial pressure of carbon dioxide in expired air
- C. A graphical representation of vital capacity
- D. A graphical representation of oxygen saturations

3. Arterial lines measure:

- A. Capillary hydrostatic pressure
- B. The volume of circulating blood
- C. Arterial blood pressure in a continuous real-time waveform
- D. None of the above

4. A Central venous catheter (CVC) can be used for:

- A. Performing an ABG
- B. CVP measurement
- C. Haemodialysis
- D. All of the above

5. Mean arterial pressure (MAP) is calculated by:

- A. Systolic BP + Diastolic BP
- B. Systolic BP–Diastolic BP plus $\frac{1}{3}$ of Diastolic BP
- C. Systolic BP + Diastolic BP minus $\frac{1}{2}$ Diastolic BP
- D. None of the above

6. Cardiac output can be measured by:

- A. Multiplying heart rate by stroke volume
- B. Systolic blood pressure minus diastolic blood pressure, divided by heart rate
- C. Heart rate divided by stroke volume
- D. None of the above

7. A 'P wave' on an ECG relates to:

- A. Atrial depolarisation
- B. Atrial repolarisation
- C. Ventricular depolarisation
- D. Ventricular repolarisation

8. The most common feature of atrial fibrillation as recognised on an ECG is:

- A. Broad QRS complex
- B. Prolonged QT interval
- C. Short R-R interval
- D. An absence of recognisable P waves

9. An inotrope is a drug which:

- A. Affects myocardial contractility
- B. Improves speed of conduction through the AV node
- C. Increases heart rate
- D. All of the above

10. Ace inhibitors are contraindicated:

- A. In the post-natal period
- B. When combined with beta blockers
- C. During pregnancy
- D. When combined with paracetamol

11. When monitoring a woman using a 3 lead ECG, the white lead is placed:

- A. On the left arm below the clavicle
- B. On the right arm below the clavicle
- C. On the right umbilicus in line with the nipple

D. On the middle of the sternum

12. Cryoprecipitate is a blood product which contains:

- A. Factor VIII only
- B. Fibrinogen only
- C. Factor VIII, Fibrinogen, Factor XIII, vWF and fibronectin.
- D. Platelets suspended in plasma

13. Plasma volume in pregnancy can increase by as much as:

- A. 20%
- B. 30%
- C. 40%
- D. 50%

14. A pregnant woman at 28 weeks of gestation presents to MFAU at term with the following maternal ABG:

pH - 7.2

HCO₃ 16

PaCO₂ 35mmHg

PaO₂ 100mmHg

BE -2

15. This blood gas can be interpreted as:

- A. Metabolic acidosis
- B. Metabolic alkalosis
- C. Respiratory acidosis
- D. Respiratory alkalosis

16. What is one probable cause of the abnormal ABG in question 15:

- A. Gastroenteritis
- B. Hyperventilation
- C. Hypoventilation
- D. Nausea

17. Which of the following is not a risk factor for venous thromboembolism (VTE) during pregnancy:

- A. Pre-eclampsia
- B. Age 30-35 years
- C. OHSS
- D. Hyperemesis

18. Clexane (enoxaparin) is a low-molecular weight heparin which:

- A. Is an anti-platelet agent
- B. Increases INR
- C. Is contraindicated during pregnancy
- D. Inhibits the conversion of prothrombin to thrombin, decreasing fibrin clot formation

19. A physiological benefit of CPAP (continuous positive airway pressure) is to:

- A. Reduce the work of breathing
- B. Increase functional residual capacity
- C. Improve alveolar gas exchange
- D. All of the above

20. Chest auscultation of a patient with acute pulmonary oedema should reveal:

- A. End expiratory crackles
- B. Quiet breath sounds
- C. Inspiratory wheeze
- D. Expiratory wheeze

21. A non-rebreather mask attached to a flow rate of 10L/min of oxygen delivers:

- A. An FiO_2 of approximately 70%
- B. An FiO_2 of approximately 80%
- C. An FiO_2 of approximately 90%
- D. An FiO_2 of approximately 100%

