

# **Towards the Promotion of Normal Birth: Action Research in a Tertiary Maternity Unit in Singapore**

**Wei Ling, Leta LOH**

RN RM BHSc (Nurs), MNPS (Ed & Mgmt)

**A thesis submitted in fulfilment of the requirements for the  
degree of Doctor of Midwifery**

**Centre for Midwifery, Child and Family Health  
Faculty of Health  
University of Technology Sydney**

**2015**

## **CERTIFICATE OF ORIGINAL AUTHORSHIP**

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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## **Dedication**

In loving memory of 'Po po' (Ms. Hiew Mee Yong 1918-2011, Kuala Beliat, Brunei) and 'Ah ma' (Ms. Eu Kaiy Lin 1921-2011, Pulau Bukom Kechil, Singapore)

I dedicate this thesis to both my late maternal and paternal grandmas whom I miss dearly. They have been an inspiration to me in terms of their strength, generosity, courage and resilience – women whom I strongly admire. My grandmas were women of fortitude, who, in spite of the hardships they went through, lived their lives to the fullest. I have always been intrigued by the birth stories they shared openly with me; their own (home) birthing experiences, the births of fellow women in their community, and the practices of birth attendants during their time. My paternal grandma had three homebirths, gave birth to her first child during World War II and raised nine children. My maternal grandma had four children. Unfortunately, she had an accident which severed her right forearm not long after the birth of her fourth child, and she was able to use only her left hand thereafter. It was a difficult time for her; having to take care of the household and very young children.

My grandmothers were my number one fans since the day I became a nurse and later a midwife. They were of the opinion that the 'practice of care' in nursing and midwifery was virtuous, honourable, and therefore, one of the best jobs in the world. It was their strong encouragement and constant support that helped nurture and strengthen my passion in committing to this satisfying vocation of working in partnership with childbearing women over the last 15 years.

This special dedication also goes to my mum and all the women out there. You are the reason that makes my work on promoting normal birth worthwhile. The privileged partnership each of you afforded me over the years has deepened my understanding of and attentiveness to what matters to childbearing women, during this significant and transformative life event. It spurs me on to constantly strive towards achieving the quality maternity care women so rightly deserve.

## **ACKNOWLEDGEMENTS**

There seems to be an accepted sequence to writing the Acknowledgements to a doctorate but in the spirit of the thesis on changing practice and culture, I am going to defy convention and start by detailing the path of my doctoral journey and thanking people along the way. If I have let your name escape these pages, I apologise and would like to thank you now from the bottom of my heart. You know who you are.

It has dawned on me that my doctoral candidature has been somewhat akin to a childbearing woman's experience of her first pregnancy, labour and birth – the joys of discovering that one is pregnant, the ups and downs of the pregnancy experience, the labour process, and the birth of the baby. This metaphor is apt to describe the parallels of these journeys (albeit mine being a very lengthy one). Both of these journeys require the continuous support and encouragement of many people.

My doctoral candidature at the University of Technology Sydney (UTS) has been a 'significant' life-changing experience for me. I vividly remember the moments of joy upon receiving news from the University of my acceptance into the candidature – the best Christmas present ever! This candidature has afforded me the opportunity to meet many wonderfully inspiring people who have in their own unique way made it possible for me to take up the challenge to begin and complete this candidature. Thank you to UTS for affording me this opportunity and for the support and consideration along the way.

No amount of words can fully describe my appreciation of my candidature experience: the people I have met, the new things I have learnt, the experiences that I have had, both good and bad (the latter due mainly to technological challenges), and also the valuable new understanding of myself in the journey. I consider myself very lucky. Indeed, so many people have contributed to: the continuous support and encouragement through the challenges of my 'pregnancy and labour', and the eventual 'birth'! I would like to take time to thank each one of you here.

I would like to start by thanking my family. My family whose love and unfailing support have been the greatest blessing which I consider myself privileged to have. I want to thank you for your forbearance, and understanding – even when I was at my lowest point. It is your enthusiasm and encouragement that has spurred me on to chase my dream. Thank you for supporting all my decisions, even when I made choices that you might have thought unsuitable.

Partaking in this research journey has led me to meet extraordinary midwives, nurses, and birth activists from Australia, Canada, the UK, USA, and around the world; ‘champions’ dedicated to enhancing care for childbearing women. You work tirelessly in fortifying ‘links’ with women and maternity care providers, both locally and internationally, to encourage collaborative efforts, sharing, and discussions for the betterment of maternity services for the women at present and for the future generation of women to come. There are far too many of you to mention you all.

I am privileged that three of these extraordinary midwives: Professor Caroline Homer, Professor Nicky Leap and Professor Deborah Davis are in my supervisory committee. You have been my continuous ‘three-to-one’ support persons who have had ‘more than a hand’ in guiding and supporting me throughout my candidature: the research, writing, and eventual ‘birth’ of this thesis. Deb, you have given me invaluable guidance in igniting the initial idea, working with me to fine tune my thesis proposal and helping me through my candidature assessment. Nicky, I thank you for your belief in my work, and the perceptive comments that made me persevere in this long ‘labour’. Your sophistication with words is indeed valuable; a wordsmith skilfully moulding and shaping my writing with me in the final stages. Caroline, my principal supervisor, you deserve high praise for your abilities to keep me on the straight and narrow through the many writing of drafts in order to make them organised and properly managed. You are a role model to me in many ways; I admire your strong ethical principles, your strength, honesty, utmost clarity and insight. I am very lucky to have had your guidance, unwavering support and I thank you for believing in my abilities. Your editing skills have improved the quality of this thesis.

I wish to thank senior managers in the Ministry of Health (MOH) Singapore, National University Health System (NUHS), and National Healthcare Group (NHG) for approving support through the Health Manpower Development Programme (HMDP) that enabled me to further my knowledge and expertise as a midwife. My gratitude also goes to the National University Hospital (NUH), Singapore who kindly gave me the opportunity to spend time focused on completing this PhD.

My appreciation goes to the maternity team and Normal Birth Collaborative (NBC) workgroup members who embarked on this journey with me in an effort to enhance our care for all childbearing women coming through our service. I would like to acknowledge: the Head of Department, Professor EL Yong, for your support of this study in the maternity unit; the NUH senior management team, Professor Arijit Biswas, Professor Chong Yap Seng, A/Professor Lee Siu Yin, Dr Emily Ang, Ms Tan Chwee Eng, Ms Chan Yah Shih; the midwives, the nurses and doctors in the unit who believed in the value of this study. It is your collaborative efforts and involvement, in one way or another, that has enabled us to work on initiatives that encourage a safe and satisfying birth for women. I am indebted to Professor PC Wong for your wisdom and astuteness in providing me with generous mentorship throughout my academic journey and career.

Medical students from the National University of Singapore (NUS) Yong Loo Lin School of Medicine are to be thanked for your enthusiasm and interest in the Promotion of Normal Birth (PoNB) study and for taking time to partake in some of the planning activities. I thank those of you who became 'models', simulating women in labour in different positions, for the photographs that were utilised as education tools to encourage mobility for women in labour. I am thankful to Jasline and Brandon, for all their help with preparation leading up to the implementation phase of the study.

Special thanks also go to Di Bustamante of ParentLink Singapore. I am most grateful for your assistance in facilitating the possibility of interviews with private childbirth educators, doulas, and women in the first phase of the study.

And finally – but most importantly – I especially want to thank the women who kindly agreed to participate in the study. Thank you for taking time to share your vision for the approaches to care that you long for, and for your valuable feedback and ideas on the provision of maternity services that should be made available, so that other childbearing women can have a positive experience of birth.

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## **ABBREVIATIONS**

ACNM	American College of Nurse-Midwives
AMP	Anonymous Maternity Providers survey
AR	Action research
BFHI	Baby Friendly Hospital Initiative
CS	Caesarean section
CST	Critical social theory
EFM	Electronic fetal monitoring
FG	Focus group
MANA	Midwives Alliance of North America
NACPM	National Association of Certified Professional Midwives
NBC	Normal Birth Collaborative workgroup
NICU	Neonatal Intensive Care Unit
NCT	National Childbirth Trust
NHS	National Health Service
PFL	Positions for Labour intervention
PoNB	Promotion of Normal Birth Study
RCM	Royal College of Midwives
SOGC	Society of Obstetrician and Gynaecologists of Canada
TOL	Trial of labour
VBAC	Vaginal birth after CS
WHO	World Health Organization

## **ABSTRACT**

### *Background*

Strategies to promote normal birth are a priority in many high-income countries, where the increasing escalation of caesarean section is an important health concern. There are serious implications associated with caesarean section (and the consequential decrease in normal births) for childbearing women and their families as well as maternity services. Limited information, however, is available on effective and sustainable approaches to address this issue. In particular, research on strategies to promote and support normal birth in tertiary maternity units, where most women in high-income countries give birth to their babies, is scarce.

The Promotion of Normal Birth (PoNB) study focused extensively on working towards the promotion of normal birth and changing the culture within a tertiary maternity unit in Singapore. The study was the country's first hospital-supported effort aimed at promoting normal birth and reducing caesarean section rates.

### *Aims*

The PoNB study was designed to explore how the promotion of normal birth could be encouraged and embedded in the culture within a hospital maternity unit. The study aims were to: (1) promote maternity care practices that support normal birth in a tertiary maternity unit in Singapore; (2) encourage participation among providers of maternity care (midwives, nurses and obstetricians) and consumers (women, who use the service, childbirth educators and doulas), in working together (co-creation) as a 'team' through systematic problem-solving processes to promote normal birth; (3) develop a culture within the tertiary maternity unit that is supportive of normal birth; and (4) develop understanding to inform future developments in the promotion of normal birth that might be able to be applied in other similar settings (i.e. tertiary maternity contexts).

### *Method*

This work was developed and implemented within an Action Research (AR) framework, guided by the philosophy of critical social theory. Six midwives (including the primary researcher) and two obstetricians from the hospital formed the Normal Birth Collaborative

(NBC) action research workgroup. Thematic content analysis of focus groups and descriptive statistical analysis of surveys as well as clinical outcomes informed the action research. In total, over 600 participants (maternity care providers, women, childbirth educators and doulas) were involved in the study.

### *Findings*

An AR framework enabled maternity service staff and consumers to engage in a collaborative process that informed the successful identification, planning and evaluation of a number of initiatives to promote normal birth in the maternity unit. Improvements were made when addressing a number of key characteristics of labour ward culture that were identified as important areas for change. In particular, the Maternal Positions for Labour initiative (PFL) was successful in raising awareness about the identified need to provide an appropriate environment and birthing aids so that women could be supported to move around in labour and adopt positions of their choice. Focus groups with the NBC workgroup members as well as PFL surveys showed that both women and staff members appreciated the opportunities afforded by the intervention.

### *Implications for practice*

The findings from the PoNB study have the potential to impact significantly on efforts to promote normal birth and improve maternity care in Singapore, as well as in similar organisations internationally. The study reinforces the importance of collaboration between maternity service providers and consumers in all phases of changing practice.

## **Presentations related to this research**

The presentations associated with this research study are listed below, starting with the most recent. I have also presented at the bi-annual University of Technology Sydney (UTS) Research Student Forum.

Loh, W. L. L. 'Maternal positions for labour (PFL) project', *Maternity Forum*, National University Hospital, Singapore, April, 2012.

Loh, W. L. L. 'Focus on normal birth and reducing caesarean section rates to a safe minimum: Introducing the Normal Birth Collaborative (NBC) workgroup', *Obstetrics and Gynaecology Grand Round*, National University Hospital, Singapore, April, 2012.

Loh, W. L. L. and Homer, C. S. E. 'Managing engagement: Initial phase of an action research project', *15th East Asian Forum of Nursing Scholars (EAFONS)*, Furama Hotel, Singapore, February, 2012.

# CHAPTER 1: INTRODUCTION

## 1.1 Introduction

Childbirth is a significant event in women's lives. Midwives' scope of practice frames this transformative life event as a natural, healthy and normally occurring process for women (Downe 2009; ICM 2008; Kennedy & Shannon 2004). The midwifery philosophy encompassing woman-centred, midwife-led, continuity of care models has been shown to improve the maternal and infant health outcomes (Renfrew et al. 2014; ten Hoop-Bender et al. 2014). Midwifery models of care have also been shown to optimise best practices associated with normal labour and birth (Homer et al. 2014; Sandall et al. 2013).

The World Health Organization (WHO 1999, p. 4) defines normal birth as 'Spontaneous in onset, low-risk at the start of labour and remaining so throughout labour and delivery; the infant is born spontaneously in the vertex position between 37 and 42 completed weeks of pregnancy; and after birth, mother and infant are in good condition'. While this recommendation is broadly supported by international organisations (*see below*), many have suggested that the definition of normality is not standardised (Davis 2010; Gould 2000). For example, major organisations such as the National Health Service (NHS) Institute for Innovation and Improvement in the United Kingdom (UK) (2006); National Childbirth Trust (NCT), Royal College of Midwives (RCM), Royal College of Obstetricians and Gynaecologist (RCOG) (MCWP 2007); the Society of Obstetrician and Gynaecologists of Canada (SOGC) (2008); as well as the American College of Nurse-Midwives (ACNM), the Midwives Alliance of North America (MANA), and the National Association of Certified Professional Midwives (NACPM) (2012) have made attempts to define the term 'normal' in normal birth, with variations about what it does or does not include. Clearly, normal birth has a different meaning in differing countries and maternity

systems. However, despite the difficulties of definition and comparison, there has been increasing recognition that the incidence of normal (physiological) birth is decreasing in many countries worldwide (Betrán et al. 2007; WHO 2014).

A World Health Organization's (Lumbiganon et al. 2010) report on a global survey project – implemented in the Americas (2005), Africa (2005), and Asia (2007–08), revealed exceedingly high caesarean section (CS) rates within westernised health facilities, particularly in Latin America. Although CS rates in Asia are thought to be lower than those in Latin America (overall rate of CS in Asia is 27.3%), the rates of CS, both in developing and developed countries have increased rapidly over the last two decades. Singapore, along with other countries such as China, Vietnam, Thailand and Sri Lanka, has experienced an unprecedented CS rate increase in recent years with an overall rate of 31% in Singapore (Ganesan 2004); 46.2% in China, 35.6% in Vietnam, 34.1% in Thailand, and 30.6% in Sri Lanka respectively (Lumbiganon et al. 2010).

Several reasons have been put forth in an attempt to explain the rise in CS rates (Barber et al. 2011; Gamble et al. 2007; Lauer et al. 2010; Wagner 2000) and the consequent decrease in the rate of normal births. The reasons include personal, cultural and, or obstetric issues (Karlstrom, Lindgren & Hildingsson 2013; Kingdon, Baker & Lavender 2006; Mazzoni et al. 2011). For instance, some childbearing women seem to request CS because of perceived safety for both for themselves and their baby (McCourt et al. 2007) or fear associated with labour and vaginal birth (Fenwick et al. 2014; Pang et al. 2008). Whilst it is true that access to operative births is an important part of any safe maternity service, the widespread increase in rates of CS has indeed raised significant questions on its prevalence and associated risks for healthy women (Lavender et al. 2012; McAra-Couper, Jones & Smythe 2010). There are also studies to suggest that the increase in rates of CS does not necessarily lead to improved maternal or neonatal outcomes and could instead be associated with harm and significantly higher health care costs for childbearing women and their families (Deneux-



Tharaux et al. 2006; Gibbons et al. 2010; Hansen et al. 2008; Karlstrom, Lindgren & Hildingsson 2013; Villar et al. 2007).

A multi-country analysis conducted in 373 selected health facilities to investigate the intrinsic risk of CS and the relationship between CS and severe maternal outcomes (Souza et al. 2010) has shown substantive evidence of increased risk of maternal morbidity associated with medically unnecessary CS. In addition, compared with women who had a spontaneous vaginal birth, those who had CS (both elective and emergency) had greater risks of bleeding, infection, anaesthetic complications, postpartum thrombo-embolism and postpartum depression. Other studies have found that their babies have an increased likelihood of adverse perinatal health outcomes which would require longer hospital stay (Häger et al. 2004; Levine et al. 2001; MacDorman et al. 2008). Clearly, these findings have implications both for childbearing women, as well as providers of maternity care.

Normal birth is associated with a number of physiological benefits for both mothers and infants in terms of birth experience and outcomes. These include improved maternal satisfaction (Leap et al. 2010), earlier and more successful breastfeeding (Brown & Jordan 2013; Rowe-Murray & Fisher 2002), and improved maternal-infant bonding (Moore et al. 2012).

In the last few decades, evidence suggests the misuse of modern technology especially in high-income countries interferes with the normal (physiological) process of labour and birth (Sakala & Corry 2008). It is suggested that more technology does not necessarily translate to better outcomes. Instead, the high dependence on technology such as continuous electronic fetal monitoring (EFM) (Alfirevic, Devane & Gyte 2006), and using oxytocins and/or amniotomy to induce or accelerate a labour (Frigoletto 2007) is considered an obstacle to achieving safe and effective care in optimising a woman's chances of a normal birth. The routine use of these medical interventions possibly influence and

restrict normal movement or nourishment of the labouring woman (Yount & Garland 2012), which in turn potentially affects the normalcy of the labour and birth process.

Many groups support and promote the non-interventional (or minimal intervention) approach for normal childbirth. Initiatives to promote normal birth have been set up in many countries in an effort to preserve normal birth and curtail the currently high (and often still rising) CS rate. For example, in New South Wales (NSW), Australia the 'Towards Normal Birth' policy directive was launched to promote normal vaginal births and lower the rates of caesarean section (CS) (NSWH 2011). Similar policies have been promoted in the United States of America (USA) and UK. Namely, the *Healthy People 2020* to reduce CS births among low-risk first time mothers at full term (DoHHS 2012), the *Making Normal Birth a Reality* to encourage a positive focus on normal birth (MCWP 2007; Werkmeister et al. 2008), as well as the United Kingdom's National Health Service (NHS) Institute for Innovation and Improvement programme *Focus on Normal Birth and Reducing Caesarean section Rates* (Baldwin et al. 2010; NHS 2006, 2007).

Despite these factors, the promotion of normal birth, particularly in tertiary maternity settings, has not been studied extensively and limited information is available on approaches that successfully address the issue in this context. Current strategies have yet to fully explore the options and possibilities regarding the involvement, participation and collaboration of stakeholders<sup>1</sup> ('collaborative' practice) and the contribution this can make to effecting practice change in maternity services. No research study was found that exclusively examines an approach that encourages and considers the 'collective' participation and collaboration among stakeholders in the promotion of normal birth in the

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<sup>1</sup> Stakeholder(s) – a person or group with a direct interest or involvement in maternity care. This can include people in the following broad groups: women as maternity service users, childbirth educators, doulas, and maternity care providers (doctors, midwifery and nursing staff).

tertiary maternity setting. Therefore, there is a gap in the literature that this research addresses.

## **1.2 Background to the Study**

As this study was undertaken in Singapore, a brief understanding of the context of maternity care in the country is necessary. This section provides an overview of the maternity service provision, including: a brief demographic description of the country; and maternity statistics pertinent for the study in working towards the promotion of normal birth. Discussion will focus on the maternity trends and contemporary birthing culture of childbearing women in Singapore, as well as the impact this has on the motivation for the study.

### ***1.2.1 The Singapore Context***

The Republic of Singapore is an island-state in Southeast Asia. It lies off the southern tip of the Malay Peninsula with a land area of 716.1 sq km. Approximately 5.4 million people live in Singapore of which almost two million are foreign-born (see *Table 1-1*). The ethnic composition of resident population consist of predominately Asians; 74.3% of the population is Chinese, with significant minorities of Malays (13.3%), Indians (9.1%), and Eurasians/others (3.3%) (SDS 2014).

Multiculturalism is promoted in Singapore and there are four official languages spoken; English, Malay, Mandarin, as well as Tamil. The literacy rate is 96.5% for those 15 years old and above, and half of the resident population aged 25 years and over had post-secondary education in 2013. Among residents aged 25-34 years in 2013, 51% had attended university education (ICA 2013).

**Table 1-1: Singapore Population Statistics**

	<b>2006</b>	<b>2010</b>	<b>2012</b>	<b>2013</b>
<b>Land Area (sq km)</b>	699.5	712.4	715.1	716.1
<b>Total Population (approx '000)</b>	4,401,400	5,076,700	5,312,400	5,399,200
<b>Birth Rate (per 1,000 population)</b>	10.3 births	9.3 births	10.1 births	9.3 births
<b>Life Expectancy at Birth</b>	80.3 years	81.7 years	82.1 years	82.5 years
<b>Maternal Mortality Rate (per 100,000 live-births)</b>	10	3	2	3
<b>Infant Mortality Rate (per 1,000 live-births)</b>	2.6	2	1.8	2

Source: Singapore Department of Statistics (SDS 2014)

In terms of the healthcare system, Singapore ranks sixth out of 191 countries on overall health system performance in the World Health Report (WHO 2000). The WHO assessment was based on five indicators: overall level of population health; health inequalities (or disparities) within the population; overall level of health system responsiveness (a combination of patient satisfaction and how well the system acts); distribution of responsiveness within the population (how well people of varying economic status find that they are served by the health system); and the distribution of the health system's financial burden within the population (who pays the costs).

A 2012 report from the World Health Organization ranked the country first for its low infant mortality; second for its maternal mortality; as well as ninth for the country's life expectancy (82.1 years) at birth (WHO 2012) (*Table 1-1*). These records were achieved against a background of comparatively low expenditure on health care. In 2011, total expenditure on health care was reported to be 4.2% of gross domestic product (GDP), with the public portion of health spending in Singapore estimated at 33.3% (WHO 2014). One of the reasons attributing to

Singapore's healthcare achievement could be due to its geographical nature (land area) and population (Gauld 2012). Singapore is one of the most densely populated countries in the world. Residents live in close proximity to one another and may have benefited from the concentration of services in a small number of hospitals and other healthcare facilities.

Singapore offers universal healthcare coverage to citizens via a three-tier financing system – the Medisave, MediShield, and Medifund (MOH 2013a). Medisave involves a compulsory medical savings account scheme through monthly individual contributions from a part of their wages and employer contribution, which allows Singaporeans to pay for their medical treatment. MediShield is a medical insurance scheme which allows deductibles and co-payments from the Government for major illness. Lastly, Medifund is a medical endowment fund set up to serve as a safety net for Singaporeans who cannot afford to pay their medical bills despite the subsidies, Medisave and MediShield. There is strong emphasis however, on shared responsibility between the Singapore Government and users of the healthcare system, where public subsidies go alongside co-payments by patients that vary according to their means (i.e. income and choice of wards) (Gauld 2012; MOH 2013a).

### ***1.2.2 History of maternity service provision in Singapore***

Until 1950, childbirth in Singapore occurred largely in the family home or community where women laboured and gave birth (Tan & Chern 2003). The women were cared for, and supported by, midwives or birth attendants in their community. However, throughout the past century, a strong drive towards an industrial model of childbirth (thought to be appropriate and successful at that time) has transferred the care and support of childbearing women from the family home or community into large medical hospitals in Singapore, as in much of the world. This global movement was described by sociologist Barbara Katz Rothman (1982) and was associated with changing practices relating to childbirth

that included a shift from midwife-led, home-based care to consultant-led care controlled by obstetricians and medical practitioners in hospital-based maternity units. This is an important part of the context that gave rise to the contested nature of the current state of maternity care which impacts on normal birth.

Developments in Singaporean maternity care have been heavily influenced in the last 50 years by global trends in industrialised countries, including Australia, Canada, China, the United Kingdom (UK) and the United States of America (USA), where increasing hospitalisation and the active management of labour have been promoted as 'the way forward' (Gao, Ronsmans & Lin 2009; Hunt & Symonds 1995). These influences and modernisation played a significant role in establishing obstetric birthing as the standard of care in Singapore (Lean 1960; Tow 1963; "Hospital gets maternity forecast aid" 1966) with the changes in childbirth being a microcosm of larger social and political transformation that was going on during that time. State ideologies in the 1960s favoured a move towards a 'technological' form of childbirth reinforced by relocation, urbanisation and increased access to medical facilities that reduced considerably the demand for home birth. The decline in prestige and the withdrawal of support for community-based midwifery care left women in Singapore with no choice but to give birth in a hospital in the 1970s, since no obstetrician would by this time, be willing to attend them at home. Evidence of these developments can be found in newspaper articles, with some journalists identifying that: "Some [women] still prefer the midwives" (1979).

As in other countries, in Singapore, developments in healthcare provision and the hospitalisation of birth contributed to the growing acceptance of medical care in childbirth by the public at large. These factors have seen the majority of women giving birth in mainstream labour wards situated in hospital settings, and frequently in larger tertiary hospitals. These hospitals provide obstetric, anaesthetic and neonatal services, and are supported by technologies such as cardio-toco-graphic (CTG) machines [also known as electronic fetal monitoring

(EFM)] and ultrasound scanning devices, among other services. Because of the radical shift in the hospitalisation of childbirth, primary care of childbearing women by midwives or birth attendants in the community without the support of these services and technologies were subsequently sidelined and disregarded in favour of hospital-based care. This shift in childbirth from community-based (midwife-led) care to hospital-based (obstetrician-led) care led to a change in societal views where hospitalisation and medicalised care began to be seen as valid and desirable. Obstetricians have replaced midwives as the lead maternity care provider in Singapore.

Hospital birth is the standard of care legislated by the state government in Singapore. State health policy and legislation in the provision of maternity services helped secure the position of doctors and their involvement in childbirth. Community (independently practising) midwives were increasing seconded to practice in institutions, and required to work under the supervision of a medical practitioner. With this move, domiciliary (home-based) care was gradually discontinued (Tan 2003).

### ***1.2.3 Present maternity service provision in Singapore***

In 2013, 39,720 live births occurred in Singapore (ICA 2013). In the same year, the Singapore Nursing Board (SNB) a regulatory authority for nurses and midwives in Singapore, reported that there were 1,385 midwives registered to practice (registered nurses with midwifery qualifications and direct entry midwives) (SNB 2013). The number of midwives decreased from previous figures of 1,615 in 2010 and 1,507 in 2012 (*Table 1-2*). This midwifery shortage meant that continuity of care and continuous support in labour was difficult for women to access in Singapore. *Table 1-2* provides an overview of the *Singapore Maternity Statistics* as well as the average costs in both the private and public hospitals.

**Table 1-2: Singapore Maternity Care Statistics (1)**

	<b>2004</b>	<b>2012</b>	<b>2013</b>
<b>Live Births</b>	37,174	42,663	39,720
<b>Stillbirths</b>	115	111	80
<b>Mother's Mean Age at first Birth</b>	29.3 years	30.2 years	30.3 years
<b>Number of Registered Midwives</b>	1,615*( for 2010)	1,507	1,385
<b>Average CS Rates</b>			
- Private Sector Hospitals	35.3%*(2001-2003)	38.4%	37.3%
- Public Sector Hospitals	25.1%*(2001-2003)	26.7%	26.6%
<b>Average Cost of Birth</b> (50 <sup>th</sup> Percentile Bill Size)	(2001-2003)		
- Private Sector Hospitals			
• Vaginal Birth	\$2,718 to \$4,029	\$3,399 to \$7,367	\$3,763 to \$8,216
• Caesarean Section	\$5,328 to \$6,381	\$6,029 to \$11,903	\$7,023 to \$12,583
- Public Sector Hospitals			
• Vaginal Birth	\$1,970 to \$3,624	\$828 to \$4,623	\$790 to \$4,814
• Caesarean Section	\$4,331 to \$5,324	\$1,190 to \$7,537	\$1,128 to \$7,624
<b>Average Length of Hospital Stay</b>	(2001-2003)		
- Private Sector Hospitals			
• Vaginal Birth	2.07 to 2.59 days	2.10 to 2.50 days	2.00 to 2.60 days
• Caesarean Section	3.23 to 3.53 days	2.80 to 3.50 days	2.80 to 3.60 days
- Public Sector Hospitals			
• Vaginal Birth	1.94 to 2.51 days	1.80 to 2.40 days	1.80 to 2.60 days
• Caesarean Section	3.26 to 4.09 days	3.00 to 4.50 days	3.00 to 4.00 days

**Source:** Singapore Department of Statistics (SDS 2014); Singapore Nursing Board (SNB 2013); Immigration and Checkpoint Authority (ICA 2013); and Ministry of Health, Singapore (Ganesan 2004; MOH 2014a, 2014b, 2014c)



At a national level, the intervention rates in childbirth such as CS are significantly higher in the private sector hospitals. The average rates of CS reported for 2013 were 37.3% in the private compared with 26.6% in the public sector hospitals (MOH 2014a). However, following further comparison with published data from 1994 (Ganesan 2004), CS in Singapore was found to have increased by over 10% (from 16% in 1994 to 26.6% in 2013) for women in public sector hospitals and approximately 4% (from 34% in 1994 to 37.3% in 2013) for women in private sector hospitals. The marked increase in CS over the last two decades with a corresponding decline in the rates of normal vaginal births specifically in the public sector hospitals is a cause for concern. The cost (of birth expenses) to the woman of the rising intervention in childbirth is also significant, with longer average length of hospital stay for women who undergone CS (MOH 2014c) (*Table 1-2*).

A Medisave Maternity Package (MMP) scheme provides women with subsidies covering birth expenses (i.e. antenatal consultation and ultrasound) in both public and private hospitals (MOH 2013b). Under the MMP, women may withdraw up to S\$2,550 (over 3 days) for a vaginal birth and up to S\$4,400 (over 4 days) for a CS starting from the birth of their first child. Medisave grants are also provided for newborns to support parents with their children's healthcare needs. Recent additions to the MediShield scheme in March 2013, includes subsidies for parents of newborns with congenital and neonatal conditions (MOH 2013b).

The approach to maternity care in Singapore is based upon a medical model and an obstetrician remains the primary carer. There are no birth centres, regulated homebirths nor midwifery-led care available to childbearing women in Singapore. In addition, there are no midwives registered to attend labour at home. The national statistics on place and attendant at birth – the *Singapore Maternity Statistics* (*Table 1-3*) reveal that majority of births (92.4%) in 2013

were attended by doctors (i.e. obstetric specialists, registrars, medical and house officers).

**Table 1-3: Singapore Maternity Care Statistics (2)**

<b>Place of Birth and Attendants at Birth</b>	<b>2007</b>	<b>2010</b>	<b>2013</b>
<b>Total Births</b>	39,490 births	37,967 births	39,720 births
<b>Place of Birth</b>			
- Private Sector Hospitals	22,951 births	22,546 births	23,919 births
- Public Sector Hospitals	16,408 births	15,312 births	15,646 births
- Other Locations (i.e. home, ambulance)	131 births	109 births	155 births
<b>Primary attendant at birth</b>			
- Doctor in Private Sector Hospitals			23,922
- Doctors in Public Sector Hospitals			12,818
- Midwife or Nurse in Public Sector Hospitals			2,829
- Midwife or Nurse in Private Sector Hospitals	(Not available)	(Not available)	25
- Ambulance Officer / Paramedic			12
- Birth without doctor, midwife or nurse			114

**Source:** Immigration and Checkpoint Authority (ICA 2013); and Ministry of Health, Singapore (MOH 2014c)

Women who give birth in private hospitals are directly under private obstetric care. In 2013, 60.2% (n=23,919) of women gave birth in private hospitals with majority of their births attended by doctors. The public hospitals saw 39.4% (n=15,646) of the total births, with the remaining 0.4% (n=155) of women who gave birth in other locations, possibly in their residence or en route to the hospital. Midwives and nurses in the public sector hospitals seem to be better

placed to care for childbearing women (18.1%, n=2,829) than their counterparts in the private sector hospitals (ICA 2013).

The maternity service within a public tertiary hospital, where the PoNB study took place, attends, on average, 2,900 women per year, which accounts for about 8.5% of total births in Singapore (MOH 2014c). The unit provides care to women in both low and high-risk pregnancies, with the availability of obstetric, anaesthetic and paediatric care including many other support services and technologies, such as medical practitioners on site, electronic fetal monitoring (EFM), ultrasound scans, pathology and radiology services.

This service follows an obstetric-led model. Obstetricians oversee the clinical management during intrapartum and usually attend the birth to 'deliver' the baby, although this is occasionally undertaken by the midwife in attendance. The women whose births were attended by midwives were mainly those who receive a subsidy for their maternity care. Unpublished birth statistics in the study unit for 2012 reveal a normal birth rate of 60.3%, assisted vaginal birth of 6.5% and CS rate of 32.9%. Active management of labour is common and there is a routine use of electronic fetal monitoring (EFM) in the unit where all women in established labour are attached continuously to EFM. The epidural uptake is approximately 41.6% (Unpublished internal data for 2012), and women in the unit commonly stay for an average of 2.2 days after a vaginal birth and 3.3 days after CS (MOH 2014c). The neonatologists work closely with obstetricians in the unit and they oversee the monitoring and provision of care for the newborns.

The study site maternity unit already had a commitment to making improvements in order to facilitate choice for women wanting to have a birth without medical intervention or pharmacological pain management; a 'natural birth programme' had been in place for over eight years (since 2006) before the study commenced. All midwives in the delivery suite are trained in the facilitation of natural birth, to cater for demand from birthing women. Also,

changes to the Obstetrics and Gynaecology (O & G) Department management and leadership in 2010 had renewed the unit's focus and motivation for supporting women seeking to give birth without interventions. There were discussions within the unit for developments in the provision of a postnatal home visiting service, the implementation of the Baby Friendly Hospital Initiative (BFHI) (WHO & UNICEF 2009), as well as the possibility for women to access one-to-one midwifery continuity of care and support.

The general consensus among midwives in this unit was that more should be done to facilitate normal birth. This provided a 'wave' of opportunity to enhance normal birth promotion; to craft timely initiatives in the study environment so as to encourage a culture that is more woman-centred, evidence-based and physiologically focused. These supportive practices that meet women's needs during the experience of childbirth can be beneficial for the provision of safe and high quality care for women and their babies. This was therefore the impetus for, and subsequent focus of, this doctoral study.

### **1.3 Aims of the Research**

As a result of these issues, the aims of the PoNB Study were:

- To promote maternity care practices that support normal birth in a tertiary maternity unit in Singapore.
- To encourage participation among providers of maternity care (midwives, nurses and obstetricians) and consumers (women, who use the service, childbirth educators and doulas), in working together (co-creation) as a 'team' through systematic problem-solving processes to promote normal birth.
- To develop a culture within this tertiary maternity unit that is supportive of normal birth.
- To develop understanding and inform future development in the promotion of normal birth that may be able to be applied in other similar settings (i.e. tertiary maternity context)

The following overarching question framed the PoNB study:

- How can the promotion of normal birth be encouraged and embedded in the culture in a tertiary maternity unit in Singapore?

#### **1.4 Rationale and Significance of Research**

It has been previously suggested that research on approaches that understand the nature of supporting and promoting normal birth within the intricacies of contemporary maternity is warranted (Kinnear 2011; Ruiz & Limonero 2014). There is an urgent need for strategies that look into alternate working models to uncover effective and sustainable means in the promotion of normal birth and to improve the quality and safety of maternity care (Dahlen et al. 2014; ten Hoop-Bender et al. 2014).

This research is useful to further understand the ways in which normal birth can be promoted in a tertiary maternity setting. Findings from the study will have the potential to provide knowledge and workable 'steps' for other maternity units facing similar challenges in working towards promoting normal birth in their own unique context.

Crucially, such an approach also presents an opportunity to work with stakeholders, within differing models of care, and has the potential to achieve much for women, babies, families and maternity care staff within the complexity of contemporary maternity services. These issues provide the underpinning motivation and rationale for this study.

#### **1.5 My position in the research**

Professional and personal experiences shape the researcher's views of the world and may influence the research design, data collection, and analysis (Costley, Elliott & Gibbs 2010; Moon & Blackman 2014). I am mindful that my experiences

as a midwife, educator and researcher in the study site drove my motivation and may have had a strong influence on the work undertaken for this thesis.

A personal story about how my interest in supporting women to have a normal birth developed sheds light on the personal and professional development that took place for me in the course of undertaking this study. This provides a starting point for reflecting on my motivation to make change happen as well as considerations of how this may have affected the way colleagues and participants engaged in the study.