22. What is the minimum flow rate required for a non-rebreather mask?

- A. 6 L/min
- B. 8 L/min

C. 10 L/min

D. 12L/min

23. Clinical features of pheochromocytoma during pregnancy may include:

A. Paroxysmal hypertension

B. Urinary catecholamines

C. Profuse sweating

D. All of the above

24. Acute pancreatitis in pregnancy may be caused by:

A. Gallstones

B. Exercise intolerance

C. Smoking

D. Anaemia

25. What is the most common non-obstetric surgical emergency during pregnancy:

A. Acute appendicitis

B. Renal calculi

C. Paralytic ileus

D. Cholelithiasis (Gallstones)

26. Which statement best describes disseminated intravascular coagulopathy (DIC):

A. It includes the consumption of clotting factors and platelets leading to bleeding

B. It is a complication of an existing illness

C. It is a complex thrombohaemorrhagic disorder

D. All of the above

27. An effective therapy for Von Willenbrand's Disease is:

A. Red blood cells

B. Aspirin

C. Desmopressin

D. Steroids

28. Which of the following statements is NOT true in relation to Acute Fatty Liver of pregnancy:

- A. A liver biopsy is required to confirm diagnosis
- B. It frequently occurs in the third trimester of pregnancy and is often associated with pre-eclampsia
- C. Is often accompanied by hypoglycaemia and jaundice
- D. The condition can be life-threatening to both the woman and foetus

29. A possible diagnosis for a peri-menopausal woman with a 6 week history of menorrhagia and dizziness is:

- A. UTI
- B. Asthma
- C. Hypertension
- D. Iron deficiency anaemia

30. Which medication should be avoided in women with pre-eclampsia:

- A. Metoprolol
- B. Non-steroidal anti-inflammatory drugs
- C. Heparin
- D. Bupivacaine

Appendix K Pre-Course and Post-Course Skills Evaluation

Pre/Post course Skills Evaluation



All the information that you provide in this evaluation is strictly confidential and will not be used to identify any individual.

Record your responses to each question by placing a tick in the box that best describes your level of competence

1. I can independently administer a loading dose of magnesium sulphate for a woman with pre-eclampsia according to hospital policy when prescribed by a medical officer.			
Strongly agree	Agree	Disagree	Strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. I can independently withdraw blood from an arterial line.			
Strongly agree	Agree	Disagree	Strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. I can independently perform a 12 lead ECG.			
Strongly agree	Agree	Disagree	Strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. I can independently and accurately assess patella reflexes in a woman with pre-eclampsia.			
Strongly agree	Agree	Disagree	Strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. I can independently assess a woman's breath sounds through auscultation if required.

Strongly agree	Agree	Disagree	Strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. I can independently assess a woman's neurological status using the Glasgow coma scale and neurological observation chart.

Strongly agree	Agree	Disagree	Strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. I can independently titrate a vasopressor or inotropic infusion such as phenylephrine according to a woman's blood pressure and mean arterial pressure.

Strongly agree	Agree	Disagree	Strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. I can respond to, intervene and act appropriately MOST of the time when a woman has a hypertensive crisis within the scope of my clinical practice.

Strongly agree	Agree	Disagree	Strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. I can independently manage the care of central vascular access devices such as CVCs and PICC lines when insitu.

Strongly agree	Agree	Disagree	Strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. I can independently titrate a woman's oxygen requirements to her oxygen saturations.

Strongly agree	Agree	Disagree	Strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. I can independently ventilate a woman using an air viva/bag and mask.

Strongly agree	Agree	Disagree	Strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12.	I can effectively communicate with women and their families in stressful situations MOST of the time.			
	Strongly agree	Agree	Disagree	Strongly disagree
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13.	I can independently identify atrial fibrillation on an ECG or monitor MOST of the time.			
	Strongly agree	Agree	Disagree	Strongly disagree
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14.	I can independently initiate CPR on a woman who has collapsed, is unresponsive and has no pulse.			
	Strongly agree	Agree	Disagree	Strongly disagree
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15.	I can independently measure Central Venous Pressure (CVP) using a transducer.			
	Strongly agree	Agree	Disagree	Strongly disagree
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16.	I can independently connect a patient to 3 lead ECG monitoring.			
	Strongly agree	Agree	Disagree	Strongly disagree
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix L General Self-Efficacy Scale

General Self-Efficacy Scale



Please complete the following questions by placing a tick in the box which relates to your confidence and self-belief when caring for acutely ill women as a nurse or midwife within the workplace. When you answer the questions, think of a woman you may have cared for who was acutely ill, and how you felt at that time. Respond to the questions as if you are still in that moment.

1. I can always manage to solve difficult problems if I try hard enough.				
Not at all true	Hardly true	Moderately true	Exactly true	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2. If someone opposes me, I can find the means and ways to get what I want.				
Not at all true	Hardly true	Moderately true	Exactly true	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3. It is easy for me to stick to my aims and accomplish my goals.				
Not at all true	Hardly true	Moderately true	Exactly true	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4. I am confident that I could deal efficiently with unexpected events.				
Not at all true	Hardly true	Moderately true	Exactly true	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

5. Thanks to my resourcefulness, I know how to handle unforeseen situations.				
Not at all true	Hardly true	Moderately true	Exactly true	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

6. I can solve most problems if I invest the necessary effort.				
--	--	--	--	--

Not at all true	Hardly true	Moderately true	Exactly true
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7.	I can remain calm when facing difficulties because I can rely on my coping abilities.		
Not at all true	Hardly true	Moderately true	Exactly true
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8.	When I am confronted with a problem, I can usually find several solutions.		
Not at all true	Hardly true	Moderately true	Exactly true
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9.	If I am in trouble, I can usually think of a solution.		
Not at all true	Hardly true	Moderately true	Exactly true
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

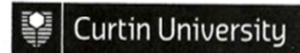
10.	I can usually handle whatever comes my way.		
Not at all true	Hardly true	Moderately true	Exactly true
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix M Focus Group Interview Questions

In-depth Interview Questions

- 1) Has your confidence to care for acutely ill women as a midwife changed since completing the high-dependency course?
- 2) What has made you more or less confident since completing the course?
- 3) What do you need to learn in order to be more confident in caring for acutely ill women?
- 4) What influence has your previous working experience had upon your ability to feel confident when caring for acutely ill women?
- 5) What working experience do you feel that you need in order to confidently care for acutely ill women?
- 6) What clinical support do you need within the workplace in order to care for acutely ill women confidently?

Appendix N Curtin University Low Risk Ethics Approval



Memorandum

To	Ms Emma Manolas
From	Professor Dianne Wynaden
Subject	Protocol Approval SON&M 2-2011
Date	10 th January 2013
Copy	Professor Gavin Leslie, Ms Janice Butt

Thank you for your "Form C renewal Application for Approval of Research with Low Risk (Ethical Requirements)" for the project titled "**Do midwives possess knowledge, skills and confidence to competently care for acutely ill women within the tertiary hospital setting?**" On behalf of the Human Research Ethics Committee, I am authorised to inform you that the project is renewed.

Approval of this project is for a period of twelve months from 10th January 2013 to 10th January 2014.

The approval number for your project is **SON&M 2-2011**. *Please quote this number in any future correspondence.* If at any time during the twelve months changes/amendments occur, or if a serious or unexpected adverse event occurs, please advise me immediately.

A handwritten signature in black ink, appearing to read "Dianne Wynaden".

Professor Dianne Wynaden
Low Risk Coordinator/Ethics Advisor
School of Nursing and Midwifery

Appendix O Consent to participate in recorded interview

FORM OF CONSENT

PLEASE NOTE THAT PARTICIPATION IN RESEARCH STUDIES IS VOLUNTARY AND SUBJECTS CAN WITHDRAW AT ANY TIME WITH NO IMPACT ON CURRENT OR FUTURE CARE.