I qualified as a midwife in 2002. Since then, I have worked in the birthing suite of the second largest public tertiary maternity unit in Singapore. As a midwife in Singapore, I only had the option of practising in hospital-based settings. Although maternity care is mainly obstetrician-led, as midwives, we provide care and attend the births of women who have not booked a private obstetrician. These were mainly women who received a subsidy for their healthcare. Despite the restrictions of working in this way, I had always had this 'inkling' that there was more to maternity care than just 'performing deliveries'.

The opportunity came, when I enrolled in a Master's program at UTS in 2005. Although I was pursuing a non-midwifery related degree at the time, I felt privileged to be introduced to a renowned team of midwifery academics in the faculty. Aware of my keen interest in midwifery and the practices of midwives in Australia, they invited me to midwifery talks and information sharing sessions that were held both at UTS and externally. It was through this sharing with midwives who had a long history of promoting woman centred care and normal birth, both in Australia and internationally, that I began to realise that maternity services in Singapore needed to 'keep up' with the evidence. I became aware that there was much to be done in supporting women in Singapore to have positive experiences throughout their pregnancy, labour and birth. This was the start of a journey that would involve me engaging with colleagues in the

maternity unit in Singapore and local consumers in order to find ways to improve maternity care and promote normal birth.

In 2008, I became a midwifery educator in the maternity unit in Singapore. This was the first time that a midwifery educator position was in place and I was able to work with colleagues to establish clinical placements and a range of education initiatives in the unit for students, newly qualified midwives and maternity unit staff. This role increased my ability to influence the promotion of normal birth in the unit and there was a commitment to facilitating choice for women in the unit who wanted to give birth without medical interventions.

My role and experience as a midwifery educator meant that I was in an ideal position to engage with colleagues in this study and form an action research group to promote normal birth within the unit. Members of staff in the unit were used to seeing me in an educator (Level 2 - leadership) role and were already aware of my passionate commitment to promoting normal birth. I also had established working relationships with staff and a degree of familiarity and trust, including with obstetric colleagues and was in touch with a network of local childbirth educators and doulas. The implications of this 'insider' role (Burns et al. 2012; McDermid et al. 2014; Taylor 2011) for the research is further discussed in *Chapter 6*.

## **1.6 Organisation of the thesis**

The thesis is organised into *six* chapters, of which this is the first. A background to the study is provided in *Chapter 1*, where maternity care, midwifery and issues around normal birth in the Singapore context have been briefly outlined. These issues are discussed in relation to the study aims regarding the promotion of normal birth in a tertiary maternity unit in Singapore.

*Chapter 2* appraises the contemporary literature on the health consequence of CS and normal vaginal birth for both women and their babies. This includes topics on the benefits of normal birth and the risk (adverse effects) of CS. The chapter proceeds to discuss factors that influence normal birth and the provision of care practices that have the potential to promote normality in labour and birth. Essentially, this chapter discusses why normal birth matters and addresses efforts to support and optimise a woman's chance of achieving normal birth.

*Chapter 3* provides an outline of the methodology of the study. It presents the theoretical framework that was employed in this research project: action research (AR) guided by the philosophy of critical social theory (CST). The ways in which this framework informed all stages of the research are explained.

*Chapter 4* is the methods chapter in which the research design, including relevant ethical issues and methods employed are presented. The way in which Parkin's (1999) model of action research and managing change was used in the Promotion of Normal Birth (PoNB) study is introduced here. This includes a description of the various ways in which data were collected and analysed.

*Chapter 5* presents the results of the study. Firstly, it reports on the pre-intervention baseline data, specifically findings related to: the Pre-intervention Anonymous Maternity Providers (AMP) survey, focus groups (FGs) with women, childbirth educators and doulas; as well as maternal clinical outcomes *before* the Maternal Positions for Labour (PFL) intervention. Lastly, the chapter reports on post-intervention data, specifically findings from the Post-intervention Anonymous Maternity Providers (AMP) survey, focus group (FG) with the Normal Birth Collaborative (NBC) workgroup members, as well as maternal clinical outcomes *after* the Maternal Positions for Labour (PFL) intervention.

*Chapter 6* will discuss the implications of the findings in relation to the study questions and relevant literature. Limitations of the study, implications for



practice and recommendations regarding normal birth promotion are highlighted in this final concluding chapter.

### **1.7 Summary**

This chapter has introduced the study by exploring briefly the context of maternity care in relation to normal (physiological) birth. There is increasing worldwide recognition that incidences of normal birth is decreasing in many countries, with a counter increase in the prevalence of intervention and CS in the provision of maternity care for childbearing women. This increase has not led to improved maternal and neonatal outcomes and is instead associated in some instances with harm and significantly higher health care costs for childbearing women and their families.

An overview of the provision of maternity care in Singapore was given to provide an understanding and comparison of midwifery in relation to similarly high-resource (developed) countries. Also outlined was the practice of maternity care in Singapore and its current context in relation to normal birth promotion. The next chapter will review the literature in relation to the promotion of normal labour and birth.

## **CHAPTER 2: LITERATURE REVIEW (MAPPING THE TERRAIN)**

### **2.1 Introduction**

In this chapter, literature relevant to the study is reviewed, addressing critical issues in the promotion of normal labour and birth and sustainable efforts to normalise birth for childbearing women. A clear understanding of these elements within the intricacies of contemporary maternity practice may contribute to identifying progress, gaps and ways forward in supporting normal birth, which is critical to the research described in the thesis. Discussion of relevant research studies is integrated throughout, providing an overview of the research knowledge terrain and the place of the Promotion of Normal Birth (PoNB) study within it.

The review begins with an appraisal of best available evidence on the health consequences of CS and vaginal birth for both the mother and baby. The topics reviewed include: maternal adverse outcomes (related to current pregnancy); neonatal adverse outcomes (related to current pregnancy); childhood chronic disease; complications unique to CS; complications unique to vaginal birth; psychosocial outcomes; maternal and placental complications (in subsequent pregnancies); and fetal and neonatal complications (in subsequent pregnancies). Essentially, this section provides evidence on 'why normal birth matters'.

The discussion then focuses on the factors that influence the provision of practices that promote normal physiological. The topics reviewed were: midwifery-led care; support during labour; maternal positions for labour and birth; non-pharmacological pain management in labour; as well as birth environment (home-like settings). In essence, this section addresses what can be done to support and optimise a woman's chance of achieving a normal birth and the significance of (these) efforts in advancing the PoNB study objectives.

## **2.2 Literature Review Methods**

A search of relevant literature was commenced in 2010 and continued till mid-2014, to identify new research in the field of normal birth promotion as this arose during the course of the study. This involved an electronic search of the following databases: CINAHL [Cumulative Index to Nursing & Allied Health], Cochrane Library, EBSCO, Informit, MIDIRS [Maternity and Infant Care], Ovid MEDLINE, ProQuest Central, PsycINFO, PubMed, Sage, SCOPUS, and Wiley Interscience, using the following keywords: normal birth, physiologic birth, vaginal delivery, natural childbirth, labo(u)r and birth practice, maternity service, obstetric care, inter-disciplinary collaboration, pregnancy outcome and quality improvement. To augment the results of the primary search, relevant professional journals, books and chapters were reviewed for studies that related to aspects of normal birth promotion. Additional literature was sourced by examining the reference list or bibliographies of the papers reviewed.

Attempts to obtain primary studies related to aspects of the promotion of normal birth in hospital-based maternity settings were, at times, problematic. To date, few studies seem to have sought to illuminate the subject of normal birth promotion within the hospital maternity unit setting. Much of the literature has previously focused on promoting normal birth in midwifery-led practices (i.e. in home births, birth centres and primary care settings), with some studies addressing the care provision of case-loading midwives caring for women in a variety of settings. Studies also focused on differing midwifery and obstetric practices rather than on collaborative practice (working together as a team) in normalising childbirth. Importantly, this highlighted the 'less-charted terrain' in the current literature of collaborative practices in normal birth promotion specifically in hospital (tertiary) maternity settings.

Types of studies selected for review included those categorised by Level 1-4 classification recognised by the Cochrane Collaboration (Muir Gray 1997). These are levels of evidence, based on the research design used. Level 1 studies include

systematic reviews and meta-analyses; Level 2 are randomised controlled trials (RCTs); Level 3 include quasi-experimental studies, cohort and case-control studies; and Level 4 are observational evidence. Level 1 evidence is the 'gold standard' at the top of the evidence hierarchy (or highest level of evidence).

Recommendations by Harbour and Miller (2001) on the strength of supporting evidence such as generalisability, applicability, consistency, and clinical impact were also considered in the review. Wherever an eligible systematic review was available – that is, a review of studies on a defined question or questions that described its search methods, specified inclusion and exclusion criteria, and used meta-analysis when appropriate (Kitchenham 2004) – this was used as an exclusive source. If more than one eligible systematic review was identified covering the same topic, the most recent was chosen, unless including multiple systematic reviews enabled reporting of additional outcomes. If no eligible systematic review could be identified, observational studies of designs including cohort, cross-sectional, or case-control were reviewed. These database studies take into account confounding and correlating factors that could both lead to CS and predispose women and their babies to adverse outcomes. Evidence for some of these outcomes was only available in case series and reports. In this situation, only the largest of the case series, excluding single case reports or series of only a few cases were included.

The review identified studies published in developed (high-resource) and developing (low-resource) settings, including Australasia, Asia, Europe, North and South America. Whilst this review was intended to inform the study's decisions in Singapore, there was no identifiable local research or published evidence on the promotion of normal birth at the time of writing. International studies conducted in countries that have a reasonable level of comparability to the Singaporean maternity system in terms of available resources were therefore the next best option; in particular, exemplars of normal birth development and

emerging practices to increase normal birth rates in Australia and the United Kingdom (UK) were included with compatibility in mind.

### **2.3 Consequence of caesarean section and vaginal birth – Why normal birth matters**

The term ‘caesarean section’ or CS refers to the operation of delivering a baby through an incision made in the mother’s abdominal wall and uterus. Performed for certain medical indications such as placenta praevia (placenta lying over the opening of the cervix) or transverse lie (the baby lying across the uterus), CS can be a life-saving operation (Neilson 2003). A CS is medically indicated when a significant risk of adverse outcome for mother or baby is present if the operation is not performed at a given time (Penna & Arulkumaran 2003). However, the use of CS for less well defined indications (e.g. presumed slow progress, presumed fetal compromise) and non-medical reasons (e.g. maternal request) is increasing in many health services in high-income countries (Fuglenes & Kristiansen 2009; Lavender et al. 2012; Souza et al. 2010).

Rates of CS have increased in countries around the world (Betrán et al. 2007; WHO 2014). Over the past two decades, the CS rate has increased among women with and without prior CS, in both preterm and term pregnancies, in women at low and high risk of complications, and across all ages, races, and ethnicities (Boyle & Reddy 2012; Menacker, Declercq & Macdorman 2006). In addition, CS rates vary considerably across providers, facilities and countries (Baicker, Buckles & Chandra 2006; Clark et al. 2007). The variation is illustrated in a study by Baicker, Buckles and Chandra (2006) on the appropriate use of CS across 198 different United State cities using national birth and infant death data (N = 15,592,980). The analysis focused on: i) area-level CS rates; ii) CS and medical appropriateness; and iii) CS use and patient mortality, with emphasis on the relationship between CS rates and birth characteristics, county socioeconomic characteristics, local provider capacity, and medical malpractice

liability. The results revealed trends and variations suggesting that CS rates reflect clinician practice patterns (Lee & Kirkman 2008; Socol 2012) and are influenced by institutional and system factors in addition to medical factors and women's preferences.

As CS rates increase, normal birth rates are invariably affected with proportionally more low-risk women<sup>2</sup> having a CS (Baicker, Buckles & Chandra 2006; Barber et al. 2011). Overuse of CS in low-risk women exposes more women and babies to the potential harms of CS, with minimal likelihood of benefit (Deneux-Tharaux et al. 2006; Hansen et al. 2008; Liu et al. 2007; Mander 2007). Of particular consequence, there is evidence to suggest increased maternal risks associated with the surgery, including anaesthetic risks, surgical complications, blood loss, need for transfusion, and pulmonary embolism (Deneux-Tharaux et al. 2006; Kelleher & Cardozo 1994). There may also be restricted activities of daily living (Derrick, Lowdon & Barlow 2004), breastfeeding difficulties (Rowe-Murray & Fisher 2002) and increased maternal problems related to the uterine scar in subsequent pregnancies (Lydon-Rochelle et al. 2001).

Unexpected long-term risks of CS, including in subsequent pregnancies, continue to be reported. These include abnormal placentation (Wu, Kocherginsky & Hibbard 2005), ectopic pregnancy, haemorrhage and hysterectomy following uterine evacuation, implantation endometriosis, adenomyosis and increased hospital readmission (Bewley & Cockburn 2002; Mander 2007). Caesarean section has also been associated with emotional difficulties (Clement 2001) including postpartum depression and negative feelings about the experience of childbirth (Minkoff & Chervenak 2003).

Potential increased risks for the baby who is born by CS include increased admission to neonatal units; separation of the mother and neonate (Anderson et

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<sup>2</sup> Women whose pregnancies are likely to be safe or without problems.

al. 2003; Rowe-Murray & Fisher 2002); iatrogenic prematurity (Grönlund et al. 1999; Wagner 2000); unintended lacerations on babies (Haas & Ayres 2002; Reddy, Kogan & Glick 2011); increased neonatal respiratory problems (Hansen et al. 2008; Levine et al. 2001); increased special educational needs in later life linked to the timing of the CS (Kapellou 2011; MacKay et al. 2010); subsequent childhood pathology i.e. diabetes mellitus (Type 1), Asthma and food allergies (Neu & Rushing 2011; Thavagnanam et al. 2008); and, stillbirth in the subsequent pregnancy (Smith, Pell & Bobbie 2003). Women who had undergone CS were also found to be less responsive to their baby's cry in the immediate postpartum period than those who had a vaginal birth (Swain et al. 2008).

Safely avoiding the first CS, by supporting normal physiological birth, especially in low-risk women, has become a priority in many settings with growing multi-stakeholder consensus (Kinnear 2011; Main et al. 2011; MCWP 2007; Queenan 2011). A major goal, especially for many in high-income countries, is to reduce CS to the recommended level of 15% (WHO 1985) in low-risk women. A recent World Health Organization (WHO 2014) annual compilation on global births by CS reveals increasing trends of CS in high-income countries such as Australia, Singapore, United Kingdom (UK), United States of America (USA) with figures almost doubling that of the acceptable rates of CS for safe maternity care.

### ***2.3.1 Maternal adverse outcomes – related to current pregnancy***

This section reviews the evidence regarding the health consequence of CS versus vaginal birth for both the mother and baby. It illuminates the short and long-term consequences of primary CS and examines outcomes unique to surgery (i.e. CS scar, subsequent ectopic pregnancy, operative injury to internal organs) or vaginal birth (i.e. perineal or genital injury). Studies without comparison groups have been included on topics where there were no randomised control studies to be found.

### *Maternal death*

Excess risk of maternal death with CS is possible as surgery introduces the possibility of surgical complications, including life-threatening complications. Two studies, one in North Carolina and one in France, have attempted to determine whether CS directly contributes to an excess of maternal deaths. In North Carolina, the death rate associated with live births according to mode of birth was 3.6 per 10,000 with CS compared with 0.9 per 10,000 with vaginal birth (Harper et al. 2003). After taking into account medical complications, maternal age, and preterm birth, women having a CS were 3.9 times more likely to die than women having a vaginal birth. Another study from France excluded all deaths that did not result in a live birth (i.e. ectopic pregnancy) and all pregnancy conditions that would both increase the risk of death and the likelihood of CS such as placental attachment abnormalities (Deneux-Tharaux et al. 2006). After adjusting for age, nationality, parity, and preterm birth, women having a CS were 3.6 times more likely to die than women having a vaginal birth. However, both studies may have underestimated the true CS-related mortality rate because they excluded deaths related to complications that were associated with prior CS and that would not (caesarean scar ectopic pregnancy) or might not (placenta praevia) result in a live birth (Goer, Romano & Sakala 2012). In essence, more women appeared to die as a result of CS itself, but the excess risk (number) cannot be calculated from the studies examined.

### *Cardiac arrest*

Limited evidence suggests that a moderate excess number (10 to 99) of every 10,000 healthy women may experience cardiac arrest in association with CS compared with similar women planning vaginal birth (Goer, Romano & Sakala 2012). A large 14-year (April 1991 to March 2005) retrospective population-based study (n=2,339,186) in Canada by Liu and colleagues (2007) observed considerable differences in risk of cardiac arrest between groups. The study compared healthy women having planned primary CS for breech with similar



women with a cephalic (head-down) presentation fetus planning vaginal birth (8.2% of whom ended up having a CS). The researchers concluded that women having a planned CS had an increased risk of cardiac arrest, 1.9 per 1,000 versus 0.4 per 1,000 among those in the planned vaginal birth group (adjusted odds ratio 5.1; 95% CI 4.1 to 6.3). In other words, 15 women per 10,000 having a planned CS will experience cardiac arrest before hospital discharge. The adjusted absolute risk difference for cardiac arrest was 1.6; 95% CI (1.2 to 2.1).

### *Thromboembolic events (blood clots)*

If deep venous clots become dislodged, they can lead to pulmonary embolism (blockage of a blood vessel in the lung) or stroke. These blood clots occur more frequently with CS compared with planned or actual vaginal birth (Simpson et al. 2001). This risk can be reduced with routine prophylactic measures, for example, use of pneumatic compression devices after surgery (Clark et al. 2014; Clark et al. 2011).

Two studies reported increased likelihood of thromboembolic events with CS compared with vaginal birth. One study in Ohio, USA (n=168,736) occurring from July 1991 through April 1996 compared 31,034 women having elective CS with 137,702 women having spontaneous vaginal births (Koroukian 2004) and reported an increase prevalence of thromboembolic events (deep venous clot, embolism, or stroke) for women having elective CS. This risk was 1.9 per 1,000 births for those having CS, compared to a risk of 0.7 per 1,000 births for women with spontaneous vaginal births (RR 0.41; 95% CI 0.30 to 0.55) (12 per 10,000 births). Similarly, the previously mentioned study by Liu et al. (2007) in relation to cardiac arrest indicated that women were more likely to experience deep venous clots when comparisons are made with those planning CS and vaginal birth. The incidence was 0.6 per 1,000 births versus 0.3 per 1,000 births respectively (RR 0.3; 95% CI 0.1 to 0.6) (3 per 10,000 births). These studies

suggest a small (1 to 9) to moderate (10 to 99) excess number of healthy women (per 10,000) having CS are at increased risk of having a blood clot.

#### *Anaesthetic complications*

Limited evidence suggests that a moderate excess number (10 to 99) of every 10,000 healthy women having a CS may experience complications with anaesthesia compared with similar women having spontaneous vaginal births (Goer, Romano & Sakala 2012). In Ohio, USA, a study involved 168,736 women receiving Medicaid (means tested Government assistance) who had no documented maternal risk factors or complications. The study found that 30 women per 10,000 having elective CS were likely to have anaesthetic complications (not defined) (3.9 vs. 0.9 per 1,000 births) (Koroukian 2004). The relative risk of anaesthetic complications is 0.36; 95 percent CI = 0.28 to 0.48 for women undergoing CS when outcomes were compared.

#### *Major infection*

For some time it has been recognised that CS in healthy women imposes an increased risk of major puerperal infection (i.e. endometritis, fever, peritonitis, septicaemia). A systematic review of prophylactic antibiotic for CS (Tita et al. 2009) and a meta-analysis of timing of peri-operative antibiotics administration (Costantine et al. 2008) established that antibiotic prophylaxis can reduce infection rates after CS with pre-incision administration being more effective than intrapartum administration.

According to a review carried out by Goer, Romano and Sakala (2012), limited evidence suggests that a moderate (10 to 99 women) to large (100 to 999 women) excess number of every 10,000 healthy women having planned CS experience major puerperal infection compared with women having or planning vaginal birth (Goer, Romano & Sakala 2012). In the Ohio study by Koroukian

(2004), the researcher compared maternal outcomes within 60 days after birth for healthy women having elective CS and women having spontaneous vaginal births and found that women undergoing CS were significantly more likely than women with a vaginal birth to have major puerperal infections. The incidence was 28.7 versus 9.0 per 1,000 births (RR 0.41; 95% CI 0.38 to 0.45) (Koroukian 2004). This means 197 women per 10,000 having planned CS are likely to have major puerperal infections. Similar findings of increased risk of puerperal infection were also noted in Liu et al. (2007). The Canadian study which compared healthy women having planned primary CS for breech with similar women with a cephalic (head-down) presentation fetus planning vaginal birth, reported that 39 women per 10,000 having planned CS are likely to have major puerperal infections. The risk was 6.0 versus 2.1 per 1,000 births respectively.

#### *Problems with the caesarean versus genital wound*

Healthy women having CS are more likely to experience problems with the abdominal wound than women having vaginal birth are to experience problems with a genital wound (McMahon et al. 1996). Problems include infection, wound disruption (wound re-opens), hematoma (a blood-filled swelling), and chronic pain (Nikolajsen et al. 2004). Furthermore, with avoidance of episiotomy, a substantial percentage of women having vaginal births do not experience any genital wound, and thus they are not at risk for wound complications (Albers et al. 2005).

A study reported on wound infection in women having a planned primary CS compared with women planning vaginal birth (Bodner et al. 2011). When only low-risk women were compared, it was found that 790 women per 10,000 having planned CS were likely to develop wound infections.

A second large cohort study (n=32 468) in Denmark by Leth and colleagues (2009) over a five-year period, reported that 552 more women per 10,000 having

CS during labour and 382 per 10,000 more women having planned CS had a wound infection within 30 days postpartum than women having a vaginal birth. The investigators analysed infection rate differences between caesareans during labour (560 per 10,000) and planned CS (390 per 10,000), finding a significant difference. According to Goer, Romano and Sakala (2012) it is possible they would have found further differences in wound infection rates had they compared rates with vaginal birth, results from their analysis demonstrating a large number of healthy women having CS have wound infections compared with women planning vaginal birth. In terms of wound disruption and haematoma, Liu and colleagues (2007) in their study (aforementioned) suggest that 103 women per 10,000 having planned CS will have hematomas and 4 women per 10,000 will experience the wound re-opening.

#### *Longer hospital stay*

Three studies were found that compared length of hospital stay after planned CS versus planned vaginal birth. All three had high CS rates in the planned vaginal birth groups, varying from 25 to 43%. Median hospital stay in one study was four days with planned CS versus 2.8 days with planned vaginal birth, and the CS rate with planned vaginal birth was 43% (Hannah et al. 2000). In the other study, the median length of stay was four days with planned CS versus 2 days with planned vaginal birth, and the CS rate with planned vaginal birth was 25% (Sanchez-Ramos et al. 2001). The third recent study was of healthy first-time mothers at term planning CS for breech presentation or other elective reason versus similar women whose babies were head down and were planning vaginal birth (Geller et al. 2010). The mean length of stay was 3.2 days with planned CS versus 2.6 days with planned vaginal birth, and the CS rate with planned vaginal birth was 35%. In summary, planned CS increases length of hospital stay by at least 0.6 to 2 days compared with planned vaginal birth (Goer, Romano & Sakala 2012). This observed difference may have been reduced due to the variation of CS rates in the planned vaginal birth group from each of the studies. These findings have

implications on the hospital cost as well as separation for women from their families.

### *Hospital readmission*

Overall, a moderate (10 to 99) to large (100 to 999) excess number of healthy women (per 10,000) having CS require readmission to the hospital (Goer, Romano & Sakala 2012). Three studies looked at hospital readmission rates according to actual or planned mode of birth.

In an analysis which compared hospital readmission rates in low-risk women having a primary CS with women having a spontaneous vaginal birth, Lydon-Rochelle and colleagues (2000) found that 120 more women per 10,000 having CS were re-admitted to the hospital within the first 60 days after birth. Women with no medical or obstetric complications who had CS were just as likely to be readmitted as women in the CS population overall, which suggest that factors inherent to surgery are the reasons for the readmissions.

A second study compared hospital readmission rates in women with no reported risk factors having a primary CS with similar women planning a vaginal birth among whom 9% had CS during labour and found that 40 more women per 10,000 were readmitted to hospital within the first 30 days after birth (Declercq et al. 2007). Most hospital readmissions in the planned vaginal birth group were in women who had CS during labour.

The third more recent study compared rates between low-risk women planning primary CS with similar women planning vaginal birth among whom 8% had a CS during labour (Bodner et al. 2011). The authors suggest that 220 women per 10,000 having a planned CS would be readmitted after hospital discharge compared with none of the women planning a vaginal birth but the numbers in their study meant that their findings were not statistically significant. The study

enrolled too few women (n = 178 women in each group) to detect a true difference.

### *Problems with physical recovery*

Numerous studies suggest that women who have CS face greater challenges than women having vaginal births in physical and social functioning and carrying out daily activities in the early weeks and months after birth. Differences in physical functioning are also influenced by the proportion of women having instrumental vaginal births. Women having vaginal births with a vacuum extraction or forceps, have increased problems with physical functioning (i.e. pain; limitations on activity; and sexual, bowel, and possibly urinary problems) compared with those having spontaneous vaginal birth (Lydon-Rochelle et al. 2001; Thompson et al. 2002).

Three studies of postpartum health in the weeks and months following childbirth all report poorer physical functioning for women who had a CS. One study in Washington (USA) surveyed first-time mothers (n=256,795) at seven weeks postpartum to assess general health according to mode of birth (Lydon-Rochelle et al. 2000). Compared with those who had a spontaneous vaginal birth, women who had a CS scored lower in physical functioning, general health perception, bodily pain, social functioning, and ability to carry out daily activities. In specific areas of physical functioning, fewer women who had a CS reported no limitation in performing vigorous activities such as running or lifting heavy objects (2,000 fewer per 10,000), participating in less vigorous activities such as vacuuming (1,500 fewer per 10,000), or lifting and carrying groceries (1,000 fewer per 10,000). Fewer women in the study evaluated their overall health as excellent (1,200 fewer per 10,000) or agreed that pain did not interfere at all with usual activities in the prior four weeks (1,800 fewer per 10,000) or that their health had not limited their social activities in the prior four weeks (1,100 fewer per

10,000). Finally, 1,600 fewer women per 10,000 with CS agreed that they had no difficulty at all going about their usual daily activities and tasks.

A second study conducted in the Australian Capital Territory (ACT) surveyed women at 8, 16 and 24 weeks postpartum (Thompson et al. 2002). A total of 1,295 women participated of which 92% (n=1,193) completed the study. Compared with spontaneous vaginal birth, women who had a CS were more likely at 8 weeks to report extreme tiredness (60% versus 49%, 900 more per 10,000), to be troubled by lack of sleep due to their baby crying (30% versus 15%, 1 000 more per 10,000), and to be experiencing bowel problems (i.e. constipation or diarrhoea) (37% versus 17%, 1,100 more per 10,000). More women who had a CS also reported bowel problems at 16 weeks (600 more per 10,000; not statistically significant) and 24 weeks (700 more per 10,000; statistically significant).

The third, more recent study in Melbourne, Australia by Woolhouse and colleagues (2012), surveyed 1,507 first-time mothers and reported differences by mode of birth at three, six, and 12 months postpartum. At three months postpartum, 1020 fewer women per 10,000 complained of haemorrhoids after CS than women after spontaneous vaginal birth. At 6 months postpartum, 770 more women per 10,000 complained of extreme tiredness and 930 more women per 10,000 reported lower back pains after CS than after spontaneous vaginal birth. At 12 months postpartum, 920 more women per 10,000 women complained of extreme tiredness and 780 more women per 10,000 complained of upper back pain with CS than after spontaneous vaginal birth.

Finally, a fourth study, a national 'Listening to Mothers II' survey in USA reported on outcomes of postpartum pain associated with vaginal births and CS (Declercq et al. 2008). When first-time mothers (n=1,573) were asked how much pain had interfered with routine activity in the first two months after birth, 79% (1,300

more women per 10,000) with CS responded 'quite a bit' or 'extremely' compared with women having a spontaneous vaginal birth.

Generally, with the exception of the presence of haemorrhoids, which are more common with vaginal birth, a large (100 to 999) to very large (1,000 to 10,000) excess number of women (per 10,000) having CS experience problems with physical recovery, including general health, bodily pain, extreme tiredness, sleep problems, bowel problems, ability to carry out activities, and ability to perform strenuous activities, compared with women having spontaneous vaginal birth (Goer, Romano & Sakala 2012). These effects may potentially hamper and interfere with the woman's postpartum recovery and ability to care for the infant.

#### *Chronic pelvic pain*

Two studies in a systematic review analysing factors correlated with chronic pelvic pain evaluated the relationship with CS, and a meta-analysis pooling their data found that women were more than three times as likely to report chronic pelvic pain after CS compared with women who give birth vaginally (Latthe et al. 2006). More women experience chronic pelvic pain after CS than after vaginal birth, but the excess risk (number) cannot be calculated from the studies examined as the numbers of outcomes are too small and chronic pain is not included in all the studies.

#### ***2.3.2 Neonatal adverse outcomes – related to current pregnancy***

In addition to maternal problems, CS is associated with increased likelihood of babies experiencing a number of problems as described in the next section.



### *Neonatal mortality*

A national USA database study of 8 million women at 'no indicated risk' for CS (i.e. singleton, term, vertex, no medical risk factors reported on the birth certificate, no prior CS) compared neonatal mortality rates between women having planned CS and women planning vaginal birth among whom 8% had CS during labour (MacDorman et al. 2008). Adjustments were made for birth weight, gestational age, maternal age, race, or ethnicity, parity, education, and smoking. They further excluded all infants with congenital anomalies because this could affect both choice of birth route and mortality risk and all infants with Apgar scores less than 4 as a proxy for fetal distress, which, as with congenital anomalies, could affect both mode of birth and mortality. Nevertheless, the risk of neonatal death was 70% greater with planned CS than with planned vaginal birth (MacDorman et al. 2008). Limited evidence suggest that babies of women having their first elective CS may be at greater risk of neonatal death compared with low-risk women planning vaginal birth, but the excess risk (number) of deaths cannot be calculated from the study examined.

### *Respiratory problems*

Elective CS is associated with increased risk of breathing complications in the newborn compared with vaginal birth or CS during labour; however, the magnitude of the risk decreases as the baby's gestational age advances past 37 weeks. A systematic review without meta-analysis analysed nine studies comparing respiratory complications after elective CS versus after vaginal or planned vaginal birth at or near full term (Hansen et al. 2007). Four studies evaluated respiratory distress syndrome (oxygen supplementation longer than 24 hours plus X-Ray findings typical of respiratory distress syndrome). Two of the four studies reported a statistically significant increase, and a third reported an increase that did not achieve statistical significance. The fourth study was small and had too few cases to perform a statistical analysis. Rates ranged from 20 to 70 per 10,000 with elective CS versus 10 to 20 per 10,000 with vaginal or planned

vaginal birth; however, intra-study differences were not reported, which prevents calculation of absolute differences (Goer, Romano & Sakala 2012). The association disappears after 39 weeks' gestation.

One study included in the systematic review by Hansen and colleagues (2007) evaluated pulmonary hypertension (continued fetal circulation requiring 100% oxygen supplementation to maintain adequate oxygenation). It reported an excess of 29 cases per 10,000 with elective CS compared with vaginal birth. Limited evidence suggests that moderate (10 to 99) excess number of babies (per 10,000) born by elective CS may develop pulmonary hypertension (Levine et al. 2001).

### *Breastfeeding issues*

A recent systematic review in 2012 examined the association between breastfeeding and CS versus vaginal birth (Prior et al. 2012) and found that pre-labour CS negatively affected early breastfeeding rates (i.e. any initiation or breastfeeding at hospital discharge), but CS during labour did not. However, only two of the 53 studies controlled for breastfeeding intent (Jordan et al. 2005; Patel, Liebling & Murphy 2003), an important potential confounding factor. Both of the studies adjusting for breastfeeding intent were conducted in England. One of the two studies included in the review was of first-time mothers and reported a statistically significant reduction in breastfeeding at hospital discharge among women who gave birth by CS, 28 of whom had planned caesareans and 72 had caesareans in labour (Jordan et al. 2005). The other compared women having instrumental vaginal births with women having CS during the pushing phase of labour (Patel, Liebling & Murphy 2003). It found a reduction in breastfeeding rates in the CS group that did not achieve statistical significance. Conflicting evidence suggests that babies born by CS may be at risk of not being breastfed.

### ***2.3.3 Childhood Chronic Disease***

There is an association between CS and the risk of the child developing autoimmune diseases, including asthma (Thavagnanam et al. 2008), Type 1 diabetes (Cardwell et al. 2008), and allergies (Bager, Wohlfahrt & Westergaard 2008). Researchers hypothesise that a primary mechanism is the disruption of neonatal gut flora, which have a key role in establishing health immunity, metabolism, and digestion (Hyde et al. 2012). This is not a cause and effect relationship but a concerning association requiring further study.

### ***2.3.4 Complications unique to caesarean section***

Certain complications are unique to surgical intervention, thus vaginal birth eliminates the risk of their occurrence.

#### *Operative maternal injury*

Three cohort analyses report on operative injury during primary CS (Makoha et al. 2004; Nisenblat et al. 2006; Silver et al. 2006). Cumulative incidence rates are 11 per 10,000 for bladder puncture, 9 per 10,000 for bowel injury, and 4 per 10,000 for urethral injury. Injury rates would be lower with planned CS than with CS during labour. Among women having first birth via CS, a moderate (10 to 99) number of women (per 10,000) experience bowel injury or injury to the ureter (Goer, Romano & Sakala 2012).

#### *Surgical cuts to the baby*

A case series (n = 262 cases) reported rates of surgical cuts to the baby of 40 per 10,000 with planned CS versus 70 per 10,000 among CS overall (Alexander et al. 2006). This study did not report on seriousness of injury, but other smaller studies reported that some infants required suturing or wound closure with staples (Dessole et al. 2004; Haas & Ayres 2002). Injury rates would likely be

lower with planned CS than with CS during labour. Goer et al's (2012) analysis suggests that a moderate (10 to 99) number of babies (per 10,000) are cut during CS.

*Persistent pain at the site of the caesarean incision*

A survey of 1,573 women living in the USA revealed that among women having CS, 18% (1,800 per 10,000) reported pain at the site of the caesarean incision lasting 6 months or more (Declercq et al. 2008). Among women with CS who responded to the survey 10 months or more after the birth, 600 per 10,000 reported continuing pain at the incision site. A survey of Australian women in a study by Woolhouse and colleagues (2012) reported that among women having CS, incision pain was reported 'occasionally' or 'often' by 1 900 per 10,000 at 6 months postpartum, 700 per 10,000 at 12 months postpartum, and 600 per 10,000 at 18 months postpartum. Limited evidence suggests that a large (100 to 999) to very large (1,000 to 10,000) number of women (per 10,000) still experience pain at the incision site 6-10 months or more after CS.

*Caesarean scar (intramural) ectopic pregnancy / early placenta accreta*

In subsequent pregnancies following CS, it is possible that either the embryo or placenta may implant within the uterine scar. These complications might be fatal to the embryo and life-threatening for the woman. Studies have shown an association with the rising incidence of adherent placenta (i.e. accreta, increta and percreta) and CS rates (Silver et al. 2006; Wu, Kocherginsky & Hibbard 2005). Although the condition of intramural ectopic pregnancy is relatively rare, the implantation of the gestational sac in the scar or niche of a previous CS is also a serious consequence with the increasing CS rates.

A systematic review of the literature on placenta accreta asserts that most placenta accretas are a manifestation of the same underlying pathology as CS

scar (intramural) ectopic pregnancy (Timor-Tritsch & Monteagudo 2012). Among 47 women with placenta accreta detected and treated before the third trimester, 79% required hysterectomies. Among 751 cases of CS scar ectopic pregnancy, 5% ended in hysterectomy. Reviewers believe that CS scar pregnancy is underreported. Based on frequency estimates, they estimate that there should have been 557-696 women in 2007 in the United States alone, but their review of the United States literature published in the last 20 years only identified 44 cases. In essence, some women becoming pregnant after CS will experience a CS scar (intramural) ectopic pregnancy or placental implantation within the uterine scar, but the risk (number) cannot be calculated from the studies examined.