I

have read the information explaining the study entitled

Do midwives possess the knowledge, skills and confidence to care for acutely ill women within the tertiary hospital setting?

I have read and understood the information given to me. Any questions I have asked have been answered to my satisfaction. I understand I may withdraw from the study at any stage and withdrawal will not incur any penalty. I consent to have my interview tape-recorded, and transcribed. I understand that I will not be identified by name in the transcription. I agree that research data gathered from the results of this study may be published, provided that names are not used.

Dated day of 20

Signature

I, have explained the above to the

(Investigator's full name)

signatory who stated that he/she understood the same.

Signature

Appendix P Additional factors affecting midwifery confidence

Level of skill	Scope of practice	Level of autonomy in practice
Accessibility and availability of support	Physical resources	Professional credibility
Policies and guidelines	Communication processes	Recency of general nursing experience
Professional development opportunities	Departmental structure	Team work
Medical leadership, consistency and accountability	Perceptions or attitudes of fellow midwives and self	Collaborative networks
Leadership skills	Nature of health service	Assertion and advocacy skills
Critical thinking, insight and reflection	Context of current practice	Personal and professional attributes
Previous critical care experience	Organisational factors	Consolidation and application of theory and practice
Staffing	Rotation to other clinical areas	Silo based care

Appendix Q Maternity high-dependency course timetable

CONTENT / TOPIC	PRESENTER	TIME
25/1/2011		
WELCOME	EMMA MANOLAS	08.00 -08.15
PRE-COURSE TEST	EMMA MANOLAS	08.15 -09.00
EVIDENCE BASED PRACTICE AND USING RESEARCH	DR SARA BAYES A/PROFESSOR MIDWIFERY	09.00 -09.45
PHYSIOLOGICAL CHANGES OF PREGNANCY	DR MIKE PAECH ANAESTHETIST	10.15 -12.15
REGULATION OF CARDIAC OUTPUT AND BP	DR IAN MADDOX ANAESTHETIC REGISTRAR	12.45 -13.30
VASOACTIVE DRUGS	DR MIKE PAECH ANAESTHETIST	13.30-14.30
IRON INFUSION	DR ROGER BROWNING ANAESTHETIST	14.45 -15.15
INSERTION OF CENTRAL LINES	LINDA LONG CNC ANAESTHESIA	15.15 -15.45
CONTENT / TOPIC	PRESENTER	TIME
4/3/2011		
FLUID AND ELECTROLYTE	DR CELINE BABER	08.00 -10.00

REGULATION	ANAESTHETIC REGISTRAR	
BLOOD PRODUCTS AND MASSIVE HAEMORRHAGE	DR NOLAN MCDONNELL ANAESTHETIST	10.30 -12.30
RUPTURED ECTOPIC PREGNANCY CASE PRESENTATION	EMMA MANOLAS CLINICAL MIDWIFE / EDUCATOR	13.00 -13.30
COLLECTION, STORAGE AND TESTING OF BLOOD PRODUCTS	M.GALLAGHER-SWANN MEDICAL SCIENTIST	13.30 -14.15
HAEMOGLOBINOPATHIES	DR JANET HORNBUCKLE MFH CONSULTANT	14.15 -14.50
CARE OF VASCULAR ACCESS DEVICES	BOBBY KEMP CNC IV THERAPY	15.00 -16.00
CONTENT / TOPIC 18/3/2011	PRESENTER	TIME
HAEMODYNAMIC MONITORING	DR RICH KAYE ANAESTHETIC REGISTRAR	13.30 -14.30
HAEMODYNAMIC WORKSHOP	EMMA MANOLAS SUE ROSENBERG CLINICAL MIDWIVES	14.30 -16.30
CONTENT / TOPIC 1/4/2011	PRESENTER	TIME
MANAGEMENT OF ACUTE	DR STEVE DUNJEY	13.30 -14.30

CORONARY SYNDROMES	ED CONSULTANT	
ECG AND ARRHYTHMIA INTERPRETATION THEORY	MADELEINE CONNOLLY CNS CARDIOTHORACICS	14.30 -15.30
ECG WORKSHOP	MADELEINE CONNOLLY CNS CARDIOTHORACICS	15.30 -16.30
CONTENT / TOPIC 15/4/2011	PRESENTER	TIME
PRINCIPLES AND THEORY OF COAGULATION IN PREGNANCY	DR NOLAN MCDONNELL ANAESTHETIST	13.30 -14.00
CURRENT TREATMENT OF VTE	DR NOLAN MCDONNELL ANAESTHETIST	14.00 -14.30
AMNIOTIC FLUID EMBOLISM CASE PRESENTATION	JENNIFER SHANNON CLINICAL MIDWIFE, HDU	14.30 -15.00
THROMBOPHILLIA IN PREGNANCY	TRACY BROWN- NEAVES CLINICAL MIDWIFE, MFM	15.00-16.00
CONTENT / TOPIC 29/4/2011	PRESENTER	TIME
SEPSIS	FIONA FOXALL LECTURER	13.30 -14.30
ANAPHYLAXIS	DR NOLAN	14.30 -15.30

	MCDONNELL ANAESTHETIST	
VASOACTIVE DRUGS REVISION	DR IAN MADDOX ANAESTHETIC REGISTRAR	15.30 -16.30
CONTENT / TOPIC 13/5/2011	PRESENTER	TIME
BREASTFEEDING AND THE ACUTELY ILL WOMAN	LIZ ASHTON LACTATION CONSULTANT	13.30 -14.15
PTSD AND DEBRIEFING AFTER SEVERE TRAUMA	LIZ OXNAM CLINICAL PSYCHOLOGIST	14.14 -15.15
PATIENT'S EXPERIENCES	CONSUMERS	15.15 -17.00
CONTENT / TOPIC 27/5/2011	PRESENTER	TIME
CARDIAC DISEASE IN PREGNANCY	DR BARRY WALTERS OBSTETRIC MEDICINE	13.30 -14.30
CARDIOMYOPATHY IN PREGNANCY	JOANNE CLARKE CNC HEART FAILURE	14.30 -15.30
AUTOIMMUNE DISEASE IN PREGNANCY	DR SUZANNE MEHARRY OBSTETRIC REGISTRAR	15.30 -16.30
CONTENT / TOPIC	PRESENTER	TIME

10/6/2011		
HELLP / FATTY LIVER DISEASE	DR BARRY WALTERS OBSTETRIC MEDICINE	1330 -14.15
RESEARCH, MEDICATION AND TREATMENT TRENDS IN PRE-ECLAMPSIA	DR BARRY WALTERS OBSTETRIC MEDICINE	14.15 -15.00
NIV, CPAP, BiPAP AND HI-FLOW OXYGEN	FIONA FOXALL LECTURER	15.00 -16.00
CONTENT / TOPIC	PRESENTER	TIME
24/6/2011		
RESPIRATORY ASSESSMENT, ANATOMY AND PHYSIOLOGY	RACHEL MULLINS PHYSIOTHERAPIST	13.30 -14.30
INTERPRETATION OF CXR'S	NATALIE TRAN SNR PHYSIOTHERAPIST, ICU	14.30-15.30
FOCUS GROUP INTERVIEWS POST COURSE TEST	RESEARCH INTERNS	15.30 -16.30

Appendix R Maternity high-dependency course unit outline

Women and Newborn Health Service – King Edward Memorial Hospital

Contact Hours: Total = 40 hours (2 x 8 hour days & 8 x 3 hour sessions)

Course Facilitators: Emma Manolas, Nolan McDonnell & Janice Butt

Background

Midwives and medical practitioners are becoming increasingly involved with childbearing women who have the potential to become critically ill. In the United Kingdom the Safer Childbirth report (2007) recommended that all obstetric units should be able to provide some high dependency care. The report also stated that appropriately skilled midwifery, obstetric and anaesthetic staff should be available. A survey of midwives working in the Adult Special Care Unit at KEMH demonstrated a high level of interest in gaining more knowledge and skill in the care of women requiring high dependency maternity care.