### ***2.3.5 Complications unique to vaginal birth***

The complications unique to vaginal birth are perineal and genital trauma and consequent persistent local pain. The greatest concern is anal sphincter laceration because it increases the likelihood of experiencing perineal pain in the short term and continued pain up to six weeks after the birth, and predisposes to faecal incontinence (Dudding, Vaizey & Kamm 2008; Fenner et al. 2003; Macarthur & Macarthur 2004). The proportion of women experiencing trauma during a vaginal birth depends on risk factors that are sometimes modifiable, including whether they have an instrumental vaginal birth, whether the instrument is a vacuum extractor or forceps, whether fundal pressure is applied to help expel the baby, whether they have an episiotomy, whether the episiotomy is median or medio-lateral, their pushing position at birth, and whether the woman pushes forcefully when giving birth (Dahlen et al. 2007b; Eason et al. 2000; Wheeler & Richter 2007).

#### *Perineal and genital trauma*

No systematic review was identified reporting on interventions to reduce the incidence of genital tract trauma in vaginal birth. A study by Albers and

colleagues (2005) was conducted in the USA as a single-centre randomised controlled trial of perineal management at birth in 1,202 women having vaginal birth attended by experienced midwives. Women were randomised to one of three care measures late in the second stage of labour: 1) warm compresses to the perineal area; 2) massage with lubricant; or 3) no touching of the perineum until crowning of the baby's head. No differences were recorded in genital tract trauma and the researchers concluded that it should be up to individual women and their care providers to decide whether to use any of these measures with comfort and other considerations in mind. A randomised controlled trial in Sydney studying the use of warm packs to the perineum in the second stage of labour also found no decrease in the incidence of women needing suturing as a result of the intervention (Dahlen et al. 2007a). The use of warm packs was, however, associated with significantly fewer third and fourth degree tears and lower pain scores on days one, two and three following birth. Furthermore, women who had used warm packs were significantly less likely to have urinary incontinence at three months compared to women in the standard group. The study recommendation was that this simple, inexpensive practice should be incorporated into labour care practice.

#### *Persistent perineal pain*

A survey in the US reported that 100 women per 10,000 reported perineal pain 6 months or more after spontaneous vaginal birth, and 1,700 per 10,000 women reported pain as a problem persisting 6 months or more after instrumental vaginal delivery (Declercq et al. 2008). Limited evidence suggests that a large (100 to 999) number of women (per 10,000) experience persistent perineal pain lasting at least six months with spontaneous vaginal birth, and a very large (1,000 to 10,000) number of women (per 10,000) experience perineal pain lasting at least six months after instrumental vaginal delivery.

### ***2.3.6 Psychosocial outcomes***

Postpartum psychological morbidities such as depressive mood or post-traumatic distress symptoms can have profound adverse effects on women, impairing their functioning at home and work and increasing their risk of suicide. These difficulties can also have an adverse impact for women on both caretaking and responsiveness to their children, resulting in behavioural and emotional problems in the child, and women's relationships with their partners (Andersen et al. 2012; Olde et al. 2006). It is difficult however, to determine the degree to which psychological morbidity relates to mode of birth because of the limitations of available research. These include small sample sizes, possible selection biases, lack of prospective assessment, and inadequate and diverse assessment measures (Carter, Frampton & Mulder 2006; Chung et al. 2001; Gamble et al. 2005; Grekin & O'Hara 2014; Lobel & DeLuca 2007). Studies may also fail to control for confounding factors (Andersen et al. 2012). These include negative or traumatic experience in prior pregnancy and birth, complications such as preterm birth that predispose both CS and to maternal psychological morbidity, and labour management factors such as instrumental vaginal delivery or labour induction, which also predispose to adverse psychological outcomes (Carter, Frampton & Mulder 2006; Lobel et al. 2008; Olde et al. 2006; Waldenstrom et al. 2004). In addition, timing of data collection can influence outcomes (Lobel & DeLuca 2007; Waldenstrom et al. 2004). With the passage of time, a positive experience of motherhood may soften a negative perception of childbirth experience, and may make it difficult for women to acknowledge negative feelings.

Overall, data conflict about whether CS has an adverse effect on the mother-child relationship (Lobel & DeLuca 2007) and whether CS increases the likelihood of postpartum depression (Carter, Frampton & Mulder 2006). Likewise, there is conflict in data on post-traumatic distress, but suggests that more women may experience post-traumatic distress or post-traumatic distress symptoms after CS

in general and in the case of an unplanned CS in particular (Andersen et al. 2012; Olde et al. 2006).

### ***2.3.7 Maternal and placental complications - in subsequent pregnancies***

Following the discussion on *Maternal Adverse Outcomes* (see Section 2.3.1) and *Complications Unique to Caesarean Section* (see Section 2.3.4) this section discusses complications related to subsequent pregnancies following CS. The consequence of CS for subsequent pregnancies and birth must be taken into account when considering the first CS regardless of the woman's plan for future children (Landon et al. 2004).

Maternal mortality and the risk of uterine rupture during labour among women with a prior CS is a serious obstetrical complication (Lydon-Rochelle et al. 2001). A retrospective cohort study of 308,755 Canadian women who had experienced a previous CS found trial of labour (TOL) associated with increased risk of uterine rupture (0.65% in the TOL group compared with 0.25% in the non-TOL group), but elective CS may increase the risk of maternal death (1.6 per 100,000) in the TOL group compared with 5.6 per 100,000 in the elective CS group (Wen et al. 2004). These findings resonate with those of Guise and colleagues (2010) when comparison outcomes of maternal mortality and uterine rupture between women with vaginal births after CS (VBAC) and those with repeat elective CS were studied. Risk for maternal mortality with repeat elective CS was higher than with VBAC (9.6 per 100,000 versus 1.9 per 100,000 at term respectively) (Guise et al. 2010). However, among women at term, 778 per 100,000 having a VBAC TOL will experience uterine rupture compared to 22 per 100,000 with an elective CS. The risk for uterine rupture increases with gestational age and more than triples when induction of labour is carried out for women undergoing VBAC TOL. Uterine rupture is the most significant adverse event associated with VBAC and drives much of the debate and decision making on the topic (Guise et al. 2010; Lydon-Rochelle, Cahill & Spong 2010).



### ***2.3.8 Fetal and neonatal complications - in subsequent pregnancies***

Fetal and neonatal complications in subsequent pregnancies are addressed in this section. This relates to earlier discussion on *Neonatal Adverse Outcomes* (see *Section 2.3.2*) and associated *Complications Unique to Caesarean Section* (see *Section 2.3.4*) in the current pregnancy.

Caesarean section is associated with an increased risk of disorders of placentation in subsequent pregnancies, but effects on the perinatal mortality rate (i.e. antepartum stillbirth, intrapartum demise, and neonatal death) are unknown (Silver 2010; Smith et al. 2002). Smith and colleagues (2003) analysed routinely collected maternity data in their study which involved linked pregnancy discharge data from the Scottish Morbidity Record (1980—1998) and the Scottish Stillbirth and Infant Death Enquiry (1985—98). They estimated the relative risk of antepartum stillbirth in second pregnancies using time-to-event analysis.

For 120,633 singleton second births, there were 68 antepartum stillbirths in 17,754 women who previously had a CS (2 to 39 per 10,000 women per week) and 244 in 102,879 women who previously gave birth vaginally (1.44;  $p < 0.001$ ). Risk of unexplained stillbirth associated with previous CS differed significantly with gestational age ( $p = 0.04$ ); the excess risk was apparent from 34 weeks (hazard ratio 2.23; 95% CI 1.48 to 3.36). Risk was not attenuated by adjustment for maternal characteristics or outcome of the first pregnancy (2.74 [1.74—4.30]). The absolute risk of unexplained stillbirth at or after 39 weeks' gestation was 1.1 per 1,000 women who had had a previous CS and 0.5 per 1000 in those who had not. The difference was due mostly to an excess of unexplained stillbirths among women who previously had a CS (Smith, Pell & Bobbie 2003).

A CS in the woman's first pregnancy could increase the risk of unexplained stillbirth in the second. In women with one previous CS, the risk of unexplained antepartum stillbirth at or after 39 weeks' gestation is about double the risk of

stillbirth or neonatal death from intrapartum uterine rupture (Smith, Pell & Bobbie 2003). Comparable trends in the association between CS and stillbirth in the following pregnancy were also reported in two population-based studies: a) an England study of 81,784 singleton births between 1968 and 1989 (Gray et al. 2007) and b) a study in South Australia of 36,038 singleton births between 1998 and 2003 (Kennare et al. 2007).

In contrast, four studies were found to report no association between previous CS and stillbirth (Bahtiyar et al. 2006; Salihu et al. 2006; Taylor et al. 2005; Wood et al. 2008). In a US study using the Missouri linked maternity data set (n = 396,441) between 1978 and 1997, no significant overall association were noted in white mothers but a significant elevation of risk of about 40% were found in black mothers (Salihu, Sharma, Kristensen, Blot et al. 2006). The apparent conflicting results among studies may be due to the variables and measurements used, as well as varying levels of detail about potential confounders. Examples include: the assessment of all pregnancies versus only the first two pregnancies, and the different definition of unexplained stillbirths. These inconsistent results raise questions about the strength of the association between CS and subsequent stillbirth which mandates further exploration (Silver 2010).

### ***2.3.9 Summary - CS versus vaginal birth***

This review addressed a set of outcomes relevant to CS versus vaginal birth to inform the PoNB study. To facilitate understanding of risk, differences in risk (numbers) were reported using Goer, Romano and Sakala (2012) recommended scale of 'very small' to 'very large' according to orders of magnitude standardised to a denominator of 10,000.

The limitations of this review primarily originate in weaknesses in the body of relevant research. In many areas, the evidence is conflicting, inadequate, or non-existent. For example, more research is needed in long-term outcomes in women

and children, subsequent reproductive complications after primary CS, quality of life in the postpartum period, breastfeeding outcomes, and psychosocial outcomes. The lack of existing evidence is likely to be due to the lack of equipoise for such a trial or the highly complex methodological issues which such a trial may generate (Lavender et al. 2005). These include the complexity of following up women throughout their reproductive life; the difficulty of agreeing on a single primary outcome on which to base sample-size calculations; and the prohibitive cost of a trial in relation to addressing research questions where the adverse outcomes are rare.

Because of the large scope and number of potentially eligible studies, the review used systematic reviews where available. However, there are no randomised controlled trials of planned vaginal birth versus planned primary CS (other than related to breech presentation). Systematic reviews were limited to observational or descriptive studies, which in most cases did not permit meta-analysis.

Consistent evidence identifies significant overuse of harmful or ineffective practices and underuse of other practices shown to improve outcomes (Sakala & Corry 2008). Poor quality care for planned vaginal birth results in excess neonatal injury, genital tract trauma, and pelvic floor dysfunctions and leads to a higher proportion of labours that end in CS, thus exposing women and babies to surgical risk (Goer & Romano 2012). Sub-optimal practices with CS (i.e. inadequate prophylaxis against infection or blood clots) affect rates of certain adverse outcomes, with the problem more pronounced and affects far more outcomes (as discussed) than with planned vaginal birth.

While the review did not identify a single strategy to reduce CS, documented variation in CS rates across providers, settings, and geographic regions suggests that some approaches to organising and delivering maternity care are more effective in reducing the rate of CS than others. Further research should examine

the characteristics of settings and providers with low CS rates and good maternal and newborn outcomes to identify approaches to care that may be effective – approaches that closely examine care that promotes, supports, and protects physiologic labour and birth. These approaches will be discussed in detail in the next section '*Factors that influence normal physiological birth*'.

## **2.4 Factors that influence normal physiological birth**

This section discusses factors that have a positive influence on supporting normal physiological birth. This includes: midwife-led care (Sandall et al. 2013); continuous support in labour (Hodnett et al. 2013a); upright positions and mobility (Lawrence et al. 2013); immersion in water (Cluett & Burns 2012); and alternative (home-like) birth environments (Hodnett, Downe & Walsh 2012), all of which have been shown to promote and optimise a woman's chance of achieving a normal birth.

### **2.4.1 Midwife-led care**

In many parts of the world, midwives are the main providers of care for childbearing women (Koblinsky et al. 2006). There are however, considerable variations in the organisation of midwifery services and in the education and role of midwives (WHO 2006). Elsewhere, for example in North America, it may be obstetricians or family physicians who have the main responsibility for care for the vast majority of childbearing women. In other countries such as Australia, New Zealand, the Netherlands, the UK and Ireland the responsibility may be shared, with various combinations of midwife-led continuity, medical-led, and shared models of care available.

The philosophy behind midwife-led continuity models is support for normality, continuity of care and being cared for by a known, trusted midwife during labour. The emphasis is on the natural ability of women to experience birth with minimum intervention. Midwife-led continuity of care can be provided through a

team of midwives who share the care of a group of women which is often called 'team' midwifery. Another model is 'caseload midwifery', which aims to ensure that the woman receives all her care from one midwife or her or his practice partner/s. Midwife-led continuity of care is provided in a multi-disciplinary network of consultation and referral with other care providers. This contrasts with medical-led models of care where an obstetrician or family physician is primarily responsible for care. In shared-care models, responsibility is shared between different healthcare professionals.

In reviewing the literature on the provision of care by providers in maternity services, over 800 articles were identified. There have been several systematic reviews of the evidence comparing midwife-led care during pregnancy and birth with medical-led care. To list a few, Brown and Grimes's (1995) meta-analysis included a comparison of nurse-midwife and physician-led care; Sandall and colleagues (2013) conducted a meta-analysis of midwife-led care versus other models of care; and Villar et al. (2001) reviewed patterns of care for pregnant woman which included three randomised controlled trials that evaluated the types of care provider; along with other systematic reviews (Devane et al. 2010; Waldenström & Turnbull 1998; Walsh & Downe 2004).

The Cochrane review by Sandall and colleagues (2013) is the most recent synthesised evidence comparing midwife-led continuity models of care with other models of care for childbearing women. A substantive amendment to this systematic review was undertaken in July 2013 and hence is discussed here. The review also complements other work on models of maternity care and attributes thereof, specifically, the work of Hodnett, Downe and Walsh (2012) and Olsen and Clausen (2012) in which the relationships between the various birth settings and pregnancy outcomes were evaluated systematically.

A total of 13 trials involving 16,242 randomised women were included in the review (Sandall et al. 2013). Included studies were conducted in the public health

systems in Australia, Canada, Ireland, New Zealand and the UK with variations in model of care, risk status of participating women and practice settings. Eight studies compared a midwife-led continuity model of care to a shared model of care (Begley et al. 2011; Biro, Waldenström & Pannifex 2000; Flint, Poulengeris & Grant 1989; Hicks, Spurgeon & Barwell 2003; Homer et al. 2001; Kenny et al. 1994; NSCCRT 2000; Rowley et al. 1995), three studies compared a midwife-led continuity model of care to medical-led models of care (Harvey et al. 1996; MacVicar et al. 1993; Tumbull et al. 1996) and two studies compared midwife-led continuity of care with various options of standard care including midwife-led (with varying levels of continuity), medical-led and shared care (McLachlan et al. 2012)(Waldenstrom, McLachlan, Forster, Brennecke & Brown 2011).

Models of care are classified as midwife-led continuity of care, and other or shared care on the basis of the lead professional in the antepartum and intrapartum periods. In midwife-led continuity models of care, the midwife is the woman's lead professional, but one or more consultations with medical staff may be part of routine practice. Other models of care include: a) where the physician/obstetrician is the lead professional, and midwives and/or nurses provide intrapartum care and in-hospital postpartum care under medical supervision; b) shared care, where the lead professional changes depending on whether the woman is pregnant, in labour or has given birth, and on whether the care is given in the hospital, birth centre (free standing or integrated) or in community setting(s); and c) where the majority of care is provided by physicians or obstetricians.

In the primary comparison (midwife-led continuity models of care versus other models of care), the results consistently show less use of some interventions for women who were randomised to receive midwife-led continuity of care compared to women randomised to receive other models of care without detriment to outcomes (Sandall et al. 2013). Specifically, women who had midwife-led continuity models of care were less likely to experience regional

analgesia (epidural/spinal) (13 trials, n=15,982; average RR 0.83; 95% CI 0.76 to 0.90), episiotomy (13 trials, n=15,982; average RR 0.84; 95% CI 0.76 to 0.92), and instrumental birth (forceps/vacuum) (12 trials, n=15,809; average RR 0.88; 95% CI 0.81 to 0.96), and were more likely to experience no intrapartum analgesia/anaesthesia (six trials, n=8,807; average RR 1.16; 95% CI 1.04 to 1.31). Women were more likely to experience spontaneous vaginal birth (11 trials, n=14,995; average RR 1.05; 95% CI 1.03 to 1.08), attendance at birth by a known midwife (six trials, n = 5,225; average RR 7.83; 95% CI 4.15 to 14.80), and a longer mean length of labour (hours) (three trials, n=3,328; MD 0.50; 95% CI 0.27 to 0.74). However, there was evidence of skewness in the data from one of the trials in the analysis of length of labour (Tumbull et al. 1996). There were no differences between groups for rates of CS (13 trials, n=15,982; average RR 0.93; 95% CI 0.84 to 1.02).

Women who were randomised to receive midwife-led continuity models of care in the trials of the review were less likely to experience preterm birth (seven trials, n=11,546; average RR 0.77; 95% CI 0.62 to 0.94) and fetal loss before 24 weeks' gestation (10 trials, n=13,953; average RR 0.81; 95% CI 0.66 to 0.99), although there were no differences in fetal loss/neonatal death of at least 24 weeks (11 trials, n=15,667; average RR 1.00; 95% CI 0.67 to 1.51) or in overall fetal/neonatal death (12 trials, n=15,869; average RR 0.84; 95% CI 0.71 to 1.00). Overall, Sandall and colleagues (2013) did not find any increased likelihood for any adverse outcome for women or their infants associated with having been randomised to a midwife-led continuity model of care. These results were moderate in magnitude and generally consistent across all the trials.

Although there were limitations in the way that satisfaction related outcomes were assessed and reported, the majority of the included studies showed a higher level of satisfaction with various aspects of care in the midwife-led continuity of care compared to the other models of care. Five studies presented economic analysis in which different economic evaluation methods were

employed for estimates of cost and resource use (Flint, Poulengeris & Grant 1989; Homer et al. 2001; Kenny et al. 1994; Rowley et al. 1995; Young, Lees & Twaddle 1997). Results generally suggest a cost-saving effect in intrapartum care; one study suggests a higher cost of postnatal care when midwife-led continuity of care is compared with medical-led care. However, there is a lack of consistency in estimating maternity care cost among the available studies, and there seems to be a trend towards a cost-saving effect of midwife-led continuity of care in comparison with medical-led care.

A recent randomised controlled trial published after the most recent update of the Cochrane systematic review offers some answers to questions about the economic effect of midwife-led care on maternity care cost in terms of its benefits and cost-effectiveness. The randomised controlled study involving 1,748 women at two metropolitan hospitals in Australia examined the cost of care for caseload midwifery compared with standard maternity care for women of all risk (Tracy et al. 2013). Women in the study were randomly allocated to caseload midwifery care (n = 871) and standard maternity care (n = 877). Factors that differentiated caseload midwifery and standard care in the trial groups include: continuity of care from a named midwife or her small group practice of midwives for duration of pregnancy, labour, birth and postnatal care; ensuring consistency of advice and information; labour assessment by caseload midwife before admission to labour ward, thereby potentially avoiding unnecessary time spent in hospital and increasing possibility of interventions to accelerate progress; early discharge and home postnatal visits; and, collaboration between medical staff and caseload midwives based on guidelines for consultation and referral. Although the proportion of CS did not differ between the groups (183 women [21%] in the caseload group versus 204 women [23%] in the standard care group; odds ratio [OR] 0.88; 95% CI 0.70–1.10; p=0.26), the proportion of women who had elective CS (before onset of labour) differed significantly between caseload and standard care (69 women [8%] versus 94 women [11%]; OR 0.72; 95% CI 0.52–0.99; p=0.05). Instrumental birth proportions were similar (172 women



[20%] versus 171 women [19%];  $p=0.90$ ), as were the proportions of unassisted vaginal births (487 women [56%] versus 454 women [52%];  $p=0.08$ ) and epidural use (314 women [36%] versus 304 women [35%];  $p=0.54$ ). Neonatal outcomes did not differ between the groups. The total cost of care per woman was AUD \$566.74 (95% 106.17–1027.30;  $p=0.02$ ) less for caseload midwifery than for standard maternity care.

The findings from the aforementioned reviews are corroborated by other research (Devane et al. 2010; Hollowell et al. 2011; Sandall et al. 2011) which indicates that midwife-led care has the capacity to meet the needs of the mothers and infants, and that for some outcomes, it may serve their needs better than other models of care.

#### **Summary – Midwife-led care**

Midwife-led continuity of care confers clinically important benefits (particularly around normalising and humanising birth and preventing preterm birth) and shows no adverse outcomes. It seems that such benefits are conferred even when midwives provide intrapartum care in hospital settings, and also in instances where midwives provide antenatal care in hospital or community settings. However, due to the exclusion of women with significant maternal disease and substance abuse from some trials of women at mixed risk, caution should be exercised in applying the findings of this review to women with substantial medical or obstetric complications.

#### ***2.4.2 Support during Labour***

Historically, support for childbearing women in labour was provided by other women, including midwives or birth attendants in the community. Common elements of this care include emotional support (i.e. continuous presence, reassurance and praise), information about labour progress and advice regarding coping techniques, comfort measures (i.e. comforting touch, massage,

warm/baths/showers, adequate fluid intake and output) and advocacy (helping the woman articulate her wishes to others). Researchers have hypothesised that support in labour enhances physiology and mothers' feelings of control and competence, reducing reliance on pharmacological analgesia and medical interventions (Dickinson et al. 2003; Hodnett 2002).

A significant body of literature on the provision of support for women during childbirth was identified. These include over thirty randomised trials and systematic reviews of these trials (Hodnett et al. 2013a; Scott, Berkowitz & Klaus 1999; Zhang et al. 1996), all of which were undertaken to determine the effect of this support on mothers and babies. The most recent systematic review by Hodnett and colleagues (2013) (substantive amendment up to June 2013) will be presented in this section.

In the review (Hodnett et al. 2013a), 22 trials were identified from 16 countries, involving 15,288 women in the hospital setting. Women who had continuous, one-to-one support during labour were more likely to have a spontaneous vaginal birth (19 trials, n=14,119; RR 1.08; 95% CI 1.04 to 1.12) and less likely to have intrapartum analgesia (14 trials, n=12,283; RR 0.90; 95% CI 0.84 to 0.96) or to report dissatisfaction with their childbirth experience (11 trials, n=11,133; RR 0.69; 95% CI 0.59 to 0.79). In addition, women with support had shorter labours (12 trials, n=5,366; MD -0.58 hours; 95% CI -0.85 to -0.31), they were less likely to have a CS (22 trials, n=15,175; RR 0.78; 95% CI 0.67 to 0.91) or instrumental vaginal birth (either vacuum or forceps) (19 trials, n=14,118; fixed effect; RR 0.90; 95% CI 0.85 to 0.96), regional analgesia (nine trials, n=11,444; RR 0.93; 95% CI 0.88 to 0.99) or a baby with a low five-minute Apgar score (13 trials, n = 12,515; fixed effect; RR 0.69; 95% CI 0.50 to 0.95). There were no significant differences on the use of synthetic oxytocins during labour (15 trials, n = 12,620; RR 0.97; 95% CI 0.91 to 1.04) or other intrapartum interventions.

In the subgroup analyses, comparisons such as between spontaneous vaginal birth and CS, suggest that the effectiveness of continuous intrapartum support may be enhanced or reduced by policies and practices in the birth setting and by the nature of the relationship between the provider and labouring woman. However, these findings should be interpreted with caution, particularly when the sample size in one subgroup was much smaller than in another. There remains relatively little information about the effects of continuous intrapartum support on mothers' and babies' health and well-being in the postpartum period (Hodnett et al. 2013a).

### **Summary - Support during labour**

Continuous support during labour has clinically meaningful benefits for women and infants and no known harmful outcomes. Such support appears to be effective in reducing the likelihood of any intrapartum analgesia or epidural analgesia use has the potential to limit many aspects of routine labour and birth interventions.

Given the clear benefits and absence of adverse effects of continuous labour support, all women should have the provision of support throughout labour and birth. In the current study/context, continuous support could positively enhance women's satisfaction with childbirth (Hodnett et al. 2013a), as well as the opportunity for maternity care professionals to promote a normal physiological labour and birth.

### ***2.4.3 Maternal Positions for Labour and Birth***

Increasingly, more women in both developed and developing countries labour and give birth in healthcare facilities, usually in bed in supine recumbent (lying down) positions (Boyle 2000; Dahlen et al. 2013; Guittier et al. 2014; RCM 2010a). Although the position assumed by women is influenced by several complex factors (such as comfort, cultural norms, expectations and demands of

medical procedures), studies have shown that women use a variety of positions when encouraged and change postures according to need as the labour progresses, with no evidence of harmful effects to either the mother or baby (Dahlen et al. 2013; Gizzo et al. 2014; Gupta, Hofmeyr & Shehmar 2012; Hodnett et al. 2013b).

The positions that women assume for labour and birth are broadly categorised as being either upright (including walking, sitting, standing, squatting and kneeling) or recumbent (including semi-recumbent, lateral and supine). There is evidence of several theoretical physiological advantages for being upright during labour and birth (Cotton 2010). These include the effect of gravity of the fetus within the uterus; better alignment of the fetus; more efficient contractions (Roberts & Hanson 2007); and increased pelvic outlet when the woman is in squatting and kneeling positions (Flynn, Kelly, Hollins & Lynch 1978; Gupta, Glanville, Lilford, Dunham & Watters 1991). Upright and mobile positions are also less likely to cause compression of the abdominal blood vessels by the woman's pregnant uterus (Cyna et al. 2010) and this maximises uterine blood flow to the placenta and fetus during labour. Supine positions however were reported to negatively affect this physiology and may have adverse effects on the woman and her baby, and on the progression of labour (Hunter, Hofmeyr & Kulier 2007; Stacey et al. 2011).

The influences of maternal mobility and positions during labour and birth have been a continuing topic of interest and research over many years with studies dating back to the 1960s. This includes systematic reviews (De Jonge, Teunissen & Lagro-Janssen 2004; Gupta, Hofmeyr & Shehmar 2012; Hunter, Hofmeyr & Kulier 2007; Kemp et al. 2013; Lawrence et al. 2013; Roberts et al. 2005), randomised controlled trials and descriptive studies. Three most recent systematic reviews will be addressed here under the two main headings: a) mobility and positions in first stage of labour (Lawrence et al. 2013); and b) positions in the second stage of labour (Gupta, Hofmeyr & Shehmar 2012; Kemp

et al. 2013). The reviews of positions in the second stage of labour will be discussed separately to differentiate its scope: positions in the second stage for women without epidural anaesthesia (Gupta, Hofmeyr & Shehmar 2012); and positions in the second stage for women with epidural anaesthesia (Kemp et al. 2013). Different terms that indicate mobility and positions will be used interchangeably (as reflected in the reviewed studies). These include: movement, postures and positioning.

*a) Mobility and positions in first stage of labour*

The Cochrane systematic review by Lawrence and colleagues (2013) provides the latest evidence on the value of different upright and recumbent positions and mobility in the first stage of labour (defined as the period from the onset of labour to the complete dilatation of the cervix). The most recent substantive amendment to this systematic review was undertaken in April 2013.

Randomised or quasi-randomised trials registered in the Cochrane Pregnancy and Childbirth Group's Trials Register up to 31 January 2013, were considered for inclusion in the Cochrane review (Lawrence et al. 2013). In these trials, women in labour had assumed positions categorised as upright (i.e. walking, sitting, standing, squatting, kneeling and on-all-fours) or recumbent (i.e. semi-recumbent, lateral, supine, dorsal and bed care) during the first stage of labour. Outcomes were grouped as: (i) primary maternal outcomes: duration of the first stage of labour, mode of birth, maternal satisfaction with position and experience of childbirth; (ii) primary fetal and neonatal outcomes: fetal distress requiring immediate delivery and use of neonatal mechanical ventilation; (iii) secondary maternal outcomes: pain, use of analgesia, duration of the second stage of labour, augmentation of labour with oxytocins, artificial rupture of membranes, hypotension requiring intervention, estimated blood loss greater than 500mLs and perineal trauma; and (iv) secondary neonatal outcomes: Apgar scores less than 4 at birth, Apgar scores less than 7 and 3 respectively at five minutes following birth, admission to neonatal intensive care unit (NICU) and

perinatal death. Comparisons were also made between women who did not have epidural analgesia (Comparison 1) and women who had epidural analgesia (Comparison 2) at the time of study entry. The rationale for this comparative analysis was based on the opinion that epidural analgesia is associated with prolonged labour, an increased requirement for augmentation, and increased incidences of operative vaginal birth (Anim-Somuah, Smyth & Jones 2011; Kemp et al. 2013; Simmons et al. 2012).

Twenty-five studies with a total of 5,218 women were included (Lawrence et al. 2013). Most trials had small numbers of participants of between 40 to 300 women except for three trials [that is, Boyle 2002 (n=409); Nageotte 1997 (n=761); and Bloom 1998 (n=1,067)]. The majority of the trials (n=16) included women who were more than 36 weeks' gestation with no obstetric or medical complications. There was also considerable variation about the combinations of upright, mobile and recumbent positions used in the study protocols. The authors performed 80 meta-analyses in order to evaluate how a variety of maternal positions used during first stage labour affect the birth process and outcomes for mothers and babies.

For women who did not have epidural anaesthesia, a total of 18 trials comprising 3,337 women were included. The first stage of labour was shorter by approximately 1 hour and 22 minutes for women randomised to the upright and ambulant positions compared with those in the recumbent positions and bed care groups (15 trials, n=2503; mean difference [MD] -1.36; 95% confidence interval [CI] -2.22 to -0.51). However, this finding should be interpreted with caution as there was a high level of heterogeneity between studies. Women who were encouraged to maintain upright and mobile positions had lower rates of CS (risk ratio [RR] 0.71, 95% CI 0.54 to 0.94) and were less likely to have an epidural (RR 0.81, 95% CI 0.66 to 0.99). Pooled results from 14 trials (n=2,682) on CS (mode of birth outcome) and nine studies (2,107 women) on epidural (maternal analgesia type outcome) respectively, showed a statistically significant difference

between the groups. Babies of mothers who were upright were also less likely to be admitted to the neonatal intensive care unit, however this was based on one trial (one study, 200 women; RR 0.20; 95% CI 0.04 to 0.89).

There were no significant differences between groups for other outcomes including duration of the second stage of labour, or other outcomes related to the wellbeing of mothers and babies. Although most of the included studies collected information on mode of birth, few had the statistical power to detect differences between groups. Furthermore, few included studies that collected outcome data on review outcomes such as pain, maternal satisfaction, and neonatal outcomes. The many studies reporting Apgar scores did so by different methods and at differing end points and hence outcome data could not be pooled uniformly in these instances.

In women who had epidural analgesia (seven trials, n=1,881) there were no significant differences in outcomes for those in the upright, recumbent positions or bed care group. This applied to duration of the second stage of labour and other outcomes related to the wellbeing of mothers and babies.

### **Summary – Mobility and positions in first stage of labour**

The Cochrane systematic review by Lawrence and colleagues (2013) identifies clear evidence that walking and upright positions in the first stage of labour reduces the duration of labour, the risk of CS and the need for epidural analgesia, with no association with increased interventions or negative effects on mothers' and babies' wellbeing. It is important to consider the new evidence in this review that women encouraged to maintain upright positions had lower rates of CS. Another new finding was that babies of mothers who were upright were less likely to be admitted to the neonatal unit. However, it would be prudent to treat this finding with caution as it is based on the results of only one study included in the systematic review.

The outcomes of this review demonstrate benefit to the wellbeing of mothers and babies with no additional risk. Women in low-risk labour should be informed of the benefits of upright positions, and encouraged to assume whatever position they choose. Moving around in labour often requires encouragement and continuous one-to-one support from a midwife or other birth attendant, hence assistance and support should be considered within the context of care. This evidence formed the basis for the Maternal Position for Labour (PFL) Intervention in the PoNB study to help maternity care providers enhance the birth experience of the women they work with, and to optimise a woman's chance of achieving a normal physiological birth.

*b) Positions in second stage of labour*

Where encouraged to do so, in second stage of labour and for birth, woman may choose to continue with a similar position to that they have adopted during the first stage of labour or change positions accordingly. The supine or semi-recumbent position for birth is widely used in contemporary obstetric practice.

There is controversy around whether being upright or lying down has advantages for women giving birth. Several physiological advantages have been hypothesised and measured for non-recumbent or upright labour: improved alignment of the fetus for passage through the pelvis ('drive angle') (Gold 1950). There is also radiological evidence of increased anterior-posterior (Borell & Femström 1957) and transverse (Russell 1969) pelvic outlet measurements, resulting in an increase in the total area, when women are in squatting positions (Gupta et al. 1991; Lilford et al. 1989) and kneeling positions (Russell 1982).

The squatting position is often termed the most natural position and is regularly used by women if left alone to choose their own birth position (Kurokawa & Zilkoski 1985; Romond & Baker 1985). However, the major disadvantage of the squatting position is that women who are not used to this position may not have



the appropriate muscular fitness and stamina to remain squatting for a considerable length of time.

This section will focus on two latest systematic reviews on positions in the second stage of labour. The reviews will be addressed separately to differentiate its scope: positions in the second stage for women without epidural anaesthesia (Gupta, Hofmeyr & Shehmar 2012); and positions in the second stage for women with epidural anaesthesia (Kemp et al. 2013).

❖ *Positions in the second stage of labour for women without epidural anaesthesia*

A Cochrane review by Gupta and colleagues (2012) evaluated the available evidence about the effectiveness, benefits and possible disadvantages for the use of different positions during the second stage of labour in women without epidural analgesia. The most recent substantive amendment to the review was undertaken in March 2012. Twenty-two trials involving 7,280 women were included in the meta-analysis. The outcome measures include the possible benefits and risks of the use of different birth positions during the second stage of labour on maternal, fetal and neonatal outcomes without epidural anaesthesia.

Comparisons were made between the use of any *upright positions* with gravity involved (including sitting [birthing stool/chair], kneeling, and squatting [unaided, using squatting bars or birth cushion]) or *lateral positions* during the second stage of labour with the *supine positions* (including lateral [Sim's] position, semi-recumbent [trunk tilted forwards up to 30° to the horizontal], lithotomy position, and Trendelenburg's position [head lower than pelvis]) in the Cochrane review (Gupta, Hofmeyr & Shehmar 2012). It was noted however that some of the women allocated to assume and maintain upright positions in the trials had difficulty doing so, thus some trials excluded participants following

randomisation. This variance together with problems associated with using a randomised control methodology for birth positions may have affected the principal outcome measures. The authors therefore recommend that results be interpreted with caution, taking into account these considerations.

Gupta et al. (2012) identified that in all women studied (primigravid and multigravid) there was a significant reduction in assisted births in the upright group (19 trials, n=6,024; RR 0.78; 95% CI 0.68 to 0.90), a reduction in episiotomies (12 trials, n=4,541; average RR 0.79; 95% CI 0.70 to 0.90) which was partly offset by an increase in second degree perineal tears (14 trials, n=5,367; RR 1.35; 95% CI 1.20 to 1.51), an increase in estimated blood loss greater than 500 ml (13 trials, n=5,158; RR 1.65; 95% CI 1.32 to 2.60; asymmetric funnel plot indicating publication bias), and fewer abnormal fetal heart rate patterns (two trials, n=617; RR 0.46; 95% CI 0.22 to 0.93). No significant differences were demonstrated for the duration of second stage for all women in the upright group (10 trials, n=3,485); rates of CS (13 trials, n=4,824); the number of third or fourth degree perineal tears (five trials, n=1,685); anaesthesia use during the second stage of labour (seven trials, n=3,593); need for blood transfusion (two trials, n=1,747); manual removal of placenta (four trials, n=1,910); admission to neonatal intensive care unit (two trials, n=1,524) and perinatal death (three trials, n=827).

Because of variable trial quality, inconsistencies within trials, and heterogeneity of participants, the results should be interpreted with caution. Furthermore, as blinding was not possible, negative or positive attitudes of caregivers to new techniques may have influenced the results. There was no reduction in duration of second stage of labour with the (non-significant) exception observed in two trials of a birth cushion (reduction of 15.24 minutes). No significant difference in duration of second stage was found with the birth chair or birth/squatting stool. Taken together, the rates of assisted births and episiotomy lend support to the

concept that second stage bearing down is more efficient in upright positions in women who do not have epidural anaesthesia.

The increased incidence of blood loss greater than 500mLs, particularly in women allocated to any upright position, should be interpreted with caution. The estimation of blood loss may have been influenced by the fact that blood loss in the birth stool group was more easily collected in a receptacle.

A study by De Jong and Lagro-Janssen (2007), which was a secondary analysis of data from a large trial involving 1646 low-risk women, examined the association between upright position and increased blood loss. The study showed that blood loss was associated with perineal damage and was only significantly increased in women in sitting (OR 2.25; 95% CI 1.37 to 3.71) and semi-sitting positions (OR 1.30; 95% CI 1.00 to 1.69) compared to women in a recumbent position (De Jonge et al. 2007). In this study, blood was measured rather than estimated, increasing its accuracy. The authors conclude that increased perineal oedema associated with upright positions is the most likely cause of the increased blood loss observed in other trials.

#### **Summary – Positions in 2<sup>nd</sup> stage for women without epidural anaesthesia**

With the possible exception of increased blood loss, no deleterious effects to the mother or baby when giving birth in the upright posture have been demonstrated. In women without epidural anaesthesia, a number of observational studies have suggested that giving birth in an upright position results in shorter labours, lower incidence of instrumental births and episiotomies, and is a more comfortable position (Bodner-Adler et al. 2003; Mendez-Bauer et al. 1975). One small RCT (Chen et al. 1987) and two systematic reviews (De Jonge, Teunissen & Lagro-Janssen 2004; Gupta, Hofmeyr & Shehmar 2012) have confirmed this finding. In light of this, it is suggested that women should be encouraged to give birth in whichever position is most comfortable for them, although this review did not look at this specifically.

❖ *Positions in the second stage of labour for women using epidural anaesthesia*

A separate Cochrane review has addressed positions in the second stage for women using epidural anaesthesia (Kemp et al. 2013). The review aimed to assess the effects of different birthing positions during the second stage of labour, on important maternal and fetal outcomes for women with epidural analgesia. The most recent substantive amendment to the review was undertaken in October 2012.

Epidural analgesia is commonly used as a form of pain relief in labour. Systematic reviews of randomised controlled trials have found that it is more effective than other non-epidural methods (Anim-Somuah, Smyth & Jones 2011). However, epidurals result in a longer second stage of labour and more instrumental deliveries (Anim-Somuah, Smyth & Jones 2011). This matters because prolonged second stage of labour may increase the risk of fetal respiratory acidosis and postpartum haemorrhage (Watson 1994). Instrumental births are associated with prolapse, urinary incontinence, and dyspareunia (Liebling 2004; MacLennan 2000). Strategies to shorten the second stage of labour and reduce instrumental births in this setting are important.

One suggestion to reduce adverse outcomes in labour with an epidural is the use of alternative maternal birth positions. Although it has become more common in high-income countries to give birth in the supine position, this position may result in a higher number of instrumental births and episiotomies (De Jonge, Teunissen & Lagro-Janssen 2004).

The Cochrane review by Kemp, et al. (2013) examines the effect of vertical versus horizontal positions in women with all types of epidural. The authors recognise that some vertical positions, (for example. ambulation, standing and squatting), as well as some horizontal positions, (for example, knee chest), may be difficult for women with a traditional epidural to maintain. However, other vertical

positions, (for example, sitting supported), are possible even with a traditional epidural; for this reason they included studies where women had traditional epidurals in the analysis. Studies were included where pregnant women (primigravidae and multigravidae) were in the second stage of induced or spontaneous labour; were recruited and randomised in any stage of labour and had singleton pregnancies at term gestation (more than 37 weeks).

There are three potential time phases in which the effects of different positions can be studied: namely the latent phase; the active phase; and both phases. The studies included by Kemp et al (2013) were classified as either a comparison of an upright versus a recumbent position in the latent phase of the second stage of labour, or a comparison of an upright versus a recumbent position in the active phase of the second stage of labour. The studies were considered eligible for inclusion if it was intended that participants spent at least 30% of time in the relevant phase of second stage labour in the allocated position. Finally, studies that compared an upright position with a recumbent position in both phases of the second stage formed a third group.

In total, five randomised controlled trials (Boyle, Entwistle, Hamilton & Kulinska 2001; Downe, Gerrett & Renfrew 2004; Golar & Shennan 2002; Karraz 2003; Theron, Baraz, Thorp-Jones, Sanders & Collis 2011), involving 879 women, were included (Kemp et al. 2013). All the included studies had two intervention groups which could be classified into an upright or recumbent position. The authors acknowledged that there would be some overlap between these studies and the Cochrane review 'Maternal positions and mobility in the first stage of labour' (Lawrence et al. 2013).

Overall, Kemp and colleagues (2013) identified no statistically significant difference between upright and recumbent positions in primary outcomes of operative birth (caesarean or instrumental vaginal) (five trials, n=874; average risk ratio (RR) 0.97; 95% CI 0.76 to 1.29), or duration of the second stage of

labour measured as the randomisation to birth interval (two trials, n=322; average mean difference -22.98 minutes; 95% CI -99.09 to 53.13). There were no differences in the incidence of instrumental birth or CS separately, or in any other important maternal or fetal outcome, including trauma to the birth canal requiring suturing, operative birth for fetal distress, low cord pH or admission to neonatal intensive care unit. The studies were relatively small. However, the 95% confidence intervals around each estimate were wide, and clinically important effects have not been ruled out. The authors conclude that women with an epidural should be encouraged to use whatever position they find most comfortable during their second stage of labour.

All of the studies had some methodological concerns including lack of registration, unclear randomisation concealment, or post randomisation exclusions, which means the results should be interpreted with caution. There were no data reported on excess blood loss, prolonged second stage or maternal experience and satisfaction with labour. Similarly, there were no analysable data on Apgar scores, the need for neonatal ventilation or for perinatal death.

#### **Summary – Positions in 2<sup>nd</sup> stage for women with epidural anaesthesia**

The result of this review shows that there are insufficient data to draw conclusive evidence about the effect of position for the second stage of labour for women with epidural analgesia. The authors recommend that women with an epidural should be encouraged to use whatever position they find comfortable in the second stage of labour. Support should be provided to assist women with position changes as they wish.

#### ***2.4.4 Non-Pharmacological Pain Management***

The pain experienced in labour is affected by the processing of multiple physiological and psychosocial factors (Lowe 2002; Simkin & Bolding 2004). Perceptions of labour pain intensity vary. Very occasionally women feel no pain

in labour and give birth unexpectedly (Gaskin 2003). At the other extreme, labour pain has been reported to be the most severe pain that a woman experiences in her lifetime (Melzack 1984).

Many factors influence the physiological and psychological processes of birth and the extent to which women experience pain, including parity and the way labour is managed. The pattern of pain, for instance, appears to be different in nulliparous as compared with multiparous women. Typically, during early labour (before 5 cm cervical dilatation), women having their first baby (nulliparous) women experience greater sensory pain than those who have previously given birth (multiparous) (Lowe 2002). The positions adopted by women and the extent of their mobility during labour may also significantly affect the perception of pain (Kibuka, Thornton & Kingswood 2009; Lawrence et al. 2013). Women tend to experience induced labour as being more painful than spontaneous labour (NICE 2008).

Numerous psychosocial factors also exert an influence on women's experience of labour pain. Prior experiences of labour and childbirth, culture and ethnicity, educational attainment and a woman's ability to cope are often suggested as significant mediating variables on the experience of labour pain (Lowe 2002). It is suggested that fear and anxiety can produce muscle tension (Dick Read 2004), and a wide range of 'mind-body' interventions are currently being used during pregnancy for preventing or treating women's anxiety, including autogenic training, auto-suggestion, biofeedback, hypnosis, imagery, meditation, prayer, relaxation therapy, tai chi and yoga (Marc et al. 2011).

As previously discussed, a Cochrane systematic review (Gupta, Hofmeyr & Shehmar 2012) found a reduction in the reporting of severe pain during the second stage of labour for women using any upright or lateral position as compared with women lying on their back during labour. The physical and cultural birth environment and the degree of emotional support provided by

clinical carers and the woman's birth companions also affect perceptions of pain (Foureur 2008). Leap and Anderson (2008) introduced the notion of 'the pain relief paradigm' and the 'working with pain paradigm' to theorise different approaches to pain in labour (Leap & Anderson 2008). The pain relief paradigm is based on a set of beliefs, including the conviction that labour pain is unnecessary and barbaric in the modern world, that the benefits of analgesia outweigh the risks and that women should not be made to feel guilty if they choose pain relief (Leap & Anderson 2008). The working with pain paradigm is based on the view that pain is an important part of the physiology of normal labour and that, given optimal support, a woman can cope with levels of pain in normal labour using her own natural endorphins and coping strategies. This evidence for a 'working with pain' approach has been explored by Leap, Dodwell and Newburn (2010).

A wide range of pain management methods are used by women during childbirth (Caton et al. 2002). Commonly, these include non-pharmacological interventions [hypnosis, biofeedback, immersion in water, aromatherapy, relaxation techniques (yoga, music, audio), acupuncture or acupressure, manual methods (massage, reflexology), transcutaneous electrical nerve stimulation (TENS)] and pharmacological interventions (inhaled analgesia, opioids, non-opioid drugs, local anaesthetic nerve blocks, epidural and intrathecal injections of local anaesthetics or opioids, or both). Broadly speaking, the non-pharmacological interventions primarily aim to help women cope with pain in labour, whereas the pharmacological interventions primarily aim to relieve the pain of labour (NICE 2007).

Pain in labour is multifaceted and there may be overlap between non-pharmacological and pharmacological interventions. Some interventions are taught in antenatal classes and can be administered prior to the onset of labour [hypnosis, biofeedback, aromatherapy, relaxation techniques (yoga, music, audio), acupuncture or acupressure, manual methods (massage, reflexology), TENS], whilst others are administered only during labour (intracutaneous or



subcutaneous sterile water injections, immersion in water, inhalation analgesia, opioids, non-opioid drugs, local anaesthetic nerve blocks, epidural and intrathecal injections of local anaesthetics or opioids, or both).

This section looked specifically at reviews examining non-pharmacological pain management techniques, namely, immersion in water; relaxation techniques; and massage, reflexology, and other manual methods women may use to manage pain in labour. An overview summarising each of the evidence from the individual reviews will be reported.

*a) Immersion in water in labour and birth*

Water immersion refers to the immersion in water by a pregnant woman during any stage of labour (first, second, third), and where the woman's abdomen is completely submerged (Garland 2000). The immersion takes place in a receptacle that may be a pool, tub or bath, and which is usually larger than a normal domestic bath. Immersion may be for one or more stages of labour, and for any duration. The buoyancy of water enables a woman to move more easily than on land (Edlich et al. 1987). This can facilitate the neuro-hormonal interactions of labour, alleviating pain, and potentially optimising the progress of labour (Ginesi & Niescierowicz 1998).

Water immersion may be associated with improved uterine perfusion, less painful contractions, and a shorter labour with fewer interventions (Aird, Luckas, Buckett & Bousfiel 1997; Geissbuehler & Eberhard 2000; Moneta, Okninska, Wielgos, Przybos, Szymusik & Marianowski 2001; Otigbah, Dhanjal & Harmsworth 2000; Schorn, McAllister & Blanco 1993). Shoulder-deep warm water immersion also may reduce blood pressure due to vasodilatation of the peripheral vessels and redistribution of blood flow. Water immersion during labour seems to increase women's satisfaction and sense of control (Hall & Holloway 1998; Richmond 2003). It is also suggested that the fetus benefits from a relaxed mother, as this optimises placental perfusion, and release of 'nature's

opiates', the endogenous opioids (endorphins and encephalins). Accordingly, when the woman is not fearful, oxytocin release is optimised, stimulating effective contractions. In addition, the ease of mobility that water immersion offers may optimise fetal position by encouraging flexion (Ohlsson et al. 2001).

Twelve studies randomising 3,243 women were included in this systematic review (Cluett & Burns 2012). Of the 12 trials included, eight related to the first stage of labour only; one related to early (< 5 cm dilation) versus late ( $\geq$  5 cm dilation) immersion in the first stage of labour; two involved immersion during the first and second stages of labour; and one involved women in the second stage of labour only. There were no studies evaluating the use of different types of baths/pools at any stage of labour or the effects of water immersion on the third stage of labour.

The most recent substantive amendment to the systematic review by Cluett and Burns (2012) was undertaken in August 2011. Trials in the review collected a range of data but the specific outcome measures collected were very variable, and collected in different formats. For example, some studies consider maternal outcomes but not outcomes on neonatal wellbeing. Use of Apgar scores was also variable; some used them as continuous data, others as dichotomous, making comparison across studies challenging, and resulting in the reporting of many variables based on the results from one study.

Compliance with trial allocation was variable. For example, of the trials that involved water immersion in the first stage of labour, Rush and colleagues (1996) reported that 46% of women allocated to water immersion did not actually enter the water, while Woodward and Kelly (2004) planned a 2:1 ratio allocation to water anticipating that about 50% of women would not use water, but of the 40 allocated to use water, only 24 used the pool. Another five trials (Cammu, Clasen, Van Wetteren & Derde 1994; Eckert, Turnbull & MacLennan 2001; Eriksson, Mattson & Ladfors 1997; Ohlsson, Buchhave, Leandersson, Nordstrom,

Rydhstrom & Sjolín 2001; Woodward & Kelly 2004) reported some crossover between groups. There was a high level of heterogeneity for some of these outcomes and so these results should be examined with caution.

Results for the first stage of labour showed there was a significant reduction in the epidural/spinal/paracervical analgesia/anaesthesia rate amongst women allocated to water immersion compared with those not allocated (six trials, 478/1,254 versus 529/1,245; risk ratio (RR) 0.90; 95% CI 0.82 to 0.99) (Cluett & Burns 2012). There was also a reduction in the duration of the first stage of labour in the immersion group (seven trials, mean difference [MD] -32.4 minutes; 95% CI -58.67 to -6.13).

In a single trial (n=120) comparing immersion versus no immersion in the first stage of labour significantly fewer women in the immersion group reported their pain intensity as being moderate to severe at 30 minutes after randomisation on three different instruments measuring pain intensity (RR 0.75, 95% CI 0.62 to 0.91; RR 0.72, 95% CI 0.58 to 0.90; RR 0.67, 95% CI 0.51 to 0.90). At one and two hours after randomisation, fewer women in the immersion group reported moderate or severe pain for two out of the three ordinal scales (one hour – RR 0.76, 95% CI 0.63 to 0.91; RR 0.68, 95% CI 0.53 to 0.86) (two hours - RR 0.76, 95% CI 0.59 to 0.98; RR 0.72, 95% CI 0.52 to 0.98). There were no significant differences between groups at three hours after randomisation on any of the three ordinal scales.

Mean systolic, diastolic and arterial blood pressures were also significantly lower in women in the immersion group, in one trial (n=120) that compared immersion versus no immersion in the first stage of labour (systolic, mean 120.3 mmHg versus 127.5 mmHg; MD -7.20; 95% CI -13.12 to -1.28; diastolic, mean 62.8 mmHg versus 73 mmHg; MD -10.20; 95% CI -13.70 to -6.70; and mean arterial pressure, mean 83.7 versus 94.2; MD -10.50, 95% CI -14.68 to -6.32). Women

also expressed a wish to use water for subsequent labour (120 women, RR 0.38; 95% CI 0.14 to 0.98) in the immersion group.

No difference were noted in either assisted vaginal births (seven trials, RR 0.86; 95% CI 0.71 to 1.05), or CS (eight trials, RR 1.21; 95% CI 0.87 to 1.68), although one trial (Chaichian, Akhlaghi, Roustafar & Safavi 2009) had a higher normal birth rate in the water immersion group (100% [53/53] compared to 79.2% [42/53]) (RR 1.26; 95% CI 1.09 to 1.45). There were no significant differences in the use of oxytocin infusion, perineal trauma or maternal infection rates, nor were there differences for Apgar score less than seven at five minutes, neonatal unit admissions, or neonatal infection rates.

Of the three trials (Chaichian, Akhlaghi, Roustafar & Safavi 2009; Nikodem 1999; Woodward & Kelly 2004) that compared water immersion during the second stage with no immersion, one reported a significantly higher level of satisfaction with the birth experience (RR 0.24; 95% CI 0.07 to 0.80), with fewer women in the immersion group feeling that they did not cope satisfactorily with their pushing efforts (3/60 versus 12/57). Satisfaction with pain relief; sense of control in labour; effect on mother/baby interaction; poor infant outcomes at long-term follow-up; or cost were not analysed in the review.

### **Summary – Immersion in water in labour and birth**

Evidence suggests that water immersion during the first stage of labour reduces the need and use of invasive, pharmacological pain management such as epidural/spinal/paracervical analgesia which disrupts the physiology of labour and is associated with iatrogenic interventions. The duration of the first stage of labour was also significantly reduced in the immersion group, with no evidence that use of water immersion was associated with poorer outcomes for neonates, longer labours or more complex births.

Differences were also observed for pain intensity, satisfaction with childbirth experience, a reduction in blood pressure, and wish to use water for subsequent labour although evidence for all of these outcomes were derived from single studies. There was little difference between groups for other comparisons including: breastfeeding, assisted vaginal birth, CS, adverse effects for infants, admission to special care baby unit, and Apgar score less than seven at five minutes.

Although significant findings were reported in the review, the trials were very variable and considerable heterogeneity was detected for some outcomes.

*b) Relaxation techniques for pain management in labour*

Many women would like to avoid pharmacological or invasive methods of pain management in labour and this may contribute towards the popularity of complementary methods of pain management. This review examined currently available evidence supporting the use of relaxation therapies for pain management in labour.

Eleven studies (n=1,374) were included in the Cochrane review (Smith et al. 2011). Relaxation was associated with a reduction in pain intensity during the latent phase (one trial, n=40; MD -1.25; 95% CI -1.97 to -0.53) and active phase of labour (two trials, n=74; MD -2.48; 95% CI -3.13 to 0.83). There was evidence of improved outcomes from relaxation instruction with increased satisfaction with pain relief (one trial, n=40; RR 8.00; 95% CI 1.10 to 58.19) and lower assisted vaginal births (two trials, n=86; RR 0.07; 95% CI 0.01 to 0.50). Yoga was associated with reduced pain (one trial, n=66; MD -6.12; 95% CI -11.77 to -0.47), increased satisfaction with pain relief (one trial, n=66; MD 7.88; 95% CI 1.51 to 14.25), satisfaction with the childbirth experience (one trial, n=66; MD 6.34; 95% CI 0.26 to 12.42), and reduced length of labour when compared to usual care (one trial, n=66; MD -139.91; 95% CI -252.50 to -27.32,) and when compared with supine position (one trial, n=83; MD -191.34, 95% CI -243.72 to -138.96).

Trials evaluating music and audio as a form of analgesic found no difference between groups in the primary outcomes pain intensity, satisfaction with pain relief, and CS. The risk of bias was unclear for the majority of trials.

### **Summary – Relaxation techniques for pain management in labour**

Relaxation and yoga may have a role with reducing pain, increasing satisfaction with pain relief and reducing the rate of assisted vaginal delivery. There was insufficient evidence for the role of music and audio as a form of analgesic. However, there is a need for further research.

The review of 11 randomised controlled trials, with data reported on 1,374 women, found that relaxation techniques and yoga may help manage labour pain. However, in these trials there were variations in how these techniques were applied in the trials. Single or limited number of trials reported less intense pain, increased satisfaction with pain relief, increased satisfaction with childbirth and lower rates of assisted vaginal births.

#### *c) Massage, reflexology, and other manual methods for pain management in labour*

Women may also use manual methods as a form of non-pharmacological pain management technique. This review examined currently available evidence supporting the use of manual healing methods including massage and reflexology for pain management in labour (Smith et al. 2012).

Six trials were included in this review, with data reporting on five trials and 326 women in the meta-analysis (401 women in total randomised) (Smith et al. 2012). Only studies examining massage were identified. Control conditions varied. Less pain during labour was reported from massage compared with usual care during the first stage of labour (four trials, n=225; standardised mean difference [SMD] -0.82; 95% CI -1.17 to -0.47), and labour pain was reduced in one trial of massage compared with music (n=101; RR 0.40; 95% CI 0.18 to 0.89). One trial of massage compared with usual care found reduced anxiety during the

first stage of labour (n=60; MD -16.27, 95% CI -27.03 to -5.51). None of the trials was assessed as being at a low risk of bias for all quality domains.

### **Summary – Massage, reflexology, and other manual methods for pain management in labour**

Massage may have a role in reducing pain, and improving women’s emotional experience of labour. However, there is a need for further research. There were no studies on any of the other manual healing methods. The six studies were of reasonable quality but more participants are needed to provide robust information. The authors found that women who used massage felt less pain during labour when compared with women given usual care during first stage.

#### ***2.4.5 Birth Environment (home-like settings)***

Labour wards have become the settings for labour and birth for the majority of childbearing women in high-income countries. The design of conventional hospital labour rooms is similar to the design of hospital rooms for people who are sick or in need of medical attention. For example, the hospital bed is a central feature of the room, and medical equipment such as oxygen, suction, and intravenous equipment are often in plain view.

In an effort to support normal labour and birth for healthy childbearing women, a variety of maternity care settings have been constructed in hospitals or health services over the years. Some are ‘home-like’ bedrooms within hospital labour wards; others are ‘home-like’ birthing units adjacent to the labour wards or freestanding birth centres. More recently, ‘ambient’ and Snoezelen rooms have been constructed within labour wards (Hodnett et al. 2009). These rooms are not necessarily home-like but contain a variety of sensory stimuli and furnishings designed to promote feelings of calmness, control, and freedom of movement. These structural characteristics share an overall philosophical orientation towards promoting normal birth by means of improving the environment for

birthing women. The whole environment is designed to include not only facilities, but also features that promote psychological support for women.

The relationship of the birthing environment and its impact on maternal and neonatal outcomes is addressed in a Cochrane systematic review by Hodnett and colleagues (2012). The aim of the review was to ascertain the effects, on labour and birth outcomes, of care in an alternative institutional birth setting compared with care in a conventional hospital labour ward (i.e. to what extent is a more homely environment associated with lower rates of intervention such as CS, operative assisted birth, episiotomy, use of analgesia including epidural and a more positive experience of birth). The most recent substantive amendment to this systematic review was undertaken in May 2012.

All randomised or quasi-randomised controlled trials that compared the effects of an alternative institutional birth setting to a conventional setting were reviewed. The authors included ten trials involving 11,795 women, of which nine trials involving 11,503 women provided data for the review. The authors found no trials of freestanding birth centres or Snoezelen rooms.

The systematic review identified that allocation to an alternative setting increased the likelihood of: no intrapartum analgesia/anaesthesia (six trials, n=8,953; RR 1.18, 95% CI 1.05 to 1.33); spontaneous vaginal birth (eight trials; n=11,202; RR 1.03, 95% CI 1.01 to 1.05); breastfeeding at six to eight weeks (one trial, n=1,147; RR 1.04, 95% CI 1.02 to 1.06); and very positive views of care (two trials, n = 1,207; RR 1.96, 95% CI 1.78 to 2.15). Allocation to an alternative setting decreased the likelihood of epidural analgesia (eight trials, n=10,931; RR 0.80, 95% CI 0.74 to 0.87); oxytocin augmentation of labour (eight trials, n=11,131; RR 0.77, 95% CI 0.67 to 0.88); instrumental vaginal birth (eight trials, n=11,202; RR 0.89, 95% CI 0.79 to 0.99); CS (nine trials, n=11,350; RR 0.88, 95% CI 0.78 to 1.00); and episiotomy (eight trials, n=11,055; RR 0.83, 95% CI 0.77 to 0.90). There



was no apparent effect on other adverse maternal or neonatal outcomes. Care by the same or separate staff had no apparent effects.

No conclusions could be drawn regarding the effects of continuity of caregiver or architectural characteristics. In several of the trials included in this review, the design features of the alternative setting were confounded by important differences in the organizational models for care (separate staff for the alternative setting, offering more continuity of caregiver) and thus it is difficult to draw inferences about the independent effects of the physical birth environment. Furthermore, the effects of an alternative environment may be overpowered by routine institutional policies and practices (Fannin 2003).

The authors acknowledge that although more than 11,000 women have participated in randomised trials of alternative birth settings, the low number of women allocated to alternative settings who actually gave birth in their allocated setting dilutes both the potential benefits and risks of alternative settings. Other important factors that complicate interpretation of the results are the variations in organisational models of care in the trials, including the potential impact of antenatal care, continuity of caregiver, and midwifery-led versus consultant-led care.

### **Summary - Birth environment**

In summary, a large systematic review by Hodnett and colleagues (2012) showed that, when compared to conventional institutional settings, alternative settings were associated with a reduced likelihood of medical interventions, an increased likelihood of spontaneous vaginal birth, increased maternal satisfaction, and a greater likelihood of continued breastfeeding at one to two months postpartum, with no apparent risks to mother or baby.

Unfortunately, in several trials, the design features of the alternative setting were confounded by differences in the organizational models of care (including

separate staff and more continuity of caregiver in the alternative setting), and thus it is not possible to draw conclusions about the independent effects of the design of the birth environment. The authors conclude that women and policy makers should be informed about the benefits of institutional settings that focus on supporting normal labour and birth. Providing the right facilities and giving effective support to women and families is likely to affect the outcomes of birth, reducing the rate of clinical interventions, and improving the birth experience. These findings have important implications for the current study, in terms of promoting normal birth.

## **2.5 Summary**

This literature review has included the evidence that supports normal (physiological) birth. Studies indicating the significant benefits of practices that optimise a woman's chance of a normal birth were reviewed. From the literature it was apparent normal (physiological) birth can be encouraged with strategies to facilitating the promotion of normal birth. However, it remains unclear how staff in obstetric-led units can promote normal birth for women in hospital birth environments. This PoNB study will help contribute to this knowledge in the Singapore context.

## CHAPTER 3: RESEARCH METHODOLOGY

### 3.1 Introduction

This chapter explains the foundation for the study in three-parts. Part One presents the fundamental focus underlying the Promotion of Normal Birth (PoNB) study and the design. Part Two details and justifies the critical paradigm within an action research (AR) methodology and briefly explains the use of varied data collection methods (eg. surveys, focus groups and existing birth data) to address the objectives of the study. Part Three brings together the theoretical foundations presented (action research guided by the philosophy of critical social theory) by means of Parkin's (1999) approach, in integrating action research and collaborative change management. Building on the discussion here, *Chapter 4* will then address the methods employed and the practical way in which Parkin's (1999) Model of action research and managing change was used as a core strategy for leading, managing and implementing change in the PoNB study.

In this study, the focus is to explore through an action research project how the overall goal of normal birth promotion can be encouraged and embedded in the culture in a tertiary maternity unit in Singapore. The aims were outlined in *Chapter 1*.

### 3.2 Design of the Promotion of Normal Birth (PoNB) Study

Explorations of a range of epistemological frameworks guided the development and design of the study, which operated from a fundamental standpoint of promoting collaboration and emancipation in effecting sustainable change in a tertiary maternity unit. Key considerations included collaborative and participatory action; awareness-raising; empowerment; as well as a flexible process to enable change. This change was centred not only on improving outcomes, and improving the self-understandings of practitioners, but also on

assisting participants to develop a critical understanding of their practices and practice settings – with an aim to transform maternity care for the better. The research was developed essentially as a transformative praxis, created to encourage collaborative action in the promotion of normal birth and to explore the changes (for women, their families, staff and the organisation) that have occurred in the maternity unit as a result of this study.

Action research, drawn explicitly upon the philosophical premise of a critical theory perspective (Coghlan & Brannick 2010; Reason & Bradbury 2008), was considered to be the most appropriate methodology for this study. The rationale was that, with its focus on improving and involving, AR would enable opportunities for the engagement of maternity care providers and women as partners in a process that would be empowering and that would facilitate the changes required in supporting normal birth in the study site. The AR paradigm builds on participants' motivation, giving them authority and offering them support and resources in the action-oriented change process. Action research is about inclusiveness, in that change is not done to people but by them (Massey & Williams 2006; Reason & Bradbury 2013). It is the emphasis on social interactions and working collaboratively in the construction of knowledge that leads to action (Kennedy 2001; Koch & Kralik 2006). The influence of critical theory and AR as an integrating methodology will be detailed further under *Methodological Considerations*.

The PoNB Study utilised a combination of data collection methods, some of which were identified prospectively while others were developed with the participants as the research process unfolded (Coghlan & Brannick 2010; Creswell & Plano Clark 2006; Dick 2011; Parahoo 2014; Parkin 2009b). A review of studies on affecting change in clinical practice, specifically in contemporary maternity care contexts informed decisions on the choice of methods undertaken for the study (Barrett 2006; Deery 2005; Enkin et al. 2006; Hunter 2007; Mander, Murphy-Lawless & Edwards 2010; McVicar, Munn-Giddings &

Abu-Helil 2012; Walton, Yiannousiz & Gatsby 2005). Researchers in the PoNB study acknowledged that a diverse, exploratory, yet rigorous approach to data collection, analysis and synthesis was required in order to obtain answers to the research question. This process involved collecting, analysing and synthesising a range of qualitative and quantitative data to not only explore and describe but also assess, evaluate and plan for the next course of action using AR cycles (see following section on *Action Research*). Although the study was generally of an exploratory (qualitative) nature, some emphasis was accorded to quantitative data to fully examine the nature and potential outcomes of change (promotion of normal birth) for women, their families, staff and the organisation. It was important to ensure that the study generated the appropriate data that could guide subsequent phases of the study in driving the process forward (Coghlan & Brannick 2014; Townsend 2013).

The use of both qualitative and quantitative data with a philosophical stance that embraces multiple viewpoints could allow for a wider or more complete picture to emerge (McNiff & Whitehead 2010), than where quantitative or qualitative methods alone is employed. Effectively, this study employed a flexible and pragmatic approach to the integrating and validating of a range of datasets in sequential and concurrent phases in order to facilitate a comprehensive understanding of both the phenomenon (the promotion of normal birth) and the context of change (in a tertiary maternity care setting). The use of a combination of data collection methods, grounded within a transformative paradigm synonymous with action research gives primacy to value-based and action-oriented dimensions (Klein 2012; Mertens 2004; Reason & Bradbury 2013; Williamson, Bellman & Webster 2012), vital to addressing change in a complex environment such as the tertiary maternity study site.

An action research methodology was justifiable for both its conceptual and methodological congruence with the study aims, as well as its applicability and flexibility to survey, evaluate and field research through multifaceted

observations in the clinical setting (Holloway & Wheeler 2013; McNiff 2013). The opportunity to integrate different types of data as part of the action research iterative processes allowed cumulative insights into the research focus, and was also critical to maximising the PoNB Study's potential whilst also determining its effectiveness.

### **3.3 Methodological Considerations**

This section details and justifies the theoretical framework that was employed in the Promotion of Normal Birth (PoNB) study. Action research (AR) guided by the philosophy of critical social theory (CST) which espouses a participatory or collaborative approach, wherein people and their experiences are valued is addressed, with considerations in line with the study focus and aims of the research.

#### ***3.3.1 Critical Social Theory***

Critical social theory (CST) methodology originates from the philosophical tradition of critical social (science) theory (or the critical emancipatory paradigm). It emerged as a response to an increasing and growing awareness about the limitations of alternative paradigms in addressing human consciousness and subjectivity (Carr & Kemmis 1986; Crotty 1998; Silverman 2005; Walker 2005). The underlying premise of CST research is concerned with valuing humans and the experiences they bring into the research process (i.e. history, culture, gender, economic and socio-political situations); as well as the commitment to raising emancipatory consciousness to the empowerment of individuals (Henn, Weinstein & Foard 2009; Kincheloe & McLaren 1998) in addressing change.

Critical social theorists have argued that approaches based on principles of positivism, with claims of 'objectivity', reliance on observation and

measurement, and tight control over the field of study (Hammersley 2004) are too 'restrictive' in the generation of local, contextual and pragmatic knowledge (Brown & Jones 2001; McNiff 2013; Rolfe 2006; Seidman 1994). It is deemed that this reductionist view ignores the 'values' from lived lives, which are individual, subjective, diverse and unique (Howe 1994; Lyotard 1984), all of which could lead possibly to more meaningful interpretation of change in terms of practical, theoretical, and transformational relevance to the people involved. In critical social methodologies, the involvement and participation of people by engaging and working with them in their specific environment or situation is particularly important in order to build an understanding of the motives and intentions that underpin their social behaviour (Coghlan & Brannick 2014; Coghlan & Casey 2001; Moore, Crozier & Kite 2012; Sandars & Waterman 2005). It is from this perspective that critical social theory finds its expression in learned, shared and inherited values. Critical social theorists suggest that knowledge gained through this process contributes to understanding the beliefs, norms and practices (i.e. ideologies, values and interests) of particular groups (Davies 2000; Hall 2006) which could bring about social and political changes. Such ideas explicitly challenge conventional notions of objectivity, by acknowledging the socially constructed and intrinsically subjective character of knowledge creation (Henn, Weinstein & Foard 2009).

Although critical forms of research generally follow a subjectivist epistemology similar to the hermeneutic tradition (sometimes referred to as a phenomenological, constructivist, interpretivist, postmodern or relativist paradigm), subtle differences are evident between the concentrations of their intent. While both critical and qualitative inquiry explore the relative (changing) nature of knowledge (McNiff 2013; Morton-Cooper 1999) seen to be special and centred in the people, place, time and conditions in which it finds itself (unique and context-dependent), critical methodologies begin with the stated objective of questioning the 'state' of affairs in order to improve a given situation. It is by means of a critical process of inquiry in (pre) understanding the 'cultural

environment' and dynamics of the prevailing context that critical approaches are uniquely positioned to illuminate, explain and manage the complexity inherent in development processes so as to help people change their conditions (Oreg 2006; Parkin 2009b; Williamson & Prosser 2002).

In the study, critical social approaches had the potential and capacity to address barriers to change and possible negative effects of the change process in the promotion of normal birth. For example, it was hoped that practice change geared towards supporting normal birth within the tertiary setting might potentially challenge the status quo in the unit. We recognised that possible conflict can arise from differing perspectives, which may stem from diverse professional backgrounds and the conceptual underpinnings of those groups (Gray 2013; McKellar, Pincombe & Henderson 2009; Sandars & Waterman 2005; Waterman et al. 2001); hierarchical tradition; or inflexible reactions to innovation. These obstacles can make effective inter-disciplinary working difficult and possibly affect the participation of all staff in any proposed change. Critical social research is therefore seen as a 'vehicle' that can be used to reveal for example, the existing working relationship within teams and between inter-disciplinary groups (i.e. midwives, nurses, doctors and consumers); the interplay of power relations (i.e. leadership styles, status of groups/teams); as well as the influence of cultural norms inherent to achieving developments and seeking transformations in the local context (Brooks & Brown 2002; Kemmis & McTaggart 2000; McNiff 2013; Rodney et al. 2006).

Another feature of relevance within the critical social theory paradigm is the emphasis that research strategies needed to be both empowering (seeking positive individual change through participation) and emancipatory (seeking positive societal change) (Barnes 2003; Henn, Weinstein & Foard 2009). In this view, researchers move beyond a solely 'partnership' outlook and work instead towards 'integrating' people into the research process and its process development (Denzin & Lincoln 2007; Hart & Bond 1995; Maguire 2001). While



an inclusive (extensive) process of engaging with people (i.e. maternity stakeholders - obstetricians, midwives, nurses, and consumers) in ensuring a 'voice' in determining the nature of change is a necessary feature evident in critical methodologies, emancipatory researchers urge that this is not sufficient. Simply giving 'voice' to people will not automatically contribute towards tangible transformation in terms of improving the circumstances of people and the conditions of their experience. This was an important consideration in the PoNB study where the focus was to foster a shared process of working together at the research site, to promote collective participation and co-creation in the development of normal birth promotion.