Course Structure

This course has been developed for midwives working with women who have complex medical and obstetric problems requiring high dependency maternity care. The course content will be delivered by midwifery and medical practitioners and will have a strong focus on collaborative maternity care.

It is expected that course participants will be working concurrently in a maternity care environment that provides the opportunity to care for women with high dependency needs. This includes, but is not limited to the Adult Special Care Unit at KEMH.

There is a requirement for all participants to complete a post-course multiple choice answer test to evaluate improvements in knowledge.

The course involves attendance at a series of study sessions and the expectation that selected reading will be undertaken.

It is recommended that participants have attended, or plan to attend within the next 6-12 months, a range of associated emergency maternity and neonatal care sessions provided by KEMH. This includes: IN-TIME (obstetric emergencies); Neonatal Resuscitation Program; and Advanced Fetal Assessment. Attendance at the ALSO course and any other equivalent external courses is also encouraged as part of an appropriate Continuing Professional Development Program for midwives and doctors working in this area.

Midwives will be able to choose assessed or non-assessed course options. Negotiation is in progress to confirm that those who choose to complete the assessments will be eligible to apply for recognition of prior learning as a 25 credit option unit in the Master of Midwifery Course at Curtin University, which may also be applicable to other universities with equivalent units.

Syllabus (content of course)

Advanced knowledge of the pathophysiological basis of pregnancy related complications and relevant collaborative maternity care. Advanced knowledge of relevant physiology related to normal homeostatic function in pregnancy. Advanced clinical decision making and problem solving skills in evidence informed maternity care practice. Women's experiences of complex maternity care. Psycho-social aspects of midwifery scope of practice.

Unit Learning Outcomes

On successful completion of this course participants can:

1. Apply a theoretical knowledge of physiological and pathophysiological processes to interventions and therapy that maintain and/or restore homeostasis within a maternity clinical context.
2. Analyse a range of therapeutic and patient management approaches in high dependency maternity care.
3. Evaluate the effect of –social issues on complex clinical decisions and patient management practices.
4. Integrate research findings to employ an evidence informed approach to high dependency maternity care.

Result Type (Grading System)

X	%
	Pass/Fail

Assessment

Written Assessments

Type	Date Due	% Mark
Clinical Guideline Review (1,000 – 1,500 words)	Week 6 (13.4.12)	40
Critical Incident Analysis (2,500 – 3,000 words)	Week 10 (8.6.12)	60

Assessment task – Clinical Guideline Review (1000 - 1500 words)

Clinical guidelines are developed to assist the practitioner to make decisions about clinical care. They should include a thorough evaluation of the available evidence and provide rationales for best practice. The purpose of the Clinical Guideline Review is for the course participant to be able to analyse and discuss a clinical guideline that is relevant to an aspect of high dependency maternity care. You are required to analyse the evidence used to develop the clinical guideline and discuss the links made with the recommendations.

Assessment task – Critical Incident Analysis (2500 - 3000 words)

The purpose of the Critical Incident Analysis is for the course participant to explore the scientific base for making high dependency maternity care judgements. The concepts of reflection and scientific reasoning, which are integral to the process of case review, involve the challenging of assumptions and the exploration of alternative ways of thinking and acting in clinical practice.

Guidelines for Written Assignments

The APA (American Psychological Association) referencing style is to be used for all written assessment tasks.

Unit Texts (Recommended)

Foley, M.R., Strong, T.H. & Garite, T.J. (2011.). (Eds.). *Obstetric intensive care manual (3rd ed.)*. USA: McGraw Hill Medical

Greer, I.A., Cameron, I.T., Magowan, B., Roberts, R.N. & Walker, J.J. (2003). *Problem-based obstetrics and gynaecology*. Edinburgh: Elsevier.

Greer, I.A., Nelson-Piercey, C. & Walters, B. (2007). (Eds). *Maternal medicine: Medical problems in pregnancy*. Edinburgh: Elsevier.

Robson, S.E. & Waugh, J. (2008). *Medical disorders in pregnancy*. Chichester, UK: Blackwell publishing.