Critical social theorists strive actively to involve those who will be affected by the changes. Rather than merely viewing people as 'objects' of research, researchers seek to understand situations by way of engaging participants as co-researchers who actively contribute to decision-making, enquiry, action and ownership of outcomes (Badger 2000; Heather et al. 2007; Williamson & Prosser 2002). Mutual engagement in the process of critical, evaluative reflection as they naturally occur in the field will potentially resolve contradictions and bring about change (Dewing 2008; McAllister & Walsh 2003). Critical social enquiry is enabled through reflexivity where participants in the context are actively encouraged to collaborate not only in the change process, but in a creative way in the interpretation of information and for their expert intuitive knowledge of practice to be explored (Bourdieu 1990; Parkin 2009b). This supports the notion that knowledge develops through interaction between creative conjecture and the 'test' of experience. Further features of valuing individual experiences, the relationships people create and develop for deep inquiry (to solve problems) as well as collaborative action is discussed later in the process of action research.

Meaningful research within the critical emancipatory model, therefore, is inherently political and is guided by a commitment focused on addressing critical questions such as: a) the nature of the relationships (interactions) that

researchers form with their research participants (Messner & Rauch 1995; Munn-Giddings & Winter 2013); b) the degree of involvement and scope of collaboration between researchers and participants in the research process (Greenwood & Levin 2007; Piggot-Irvine & Bartlett 2008; Sandars & Waterman 2005); and c) the methods that are most appropriate to capture 'collective' experience wherever possible. These factors can be viewed as being core to defining the enabling qualities that underpin critical research within the context of transformational and/or emancipatory intent as the goal of change (Boog 2003; Kemmis 2001; Schostak & Schostak 2007; Zuber-Skerritt 2012). Ultimately, as Fay (1993, p. 34) explains: 'To have the practical force it requires, critical research methods must become an enabling, motivating resource for its audience – it must, in short, empower them'. As in the case of the PoNB study, research processes which foster empowerment as its 'goal' in bringing about change in the promotion of normal birth are essential.

Critical social theory methodology, with its democratic processes, can be very empowering in: a) changing the dynamics of professional practice (Dewing 2008; Fernie & Smith 2010; McAllister & Walsh 2003); b) challenging taken-for-granted assumptions about the way things are and questioning established forms of thinking and practice (McCourt 2009); and c) understanding the 'structures' and potentially conflicting 'forces' in underlying 'subjective' experiences through a wide range of stakeholder perspectives (Hatch & Cunliffe 2012). Such favourable means of social enquiry are often not possible in more traditional forms of research (i.e. a singly quantitative or qualitative paradigm), which do not allow for 'dialectic' processes (Eden & Huxham 1996; Greenwood & Levin 2007; Reason & Torbert 2001). Critical social research is responsive to events in specific contexts, and emphasises active engagement and collaboration of participants in the change process. Hence, the appeal of a critical social paradigm for this PoNB study lies not only in its ability to contribute to the generation of change-enhancing social theory (McNiff 2013; Winter & Munn-Giddings 2001), but in its uniqueness of bringing together the fundamental elements of the research aims.

In short, a change process integrating essential elements of participation, collective involvement and action, as well as the fostering of empowerment among people (maternity stakeholders) in the support for normal birth.

### **3.3.2 Action Research**

Action research (AR) has its foundations in the political philosophy of critical theory. The assumptions and concepts of critical social theory (CST) (*see previous section*) also underpin AR (Carr & Kemmis 1986), and there is a convergence between their underlying values (Hart & Bond 1995; Kemmis, McTaggart & Nixon 2014; McCormack, Manley & Garbett 2004). Shared features in this philosophical framework include a democratic and user orientation; transformative agenda; as well as an emancipatory potential to making change.

The feature of a democratic and user orientation to AR emphasises, a non-hierarchical and reflexive approach to actionable change through collaborative and participative involvement of participants in the research process. The proximity and shared understanding with AR is located in a participatory worldview which encourages research that is *with, for* and *by* people and communities, rather than *on* them (McNiff & Whitehead 2002; Reason & Bradbury 2008; Winter & Munn-Giddings 2001).

As an approach, AR can claim to share many crucial linkages with CST. Action research is similar to the philosophy of CST in that it places great emphasis on stakeholder participation. Importance is placed on empowering and emancipating disadvantaged groups (Kennedy et al. 2010; Kidd & Karl 2005; Mander, Murphy-Lawless & Edwards 2010) through their active participation in research that aims to make changes happen that will be of benefit. In AR, the participants are in partnership with the researchers through all phases of the research process, rather than being passive subjects who are being studied. This enables participants to be informed sources in an empowering process of

developing strategies in the change process (McIntyre, Francis & Chapman 2012).

The theory and practice of action research have been afforded increasing attention around the world for its proven utility as an ideal methodology for changing workplace practice (Coghlan & Brannick 2014; Munn-Giddings & Winter 2013; Parkin 2009b). In healthcare for example, AR in an Australian study on health promotion practices in primary health care in the Northern Territory supported the development of respectful change processes with practitioner-informed evidence, and capacity-building strategies to reorient work practices (Judd & Keleher 2013). Likewise, the benefits of collaborative working and reducing boundaries with AR in a Northern Ireland rehabilitation unit led to improvements in patients' safety for stroke patients (Mitchell et al. 2005).

There is also a growing appreciation of AR's breadth as a field of research practice and its depth as a discourse of theoretical insights (Altrichter et al. 2002) in which new knowledge and understandings are generated. In the instance of an Australian Midwifery Action Project (AMAP 2003) conducted to explore the situation of midwifery education, workforce issues including clinical practice placement problems and funding difficulties for recruitment and retention of the midwifery workforce were identified. These findings directed focus on the development of a national approach to midwifery workforce planning in Australia (Leap, Barclay & Sheehan 2003). In addressing organisational culture and dealing with intra-professional issues, Deery (2005 p. 165) in her action research study at a maternity unit north of England noted that in the troubled culture of midwifery, the metaphor of giving 'voice' to a group with a history of being ignored was vital in providing the opportunity to reflect on deeply entrenched negative attitudes and enable growth. The reflective process, an integral part of AR, facilitated a shared concept of midwife-led care and expanded skill-base for the facilitation of normal (physiological) childbirth (Deery & Hughes 2004; Deery & Kirkham 2000).

As the name suggests, AR is an approach which aims at both taking action and creating knowledge or theory about that action (Coghlan & Brannick 2010; Shani et al. 2008). Rather than simply diffusing or disseminating new ideas, action researchers are instrumental in the implementation of solutions to the problems they help to identify (Mander, Murphy-Lawless & Edwards 2009; Sitzia 2001). Action research works through a cyclical process of consciously and deliberately 1) observing and planning, 2) taking action and 3) evaluating the action, leading to further planning and so on (McNiff & Whitehead 2002; Reason & Bradbury 2008). Observing and planning comprises 'taking stock' (fact-find in what is going on) and having an overall plan and a decision regarding what the first step to take is. Action involves taking that first step, and reflection involves evaluating this, observing what was learned and creating the basis for correcting the next step. So, there is a continuing 'spiral of steps, each of which is composed of a circle of observing, planning, action and evaluation about the results of the action' (Lewin 1946, p. 39), generally referred to as the action-reflection cycle (Elliott 1991; McNiff, Lomax & Whitehead 2003; Zuber-Skerritt & Cendon 2014).

Action research is recognised to have stemmed from the work of Kurt Lewin and the scientific outlining of General Systems Theory as applied in social sciences. It forms the basis for experimentation in natural settings, which has profound impact on social change through planned and systematic approaches to participation in the change process (Greenwood & Levin 2007; McIntosh 2010). Although Lewin's work was a building block for today's action research movement, definitions of action research to date are still varied (Coghlan & Brannick 2014; French & Bell 1999; McNiff 2013; Stringer 2007). There is often considerable overlapping and sharing of ideas (Cassell & Johnson 2006; Dickens & Watkins 1999; Hammersley 2004; Livesey & Challender 2002) despite a somewhat different emphasis. For example, some AR methodologies have developed from sociology and they focus on how political implications influence social change (Rahman 2008). These approaches tend to address broader issues

relating to social exclusion and power and control outside of organisational contexts (Coghlan & Brannick 2010, p. 44). Other AR approaches, those with origins from behavioural sciences have focused on relationships and the development of people in organisational settings (French & Bell 1999; Schein 2008).

While there are many strands to AR, the main concepts are presented succinctly by Hart (1996 p. 454): '[Action research] is problem-focused, context specific, participative, involves a change intervention geared to improvement and a process based on a continuous interaction between research, action, reflection and evaluation'. It incorporates a collaborative approach in working through action research cycles where the intended outcome leads to both action and knowledge. These concepts are further elaborated in the following sections and in *Chapter 4*, to understand their central place in the PoNB Study.

#### *a) The 'Action' in Action Research*

Primarily, as a practitioner interested in carrying out a practice development project, the 'action' aspect of AR was arguably its greatest asset and especially so, for the PoNB study in working towards the promotion of normal birth. The feature of undertaking an intervention geared towards improving or changing practice at the local level presents an opportunity to achieving study aims through the process of the research (Coghlan & Brannick 2014).

Promoting normal birth in a contemporary maternity care setting can however, be complex and immensely challenging whether at the individual, team, department or organisation levels. Any idea of innovation, change implementation or action, especially in such complex setting cannot possibly be done in isolation. Action research is interactive. The emphasis on collaboration between participant teams and groups to find shared interest and the use of co-operative 'tools' to build strategies and processes in the local environment or

practice context made it particularly attractive as a problem-solving approach in the current study (Dick, Stringer & Huxham 2009; Fernie & Smith 2010; Reason & Bradbury 2008).

Action research's cyclical nature, with fact-finding, action and evaluation within each cycle, is highly favourable. An action in this sense occurs through a process of rigorous preparation, planning, action, reflection, re-planning and validation of learning from studying that action. In the PoNB study, the AR strategies of an unfolding series of systematic, scientific, participative and collaborative actions over time is appropriate and necessary in order to change or improve the working of some aspects of the maternity system, and to study the process collaboratively in order to learn from it (Coghlan & Brannick 2014; Parkin 2009b; Titchen & Manley 2006). The AR approach, therefore, has much to offer in potentially solving perceived contextually rooted problems and improve practice (Alasuutari 1998; Fernie & Smith 2010; McKellar, Pincombe & Henderson 2009), and in doing so contributes considerably to participants' learning and the development of systems in changing practices (Piggot-Irvine & Bartlett 2008).

#### *b) The 'Research' in Action Research*

The main purpose of action research is clearly to make change happen and to learn from the experience. The ability to actively take action and make changes happen lies with participants' interpretations of a problem and their motivations to do research and enquire into their own practice (Dahlberg & McCaig 2010; Townsend 2013). Similar to research in general, action research is characterised by the existence of a problem or issue that is perceived to exist; an adherence to some form of inquiry process to provide rigor and validity; and a search for explanations (Gray 2013; Stringer 2007).

Action research is undoubtedly value laden in that participants bring their values to the way research is framed and conducted. The approach embraces the values

and bias that participants bring to research as something that provides guiding principles for the study (Bridges & Meyer 2007; Zuber-Skerritt 2005). These values are important in shaping and framing action research questions that matter to participants and in determining those actions that will achieve specific value laden change in specific circumstances. An initiative in this view involves consciously taking into account the needs, fears, and motivations of participants, as well as valuing the human aspects in managing the change (Huczynski & Buchanan 2001).

Since new knowledge is created or expanded to solve specific problems, AR also develops theory. The 'theory-generating' aspect of AR characterises it as research and significantly differentiates it from other change management approaches (Sandars & Waterman 2005). In particular, its applicability to the 'natural' environment or context in which care is being delivered allows for action (Greenwood & Levin 2007) and its ability to be adapted for change within complex and sensitive conditions enables the uncovering of knowledge from that action which advances its potential to address and narrow the 'theory-practice' gap (Koch & Kralik 2006; Morrison & Lilford 2001; Plsek & Greenhalgh 2001; Schein 2008).

Hence, the generation of context specific and situational knowledge by means of the AR process will further ensure that research results fit the uniqueness of the practice situation studied (Meyer 2000; Winter & Munn-Giddings 2001). More importantly, AR can positively influence practice while generating both context specific and situational data that can be shared with a wider audience and produce tangible benefits (Moyer et al. 1999). The aspect of AR therefore ensures its suitability in many practice-based areas with a 'real-world' focus; such as education (Elliott 1991), leadership (Williamson 2005), management (Coghlan & Brannick 2014; Eden & Huxham 1996), and in nursing, midwifery and healthcare-related settings (Meyer 2000).



### *c) The 'Reflection' in Action Research*

'Reflection is the key activity that brings together the action and the research in action research' (Coghlan & Brannick 2005, p. 37). It is through the process of reflection that practitioners plan for future action based on the concrete experience and observations around those experiences (Elliott 1991; Stringer 2013). Reflective processes for example involves challenging practitioners to stand back from their experiences and to ask questions about what was happening, why, and what are they going to do the next time.

In the PoNB study, this 'reflective' element in AR is valuable. It encourages and assists practitioners through a process of examining their professional practice, with the intention of exposing gaps, problems and contradictions in the local practice setting for the purpose of improving the practice of supporting normal birth. This form of inquiry potentially presents practitioners with an opportunity to engage in a deeper level of 'critical reflection', questioning their original belief and understanding, and then to use these new understandings to plan new actions (McKernan 2013; Robinson & Heritage 2014; Schön 1987; Taylor 2006). In maternity care, this could include reviewing routine and ritual practices, as well as examining how shared decision making – between midwives and obstetricians – can contribute to achieve safe and effective care for childbearing women (Davis-Floyd et al. 2009; Gaines & Davis-Floyd 2004; Mander & Murphy-Lawless 2013).

The nature of the AR process of 'feeding-back' data and findings to participants as part of the cyclic process can have a powerful influence to enable sharing of perspectives across traditional professional boundaries (Golden 2006; Wagner 2007). For example, it gives insights into present issues and creates a platform for care providers to uncover, 'reflect', and engage in the exchange of essential ideas and information in introducing initiatives and services innovations (Brodie & Homer 2009; Raelin 2008). Importantly, the establishment of a 'neutral ground' through AR, provides the respectful environment to be able to do this

and to discuss potential issues of concern. This means of tapping on the collective expertise and experiences of say the midwife and obstetrician in the study site can encourage unity on working together to plan and effect a possible change geared towards enhancing normal birth practices or a transformation of situations. It is by means of the AR process that teams can take responsibility and joint ownership for change at the ground-level rather than from top-level administrators who may be far removed from the situation where change is needed (McNiff & Whitehead 2010).

Reflection upon practice as part of the AR methodology is useful in generating effective and new ways to 'puzzle' and explore practice issues which are central to the improvement of practice (Walsh et al. 2005; Walsh & Moss 2010). This reflection in action facilitates the development of inquiry processes, the awareness and sensitivity that become embedded and self-sustaining in paving the opportunity for sustainable developments and change through AR.

### ***3.3.3 Summary – Significant features of Action Research guided by the Critical Paradigm***

Action research guided by the critical paradigm had been outlined in this section. There is a growing interest in the use of an AR approach to research in professionalised contexts such as commercial organisations, education, community work, as well as in health and social care (Bradbury et al. 2008; Burke 2013; Gummesson 2000; Koch & Kralik 2006; Pine 2008; Russell et al. 2014; Stringer 2007; Winter & Munn-Giddings 2001). Action research based upon a collaborative problem solving process by members of an organisation or community has become integral to the growth of theory and practice of organisational development and research in these contexts. This is reasoned on AR's applicability at both problem solving and generating new knowledge.

Action research is about improving practice through intervention by way of an iterative cyclical process (of gathering data, feeding back data to those concerned, joint analysis of data, planning and taking action, joint evaluation, leading to further planning and so on), where the intended research outcome is the construction of actionable knowledge (Bradbury-Huang 2012; Coghlan & Brannick 2010; Gustavsen 2003; Piggot-Irvine & Bartlett 2008; Tharenou, Donohue & Cooper 2007). As detailed previously, the use of an action research approach in the PoNB study allows for a simultaneous combination of action to bring about change in the study setting (i.e. an intervention in the promotion of normal birth in the tertiary maternity unit), and enables the development of knowledge and learning (for further planning and action) by means of a democratic process in analysing that intervention as it takes place in the maternity care setting (that is, an opportunity to increase understanding on the part of the 'community' involved in the research, the collaboration of women and maternity care providers in the change process).

Action research guided by a critical paradigm is a significant vehicle for professional development, particularly in situations where good inter-professional relationships and teamwork between multidisciplinary teams or professional/occupational groups are vital for safe and supportive service (i.e. maternity care). The focus on a democratic process of working *with* people in AR, creates a collaborative climate where the individual and team can explore, engage with personal experience, and learn from the experiences of other in realising quality care practices (Bridges & Meyer 2007; Deery 2005; Gray 2013; Koshy, Koshy & Waterman 2010; McKellar, Pincombe & Henderson 2009; McNiff 2013). Effectively, this safe and supportive environment establishes a 'platform' or 'common ground' for open discussion and shared decision-making, which can be a viable means to deal with political and power situations as well as territorial and cultural issues. In maternity care, action research with its emancipatory intent can be advantages in providing the opportunity for professionals to work on the provision of shared responsibility and power, along with the recognition

of the need for occupational autonomy. It develops professional relationships that are enabling for both midwives and obstetricians in working together to ensure women receive care that is appropriate and leads to the best possible outcomes.

The philosophy and methods of action research guided by critical theory represents a powerful vehicle to integrate education, research and practice development. It is for these reasons that they were seen as legitimate and appropriate for this study, to drive processes on working towards the promotion of normal birth in a tertiary maternity unit. The key aspects of Action Research are summarised in *Table 3-1*.

**Table 3-1: Summary of the key aspects of Action Research**

<b>Key Aspects of Action Research</b>
<ul style="list-style-type: none"> <li>✓ Centred on change: AR is applicable to the understanding planning and implementation of change in groups, organisations and communities.</li> <li>✓ Problem-focused: Action researchers are actively working on solving problems rather than merely collecting data.</li> <li>✓ A cyclical process where research, action and reflection (evaluation) are interlinked.</li> <li>✓ Collaborative and interactive: AR requires cooperation based on relationships with participants in the change process.</li> <li>✓ Concerned with individuals as members of social groups.</li> <li>✓ Educative: aimed at organisational improvement thus promotes organisational learning.</li> <li>✓ Characterised by openness to participants, researcher, methods, change, validity and ethics. It requires an understanding of the ethical framework, values and norms within the particular context. It can also include all types of data gathering methods, such as interviews and surveys.</li> <li>✓ Creates and develops theory.</li> </ul>

Source: (Coghlan & Brannick 2010; Parkin 2009b)

### **3.4 Parkin's (1999) Approach in Integrating AR and Collaborative Change Management**

This section brings together the theoretical foundations presented (AR guided by the philosophy of CST) by means of Parkin's (1999) approach, in integrating AR and collaborative change management. The applicability of Parkin's (1999) approach as a model in guiding the PoNB study will be outlined here. *Chapter 4* will then build on these highlighted areas, incorporating Parkin's Model as a core strategy for leading, managing and implementing change in each phase of the PoNB study.

#### ***3.4.1 Significant features of Parkin's (1999) approach***

Several researchers have attempted to characterise the significant features of the action research method and its approaches to planned change, with consideration of the structure, process and outcomes in delineating AR models employed in different contexts (Argyris 1993; Coghlan & Brannick 2014; Dick 2011; Dickens & Watkins 1999; Gummesson 2000; Lewin 1946; Lilford, Warren & Braunholtz 2003; Stringer 2007; Williamson & Prosser 2002). Parkin's (1999) approach is one such change model that was used in the PoNB study.

The Parkin (1999) approach, developed through a process of examining various action research studies from the health and social care fields, as well as a range of theories and concepts from the change literature in managing and implementing change, follows an 'organisational' or 'professionalising' focus where researchers and practitioners work in collaboration to improve practice (Parkin 2009a). Specifically, this approach recognises the complexity of change processes particularly in healthcare, and offers a model that integrates management with AR as the core strategy appropriate for the implementation of sound and worthwhile changes in the complex arena of individual workplaces.

Parkin's Model was built on Lewin's (1946) recursive AR sequence and Stringer's (1996) look, think and act process. The methods of change in the model involved an integration of key aspects of the action research cycle (of '*fact-find*', '*plan/re-plan*', '*action*' and '*reflect*') (Figure 3-2) and management processes, as well as a range of influencing factors seen as most pertinent within healthcare situations. It applies an emergent, dynamic process in addressing key concepts and practical approaches in leading, managing and implementing change in healthcare.

Parkin's Model support claims that action research has been 'inseparable' from healthcare change management and organisational development in particular (Bate 2000), in that it is context-bound (Morrison & Lilford 2001), where those within the locality participate and collaborate, working with teams in their workplaces in taking up responsibility for that change (Greenhalgh et al. 2004; Hall 2006; Meyer & Batehup 1997), at the same time, valuing knowledge that is created whilst working on problems from clinical practice (Thomas et al. 2005). This is seen as crucial to the process of action research in the PoNB project, as new knowledge created (deep understanding) also develops theory, significantly differentiating action research from other change management approaches (Sandars & Waterman 2005).

Several major influences that individuals must be aware of and address in order to successfully manage change are identified in Parkin's Model. These are the: history of the unit, group, or team; influence of culture; threats to status; threats to roles; politics of power; leadership style; and needs for control (Figure 3-2). Although they are not exhaustive, these 'influencing factors' are closely linked and significant in affecting the change process in the study (Ferlie & Shortell 2001; Hall 2006; Scambler 2002). Parkin's Model recognises that no issue in any organisation is truly context-free (Greenwood 1997) and that effectiveness of any change process will be 'situationally determined' (Ferlie & Shortell 2001, p. 283) by both the specific and wider dynamics of the organisational and political environment. The organisation's history; past experiences; and other social

factors are seen to guide members' perceptions (process of thinking), decision-making and behaviour towards change. For this reason, it is suggested that practitioners of change be mindful, prepared and equipped to handle such situations in order to work towards effective change management.

Parkin's Model which highlights the use of 'co-operative instruments' within each action research cycle enhances the change process in the PoNB study by maximising the potential for effective 'community' engagement, participation and involvement. Participation, seen as one of the core change principles in Parkin's Model, creates opportunities for engagement, where partnership is central in establishing the 'foundations' for change and in achieving sustainable developments in the promotion of normal birth (Dick, Stringer & Huxham 2009; Reason & Bradbury 2008). Distinctly, no innovations or initiatives can be effective in isolation. Any move to promote normal birth in a contemporary maternity service will require collaboration between women, midwives, nurses, childbirth educators and doulas, as well as obstetricians – essentially, the whole maternity-community (Brodie, Davis & Homer 2008; Davis-Floyd et al. 2009; MCWP 2007; Reiger & Lane 2009).

There is evidence that poor team dynamics adversely affects care (Hunter et al. 2008; Simpson, James & Knox 2006; Stapleton, Kirkham & Thomas 2002), where indirect communication and undercurrents of conflict may undermine the woman's care and adversely affect her safety and well-being. The development of sustainable interpersonal relationships through an iterative 'process approach' suggested in Parkin's Model is considered crucial to collaborative success (Parkin 1998). The interpersonal processes and roles of communication, consultation, collaboration, and co-ordination (*see Figure 3-2*) – the four key participative qualities of successful management have also been identified as important for the promotion of safety within maternity services (Downe, Finlayson & Fleming 2010; Kings' Fund 2008; Menke et al. 2014; Powell & Davies 2012), with its capacity to catalyse positive changes. This concept of collaboration through

interpersonal processes and roles reflective of action research, was particularly important in the maternity unit in the study, where numerous professional and occupational groups work alongside each other and where women as recipients of care stand to benefit when care providers are congruent in their practice approach.

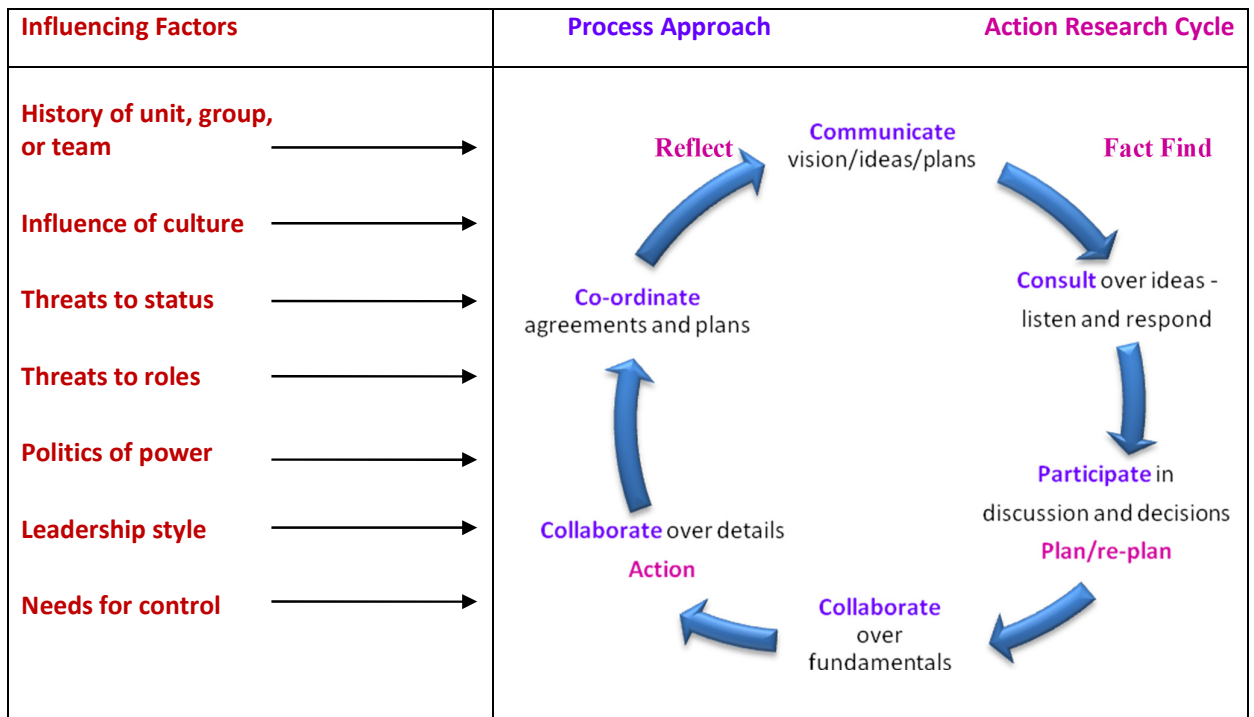
Although it may be necessary to employ a combination of approaches and repertoire of skills in order to achieve the desired 'connectedness' amongst stakeholders for the study, the move in enabling practitioners to bond and be involved in teamwork within the current tertiary care context drives energy and commitment – further building alliances (and consensus) among the maternity-community in health care change. It is increasingly evident that systems which allow for collaborative, multi-disciplinary team approaches where stakeholders work 'collectively' in shared goals highlight the potential for increase success rates in practice change (Deery 2005; Manley 1997; McKellar, Pincombe & Henderson 2009; Mitchell et al. 2005; Parkin 2009b), which in this case could well influence the practice towards normal birth in the maternity service.

### ***3.4.2 Key components of Parkin's Model of Managing Change and Action Research***

*Parkin's Model of Managing Change and Action Research* in the PoNB study is presented in *Figure 3-2*. Key components of the model include: (1) identification of major 'influencing factors' most significant in affecting the change process, (2) incorporation of the 'action research cycle' in the model with the following phases: *fact find, plan/re-plan, action* and *reflect*, repeated in a spiral of steps, (3) identification of interpersonal processes and roles of *communication, consultation, collaboration* and *co-operation* – the four key participative qualities contributing to successful change management, and (4) integration of *participation* within the continuous and cyclical 'process approach' as a means of ameliorating resistance for improvement and sustained change.



Figure 3-2: Parkin's Model of Managing Change and Action Research



(Source: derived from Parkin (1999) cited in Parkin 2009, p. 112)

\*Note: Colours denote elements in the same component groups in the Model.

In the Model, components of the AR cycle/phases were applied in conjunction with the process approach (in a recursive rather than linear process in leading development), supplemented by actions such as negotiation, seeking assistance, assessment, investigating, making choices, working through implications, reviewing changes and withdrawing (Parkin 2009b), considering as well, the factors influencing change and its management (see 3.4.1 Significant feature of Parkin's (1999) approach).

Parkin's Model suggests a dynamic interaction between the context, process, and the content of change in managing developments within specific environments. Change processes are recognised to have more chance of succeeding if key individuals are involved in the planning and design of interventions, since this process engages and satisfies their internal motivation,

leading to commitment rather than simply being compliant (Coghlan & Brannick 2014; Ferlie & Shortell 2001; Plsek & Wilson 2001; Rhydderch et al. 2004). In essence, participation builds ownership, motivates success and reduces resistance – further replicating the processes and philosophies of AR.

Nonetheless, change processes require sufficient capacity and opportunity for local flexibility and discretion in making decisions and taking actions on how best to achieve aims (Parkin 2009a). Although AR cycle/phases generally progress along these lines of *fact find, plan/re-plan, action* and *reflect*, Parkin (2009b) cautions that it is not necessarily a rigid sequence that participants must follow, rather, they are encouraged to freely flow through the phases which vary in time-span depending on the needs, complexity and dynamics of the situation (McNiff 2013; Williamson & Prosser 2002). This process of identifying issues may be characterised as fluid, dynamic and emergent (Coghlan & Brannick 2014; Creswell 2007; McNiff & Whitehead 2010) – fluid, in the sense that it is difficult to establish precise boundaries, and when boundaries are established they are often subject to change; dynamic, in the sense that the core focus is subject to continuous revision as understanding deepens; and emergent, in the sense that issues appear over time. These key characteristics in Parkin’s Model point to a process which is further characterised by the unfolding nature of interpretation and re-interpretation, making extensive use of organisational members’ judgments and revision of judgments based on insights gained from new and existing data, stimuli and perceptions (Angood et al. 2010; Chenoweth & Kilstoff 2002; Coghlan & Brannick 2010; Huxham & Vangen 2013; Kemmis 2001). It is through these iterations, that understandings of the situation were gradually refined. In other words, the existence of multiple interpretations concerning an issue was not be eliminated – as capturing multiple and diverse interpretations added to a deeper, richer picture of the issue at hand and holds the key to more effective resolution for the long term (Parkin 2009a).

Parkin's Model of Managing Change and Action Research, provides a refreshing and highly productive alternative in bring about developments in rapidly changing maternity context such as the study site for this doctoral work, since it could 'accommodate' the unpredictability of midwifery work and complex clinical-practice situations through collaboration. The cyclical nature, with fact-finding, planning, action and reflection within each cycle, was highly appropriate for researching clinical practice in times of change (De Vries et al. 2001; Deery & Kirkham 2000; McCourt et al. 2012; Waterman et al. 2001). It was especially so where uncertainties and tensions within maternity care and midwifery could be reflected upon through collaborative, democratic, and empowering approaches to change, and through a research approach that reflects the complex, messy nature of clinical practice (Davis-Floyd et al. 2009; Davis & Walker 2010; Greenwood & Levin 2007; Parkin 2009a; Walsh & Devane 2012). This process highlights important parallels in working towards maternity practices that promote normal birth in Singapore.

### **3.5 Summary**

This chapter has introduced the significant features of action research guided by the philosophy of critical social theory in addressing the aims of the PoNB study. Parkin's (1999) Model of Managing Change and Action Research (*Figure 3-2*), a framework which informed all stages of the research was also discussed. The following chapter describes in detail the data collection methods and analysis with the use of Parkin's (1999) approach in study.

## CHAPTER 4: RESEARCH METHODS

### 4.1 Introduction

This chapter explains the methods used in the study. It provides an account of each of the data collection methods and analysis involved in the inquiry process building on *Parkin's Model of Action Research and Managing Change*, which gave structure as well as flexibility to the PoNB study. Significant features of Parkin's (1999) approach and key components of Parkin's Model were detailed in *Chapter 3*.

Parkin's Model enabled researchers and participants in the study to focus on a particular area in promoting normal birth, to reflect on, and discuss, its characteristics, and then reconstruct these experiences and decide courses of action in leading, managing and implementing changes in the tertiary maternity setting. Relevant issues which include ethical considerations, consent procedures, study setting and participants of the study will also be discussed in this chapter.

### 4.2 Study Setting

The PoNB Study was undertaken in a maternity service within a tertiary hospital located in Singapore. The unit provides care to women in both low and high-risk pregnancies, and it is the second largest public maternity service in the country. Care in this unit is provided by staff from a multidisciplinary team which includes midwives (registered nurses with midwifery qualifications and direct entry midwives), nurses (registered nurses, assistant nurses and patient care associates) and doctors (i.e. obstetric specialists, registrars, medical and house officers). The service follows an obstetric-led model and the consultant obstetrician remains primary carer. Obstetricians oversee the clinical management during intrapartum and usually attend the birth to deliver the baby,

although this is occasionally undertaken by the midwife in attendance. The neonatologists work closely with obstetricians in the unit and they oversee the monitoring and provision of care for newborns.

This public maternity service attends an approximate of 2,900 women per year, which accounts for about 8.5% of total births in Singapore (MOH 2014c). The national birth figures and details on Singapore's maternity care were presented in *Chapter 1*. Unpublished birth statistics in the study unit for 2012 show a normal birth rate of 60.3%, assisted vaginal birth rate of 6.5% and CS rate of 32.9%. There is a routine use of electronic fetal monitoring (EFM) where all women in established labour are attached continuously to EFM and the epidural rate is approximately 42% (Unpublished internal data for 2012). Women commonly stay for an average of 2.2 days after a vaginal birth and 3.3 days after CS (MOH 2014c).

The study unit was one of the first maternity services in Singapore to facilitate choice for women wanting to have a birth without medical intervention or pharmacological pain management. A 'natural birth programme', started in 2006, catered for this demand mainly from women of western expatriate families. Service provision includes the use of water immersion in labour and supporting women who wish to birth their babies in water. To date, all midwives in the delivery suite are trained in the facilitation of natural birth. With the changes to the management and leadership of the Obstetrics and Gynaecology (O & G) Department in 2010, renewed motivation for developments in the provision of a postnatal home visiting service, the implementation of the Baby Friendly Hospital Initiative (BFHI) (WHO & UNICEF 2009), as well as the possibility for women to access one-to-one midwifery continuity of care and support were identified within the unit. These positive discussions suggest a commitment to improving the maternity service for physiological birth, before the start of the study.

### **4.3 Gaining access and recruitment (participants in the study)**

The participants in this study included providers of maternity care (midwives, nurses and obstetricians) and consumers (women, who use the service, childbirth educators and doulas) keen on working towards the promotion of normal birth in the maternity unit. In total, over 600 participants were involved in the entire action research, from the process of *'fact-find'*, *'plan/re-plan'*, *'action'* through to the *'reflect'* phase in Parkin's AR cycle. A detailed description of the participants at each phase of the study will be discussed later in the chapter.

In order for the participants to feel a part of any changes in working towards the promotion of normal birth, a full consultative process was undertaken with them at the start of the project to examine the rise in CS rates and to uncover barriers to the promotion of normal birth in the unit. The process involved input from clinical and managerial disciplines at all levels within the organisation, as well as from women using the service. This commitment to multiple voices, from the nursing, midwifery and medical care providers, as well as women (service users) was continually encouraged at each phase of the study to allow for a wide range of stakeholder perspectives on the promotion of normal birth to be heard and valued. These details of the consultative process will also be presented later in the chapter, in the order of the study phases.

### **4.4 Ethical considerations**

The main ethical issues in this study were confidentiality, anonymity, informed consent and data storage. Given that action research was an unfolding, emergent process, which evolves through cycles of action and reflection (Beauchamp & Childress 2001), the issue of informed consent, for example, became a challenge. This was because information on the entirety of the research study was not always possible at the onset and it was not feasible to map out a detailed anticipation of every ethical issue in advance that would

cover all eventualities (Coghlan & Brannick 2010; Morton-Cooper 1999; Williamson & Prosser 2002).

Nonetheless, it was possible to articulate the ethical principles that guided the project and work as an ethical action researcher (Boser 2007). For instance, the adherence to the professional code of ethics for midwives and nurses, in respecting and promoting client autonomy, rights to confidentiality (SNB 1999), and maintaining a high ethical standard in the conduct of research (NHG 2013). Attention to ethical principles was integrated into each stage of the AR cycle to inform decision making by maternity stakeholders and to be 'transparent' to the larger community.