Wylie, L., & Bryce, H. (2008). *The midwives' guide to key medical conditions*. Edinburgh: Churchill Livingstone

Unit References

American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington: APA.

Royal College of Obstetricians & Gynaecologists. (2007). Safer Childbirth. Minimum standards for the organisation and delivery of care in labour. Retrieved 14 May 2010 from <http://www.rcog.org.uk/womens-health/clinical-guidance/safer-childbirth-minimum-standards-organisation-and-delivery-care-la>

High Dependency Maternity Care Course

MARKING GUIDE - CLINICAL GUIDELINE REVIEW

(Please attach a copy of this guide with your assignment)

Title: _____

<i>Introduction</i>		
<ul style="list-style-type: none"> • What is the scope and purpose of the guideline? 		5
<i>Content</i>		
<ul style="list-style-type: none"> • Does the guideline make use of appropriate evidence from relevant sources? 		5
<ul style="list-style-type: none"> • Is there an explicit link between the recommendations and the supporting evidence? 		5
<i>Recommendations and conclusions</i>		
<ul style="list-style-type: none"> • Are the recommendations specific and unambiguous? 		5
<ul style="list-style-type: none"> • What are the strengths and limitations of the guideline? 		5
<i>Presentation & Referencing</i>		
<ul style="list-style-type: none"> • Grammar / Spelling / Punctuation • Correct word length (1000 - 1500) • Correctly referenced / in text / end list according to APA Guidelines 		5
FINAL MARK		30

High Dependency Maternity Care Course

MARKING GUIDE – CASE STUDY

(Please attach a copy of this guide with your assignment)

Title: _____

<i>Introduction</i>		
<ul style="list-style-type: none"> Identify presenting complaint 		5
<i>Content</i>		
<ul style="list-style-type: none"> Present relevant history 		5
<ul style="list-style-type: none"> Discuss clinical assessment findings 		5
<ul style="list-style-type: none"> Specify investigations and discuss diagnostic findings 		5
<ul style="list-style-type: none"> Describe pathophysiology of underlying disease process 		10
<ul style="list-style-type: none"> Present an evidence based management plan including medications and further investigations 		10
<i>Recommendations and conclusions</i>		
<ul style="list-style-type: none"> Suggest possible outcomes and recommended follow up 		5
<i>Presentation & Referencing</i>		
<ul style="list-style-type: none"> Grammar / Spelling / Punctuation Correct word length (2500 - 3000) Correctly referenced / in text / end list according to APA Guidelines 		5
FINAL MARK		50

Appendix S Maternity high-dependency course expression of interest

MATERNITY HIGH DEPENDENCY COURSE

EXPRESSION OF INTEREST

We are seeking applications from Registered Midwives and Registered Nurses to attend the Maternity High Dependency Course commencing 25th February 2011.

Attendees must commit to AND attend ALL sessions as proposed on the timetable.

Please forward a brief expression of interest – one typed page maximum, and forward via email to Emma.Manolas@health.wa.gov.au

In your application, please address the following points:

- Short overview of your qualifications, clinical experience and where you are currently working.
- What you hope to gain from attending the course
- Why you should be selected to attend the course
- Please indicate whether you would like to opt for formal assessment during the course, which could be considered for recognition of prior learning for future study.

DATE	Length	PROPOSED TOPIC
25/2/2011	8hrs PAID	Physiological changes in pregnancy
4/3/2011	8hrs PAID	Fluid and electrolyte regulation and resuscitation
18/3/2011	3hrs	Haemodynamic monitoring
1/4/2011	3hrs	Acute coronary syndromes and ECG interpretation
15/4/2011	3hrs	Coagulation and VTE
29/4/2011	3hrs	Sepsis and the acute abdomen
3/5/2011	3hrs	Breastfeeding and the acutely ill woman
27/5/2011	3hrs	Cardiac disease
10/6/2011	3hrs	Respiratory assessment and CXR interpretation
24/6/2011	3hrs	Pre Eclampsia / HELLP