Brydon-Miller and Greenwood (2006) are optimistic about the inherent difficulties associated with AR and suggest that AR actually held out more guarantees for the ethical treatment of human participants than conventional research. This was because AR is built on a voluntary partnership with stakeholders who form a collaborative team, learn and apply the methods together, implement the methods together and analyse the outcomes together. In essence, the processes of obtaining consent, ensuring anonymity and confidentiality, and balancing conflicting and different needs, are actualised and grounded in the AR cycle itself – in planning, taking action, collecting data and interpreting (Walker & Haslett 2002).

Approval for the research was obtained from the University and Institution's Ethics Committee and Review Board (UTS Human Research Ethics Committee *UTS HREC 2011-289R* and NHG Domain Specific Review Board *NHG DSRB 2011/00268*) (see *Appendix 1* and *2*) before the commencement of the study and subsequent renewals were provided annually for the duration of the research. Strict adherence to the ethical codes of practice, principles as well as protocols for research (i.e. code for the responsible conduct of research) by both the University and Institution were observed at all times.

This meant that:

- ✓ the permission of stakeholders / management (University and Institution) were secured before the research commenced;
- ✓ the permission of the participants and their verbal / written consent obtained prior to their recruitment in the research;
- ✓ confidentiality was observed at all times, and no names were revealed of the institution, participants or staff (de-identification process and omission of names);
- ✓ participants were kept informed of progress at all times;
- ✓ participants had access to the research report before it was published;
- ✓ all participants had the right to withdraw from the research at any time and data relating to them will be destroyed;
- ✓ data protection act and laws on copyright (NHG 2013) were abided by;
- ✓ any potential conflict of interest was addressed at the onset of the research;
- ✓ the progress of the research, and in particular any changes to the

Given the dynamic and changing nature of the data and actions in the research project as discussed above, repeated consent (as necessary) was obtained from participants at each stage of the action research cycle/phase to ensure that they understood all the ramifications of the study and were kept well informed of their rights to confidentiality (Cooper 2012; Maltby et al. 2014; Orb, Eisenhauer & Wynaden 2001). This was in anticipation that the open and collaborative nature of processes would require some data to be shared among participants (Kemmis & McTaggart 2000; Williamson & Prosser 2002) and it was possible that someone might be able to make an educated guess as to the identity of some participants even though data/reports were made anonymous (Gray 2013). The continual anticipation and identification of issues in the study were assured and discussed with the ethics committee and review board (as necessary) prior to the commencement of the project and throughout (Costley, Elliott & Gibbs 2010; Hammersley & Traianou 2012).



#### 4.5 Phases of the research and the data collection methods for each phase

The Promotion of Normal Birth (PoNB) study comprised four phases. These are summarised in *Table 4-1* and described in detail in the following pages. The tools used for data collection were formulated through a comprehensive literature search, consultations and various discussions with my supervisors, and developments from findings in each preceding phase of the study. The Normal Birth Collaborative (NBC) Workgroup members and maternity care providers in the unit were also very much involved in the development of ongoing data collection tools i.e. the Positions for Labour (PFL) survey.

**Table 4-1: Outline of Phases in the Promotion of Normal Birth (PoNB) study**

Phase of Research	Data Collection Methods	Participants
<b>Phase I (Pre-implementation)</b>		
<b>Fact-find Phase: Identifying a focus for change</b>	Pre-intervention Anonymous Maternity Providers (AMP) survey <i>(August to September 2011).</i>	Maternity care providers (doctors, midwifery and nursing staff) in the unit participated in the Pre-intervention AMP survey.
	Focus groups <i>(October 2011).</i>	Women, childbirth educators and doulas from the community were interviewed in the focus groups.
<b>Phase II (Plan/re-plan)</b>		
<b>Plan/re-plan Phase: Consideration of key changes and strategies for intervention</b>	Setting up of Normal Birth Collaborative (NBC) workgroup <i>(October 2011).</i>	Self-nominated maternity care providers consisting of doctors, midwifery and nursing staff in the unit keen on normal birth formed the core members of the Normal Birth Collaborative (NBC) workgroup.

	Minutes from meetings to refine problem focus from findings in <i>Phase I</i> ; and meetings on focus for change in the unit.	The Normal Birth Collaborative (NBC) workgroup members and maternity care providers (doctors, midwifery and nursing staff) in the unit were involved in these meetings.
	Field notes on walkabout sessions in birthing suite to garner ideas and strategies for intervention; as well as formal departmental presentations on Maternal Positions for Labour (PFL) initiative.	The doctors, midwifery and nursing staff as well as managers in the unit partook in this process.
	Field notes and minutes from further Normal Birth Collaborative (NBC) workgroup meetings; Maternal Positions for Labour (PFL) educational forum and workshops	The Normal Birth Collaborative (NBC) workgroup members and maternity care providers in the unit were involved in these meetings. Maternity care providers (doctors, midwifery and nursing staff) in the unit attended the PFL educational forum and workshops conducted.
<b>Phase III (Implementation)</b>		
<b>Action Phase: Implementation of change and collection of 'measurement' data</b>	Establishment of change(s) in the unit including the Maternal Positions for Labour (PFL) initiative from findings in <i>Phase II</i> .	Maternity care providers (doctors, midwifery and nursing staff) collaborated and were involved in the implementation.
	Commencement of initial Positions for Labour (PFL) surveys which consisted of	The women who were supported and encouraged by midwifery and nursing staff to move and change

	<p>only a maternal feedback component (<i>May to August 2012</i>).</p> <p>Field notes on reviews conducted mid-implementation to appraise the initial PFL survey; Meeting minutes from further Normal Birth Collaborative (NBC) workgroup and maternity care provider meetings</p> <p>Use of revised Positions for Labour (PFL) surveys which comprised a maternal component (to be filled by women) as well as a staff component (to be filled by the maternity provider caring for the woman) (<i>September to October 2012</i>).</p>	<p>position(s) in labour responded to the surveys during the PFL implementation in the unit.</p> <p>Maternity care providers provided feedback and further suggestions in the mid-implementation reviews. The Normal Birth Collaborative (NBC) workgroup members acted on suggestions and made the necessary improvements. This included revisions on the initial PFL survey.</p> <p>The women, midwifery and nursing staff who were involved in the PFL implementation in the unit participated in the survey.</p>
<b>Phase IV (Post-implementation / Evaluation)</b>		
<b>Reflect Phase: Review data and draw conclusions</b>	<p>Evaluation of change(s) in the unit including the Maternal Positions for Labour (PFL) initiative from findings in <i>Phase III</i>.</p> <p>Post-intervention Anonymous Maternity Providers (AMP) survey with staff in the unit (<i>February to March 2013</i>).</p>	<p>Both the women and staff respondents to the PFL surveys provided useful 'measurement' information on the change(s) implemented.</p> <p>Maternity care providers (doctors, midwifery and nursing staff) in the unit participated in the Post-intervention AMP survey.</p>

Focus group with Normal Birth Collaborative (NBC) workgroup members (March 2013).	The Normal Birth Collaborative (NBC) workgroup members were interviewed. They provided evaluative information on the implementation of change(s) in the unit.
Audits on Clinical (database) Outcomes (August 2011 to March 2013).	Pre-implementation, implementation, as well as post-implementation clinical (database) outcomes was compared.

#### **4.5.1 Phase I (Fact-find Phase)**

*Engagement work: Arousing interest through consultation process*

Activities in the engagement and consultation process include the use of a) Information Sessions and Facilitated Forums; b) a Pre-intervention Anonymous Maternity Providers (AMP) survey; and c) Focus Group sessions with women, childbirth educators and doulas. In total, over 200 participants from the ‘maternity-community’ became involved in the research.

##### *a) Information sessions and facilitated forums*

Considerable time was allocated for preparatory work leading up to the consultation process to plan and develop strategies for engagement. Preliminary activities, which included information sessions on the aims and process of the research was held with leaders and their team prior to the start of the study. Effort was invested in communicating with care providers at all levels, through attending existing departmental meetings, weekly sharing sessions and at informal get-togethers. The intent was to devote ample resource at the onset to establish a partnership – foster a ‘working with’ rather than ‘working on’ approach (Cornthwaite, Edwards & Siassakos 2013; Munson & Saulnier 2013;

Ritchie et al. 2014; Walsh et al. 2005) – to involving stakeholders in practice change. We felt that in order for this process to have meaning, everyone had to have the opportunity to become involved, to forward opinions and suggestions that may be helpful in identifying a common vision for the service in relation to the promotion of normal birth.

Facilitated forums were undertaken with an open invitation extended to all staff to enhance participation, involvement and motivate the sharing of ideas pertinent to the planning and implementation of normal birth practice in the tertiary maternity setting. A video shown at the start of each forum forms an introductory theme on normal birth. In the *'Why Normal Birth Matters'* video, opinion leaders from a multidisciplinary team – prominent leaders of organisations representing obstetricians, midwives and maternity service users – share their thoughts on why normal birth is important (Leap et al. 2009). This is one of a series of video clips developed for training purposes in a research project funded by the Department of Health, England in 2007-2008 – Supporting women to have a normal birth: Development and field testing of a training package for maternity staff. Specific areas of discussion in the video clip (i.e. questions interviewees in the video were asked) include: *'Why do you think normal birth matters?', 'What kind of things do you say and do to promote normal birth?', 'What sort of things do you see your colleagues doing to promote normal birth?' and 'What do you think you can do to improve women's experiences and promote normal birth when you haven't met the labouring woman before?'*

Decision to show the *'Why Normal Birth Matters'* video clip in the forums was based on the premise that opinion leaders (prominent maternity leaders interviewed) are an effective form of 'trigger' for changing practice and attitudes (Cullen 2006; Flodgren et al. 2011). These videoed discussions were of value to stimulate interest, to promote awareness on good normal birth practices amongst staff members in the study unit, and to inspire participants in viewing

birth as unique, sacred and a normal process. Schwartz and Hartman (2007) suggest that video is superior to other forms of media for engaging people and setting the scene for learning particularly when it is contextualised to make information relevant and meaningful. In essence, the introductory forums with the use of a stimulus video clip sets up an avenue to encourage maternity care providers – midwives, nurses and doctors – to participate in discussion and decisions, share ideas and become actively involved in the research project to promote normal birth in the unit.

In addition, relevant information with evidence-based practices and initiatives on normal birth was distributed to all staff at the forums. These printouts were also made available in tearooms and notice boards in all the clinical areas for staff who were not available to attend the forums.

#### *b) Pre-intervention Anonymous Maternity Providers (AMP) survey*

A Pre-intervention Anonymous Maternity Providers (AMP) survey was used as another consultative and preliminary data-gathering process (see *Appendix 4A, 4B, 4C & 4D*). Providers of maternity care within the tertiary unit at that time were invited to complete the survey. A *Verbal Consent Script* detailing the study and explanations of the AMP survey was distributed to participants along with the AMP survey (see *Appendix 3*). In the survey, participants were asked about specific clinical and managerial practices focusing on promoting normal birth and reducing CS rates.

The 3-section AMP survey was adapted from a tool designed by the United Kingdom's National Health Service Institute for Innovation and Improvement (NHS 2006, 2007). The '*Focus on Normal Birth and Reducing Caesarean section Rates*' toolkit was developed to enable maternity units to self-assess the processes and behaviours in their unit that would promote normal birth and foster a shared vision for change. The tool was used in a study in 20 maternity

units in the UK (Marshall, Spiby & McCormick 2014) and showed a marginal decline of 0.5% in CS rates (25.9% from 26.4%) in the year following the study. Features associated with lower CS rates included: a shared philosophy prioritising normal birth; clear communication across disciplines; and strong leadership at a range of levels, including executive support and clinical leaders in each discipline.

As detailed by Baldwin et al. (2010), the survey tool is a useful service improvement resource, which the maternity unit could use to address the cultural issues underlying clinical practice in relation to normal birth and CS. It was self-explanatory and easy to understand, and measured current practice and overall preparedness for change. The survey was modified to the local context by excluding extraneous questions (i.e. on homebirth) and some terms that were not applicable. This was done to ensure respondents understood the survey and were able to answer the questions appropriately. No identifying information was collected in the survey.

Data from the AMP surveys were entered into the Statistical Package for the Social Science (SPSS) 19 (Bryman & Cramer 2011). Descriptive statistics was used to analyse these survey data (Henn, Weinstein & Foard 2009). Planned comparisons were then performed to determine the differences.

The engagement of all maternity care providers in the AMP survey was hoped to create an opportunity for enhanced multidisciplinary understanding of the service. It aimed to motivate and provide impetus for the team in understanding their 'context' and 'culture' before planning any intervention or change. This detailed assessment of current culture, behaviours and processes may help stimulate additional ideas and aspirations for future improvements towards practices that promote normal birth. Hence, the data collected from the AMP survey was used to inform the development of action plans in the second phase of the study.

Special arrangements had to be made with the Department to tap into ‘spaces’ – such as the doctors’ morning research meetings, to share with medical colleagues the research and purpose of the survey. Survey forms were distributed to those in attendance at these meetings, and also addressed to each doctor to complete at their convenience via the department secretariat. This whole process was cumbersome and slow moving, but because the clinicians’ time was scheduled tightly around patient care when they were on campus, the strategy of tapping into a pre-programmed time and space with the maternity team created opportunities for enhanced reporting of multidisciplinary understandings of the service. The involvement of managers in this process and the ‘protected time’ negotiated with the leaders encouraged and enabled staff involvement and participation in the study.

*c) Focus Group (FG) interviews*

User involvement was pivotal to the process and to move forward in planning and providing safe woman-centred maternity services in this study. I wanted to work with women themselves in the change process and listen to their opinions in creating a better birth environment, one that is supportive of normal birth.

Women, childbirth educators and doulas self-selected for inclusion into the focus groups interviews when a request for volunteers was circulated via email through a local network that supported childbearing women who were keen on having physiological (normal) births. A *Participant Information Sheet* detailing the study and purpose of the focus group interviews were distributed (see *Appendix 5*). In total, six women and five childbirth educators/doulas external and independent to the maternity unit, whom were available, participated in the two focus group sessions. Consent was obtained before the commencement of the FG interviews (see *Appendix 6 & 7*).



The FG sessions adopted a conversational style and took place in a private room at the home of a participant childbirth educator. Photographs depicting the set-up of a birthing room were shown to participants as a stimulus to promote discussions at the beginning of the focus groups, while the questions focused on various aspects of the labour and birth experience. The focus group interview questions include: a) What sort of things helped you while you were in labour? b) What sort of things do you think would have helped (or is conducive), but weren't available to you during your labour and birth? c) What sort of (practical) things can the hospital (or service) put in place to help women who are planning a normal birth? The sessions were audiotaped and lasted approximately 90 minutes.

These FGs were analysed using thematic content analysis, where systematic analyses of key themes were presented. This qualitative descriptive methodological approach was used, as it is an appropriate method when straight description of phenomena is desired (Creswell 2007; Sandelowski 2000). Steps taken to conduct the data analysis include: thorough review of the FG transcripts; identification of all information relevant to the research in supporting normal birth (see aforementioned FG interview questions); listing the information in a separate sheet; and categorisation by combining related themes/content areas. Individual categories (themes) were then named and summarised based on their contents. Regular discussions with the research team were also held to ensure sound interpretation of these data.

Thematic content analysis was deemed a suitable approach for describing, organising and quantifying the FG data. The process enables a systematic presentation of key themes, alongside ensuring that the diversity of participants' voices is represented (Kitzinger 2013).

#### **4.5.2 Phase II (Plan/re-plan Phase)**

##### *Establishing the Normal Birth Collaborative (NBC) Workgroup*

Following the engagement and consultation process, an expression of interest was distributed to all staff to participate in a workgroup as part of the research project to promote normal birth. A copy of the research proposal, along with information that describes the study, was placed on information boards and shared during unit meetings and roll calls. Interested individuals from the medical, nursing and midwifery group were invited to form the 'core' team in the Normal Birth Collaborative (NBC) Workgroup. To ensure representation from specialised professional groups, key personnel were also approached by the researcher to join the workgroup. In total, eight staff members formed the NBC action research workgroup. The workgroup represented staff from different specialised professions within the unit and those within different positions (seniority levels), such as the: Nursing and Midwifery Managers, Nursing and Midwifery Clinician, Nursing and Midwifery Educator, Midwives and Nurses, as well as Obstetric Consultants. The NBC workgroup was established in October 2011. Some of these NBC workgroup members are featured in *Figure 4-2*.

An 'information pack' was distributed to workgroup participants before the first meeting. Information included a welcome letter; the project aims; the workgroup members' roles and responsibilities; an outline of Parkin's (1999) action research framework that guides the inquiry; as well as articles on normal birth and the action research approach. Participants were invited to work with the research team for about 18-months from October 2011 to March 2013, with a commitment to attending weekly to fortnightly meetings from October 2011 to end of September 2012 and then monthly meetings from then until the end of March 2013.

**Figure 4-2: Normal Birth Collaborative (NBC) Workgroup Members (one member not featured in photograph)**



During these meetings, the group's objective was to:

- Identify areas that necessitate improvement with input from the Pre-intervention AMP survey and data arising from the focus group sessions with women, childbirth educators and doulas;
- Develop an action plan with use of the Action Plan Template (NHS Institute for Innovation and Improvement, 2006) and identify 'tools' for practice change;
- Implement and evaluate action in the clinical setting, and;
- Make decisions about the ways in which the implementations will be further modified, implemented and evaluated.

The expectations, group process and rules for participation were discussed at the first meeting. We talked about the need for all participants to extend respect to others by listening to their contributions without interruption. Participants were

encouraged to personally reflect, learn from colleagues, and enhance respect and compassion at workgroup meetings so as to create a culture or positive climate for engagement, where candour and openness about ideas and issues matter. We agreed that all contributions were of equal value and that non-judgemental language be used. Conversations within the group meetings were to be strictly confidential with the use of pseudonyms in relation to stories about patients and staff. During the process, we acknowledged the need to make decisions for improvement and act upon these in our daily practice and care. Meeting minutes were taken as part of the research process for analysis and evaluation later (see *Appendix 9*).

Apart from the use of information arising from the Pre-intervention AMP survey and focus groups, members were invited to share stories on their experience in facilitating normal birth. The storytelling approach was an excellent method of encouraging interaction with each other, from the sharing of ideas to the stimulation of new insights into the topic. The wide array of experiential knowledge of the participants offered members of the workgroup an insight into the trends for supporting normal birth beyond the current context. This approach of storytelling draws on critical reflection, the learning from self, and from dialogue and shared experiences with others. This is helpful not only to ensure outcomes of value in the delivery of service that promotes normal birth, but that service improvements have more chance of succeeding since this process engages 'collective' involvement, teamwork, as well as professional and cohesive partnership with the midwifery, nursing and medical colleagues where shared modes of understanding allows unified action. These meetings were always informative and inspiring, and once we started, it was difficult to finish on time.

Evidence-based literature and relevant materials were also provided to members by the facilitator in anticipation of the next meeting (i.e. NICE guidelines and

journal articles on keeping birth normal). The materials were well received as it gave members some idea of where to 'start' and look for further information.

Overall, the participants of the workgroup were actively involved in critical debate and evaluative discussions on the planning and design of interventions where improvements are most needed in the tertiary maternity setting. Wherever possible, participants were involved in collecting and analysing data and informing the identification of outcomes. In hindsight, the time spent on setting up and formulating the structure of the workgroup at the initial stage assisted in helping to maintain the momentum of the project.

#### ***4.5.3 Phase III (Action Phase)***

Following the '*plan/re-plan*' phase, the NBC action research workgroup and staff members in the unit collaborated and worked on the plan of action in this '*action*' phase. Details of the '*action*' plan (see *Table 5-6*) and '*action*' activities (see *Table 5-7*) employed in this phase are located in *Chapter 5*. This placement was done to facilitate understanding from transition of '*action*' activities to '*action*' findings.

The *Position for Labour (PFL) survey* developed as a '*measurement*' tool in this phase was used to collect key data following the implementation of key actions and activities. Details of the PFL survey findings can be found in *Chapter 5* (see *Section 5.4.2*). Descriptive statistics was also used to analyse data from the PFL survey (Henn, Weinstein & Foard 2009).

#### ***4.5.4 Phase IV (Reflect Phase)***

The '*reflect*' (evaluation) phase is the final phase in the PoNB study. Post-implementation data collection methods in this phase consisted of: the Post-intervention Anonymous Maternity Providers (AMP) survey; focus group

interview with NBC workgroup members; and a review of clinical outcomes (birth statistics) from the department clinical database.

*a) Post-intervention Anonymous Maternity Providers (AMP) Survey*

A similar AMP survey detailed in the *'fact-find'* phase was used to re-evaluate the study unit on key characteristics of normal birth practices, post-implementation (see *Appendix 4A, 4B, 4C & 4D*). The Post-intervention AMP survey was necessary to uncover improvements in directing the *'reflect'* phase of the study. Providers of maternity care within the tertiary unit during the *'reflect'* phase were invited to complete the survey. Again, participants were asked about specific clinical and managerial practices focusing on promoting normal birth and reducing CS rates. Full details of the AMP survey can be found in *Phase I* (see *Section 4.5.1*).

*b) Focus group interview with Normal Birth Collaborative (NBC) workgroup members*

Members of the NBC workgroup, consisting of doctors, midwives and nurses, participated in a FG interview in the *'reflect'* phase of the PoNB study. They were asked to think back over their experiences during the implementation of the study and to share what they had learned during that process. In particular, they were asked to focus on feedback that would be useful to other units embarking on (similar) initiatives to support the promotion of normal birth. They were also asked to identify what they considered were their greatest successes and challenges in the duration of the PFL implementation. This allowed the documentation of their experiences on implementing PFL practices in the unit and to identify factors that may have had an effect on the progress of the implementation. Field notes and meeting minutes also facilitated with confirmations in study process points.

The FGs were analysed using thematic content analysis, where systematic analyses of key themes were presented. Again, this qualitative descriptive methodological approach was deemed an appropriate method when straight description of phenomena is desired (Creswell 2007; Sandelowski 2000).

*c) Review of clinical outcomes (birth statistics) from the department clinical database*

Birth statistics in the study unit were collected from the start of the PoNB study (in August 2011). In total, 20 months of clinical outcomes data were collected when the study ended in March 2013. Data included: births – normal and assisted; CS – elective and emergency; epidural use for vaginal births; post-partum haemorrhage; third and fourth degree tears; as well as monthly birth rates at the study unit. Descriptive statistics were used to analyse these data.

#### **4.6 Reflexivity**

As previously explained, before the commencement of this study, I was a midwifery educator in the study unit with experience of engaging with staff and local consumers regarding the promotion of normal birth. I was thus known to staff in the unit and had already developed trusting relationships with colleagues, including obstetricians. My position in the study site as a midwifery educator needs to be taken into account when considering the research process, including my analysis of the data. In any research project, it is important for the researcher to be aware of how they may have influenced each stage of the research process, a reflexive stance contributing to the critical examination of events, outcomes and conclusions (Brannick & Coghlan 2007; Williamson, Bellman & Webster 2012). These issues are discussed further in *Chapter 6*, where I reflect on how my role as an ‘insider’ may have influenced the research process.

#### ***4.6.1 Reflexivity in Action Research***

For me as an insider researcher, opportunities to engage in reflexivity were informed by the reflective sessions that were built into the action research process (see *Section 3.3.2*). Collective reflection is an important element of action research and includes a level of reflexivity about the potential influence of both individual and group members (Coghlan & Brannick 2014; McKernan 2013; McNiff 2013; Stringer 2013). Reflection is a thread that runs throughout any action research project and contributes to theoretical understanding and practice development. In the PoNB study, reflection was a critical endeavour employed to monitor and inform the action research process and outcomes.

The ongoing links between reflection and research may well contribute to the usefulness of action research as a research process. The link does not simply come from evaluating whether a change has occurred or if it is effective; the iterative process also allows for this evaluation to be fed back into the clinical care setting and to be used to inform current and future practice (Costley, Elliott & Gibbs 2010; Parkin 2009b), with a heightened awareness of the influences that create barriers and facilitators of change. In this approach to research and development, the production of research is not viewed as separate from development in practice (McCormack 2011; Waterman et al. 2001). This is in contrast to linear progression from research findings to the dissemination and use of findings traditionally symbolised in the evidence-based practice movement.

#### ***4.6.2 Field notes to enhance reflexivity***

Throughout the study I kept field notes outlining my thoughts, feelings and the processes undertaken. I included my reflections on the significance of all meetings and interactions associated with developing, implementing and analysing the research. This enabled me to critically examine the wider 'context' of effecting change during the course of the study (Burns et al. 2012). I was also



able to explore the impact of my role, including how my own experiences, values and attitudes may have impacted on the study. This is discussed in *Chapter 6*.

#### **4.7 Summary**

This chapter has provided an account of the methods involved in the Promotion of Normal Birth (PoNB) study. Parkin's (1999) model of action research and managing change informed the data collection methods and analysis used at each phase of the study. As highlighted in Parkin's (1999) approach, it is important to note that the AR phases in this study 'overlaps' and its interconnectedness makes it difficult at times to present the precise time points of methods, especially between Phase II (Plan/re-plan phase) and Phase III (Action phase). The next chapter presents the findings of the study.

## CHAPTER 5: FINDINGS

### 5.1 Introduction

In this study, the promotion of normal birth was explored with the use of Parkin's Model as a means to bring about change in a tertiary maternity unit. Details of the model and approach were discussed in *Chapter 3* (Research Methodology) and *Chapter 4* (Research Methods).

This chapter provides the findings of the study. These are presented in a way that reflects the action research cycle in *Parkin's Model of Action Research and Managing Change*, where findings from preceding phases (processes) inform the planning and implementation of subsequent phases. The findings are presented in the order of the phases: '*fact-find*', '*plan/re-plan*', '*action*' and '*reflect*' (Parkin 1999) (see *Figure 3-2*). This order allows clarification regarding the chain of evidence that lead to the conclusions and planning at each phase of the AR cycle and the overall study.

### 5.2 'Fact-find' Phase – Identifying a focus for change

This section describes the findings collected in the '*fact-find*' phase of the study. The information from both the Pre-intervention Anonymous Maternity Providers (AMP) survey and focus groups undertaken with women, childbirth educators and doulas form the basis of data that were analysed for this section. These findings were used by the Normal Birth Collaborative (NBC) workgroup to highlight the focus for possible change (potential areas for improvement) in the promotion of normal birth best practice. This process involved identifying wishes for change such as the potential dissatisfaction or concerns of key stakeholders in the maternity (specific) community, while taking into consideration the current circumstances within the study unit.

In total, over 200 participants from the 'maternity-community' were involved in the 'fact-find' phase of the study. This included 192 maternity care providers (staff from the unit) who participated in the Pre-intervention AMP survey and 11 focus group participants consisting of women, childbirth educators and doulas. The findings from the Pre-intervention AMP survey will be presented first, followed by the findings from the focus groups.

### ***5.2.1 Pre-intervention Anonymous Maternity Providers (AMP) Survey***

The findings from the Pre-intervention AMP survey provided a description of the 192 participants and a measure of clinical practice within the unit in relation to normal birth best practices. This was useful in providing a 'snapshot' of current clinical practice within the research setting to direct the study. Details of the AMP survey were discussed in *Chapter 4* (Research Methods) and a copy of the survey is included in *Appendix 4A, 4B, 4C, 4D*.

#### *Response rates: Pre-intervention AMP survey*

The response rates for the Pre-intervention AMP survey were encouraging, with a return rate of 91% (See following *distribution details*). It was not an easy task to get these response rates, especially with the care providers' busy schedules. In particular, it took considerable time to engage with the medical team in persuading them to complete the AMP survey.

However, it was possible that negotiations with the unit managers for 'protected time' during data collection could have been one of the factors that contributed to the high response rates. These willing responses can be seen as indicative of the support, co-operation and commitment of maternity staff in working towards the promotion of normal birth and reducing CS rates to a safe minimum in the maternity unit.

### *Distribution of Pre-intervention AMP survey respondents*

Of the 212 potential maternity care providers in the unit, a total of 192 staff participated in the Pre-intervention AMP survey. This equates to 90.6% (192 of 212) of the overall care providers in the maternity unit at the time of the survey. In relation to the professional groups, this consisted of: 132 of 141 (93.6%) potential nurses and midwives; 42 of 55 (76.4%) potential medical practitioners; and all 18 of 18 (100%) administrators/managers and/or lactation consultants in the unit. *Table 5-1*, provides an overview of the Pre-intervention AMP Survey Respondents.

Of all the 192 respondents, 182 (94.8%) were employed full-time in the unit. Only 10 (5.2%) were employed part-time or through contractual arrangements. One third worked in the antenatal/postnatal ward (33.9%, n=65), which has a total of 51-beds; while 21.9% (n=42) were from the antenatal/postnatal clinics; and 20.8% (n=40) were working in the birthing suite.

About a quarter of the respondents (23.4%, n=45) reported that they rotated through all areas of the maternity unit (i.e. antenatal/postnatal clinics, antenatal/postnatal wards and delivery suite). These respondents were mainly medical care providers, administrators/managers, lactation consultants, and a small proportion of nursing and midwifery care providers who were participating in a rotation program at that time (*Table 5-1*).

**Table 5-1: Distribution of Pre-intervention AMP Survey Respondents (N = 192)**

Characteristic	n	%
<b>Professional group</b>		
Nursing & Midwifery*	132	68.8%
Medical	42	21.9%
Others (i.e. Admin / Management, Lactation Consultants)	18	9.3%
<b>Job status</b>		
Full-time	182	94.8%
Part-time	7	3.6%
Contracted staff	3	1.6%
<b>Area of work</b>		
Antenatal / Postnatal Wards	65	33.9%
Rotate through all areas	45	23.4%
Antenatal / Postnatal Clinics	42	21.9%
Birthing Suite	40	20.8%

\* Of the 132 respondents, 28.8% (n=38) were midwives (i.e. Registered Midwives only [RMs] or RMs who were also registered as nurses [RNs]).

*Pre-intervention AMP survey findings: Mapping normal birth best practices*

Respondents to the Pre-intervention AMP survey were asked to rate practices in the maternity service against statements (known as *principles*) describing characteristics of practices that promote normal birth. Each of three sections related to principles of care with examples of the behaviours and processes that can promote normal birth and reduce CS rates (Baldwin et al. 2010; Marshall, Spiby & McCormick 2014; NHS 2006, 2007). The sections were: i) Key Characteristics of Normal Birth Practices (see *Appendix 4B*); ii) Organisational

Characteristics of Normal Birth Practices (see *Appendix 4C*); and iii) Characteristics of Normal Birth Practices: Pregnancy and Labour Care (see *Appendix 4D*). The findings are presented in the order of the sections on the survey.

#### **i) Key Characteristics of Normal Birth Practices**

Twelve principles in this section addressed key features that are considered highly important in contributing to the success of maintaining low CS rates. The findings reflect the characteristics of the culture, behaviours and processes as assessed by respondents when considering their own context against this overall list of features of normal birth best practices. The respondents considered themselves at the 'mid-portion' of the spectrum in terms of the characteristics and culture of normal birth best practices. This can be seen from the shaded boxes in *Table 5-2*, which summarises the highest respondent ratings (mode) for each of the 12 principles in the section. The high cumulative total of responses in the 'Above Average' column and 'Average' column suggests that the respondents viewed the maternity service as having room for improvement in terms of its overall characteristics and culture.

A large proportion of respondents rated the service as 'Excellent' alongside the first three survey principles (see *Table 5-2*). For example, 50% (n=96) of the respondents agreed that if a CS is planned in the unit, the process is both efficient and effective with optimal quality of care and resource utilisation. Similarly, 34% (n=66) believed that staff in the unit adhered to the same guidelines in practice and that variations were recorded and justified. In regards to the principle of managing women's expectations of pregnancy, labour and birth (antenatal education) 35% (n=67) rated the preparation and support of women in relation to their feelings for labour and birth as excellent.

**Table 5-2: Key Characteristics Section – All survey respondents (N = 192)**

Principles (12)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
If a CS is planned, the process is efficient and effective	4 (2)	17 (9)	23 (12)	52 (27)	96 (50)	192 (100%)
We manage women's expectations, we prepare them for the reality of labour (antenatal education)	22 (11)	34 (18)	26 (14)	43 (22)	67 (35)	192 (100%)
We all practice to the same guidelines - no opting out	5 (3)	16 (8)	59 (31)	46 (24)	66 (34)	192 (100%)
We get accurate, timely relevant information on our (clinical) performance	3 (2)	13 (7)	24 (12)	130 (68)	22 (11)	192 (100%)
We are a real team - we understand and respect each other's roles and expertise	5 (3)	22 (11)	68 (35)	73 (38)	24 (13)	192 (100%)
We focus on keeping pregnancy and birth normal	29 (15)	40 (21)	30 (15)	53 (28)	40 (21)	192 (100%)
Our leaders are visible and vocal	10 (5)	19 (10)	108 (56)	29 (15)	26 (14)	192 (100%)
Our guidelines are evidence-based and up to date	9 (5)	26 (13)	76 (40)	49 (25)	32 (17)	192 (100%)

Principles (12)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
We are proactive in recommending VBAC, giving accurate information about risks and benefits	9 (5)	33 (17)	71 (37)	42 (22)	37 (19)	192 (100%)
We manage women's expectations, we prepare them for the reality of labour (CS request)	22 (12)	26 (13)	68 (35)	22 (12)	54 (28)	192 (100%)
We work closely with our users (women) and stakeholders	6 (3)	45 (24)	60 (31)	42 (22)	39 (20)	192 (100%)
We get accurate, timely relevant information on our (overall) performance	20 (10)	75 (39)	43 (22)	32 (17)	22 (12)	192 (100%)

**Note:** The exact descriptions (statements) for each of the columns are included in Appendix 4B. The shaded areas identify the highest frequency response for each principle.

Eight out of the 12 principles were rated as either 'Above Average' or 'Average' in relation to the key characteristics of normal birth practices in the maternity unit. The principles rated by the respondents as 'Above Average' were: 'we get accurate, timely relevant information on our clinical performance', 'we are a real team', as well as 'we focus on keeping pregnancy and birth normal'. These exemplars that staff chose suggest that they recognised that pregnancy and birth have the potential to be normal and were willing to work towards it. Good teamwork and communication, mutual respect of each other's roles, and shared teaching and training were also exemplars that were rated highly. More than half



of the respondents (68%, n=130) ticked exemplars acknowledging that there were regular meetings for the discussion of interesting clinical cases and that there was a process for the dissemination of learning from adverse incidents. Principles and exemplars which include identifiable leaders, evidence-based guidelines, and working with women and stakeholders on service developments were rated as 'Average' on the whole.

An area highlighted as requiring attention was overall maternity performance. This principle '*we get accurate, timely relevant information on our (overall) performance*' was rated as 'Below Average'. Respondents indicated that maternity performance data were collected only for management purposes, suggesting that staff had no access to performance statistics in the unit.

When data for the 12 principles in this section were compared by professional groups (between nursing/midwifery respondents and doctor respondents), the overall summary of findings was reflective of responses provided by the nursing and midwifery respondents (100%, n=132). However, some differences in rating were noted with the doctors. On the whole, the doctor respondents (100%, n=42) were in accordance with other staff in rating 10 out of the 12 principles as either 'Above Average' or 'Average' and in highlighting feedback on overall performance as being 'Below Average'. An additional principle rated as 'Below average' by the doctors, however, pertained to user (women) and stakeholders' involvement in the unit's service committees. The doctors ticked the exemplar box that stated: '*although someone carries out occasional patient satisfaction surveys, we do not hear about the results*'.

## **ii) Organisational Characteristics of Normal Birth Practices**

*Table 5-3* summarises the findings for the Organisational Characteristics of Normal Birth Practices section. The eight principles in this section relate to organisational infrastructure, communication pathways and clinical governance;

these enabled participants to assess the characteristics and culture of the unit in relation to organisational principles regarding the promotion of normal birth.

Overall, the responses for the Organisational Characteristics section were similar to those in the previous Key Characteristics section, as staff members were generally positive about the performance of the maternity unit. They rated the service as being in the ‘mid-portion’ of the spectrum in terms of current organisational culture. There seemed to be consensus that staff members were more or less content with the current ‘way of life’ (the ethos) in the maternity unit. This is evident from the high cumulative total of responses in the ‘Above Average’ column and ‘Average’ column, as seen in *Table 5-3* where the shaded boxes denote the highest respondent ratings (mode) for each of the eight principles in the section.

**Table 5-3: Organisational Characteristics Section – All survey respondents (N=192)**

Principles (8)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
Staff share a common ethos and aspirations for high quality care	15 (8)	17 (9)	56 (29)	31 (16)	73 (38)	192 (100%)
There is a robust clinical governance structure throughout the unit	24 (13)	17 (9)	15 (8)	66 (34)	70 (36)	192 (100%)
Maternity care is delivered by a multidisciplinary team with high levels of mutual trust and respect between	1 (1)	16 (8)	55 (29)	104 (54)	16 (8)	192 (100%)

Principles (8)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
professionals						
Maternity services provide value for money	27 (14)	20 (10)	40 (21)	91 (48)	14 (7)	192 (100%)
Women are empowered to make informed choices about their maternity care	30 (16)	9 (5)	87 (45)	19 (10)	47 (24)	192 (100%)
Timely, relevant information is used to inform clinical practice and service development	11 (6)	36 (19)	67 (35)	45 (23)	33 (17)	192 (100%)
There is an embedded and sustainable model of good clinical practice	16 (8)	27 (14)	64 (33)	51 (27)	34 (18)	192 (100%)
Effective communication and information enhance decision-making	4 (2)	47 (24)	64 (33)	49 (26)	28 (15)	192 (100%)

**Note:** The exact descriptions (statements) for each of the columns are included in *Appendix 4C*. The shaded areas identify the highest frequency response for each principle.

The majority of respondents rated the unit as 'Excellent' on two survey principles: *'staff share common ethos and aspirations for high quality care'* as well as *'there is a robust clinical governance structure throughout the unit'* (See *Appendix 4C*). These were indicated by the highest percentage of responses to the exemplars for those principles. For example: 38% (n=73) of the respondents reported that staff in the unit focused on achieving high quality care and optimal outcomes for both the mother and baby. Similarly, 36% (n=70) of the respondents agreed that there was a good clinical governance structure in the

maternity unit, where managers have regular sessions to review risks. The responses suggest that staff agreed a robust clinical governance structure was evident in the study setting and that improvements had come about through risk reporting and review.

A recurring response was noted for a particular principle *'maternity care is delivered by a multidisciplinary team with high levels of mutual trust and respect between professionals'*. More than half (54%, n=104) rated this as 'Above Average'. The rating suggests that staff in the unit trusted each other, gained mutual respect by understanding each other's roles, and communicated well. The rating of 'Above Average' for this principle is consistent with responses for the principle *'we are a real team'* in the previous Key Characteristics section. This finding was encouraging when taking into consideration the fact that the study on the promotion of normal birth required participation and collaboration between professionals as a means to bring about change in the maternity unit.

Four other principles were rated as being 'Average' by respondents of the survey. For instance, almost half of the respondents (45%, n=87) chose exemplars identifying that, although they respected women's view in the unit, each clinician had different interpretation of risks and choices; the outcome would depend largely on which clinician the woman talked to. With reference to information for clinical practice and service development, 35% (n=67) of the respondents acknowledged the accuracy of an exemplar stating that a simple information system supplied basic figures; the information however was not responsive to the changing needs of the unit. This was a recurring theme in the survey. On the whole, six out of the eight principles in this section were rated by the respondents as either 'Above Average' or 'Average'.

When data from this section were compared by professional groups, one major difference in rating of a particular principle was noted. The principle *'staff share a common ethos and aspirations for high quality care'* was rated less favourably

on the whole [‘Average’] by the doctors (52%, n=22) compared with nurses and midwives, who rated it as ‘Excellent’. The doctors tended to choose an exemplar that they were of the opinion that clear aims and standards were set in the unit, but providers were too busy to reflect on the service they were actually delivering.

### iii) Characteristics of Normal Birth Practices: Pregnancy and Labour Care

The Pregnancy and Labour section was intended to bring together an illustration of clinical care practices and processes in the maternity service (study setting). The findings from this section informed *three* key areas for improvement, enabling potential actionable foci for the study’s aim to improve normal birth best practices. Seventeen principles were divided into two sub-sections: ‘Antenatal’ and ‘Labour and Birth’. *Table 5-4* presents a summary of the findings for this section.

**Table 5-4: Pregnancy and Labour Section – All survey respondents (N=192)**

Principles (17)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
<b>Antenatal</b>						
We work with women to ensure they have a realistic expectation of labour, birth and parenthood (antenatal education)	31 (16)	45 (23)	40 (21)	46 (24)	30 (16)	192 (100%)

Principles (17)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
We manage women's expectations, we prepare them for the reality of labour (CS request)	18 (9)	36 (19)	86 (45)	27 (14)	25 (13)	192 (100%)
We focus on keeping pregnancy and birth normal	23 (12)	37 (19)	57 (30)	40 (21)	35 (18)	192 (100%)
There are no social inductions	50 (26)	74 (39)	10 (5)	31 (16)	27 (14)	192 (100%)
Women a with breech presentation are offered an external cephalic version by a skilled professional	28 (15)	72 (37)	13 (7)	65 (34)	14 (7)	192 (100%)
<b>Labour and Birth</b>						
The consultant obstetrician and co-ordinating midwife provide strong visible leadership	16 (8)	44 (23)	33 (17)	69 (36)	30 (16)	192 (100%)
High risk women receive team-based care to optimise the	12 (6)	46 (24)	36 (19)	56 (29)	42 (22)	192 (100%)

Principles (17)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
potential for normal outcomes						
Labour is managed using evidence-based guidelines	6 (3)	30 (16)	87 (45)	31 (16)	38 (20)	192 (100%)
1:1 support is provided during labour by a trained carer	39 (20)	15 (8)	81 (42)	35 (18)	22 (12)	192 (100%)
Our skills drills are genuinely multi-disciplinary	24 (12)	19 (10)	69 (36)	54 (28)	26 (14)	192 (100%)
There is an open culture in which staff are supported and challenged in their decision-making	23 (12)	32 (17)	66 (34)	46 (24)	25 (13)	192 (100%)
The decoration of the birth rooms is homely with clinical equipment out of sight	44 (23)	56 (29)	46 (24)	29 (15)	17 (9)	192 (100%)

Principles (17)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
Labour is managed using evidence-based guidelines (fetal monitoring)	93 (48)	34 (18)	22 (11)	9 (5)	34 (18)	192 (100%)
The labour ward is reserved for labouring women	79 (41)	18 (9)	32 (17)	30 (16)	33 (17)	192 (100%)
Doctors enter the rooms of labouring women by invitation only	71 (37)	16 (9)	31 (16)	60 (31)	14 (7)	192 (100%)
Women are discouraged from lying on the bed	61 (32)	53 (28)	22 (11)	36 (19)	20 (10)	192 (100%)
Birth rooms are equipped with aids to facilitate active birth	55 (29)	34 (18)	37 (19)	49 (25)	17 (9)	192 (100%)

**Note:** The exact descriptions (statements) for each of the columns are included in *Appendix 4D*. The shaded areas identify the highest frequency response for each principle.

Overall, respondents rated principles in the Pregnancy and Labour section less favourably than those in the previous two sections. Of the 17 survey principles, nine were rated as either 'Above Average' or 'Average', and eight principles were rated as either 'Below Average' or 'Poor'. When responses in the 'Antenatal' and 'Labour and Birth' sub-sections were compared, the principles in the 'Labour and Birth' sub-section appeared to be rated considerably lower on the spectrum. Half of the survey principles (6 of 12) in the 'Labour and Birth' sub-section were rated



by respondents as either 'Below Average' or 'Poor'. These responses suggested pertinent areas for development in the maternity service in highlighting possible practices requiring attention in working towards the promotion of normal birth.

In the 'Antenatal' sub-section, the three principles rated as either 'Above Average' or 'Average' were seen to be relatively consistent with responses reported in the Key Characteristics Section. No major variability was noted in respondent ratings for the principles '*we work with women to ensure they have a realistic expectation of labour, birth and parenthood (antenatal education)*', '*we manage women's expectations, we prepare them for the reality of labour (Caesarean request)*', as well as '*we focus on keeping pregnancy and birth normal*'.

Two out of the five principles in the 'Antenatal' sub-section were rated as 'Below Average'. These were with regards to induction in labour for social reasons, as well as the provision of external cephalic version (ECV) for women with a baby in the breech position. Thirty nine percent (n=74) of the respondents chose exemplars describing a variety of practices in regards to social induction, identifying that these varied according to medical practitioners' opinions. Likewise, only some obstetricians appeared to offer ECV (37%, n=72). The findings in this 'Antenatal' sub-section were reflective of responses from all professional groups.

In the 'Labour and Birth' sub-section (*Table 5-4*), the respondents rated two principles as 'Above Average'. Both of these principles related to team-based care, open communication channels, and collaborative involvement in decision making processes. The recurring respondent rating ['Above Average'] implied that staff thought there was involvement and collaboration between professionals in the care of women in the maternity unit.

With regards to evidence-based guidelines, 45% (n=87) of the respondents thought that staff in the unit used a combination of evidence-based guidelines as well as practitioner preferences (their experiences) in labour management. It is worth noting that these opinions were reported [rated as 'Average'] despite respondents agreeing, in the earlier Key Characteristics section, that a) all staff practice to the same evidence-based guidelines; b) any variations to the guidelines were recorded and justified; and c) guidelines in the unit were produced, circulated and updated regularly. Similar 'Average' ratings were noted across all professional groups.

On one-to-one labour support, 42% (n=81) of respondents chose an exemplar that stated that midwives were clinically focussed on caring for women in normal labour, but were short-staffed and had to look after two women at the same time [rated as 'Average']. This was chosen predominantly by nursing and midwifery respondents. In contrast, the doctors tended to choose an exemplar that one-to-one care in labour was rarely possible; and that midwives spent a lot of time doing non-midwifery tasks [rated as 'Poor'].

In relation to the culture of open discussion and debate, 34% (n=66) of the 192 respondents reported that there were scheduled regular discussion forums in the unit to enable reflective practice. Almost all professional groups, however, chose an exemplar identifying that it was difficult for staff to find time to attend any of these forums.

One principle in the 'Labour and Birth' sub-section rated by respondents as 'Below Average' related to the decoration of the birth rooms. Although some improvements had previously been made to the décor of the birth rooms, 29% (n=56) of the respondents thought that it was still 'clinical'.

The remaining five principles in the sub-section were rated by respondents as being 'Poor'. As mentioned earlier, the considerably low ratings for these

particular principles (compared to other principles in the entire survey) highlighted significant areas requiring attention in the unit in working towards the promotion of normal birth. For instance, 48% (n=93) of respondents reported that continuous fetal monitoring was used routinely in the unit for women in labour. This finding was not surprising, given that unit guidelines recommended the use of continuous fetal monitoring unless stated otherwise by the woman's booking doctor or consultant obstetrician, despite the lack of evidence for such a practice.

Other areas rated as 'Poor' were reflected in the choice of exemplars related to: admissions to labour ward; formal ward rounds for all women by doctors; women labouring on the bed; and aids to facilitate active birth. Forty one percent (n=79) of the respondents identified that all women presenting with pregnancy problems were admitted to labour ward for assessment, raising possible issues in regards to the appropriate use of the labour ward and its suitability as a place for assessing all pregnant women. Similar sentiments on inquiring the appropriateness of practice were evident in responses to an exemplar regarding doctors entering the rooms of labouring women. Thirty seven percent (n=71) of the respondents identified that there was a formal ward round of all women on the labour ward, where doctors met all women.

On the principle '*women are discouraged from lying on the bed*', 32% (n=61) of the respondents chose an exemplar stating that the majority of women laboured on the bed and that there was a reliance on pharmacological pain relief. These responses suggested that women in the unit remained in bed throughout their labour and were possibly not encouraged to be mobile (active) within the birth environment. This possible restriction in mobility could also be attributed to the use of continuous fetal monitoring or the use of pharmacological pain relief [as reported by respondents]. Also, it seems possible that the decorations, design and the equipment in the labour rooms [reported above as 'Below Average'] could have also prevented movement. As for the principle '*birth rooms are*

*equipped with aids to facilitate active birth*', 29% (n=55) of the respondents regarded the design and equipment in the labour rooms as governed by the requirements of the staff.

When responses to the principles were either 'Below Average' or 'Poor' in this 'Labour and Birth' sub-section, they tended to be reflective of the opinions of both professional groups.

#### *Summary of 'Significant' Results from the Pre-intervention AMP Survey*

To summarise, the *five* most significant areas identified from the Pre-intervention Anonymous Maternity Providers (AMP) survey as requiring attention in the maternity unit were:

- 1) Evidence-based guidelines for fetal monitoring
- 2) Appropriate admissions to labour ward
- 3) Maternal movement in labour
- 4) Environment (decor) of birthing rooms
- 5) Birthing aids to facilitate and promote active birth.

These findings provided information and impetus for the Normal Birth Collaborative (NBC) Workgroup in their deliberations regarding the development and implementation of practice change in *Phase II* and *III* of the study. It afforded some really useful information on which to build strategies for improvement.

#### ***5.2.2 Focus Groups (women, childbirth educators and doulas)***

To further guide the NBC workgroup with identifying initiatives in the development and implementation of practice change(s) supportive of normal birth in the study, two separate focus groups, each of up to 90 minutes duration were undertaken with women (n=6) and childbirth educators/doulas (n=5) from the community. No demographic data were collected for these participants.

The focus groups were analysed using thematic content analysis, where systematic analyses of key themes were presented (Creswell 2007; Sandelowski 2000) (see *Section 4.5.1*). Notes taken during the sessions and audio recordings were used to verify (to clear up questions) and reinforce findings. This analysis was done immediately after the sessions, to ensure that the experience was fresh in the facilitators mind. This method was found to be the most expedient way to analyse the data to inform the next plan of action by the NBC workgroup.

Discussions in these two focus groups triggered lively-debate on the promotion of normal birth and contextualised processes for enhancing the quality of planned implementation and satisfaction with the maternity services provided. It invited women to reflect on their shared experience together which led them to do some of the 'work' to interpret shared needs and/or to consider potential improvements in the promotion of normal birth. The *five* key areas identified by women, childbirth educators and doulas as conducive to supporting normal birth were established through this process. Data derived from the focus groups were useful not only to supplement information from the Pre-intervention Anonymous Maternity Providers (AMP) survey, but were fundamental in exploring the issues of importance to them (Kitzinger 2005; Lehoux, Poland & Daudelin 2006).

The findings from the women participants will be presented first, followed by those from the focus group with childbirth educators and doulas. To assist with the description of these findings, quotes from the participants will be used. ID numbers however, were not allocated to individuals due to de-identification.

#### *Focus Group with women*

Guiding questions were utilised to facilitate the process. The questions asked in the focus groups with women were as follows: '*What sort of things helped you while you were in labour?*' '*What sort of things do you think would have helped (or are conducive to promoting normal birth), but were not available to you*

*during your labour and birth?’ ‘What sort of (practical) things can the hospital (or service) put in place to help women who are planning a normal birth?’* However, the researcher was mindful that guiding questions remain broad (open-ended) and allowed for maximum participation in the process, to gain rich insights into the topic (Patton 2002).

Findings from the focus group with women resulted in *five* major themes around promoting normal birth. The following section presents findings in relation to the *five* themes: i) supportive care during labour and birth i.e. continuous one-to-one care; ii) mobility in labour and birth i.e. being free to move around within the birth environment; iii) birthing aids to facilitate and promote an active birth; iv) the environment of the birth room i.e. ‘homely’ ambience; and lastly, v) specifically tailored antenatal classes i.e. to needs of women in the group.

#### **i) Supportive Care during Labour and Birth; Continuous one-to-one care**

When women were asked about features they considered conducive to supporting women planning a normal birth, unsurprisingly, they associated one-to-one supportive care in labour and birth as the ‘ideal’ form of care provision and one that maximises their chance of having a satisfactory birth experience. The women talked about how they valued the relationship with a known midwife, the establishment of a close personal relationship with their midwife who is not only calm, supportive and reassuring, but sensitive to their needs. These sentiments of receiving supportive one-to-one care were described by women in the group. The positive comments from two of the women indicated their overwhelming appreciation of the care from the same known midwife throughout their labour and birth:

*‘I must have been lucky to have the same midwife care for me throughout my labour... and she was there till the birth of Lisa... she played a very important part. She was very good, very positive and helpful, she was brilliant. I think you need somebody like that to be there to support you all the way, to give you the confidence and help you through*

*your labour... to be there to give you the attention, the personalised care you need at that time'.*

*'Having a midwife who gets to know you is very important... you can feel that she is with you to see you through the birth. I think it was her reassuring manner, that everything was going as it should be... she helped me feel that I was in control of it, although I remember hearing myself saying that I can't do it any more...'*

In contrast, two other women recounted their experiences of receiving fragmented care. They reported that there were as many as three to five different midwives caring for them throughout their labour and birth. Also, they commented that the care they received lacked the element of personalised support they needed to help them through their labour and birth, which impacted on their birth experience.

*'I kept being interrupted by different midwives asking me the same questions on my preferences... questions in regards to pain relief... which was stated clearly in my birth plan. It would have been good if I had just one midwife, the same person to support me... one who knows and understood what I wanted from the start'.*

*'...the relationship between the midwife and the woman is very important I think. I didn't feel able to communicate or develop trust with the different midwives that came and went... they seemed busy... looking at the graphs, filling out their charts...I felt that they didn't focus on me...I ended up with a c-section...it's affected my birth experience'.*

## **ii) Mobility in Labour and Birth; Being free to move around within the birth environment**

Being able to mobilise was cited as an important feature by the women in the focus group. These women were aware of the positive effects of movement and position change(s) that support normal birth. Two women gave accounts of their positive experience during labour in which they were supported to be mobile and used upright positions. However, this was counterbalanced by majority of

the women who felt unsupported and discouraged by staff to be active and to adopt position change(s) in labour:

*'I would have liked for the delivery suite staff to allow me to be mobile, especially during the early part of my labour. I was having back pains and was very uncomfortable lying on the bed...but they told me it was best for me to remain in bed, so that they could get a good reading of the baby's heart beat on the monitors... but a midwife did come in after to help me onto my side, using pillows to support my back...'*

*'No one suggested or encouraged me to change position(s) during my labour. There was space in the room [to move] but I was unable to go far with the baby monitoring attached... the wires...they did not allow me to walk further than the end of the bed'.*

*'I did verbalise my wish to move around in the room during labour even with a drip attached, but the midwife was unsupportive. She said I could move if I wanted to and left the room... when I got up to walk to the toilet, I realised that the drip stand was one that was attached to the bed, limiting my movement...'*

The women spoke on their reduced feelings of being in control which impacted on their labour and birth experience. They felt the 'pressure' to obey the staff and to conform to the 'norm' as stipulated by them.

### **iii) Birthing Aids to Facilitate and Promote an Active Birth**

Two women verbalised the use of birth balls during their labour. They felt that leaning forward on a birth ball or straight-back chair was helpful in relieving the pressure they felt on their lower backs. These women who used upright positions reported lower levels of contraction pain compared to being in supine positions. However, they had to bring in their own birthing aids like heat packs, audio equipment for soft relaxing music, birth balls and the additional pillows they need. These facilitative items were often not available in the birth rooms as part of the equipment for labouring women.



All the women agreed that having these facilitative birthing aids openly available in each of the birthing room would encourage more women to be mobile and adopt position change(s) in labour. However, labouring women must be enabled or empowered to make use of the facilities. They commented that the staff play an important role in encouraging position change(s) with the use of these available items and that it should be included as part of their care for all women in labour.

#### **iv) The Environment of the Birth Room; 'homely' ambience**

Majority of the women were satisfied with their birthing rooms during their labour and birth. Four women stated the birth rooms they had were decorated in what was felt to be a 'homely' feel. They were clean with ensuite [attached bathroom] facilities, the lights had soft-dim functions and the walls were painted in soft pastel colours which created the feeling of warmth.

Space was an issue for one woman, who described the birth room as being 'cluttered':

'...it [birth room] was small with many types of medical equipment... I had no place even to store my bag and extra pillows...it was always in the way of the staff. Also, the lights in the room were too bright and non-adjustable... we had to have all the lights off at one point, which the staff was not too happy about'.

Although the majority of women were satisfied with the physical environment of the birth rooms, they did mention that they did not always have access to the facilities. For example, one woman commented:

*'I was impressed with the ensuite Jacuzzi-like bathtub I had in my birthing room... I wanted to use the water [immersion] to help ease the contractions I had, but was told by the staff that I needed to engage a doula if I wanted to use water therapy... one who could provide the constant supervision in case I fall...'*

Above all, the women agreed that having a calm and supportive staff/midwife that motivates and accommodate their wishes whenever possible was crucial, and that it can have a major influence on women's birth experiences.

**v) Specifically Tailored Antenatal Classes; to needs of women in the group**

Information sharing and support within antenatal classes were identified by women as an area where attention was needed. The provision of contemporary antenatal education was deemed too 'restrictive' by women in the focus group. Although the content for each session varied across maternity units, majority of the sessions attended by the women followed a fixed lesson plan and agenda. They commented that there were minimal discussion and information sharing between participants in each of these sessions. These following comments illustrate the lack (or perceived lack) of discussion/information sharing and support in catering to the needs of the women attending the classes:

*'I think the topics covered in antenatal sessions need to be revised. The classes I previously attended seemed traditional, they were not responsive... [to] my needs...were not met...'*

*'...there seemed to be a set agenda for these 'traditional' antenatal courses. We were given a programme file on the first day with a whole set of power-point notes for each of the ten sessions. Each session, we just sit and listen to what she had to say and there was barely time to have a discussion in the end...very formal and one-way...'*

*'...its superficial learning with minimal support...'*

*'I attended all the stipulated classes every Saturday but still felt I hadn't really gotten the information I needed to prepare me for my labour and birth. I felt that the classes were rather a gloss over of topics and did not really answer...cater to what I wanted to know. The fixed topics did not help... were not supportive of...women... my situation, as I was planning a natural birth and wanted to focus more on getting information pertaining [to] that..'*

By contrast, two other women shared their experiences of attending a 'preparation for natural birth course' recently offered to women planning for a natural birth, who were booked with one particular hospital. The two-day course covered topics relevant to them, in which they felt supported. One woman talked about the positive attributes of the facilitator, of her having good knowledge on the physiology of normal birth:

*'...I was there for two whole days and it was great. The facilitator was marvellous, she really took time to listen to us... the class size was small with only six couples... and we had plenty of time for discussion and information sharing within the group. We...all the participants... we were asked to jot down on a piece of paper [the] three most important areas on natural birth we [would] like to discuss in the two day session...we covered all of them by the end of the second day. It [the sessions] didn't feel rushed... we...I felt supported and it boosted my confidence...that I could do it, to have the type of birth I wanted'.*

#### *Focus Group with childbirth educators and doulas*

A similar set of questions were asked in the focus groups with childbirth educators and doulas. The questions were as follows: *What sort of things help women while they are in labour? What sort of things do you think would help (or are conducive to promoting normal birth), but are currently not available to women during their labour and birth? What sort of (practical) things can the hospital (or service) put in place to help women who are planning a normal birth?* These questions invited childbirth educators and doulas from the community to reflect on their experiences in facilitating women who were keen to have normal births.

Childbirth educators and doulas take on the role of advocate in fostering women's choices in pregnancy and birth. This FG discussion with them can be of benefit to highlight the important processes maternity services can put in place

in an effort to promote birth as a positive experience for the labouring mother. In particular, an understanding of the essential issues identified will allow for approaches to uncover effective means in the promotion of normal birth.

Essentially, the themes were the same as those identified in the women's focus groups. That is: i) specifically tailored antenatal classes i.e. to needs of women in the group; ii) supportive care during labour and birth i.e. continuous one-to-one care; iii) mobility in labour and birth i.e. women free to move around within their environment; iv) birthing aids to facilitate and promote an active birth; and v) the environment of the birth room i.e. 'homely' ambience.

One particular area in regards to supportive care during labour and birth was highlighted by the childbirth educators and doulas. The childbirth educators and doulas felt that care providers were constrained by institutional requirements to be able to 'fully' provide for women the supportive one-to-one care the women want. They agreed that although most midwives were committed to facilitating normal physiological birth, they were not afforded the time or 'environment' to do so. They highlighted the difficulties midwives may face in facilitating natural birth within the hospital environment:

*'...many of them [midwives] seemed to be too 'bogged down' by the hospital system... they seem to be under constant pressure...to work within the medicalised system... the medical model... I suppose that's why they have difficulties facilitating and supporting women wanting natural birth... especially in a hospital environment...'*

*'Hospital policies may require that midwives care for more than one labouring woman each time...and the poor women... they may see a number of caregivers during the course of her labour... care is broken up... midwives just can't provide the one-to-one supportive care... the full care to women, throughout their labour and birth... I guess this is where we could come in... to help...if needed, to relieve the burden and stress...'*

### *Summary of findings from the Focus Groups*

In summary, participants in both focus groups discussed numerous strategies and ways of promoting normal birth. Much of the discussion focused on their perception of the culture of the birthing environment and what needed to change in order to move towards an environment supportive of normal birth. The main theme from both groups was their desire for maternity care providers to be supportive of their (women's) choices. Many participants used the term 'empowerment' and believed that providing women with the support and understanding was essential to supporting women to have a normal and positive experience of birth.

Table 5-5 presents a comparison of the *five* areas identified as 'significant' in promoting normal birth from the Pre-intervention Anonymous Maternity Providers (AMP) survey and focus group findings with women, childbirth educators and doulas. This review concludes the results for the 'fact-find' phase.

**Table 5-5: Five Areas Identified as 'Significant' from Pre-intervention AMP Survey and Focus Group Findings**

<b>Five areas identified by maternity staff in the Pre-intervention AMP survey as requiring attention in working towards the promotion of normal birth were:</b>	<b>Five areas identified by women, childbirth educators and doulas of the Focus groups as conducive in promoting normal birth were:</b>
1. Evidence-based guidelines in fetal monitoring	1. Supportive care during labour and birth i.e. continuous one-to-one care
2. Appropriate admissions to labour ward	2. Mobility in labour and birth i.e. women free to move around within their environment
3. Maternal movement in labour	3. Birthing aids to facilitate and promote an active birth

4. Environment (decor) of birthing rooms	4. Environment of birth room i.e. 'homely' ambience
5. Birthing aids to facilitate and promote active birth	5. Specifically tailored antenatal classes i.e. to needs of the group

### 5.3 'Plan/re-plan' Phase – Consideration of key changes and strategies for intervention

This section discusses the '*plan/re-plan*' phase in the PoNB study following the '*fact-find*' phase. The Normal Birth Collaborative (NBC) workgroup members met weekly to fortnightly in order to discuss findings from the Pre-intervention Anonymous Maternity Providers (AMP) survey and focus groups (see *Table 5-5*). This assessment of collated findings led the NBC workgroup to talk over their opinions and views on areas that necessitate improvement, and those areas identified as requiring 'major', 'moderate' or 'minimal' improvements in considering key changes in the unit and strategies for the change. Questions discussed in the scheduled meeting sessions to guide decision-making encompassed: i) the importance of the area(s) for change; ii) the possibility of improving area(s) for change within time frame / resources; and iii) the aim for maximum benefit through incremental changes in identified area(s) (see Minutes of Meeting – *Appendix 9*). Clinical data from the department database were also collected for the duration of the study and will be presented later in the '*reflect*' phase.

A plan of action was developed by the NBC workgroup following deliberation on the assessment findings (*Table 5-5*) and guiding questions to determine key area(s) for change. Again, this was made possible by the contribution of ideas and suggestions from maternity staff who attended the scheduled meeting sessions arranged by the NBC workgroup at which the 'fact-finding' results were presented. Taking into account the staff's ideas, members decided to focus on

*three* key areas for change. These areas for change were: i) Maternal mobility and movement in labour; ii) Birthing aids to facilitate active birth; and iii) Environment of birthing rooms. Staff agreed that these three areas were interrelated; since maternal mobility and movement would require an environment conducive to encourage freedom of movement and facilitative aids (i.e. birth balls) to assist with positioning (*Appendix 9*). *Table 5-6* illustrates the action plan for the *three* key changes.

The action plan (*Table 5-6*) helps the workgroup to keep track of necessary steps to bring the *three* identified changes to completion within the allocated timeframe. This included plans for a Maternal Position for Labour (PFL) educational forum and workshops, and walkabout sessions in the birthing suite to garner ideas on promotion boards/posters and pictorial representations for the change initiative. Plans were also developed to carry out demonstrations in the actual birth rooms where staff would role-play encouraging women in labour to move and change positions. Facilitative items (birthing aids) such as pillows, straight-back portable chairs, birth balls, mats, and disposable underpants were identified as items for purchase to assist with the '*action*' phase of the PFL initiative.

Although it was important at this '*plan/re-plan*' phase to meet members regularly to keep the interest and energy (momentum) of the group up, this was not always possible. It was not easy for participants of the NBC workgroup to attend all of the meetings as they were often on duty at the time and had ongoing responsibility for patient care. While senior managers were supportive of the process, attendance for the meeting had to be negotiated with colleagues to allow for coverage. It was later agreed that the use of regular emails and text messages was a good way of keeping '*connected*' between workgroup meetings.

The minutes of the meetings were also an invaluable source in keeping abreast of planning discussions – when members were not available to attend – and

useful as a summary record of the previous discussions. The meeting minutes enabled participants to work and reflect on issues discussed which kept the group moving forward towards action. The agenda for each meeting was set by the group so that the agreed upon actions evolved over time from our meetings (Appendix 9).

**Table 5-6 Plan of Action - Maternal Positions for Labour (PFL) Initiative**

<b>Area of Change:</b> Pregnancy and Labour Care Section
<b>Target Principles:</b> <ul style="list-style-type: none"> <li>• Women are discouraged from lying on the bed</li> <li>• Birth rooms are equipped with aids to facilitate active birth</li> <li>• The decoration of the birth rooms is homely with clinical equipment out of sight</li> </ul>
<b>Where are we now?</b> (based on Pre-intervention AMP survey and Focus Group findings) <ul style="list-style-type: none"> <li>• The majority of women labour on the bed</li> <li>• There is a reliance on pharmacological pain relief</li> <li>• Women are unsupported and discouraged to be active and to adopt upright positions / position change(s) in labour</li> <li>• The labour rooms still look ‘clinical’ although some improvements have been made to the decor i.e. dimmer switches in all rooms, breastfeeding posters</li> <li>• Facilitative birthing aids are limited and not available to all women</li> </ul>
<b>Where do we want to get to?</b> <ul style="list-style-type: none"> <li>• At least 50% of women are encouraged to adopt upright positions / position change(s) during their labour</li> <li>• Staff who are confident in supporting women in upright positions / position change(s)</li> <li>• Birth rooms are equipped with accessible facilitative birthing aids to encourage more women to be mobile and adopt position change(s) to promote active labour</li> <li>• To ensure clinical equipments are hidden away to create a ‘homely’ environment in birth rooms</li> </ul>



<p><b>What do we need to change?</b></p> <ul style="list-style-type: none"> <li>• Will need to address training with staff regarding upright positions / position change(s): <ul style="list-style-type: none"> <li>- Development of PFL educational forum and workshops with staff</li> <li>- On-site hands-on PFL training sessions for staff at the birthing suite</li> </ul> </li> <li>• Obtain pictures and posters on positions to be placed in labour rooms: <ul style="list-style-type: none"> <li>- Possibly to create setting-based photographs on Positions for Labour</li> <li>- To create a promotional notice board and posters to promote and raise the profile of positioning in labour</li> </ul> </li> <li>• Identify and purchase enough facilitative items (i.e. birth balls, pillows, straight-back portable chairs) to be placed in birth rooms</li> <li>• Explore further ways to promote active labour <ul style="list-style-type: none"> <li>- Possibly to create patient education pamphlet to be given to women antenatally</li> <li>- Flip-charts as memory aid when discussing positions, to be placed in each labour room</li> </ul> </li> </ul>
<p><b>Who will do (and lead) the work?</b></p> <ul style="list-style-type: none"> <li>• Researcher / NBC workgroup members</li> <li>• Midwifery managers at the birthing suite</li> <li>• Midwifery clinician / educator</li> </ul>
<p><b>When will we complete this?</b></p> <ul style="list-style-type: none"> <li>• Maternal Positions for Labour (PFL) Initiative to commence in May 2012</li> <li>• PFL surveys with women and staff will be carried out concurrently for six month and end in October 2012</li> <li>• Review action plan in six months</li> </ul>
<p><b>What tools will we use?</b></p> <ul style="list-style-type: none"> <li>• Setting-based photographs on Positions for Labour (PFL)</li> <li>• Promotional notice board and PFL posters to promote active labour</li> <li>• Accessible facilitative birthing aids in labour room to encourage more women to be mobile and adopt position change(s)</li> </ul>
<p><b>How will we measure success?</b></p> <ul style="list-style-type: none"> <li>• Use of the PFL survey to audit and gather feedback from women and staff on: <ul style="list-style-type: none"> <li>- Labour position(s) used</li> <li>- Barriers to changing position(s)</li> <li>- Maternal satisfaction with PFL</li> <li>- Usefulness of PFL tools (i.e. setting-based photographs)</li> <li>- Staff support in PFL</li> </ul> </li> <li>• Routine checks (daily) to ensure that facilitative birthing aids are available in labour rooms</li> <li>• Birth outcomes from clinical data in department database</li> </ul>

**What will be the impact? (quality and value, increase in normal birth and reduction in CS rates)**

- Women will feel enabled to be mobile during labour – increasing maternal satisfaction and leading to more normal outcomes
- Midwives will feel more confident in promoting the benefits of mobility/upright positions

## **5.4 ‘Action’ Phase – Implementation of PFL change and collection of ‘measurement’ data**

This following section describes the activities implemented and the data collected in the ‘*action*’ phase. It details the implementation of the Maternal Position for Labour (PFL) initiative in the maternity unit (study setting) based upon the action plan for the *three* key changes in the ‘*plan/re-plan*’ phase (see *Table 5-6*). The Positions for Labour (PFL) survey, which was developed to evaluate the PFL initiative, will also be discussed. This information is presented under the following headings: ‘*Action*’ Activities; and ‘*Action*’ Findings.

### **5.4.1 ‘Action’ Activities**

*Table 5-7* summarises the activities in the ‘*action*’ phase. The ‘*action*’ activities that took place in the study setting to facilitate the *three* key changes through the implementation of the Maternal Position for Labour (PFL) initiative included:

- Formal departmental presentations
- Training with staff regarding upright positions / position change(s):
  - Development of PFL educational forum and workshops with staff
  - On-site hands-on PFL training sessions for staff at the birthing suite
- The design and printing of:
  - the PFL educational tool
  - setting-based photographs [to encourage women to be mobile and adopt position change(s)]
  - promotional boards/posters to promote active labour

- The creation of a PFL stamp on all the obstetric records of women to indicate positions women use and are encouraged to use
- The establishment of the PFL survey data collection processes in the birthing suite.

Change champions from the Normal Birth Collaborative (NBC) workgroup worked closely together with maternity staff in the unit on the ‘*action*’ activities as with the planning. The staff worked very hard to ensure that the ‘*action*’ activities (*Table 5-7*) were completed in time for the launch of the Maternal Position for Labour (PFL) initiative in the unit.

**Table 5-7: Summary of ‘Action’ Activities and its Effects on the Maternal Positions for Labour (PFL) Initiative**

<b>‘Action’ Activities</b>	<b>Effects</b>
<b>Normal Birth Collaborative (NBC) workgroup meetings</b>	Shared ownership and development. Fact-find, plan, action (implement), reflect (evaluate) and dissemination of progress.
<b>Communication, Teamwork &amp; Persistence</b>	Motivation and memory jogger. Increase profile about initiative and add knowledge. Encourage staff ideas/strategies and feedback.
<b>Procurement of a ‘shopping list’ for equipment to encourage movement for normal labour and birth</b>	Successful purchase of facilitative items (birthing aids) i.e. pillows, straight-back portable chairs, birthing balls, mats and disposable underpants. Equipping all rooms with facilitative equipment and ‘flip-charts’ as a patient education tool.
<b>PFL skills based teaching workshops &amp; hands-on (role-modelling) sessions in birthing suite</b>	Increase in research-based knowledge and skills. Share experience, talk through difficulties faced to encourage position change(s) for women in the birthing rooms. Encourage use of existing equipment i.e cordless CTG machines to facilitate movement.
<b>Posters &amp; setting-based photographs displaying PFL</b>	Information for women and staff (i.e. midwives/nurses, obstetricians/doctors) Facilitate informed choice. Promote and raise the profile of positioning in labour.

<b>PFL stamp on women's records (in each review column)</b>	Memory aid for staff to encourage position change(s) in labour.
<b>PFL Information and photographs in each room – 'flip charts'</b>	Memory aid when discussing positions in labour.
<b>PFL surveys with women and staff</b>	Evaluation of practice - to find any problems, enable problem solving, garner feedback, give value and credibility to practice of changing position(s) in labour.

Participating staff gave positive feedback about the training and were enthusiastic about the concept of maternal positioning for labour and encouraging its practice in the unit. Video clips from the Royal College of Midwives (RCM), Campaign for Normal Birth website and setting-based scenarios (specific to the unit) were used in the interactive training to make it realistic for the participants. The RCM positions for labour and birth videos were deemed an appropriate resource to inspire staff and to support normal birth practices for women in our care given that the Campaign (RCM 2010a), underpinned by the RCM's philosophy of pregnancy and birth as normal physiological processes had a similar intent as the PFL initiative.

An intensive schedule of training for staff was accomplished in April 2012, at the end of which action activities were implemented. A train-the-trainer model was used to ensure coverage of training for staff in the unit. Once trained, these staff members went on to train and coach other staff on the unit, maximising staff awareness on maternal positioning for labour ahead of the PFL implementation. The model of getting staff involved in the training was suggested by the workgroup to encourage shared ownership in implementing changes in the unit.

Although it took time for staff to internalise the practice of encouraging maternal positioning and for women to adopt position change(s) in the unit, the on-going coaching and reinforcement during implementation facilitated the increase progress in the 'action' activities and PFL implementation. Namely, the practice

adoption flourished when unit 'leaders' were seen to model practices for women during care delivery. This was a powerful way of further reinforcing and influencing individual staff to adopt the practice.

#### ***5.4.2 'Action' findings***

This section describes the findings collected in the 'action' phase. It details data from the Positions for Labour (PFL) survey conducted from 1<sup>st</sup> May to 31<sup>st</sup> October 2012 during the implementation of the Maternal Position for Labour (PFL) initiative in the study setting.

The objective of the PFL survey was: a) to find out what labour position(s) women used; and b) to highlight areas of improvement in the unit with regards to supporting movement and positioning for women in labour (in the promotion of normal birth practices). Essentially, the Positions for Labour (PFL) survey forms the 'measurement' data on the PFL initiative.

#### *Positions for Labour (PFL) survey*

In total, 461 women completed the maternal component of the PFL survey and 409 maternity care providers completed the staff component of the PFL survey. At the start of the PFL survey from 1<sup>st</sup> May to 31<sup>st</sup> August 2012, an initial PFL survey tool, which comprised only a maternal feedback component, was used. The respondent rate was low, with only 52 (6.5%) returned surveys out of a possible 800 surveys (approx. 200 births/month) over that four month period. A meeting was organised on 13<sup>th</sup> August 2012 where the Normal Birth Collaborative (NBC) workgroup reviewed the PFL initiative and surveys collected. Subsequently, forums with maternity care providers held mainly at hand-over sessions and unit meetings helped gather feedback and further suggestions on the PFL initiative and existing PFL survey tool. Improvements were then made to both the PFL survey tool and the 'flow' (process) of survey collection.

The revised PFL survey, which comprised a maternal component (one to be filled by the woman herself), as well as a staff component (one to be filled by the maternity provider caring for the woman) were used in the final two months of the data collection period from 1<sup>st</sup> September to 31<sup>st</sup> October 2012. The revised PFL survey is included in *Appendix 8A & 8B*.

The revised PFL survey was a simple tool designed to collect key data on: particular position(s) used during labour; time spent in position(s) of choice; importance of changing position(s); barriers to position(s) change; usefulness of 'setting-based' PFL pictorial tool; the support and encouragement received in changing position(s); as well as suggestions to further encourage movement and position(s) change. The survey questions in the maternal component and staff component were relatively similar in intent. The only difference was phrasing the questions in a way relevant to the respondent participating in the survey. For example, questions in the staff component were worded as: "*Which positions(s) did you encourage the woman to use during her labour?*" and "*What did you find difficult in supporting her to change position(s)?*" The questions in the maternal component included: "*Which positions(s) were you encouraged to use during your labour?*" and "*What did you find difficult in changing position(s)?*" The PFL survey itself also created a sense of awareness in the unit towards the PFL initiative, an important aspect of the implementation process.

The revisions made and suggestions highlighted by the staff proved beneficial to improving the PFL survey collection process, which in turn boosted respondent rates of the PFL survey. The PFL surveys completed in September included 189 women respondents and 189 staff respondents and in October, it included 220 women respondents and 220 staff respondents. The number of births (excluding elective CS) that had taken place during the months September and October 2012 were 199 births and 238 respectively. This gives an overall response rate of 95% in September 2012, and 92% in October 2012. Findings from the revised PFL

survey following the implementation of the Maternal Position for Labour (PFL) initiative are presented in *Table 5-8*.

#### **a) Labour position(s) used**

There were a variety of position(s) used by women during labour in the study. These included upright positions (i.e. standing, sitting, kneeling and on-all-fours) and lateral positions (i.e. side-lying and lying on back/semi-recumbent). Women and staff respondents in the survey reported the use of more than one position or positions throughout each woman's labour.

As seen in *Table 5-8*, more than half of the women respondents identified the use of at least one upright (i.e. 'sitting' – 68.9%, n=292) and two lateral (i.e. 'side-lying' – 80%, n=327) as well as 'lying on back/semi-recumbent' – 63.8%, n=261) positions during labour. These labour positions were relatively similar to those findings reported by the staff respondents. More than half of the staff respondents identified that a combination of upright (i.e. 'sitting' – 89.5%, n=366) and lateral (i.e. 'side-lying' – 76%, n=311) positions were used by women during labour.

The 'sitting' and 'side-lying' positions seem to be the top two positions favoured by both the women and staff respondents in the survey. Other positions such as standing, walking, leaning and squatting were also used but less frequently.

#### **b) Time spent in labour position(s)**

The majority (87.8%, n=359) of the labouring women 'spent more than 50 % of the time' in the position(s) they chosen. The findings were reflective of results reported by the staff respondents (94.9%, n=388).

#### **c) Importance of changing position(s)**

In this section of the survey, women were asked how important it was for them to change position(s) in labour. This question was included to inform practice in supporting maternal movement in labour. Most (86.6%, n=354) women rated

changing position(s) as either 'very important' (46.7%, n=191) or 'important' (39.9%, n=163) to them. These findings were helpful and support staff encouraging women to be mobile and to use different positions in labour.

**d) Helpfulness of changing position(s) in coping with labour**

More than 80% of the women rated position(s) change as either 'very helpful' (45.5%, n=186) or 'helpful' (39.4%, n=161) for them in coping with labour. Less than one fifth of the respondents thought otherwise.

**e) Barriers to changing position(s) in labour**

Being attached to a monitoring machine (i.e. 'fetal monitoring') was reported as the most common barrier to position change by both women (60.4%, n=247) and staff (65.5%, n=268) respondents in the survey.

**f) Usefulness of 'setting-based' PFL photographs to facilitate changing position(s)**

More than half of the women (81.6%, n=334) and staff (95.4%, n=390) respondents felt that the photographs provided were either 'very useful' or 'useful' to facilitate position change, although more staff respondents felt that way. A small portion of women (6.4%, n=26) reported that they were not shown or provided with any photographs during labour, and hence were not able to rate their use.



**Table 5-8: Revised Positions for Labour (PFL) Survey – All respondents (N = 818)  
September & October 2012**

PFL Survey Items	Women respondents (n = 409)	Staff respondents (n = 409)
<b>Responses to survey items – n (%)</b>		
<b>a) Position(s) used</b>		
Standing	137 (33.5)	150 (36.7)
Sitting	282 (68.9)	366 (89.5)
Kneeling	27 (6.6)	30 (7.3)
On-all-fours	21 (5.1)	25 (6.1)
Side-lying	327 (80)	311 (76)
Lying on back/semi-recumbent	261 (63.8)	198 (48.4)
Others*	10 (2.5) *(i.e. walking, leaning, squatting, holding on to husband)	66 (16.1) *(i.e. walking, leaning, squatting)
<b>b) Time spent in position(s)</b>		
More than 50 %	359 (87.8)	388 (94.9)
Less than 50 %	49 (12)	19 (4.6)
Others*	1 (0.2) *(i.e. about 20 mins in each position)	2 (0.5) *(i.e. time varied for each position)
<b>c) Importance of changing position</b>		
Very important	191 (46.7)	-
Important	163 (39.9)	-
Neutral	53 (13)	-
Not important at all*	2 (0.4) *(i.e. whatever is best for baby, on epidural)	-
<b>d) Helpfulness in coping with labour</b>		
Very helpful	186 (45.5)	-
Helpful	161 (39.4)	-
Neutral	58 (14.1)	-
Not helpful at all*	4 (1.0) *(i.e. still painful, on epidural)	-
<b>e) Barriers to changing position(s)</b>		
Being attached to monitors	247 (60.4)	268 (65.5)

<b>i.e. Fetal monitoring</b>		
<b>On an IV drip</b>	160 (39.1)	102 (24.9)
<b>On epidural</b>	133(32.5)	224 (54.8)
<b>Space available</b>	62 (15.2)	59 (14.4)
<b>No barriers</b>	62 (15)	96 (23.5)
<b>Others*</b>	41 (8.8) *(i.e. pain from contractions, use of Entonox)	68 (16.6) *(i.e. pain from contractions, tiredness, very heavy legs due to epidural, use of Entonox)

<b>f) Usefulness of ‘setting-based’ PFL photographs</b>		
<b>Very useful</b>	172 (42)	287 (70.2)
<b>Useful</b>	162 (39.6)	103 (25.2)
<b>Neutral</b>	49 (12)	7 (1.7)
<b>Not useful at all*</b>	26 (6.4) *(i.e. no photos shown, fast labour)	12 (2.9) *(i.e. fast labour)

<b>g) Staff support received</b>		
<b>Very satisfied</b>	252 (61.6)	-
<b>Satisfied</b>	124 (30.3)	-
<b>Neutral</b>	33 (8.1)	-
<b>Dissatisfied*</b>	None	-

#### **g) Staff support in changing position(s) during labour**

Most women were either ‘very satisfied’ (61.6%, n=252) or ‘satisfied’ (30.3%, n=124) with the support received with position change in labour. No one reported any dissatisfaction with staff support, although 8.1% (n=33) of the respondents remained ‘neutral’. Overall, these findings were encouraging. It suggests that the women are choosing to change positions during labour and were supported in doing as they wish.

A free text section was made available in both the staff and women’s surveys to enable the opportunity for additional comments. The feedbacks were generally positive. Most women in the survey were satisfied with the overall service and

encouragement received during the PFL initiative. The following are some examples of the comments and suggestions provided by women:

*'I am happy that I was able to do it without an epidural! Thank you for your encouragement! I delivered within four hours!'* (Comment by a primigravida woman)

*'The midwives and nurses were very encouraging – support was important and it was given to me at times of changing position. I'm very satisfied with the motivation and support! I would suggest wireless monitoring machine if available, for better positioning movement. Thanks again!'* (Comment by a primigravida woman)

*'This is a very good initiative towards aiming for more natural births and reducing the rate of caesareans. All staff were very helpful and supportive. We are very pleased with their knowledge and skills! Well done!'* (Comment by a multigravida woman)

Additionally, staff members were asked to give suggestions on what might further encourage women to change position(s) in labour. These were some of their comments:

*'The decrease use of epidurals and increase support in labour for women who wants to try different positions are important. Consistent encouragement on positioning should be given when reviewing women too.'* (Comment by a midwife)

*'A positive attitude is crucial to encourage changing positions. We should also involve the support person or encourage partner involvement in using props such as a chair, birth ball to assist the woman to remain upright and active.'* (Comment by a midwife)

*'Opportunities to discuss and demonstrate how to remain active and adopt different positions in labour will help the woman and her partner to prepare. Good preparation will assist women to become confident in their ability to be active and motivate their use of positioning during labour.'* (Comment by a midwife)

These comments suggest that staff were aware of the value in using a range of different positions during labour and the pertinent issues that needed to be addressed to further encourage this practice. The suggestions were considered important 'peer feedbacks' which were re-iterated to staff during review meetings.

The data gathered from the Positions for Labour (PFL) survey, namely feedback from the women and staff members themselves were invaluable in this 'action' phase. Both the maternal and staff components of the PFL survey provide specific 'measurement' information which best informed providers in the study setting on their performance in encouraging movement and position change for labouring women. These data were pertinent to evaluate the practice change. Importantly, these findings could possibly enhance the development of future normal birth practices in the study setting.

The participation of women (users of service) and staff (providers of service) in the PFL survey process also promoted 'collaborative action' in effecting sustainable change in the unit. Collaboration was a key consideration of the Normal Birth Collaborative (NBC) workgroup and a fundamental standpoint from which the study operated. This fundamental process was highlighted in *Chapter 3* (Research Methodology) with the use of Parkin's (1999) model.

### **5.5 'Reflect' Phase – Review (Evaluate) Data, Draw Conclusions and Reflect**

This section describes the data collected in the 'reflect' phase of the study. Findings from the Post-intervention Anonymous Maternity Providers (AMP) survey, focus groups with the Normal Birth Collaborative (NBC) workgroup members, as well as clinical data (birth statistics) from the department database form the 'reflection' (review) data for this study. The findings in this 'reflect' phase enabled change champions in the Normal Birth Collaborative (NBC)

workgroup to assess, review and re-plan actions related to the focus of change (Maternal Position for Labour (PFL) initiative), as well as provide recommendations for future development in the study context.

In total, 191 participants from the 'maternity-community' were involved in the 'reflect' phase of the study. This included 184 participants in the Post-intervention AMP survey and seven focus group participants. The findings from the Post-intervention AMP survey will be presented first, followed by the findings from the focus groups. Presentation of the findings according to the different methods of data collection will assist with understanding the overall evaluation. Lastly, the clinical data (birth statistics) from the unit's database will be discussed.

#### ***5.5.1 Post-intervention Anonymous Maternity Providers (AMP) survey***

The findings from the Post-intervention AMP survey provided a description of the participants and a measure of clinical practice in relation to the key changes in the Maternal Position for Labour (PFL) initiative implemented at the previous 'action' phase. The AMP survey was important to re-evaluate clinical practices 'post intervention' so as to uncover improvements and possible developments in directing the evaluation of the study.

##### *Distribution of Post-intervention AMP Survey respondents*

A total of 184 (out of 198) maternity care providers participated in the Post-intervention AMP survey (92.9% of the maternity care providers at the time). The majority of respondents were from nursing and midwifery (67.9%, n=125), with a participant rate of 96.2% (125 of 130 potential nurses and midwives). This was followed by the medical group (26.6%, n=49), which had a participant rate of 86% (49 of 57 potential medical practitioners). The rest were either administrators/managers or lactation consultants (5.5%, n=10).

Table 5-9, provides an overview of the Post-intervention AMP Survey Respondents. Most respondents (96.2%, n=177) were employed as full-time. Only 7 (3.8%) were employed part-time or through contractual arrangements. Over one third of the respondents worked in the antenatal/postnatal ward (37.0%, n=68) which has a total of 51-beds; while 23.9% (n=44) were from the birthing suite; and 14.7% (n=27) were from respondents who work in the antenatal/postnatal clinics. Similar to before, about a quarter of the respondents (24.4%, n=45) reported that their work involved rotation throughout all areas in the maternity unit (i.e. antenatal/postnatal clinics, antenatal/postnatal wards and delivery suite).

**Table 5-9: Post-intervention AMP Survey respondents (N = 184)**

Characteristic	n	%
<b>Professional group</b>		
Nursing & Midwifery*	125	67.9%
Medical	49	26.6%
Others (i.e. Admin / Management, Lactation Consultants)	10	5.5%
<b>Job status</b>		
Full-time	177	96.2%
Part-time	4	2.2%
Contracted staff	3	1.6%
<b>Area of work</b>		
Antenatal / Postnatal Wards	68	37.0%
Rotate through all areas	45	24.4%
Birthing Suite	44	23.9%
Antenatal / Postnatal Clinics	27	14.7%

\*Of the 125 respondents, 33.6% (n=42) were midwives (i.e. Registered Midwives only [RMs] or RMs who were also registered as nurses [RNs]).

Generally, there were more participants from the medical, nursing and midwifery groups in this Post-intervention AMP survey compared to the initial survey at the start of the study. These participants may have been more aware of the key changes in the unit from the implementation of the PFL initiative and this influenced their involvement.

*Post-intervention AMP Survey: Mapping normal birth best practices*

Like before, participants were asked to rate the service in relation to statements (known as *principles*) in the three sections: i) Key Characteristics of Normal Birth Practices; ii) Organisational Characteristics of Normal Birth Practices; and iii) Characteristics of Normal Birth Practices: Pregnancy and Labour Care. The same set of statements (as in the initial Pre-intervention AMP survey) were used in each of three sections which relates to key features with a focus on promoting normal birth best practices and reducing CS rates.

The comparisons of Pre- and Post- intervention AMP survey findings showed that the percentages of respondents giving positive scores (i.e. ratings of 'Excellent' or 'Above Average' on a five-point scale) were higher on the Post-intervention AMP survey. These positive scores applied to all the survey principles across the three sections, although differences were more significant in some areas than others.

**i) Key Characteristics of Normal Birth Practices**

*Table 5-10* presents a summary of the findings for this section. The high cumulative total of responses in the 'Above Average' column and 'Average' column again suggests that the respondents viewed the maternity service as having room for improvement in terms of its overall culture, but were not far below the scale.

**Table 5-10: Key Characteristics Section – All survey respondents (N = 184)**

Principles (12)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
If a CS is planned, the process is efficient and effective	2 (1)	9 (5)	16 (9)	49 (26)	108 (59)	184 (100%)
We all practice to the same guidelines - no opting out	2 (1)	12 (6)	51 (28)	44 (24)	75 (41)	184 (100%)
We manage women's expectations, we prepare them for the reality of labour (antenatal education)	15 (8)	16 (9)	26 (14)	57 (31)	70 (38)	184 (100%)
We get accurate, timely relevant information on our (clinical) performance	2 (1)	5 (3)	20 (11)	126 (68)	31 (17)	184 (100%)
We are a real team - we understand and respect each other's roles and expertise	3 (2)	10 (5)	47 (25)	99 (54)	25 (14)	184 (100%)
We work closely with our users (women) and stakeholders	2 (1)	31 (17)	49 (26)	62 (34)	40 (22)	184 (100%)
We get accurate, timely relevant information on our (overall) performance	9 (5)	52 (28)	40 (22)	53 (29)	30 (16)	184 (100%)



Principles (12)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
We focus on keeping pregnancy and birth normal	18 (9)	29 (16)	42 (23)	51 (28)	44 (24)	184 (100%)
Our leaders are visible and vocal	5 (3)	14 (8)	91 (49)	47 (26)	27 (15)	184 (100%)
Our guidelines are evidence-based and up to date	6 (3)	15 (8)	74 (40)	52 (29)	37 (20)	184 (100%)
We are proactive in recommending VBAC, giving accurate information about risks and benefits	2 (1)	22 (12)	67 (37)	41 (22)	52 (28)	184 (100%)
We manage women's expectations, we prepare them for the reality of labour (CS request)	11 (6)	18 (10)	63 (34)	31 (17)	61 (33)	184 (100%)

**Note:** The exact descriptions (statements) for each of the columns are included in *Appendix 4B*. The shaded areas identify the majority ratings for each principle. The highlights in *green* denote the widest rating difference in the Pre- and Post-intervention survey comparison.

The service was rated as excellent alongside the first three survey principles (*Table 5-10*). These were illustrated with the highest percentage of 'Excellent' responses for each of those principles. For example, 59% (n=108) of the respondents in the survey agreed that if a CS is planned in the unit, the process is both efficient and effective with optimal quality of care and resource utilisation. Similarly, 41% (n=75) of the respondents reported that staff in the unit adhered to the same guidelines in practice and variations were recorded and justified. In regards to the principle on managing women's expectations of pregnancy, labour

and birth (antenatal education) 38% (n=70) of respondents thought that women in the unit were prepared and supported to explore their feelings for labour and birth.

Overall, nine out of the 12 principles were rated as either 'Above Average' or 'Average'. This is a slight improvement from the Pre-intervention survey.

The principles rated by the respondents as 'Above Average' were improved from three principles to five principles. The two additional principles were: '*we work closely with our users (women) and stakeholders*' as well as '*we get accurate, timely relevant information on our (overall) performance*', highlighted in green (Table 5-10). The remaining principles in the section were rated like before, as 'Average'. These include: visible and vocal leaders, evidence-based guidelines, as well as the management of women's expectations in relation to CS request.

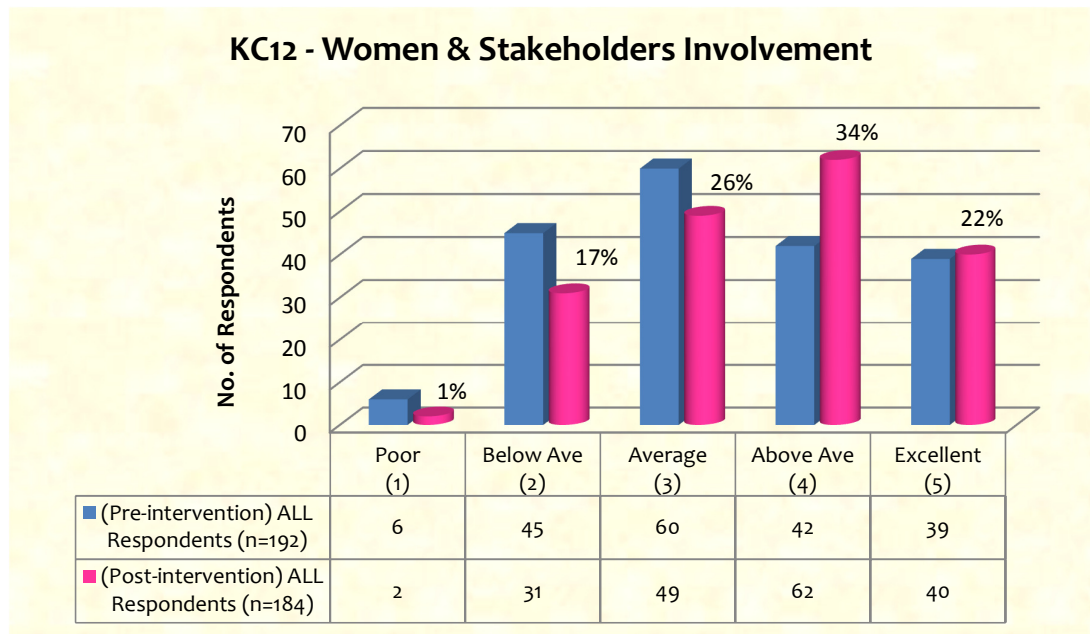
When overall data for the 12 principles in the section were compared by responses from different professional groups (nursing/midwifery respondents and doctor respondents), the aforementioned findings were reflective of responses provided by the nursing and midwifery respondents (100%, n=125). However, some differences in rating were noted with the doctor respondents. Again, the doctor respondents (100%, n=49) rated 10 out of the 12 principles as either 'Above Average' or 'Average'. The remaining two principles '*we work closely with our users (women) and stakeholders*' as well as '*we get accurate, timely relevant information on our (overall) performance*' were once again highlighted as 'Below Average' and requiring attention.

*Summary of 'significant' Post-Intervention findings in Key Characteristics Section (between Pre & Post-intervention survey comparison)*

Figure 5-11 and Figure 5-12 highlight the two 'significant' changes for principles in the Key Characteristics Section of the survey, Post-intervention. The 'shifting' of columns towards ratings 'Excellent' reveals the improving trend of change as

rated by respondents in the Pre- and Post- intervention survey comparison. As explained (in *Chapter 4*), ratings ‘poor’ refers to features least conducive for normal birth and associated with higher CS rates whereas features with ratings ‘Excellent’ contributes to normal birth and are associated with lower CS rates.

**Figure 5-11: Comparisons between Pre- and Post- Intervention Ratings - ‘we work closely with our users (women) and stakeholders’**

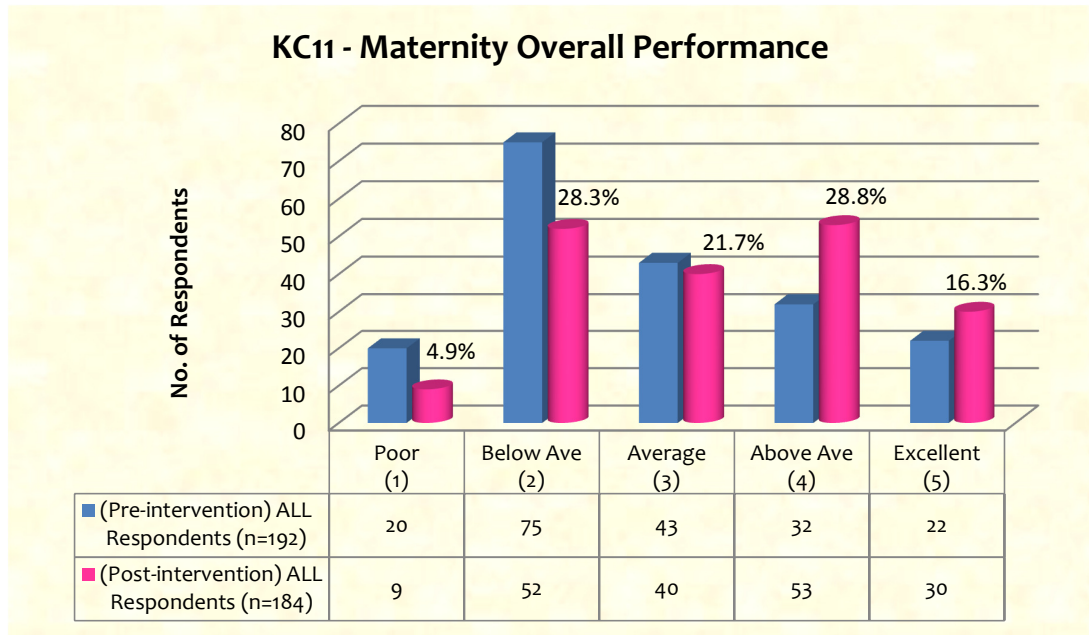


The shift in highest overall respondent ratings (as illustrated in *Figure 5-11*) from ‘Average’ to ratings of ‘Above Average’, suggest improvements in involving women and stakeholders in service developments. There was an overall increase from 42.2% (Pre-intervention) to 55.4% (Post-intervention) for the combined ratings of ‘Excellent’ and ‘Above Average’.

In the same way, *Figure 5-12* illustrates a shift for the principle ‘we get accurate, timely relevant information on our (overall) performance’. The highest overall respondent ratings improved from ‘Below Average’ to an ‘Above Average’ rating, post-intervention. There was also an increase in the overall combined ratings of

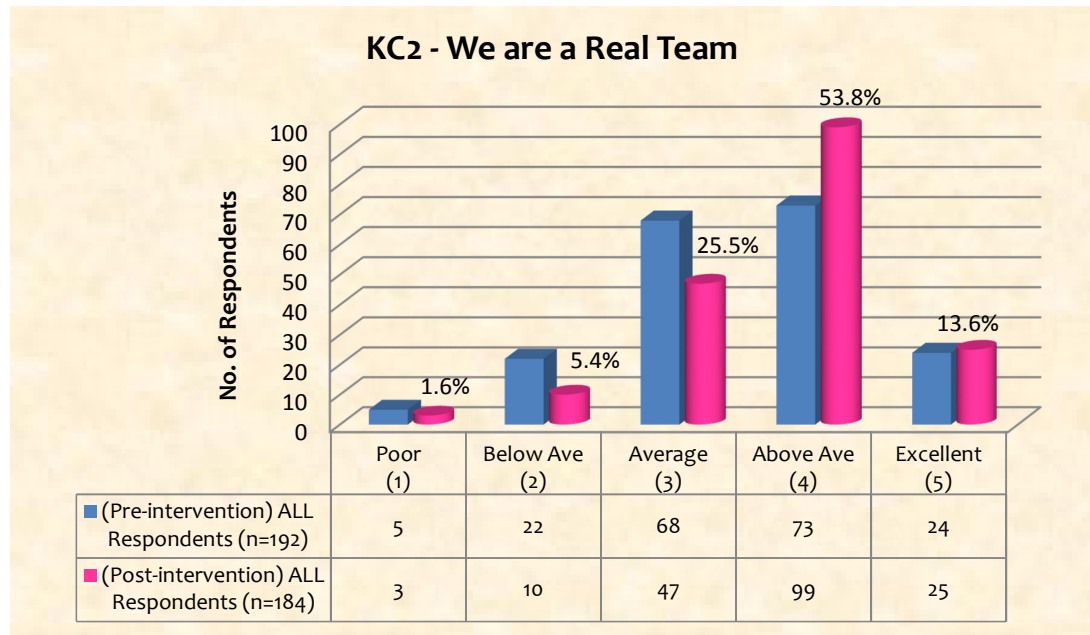
'Excellent' and 'Above Average' between the time-points (28.1% to 45.1%), suggesting a positive shift.

**Figure 5-12: Comparisons between Pre- and Post- Intervention Ratings - 'we get accurate, timely relevant information on our (overall) performance'**



Other changes with particular relevance to the implementation of key developments in the study were identified in *Figure 5-13 - 'we are a real team'*, *Figure 5-14 - 'we focus on keeping pregnancy and birth normal'* and *Figure 5-15 - 'our guidelines are evidence-based and up to date'*. Although similar respondent ratings were given pre- and post-intervention for these principles, there were marked increases in the comparisons of overall cumulative ratings of 'Excellent' and 'Above Average' between the pre- and post-intervention findings.

Figure 5-13: Comparisons between Pre- and Post- Intervention Ratings - 'we are a real team'



For example in Figure 5-13, although the highest overall respondent ratings for the principle 'we are a real team' remained the same at 'Above Average' (pre- and post-intervention), the overall combined ratings of 'Excellent' and 'Above Average' improved from 50.5% to 67.4%. This finding shows possible post-intervention improvements in teamwork in the unit and respect and understanding of individual roles and expertise.

Likewise in Figure 5-14, the overall respondent ratings for the principle 'we focus on keeping pregnancy and birth normal' remained the same at 'Above Average' (pre- and post-intervention), but the cumulative ratings of 'Excellent' and 'Above Average' for that principle increased from 48.4% to 51.6%. This finding suggests developments in the overall outlook of keeping pregnancy and birth normal in the unit, with the implementation of key changes in the PFL initiative.

Figure 5-14: Comparisons between Pre- and Post- Intervention Ratings - 'we focus on keeping pregnancy and birth normal'

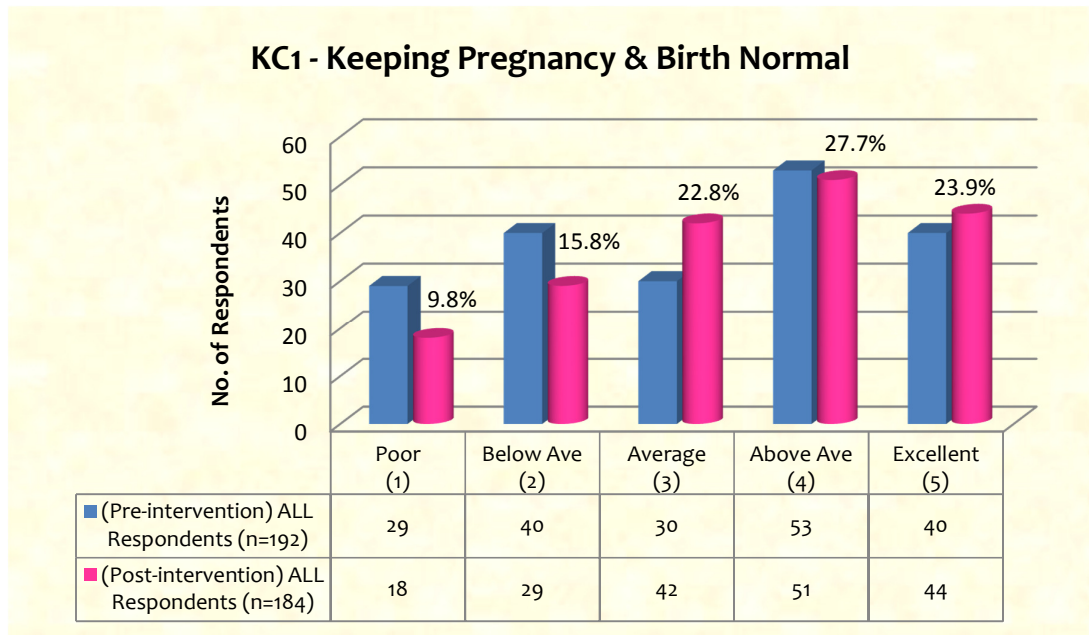
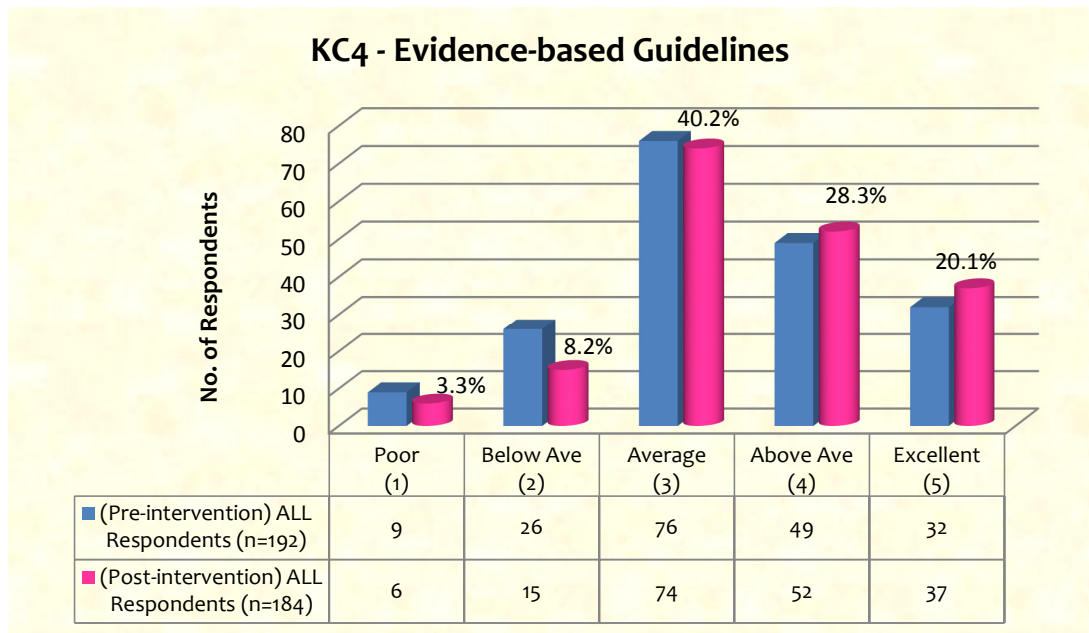


Figure 5-15: Comparisons between Pre- and Post- Intervention Ratings - 'our guidelines are evidence-based and up to date'



When comparisons were made on the ratings ‘Excellent’ and ‘Above Average’ in the Pre- and Post-intervention findings for the principle ‘our guidelines are evidence-based and up to date’ (Figure 5-15), the overall combined ratings improved from 42.2% to 48.4%. Again, the post-intervention results indicate possible progress in the development of evidence-based guidelines.

**ii) Organisational Characteristics of Normal Birth Practices**

Table 5-16 summarises the Post-Intervention AMP survey findings for the Organisational Characteristics section. Overall, the ratings in the Organisational Characteristics section were relatively similar to those in the previous Key Characteristics section, as they were generally positive. Respondents in this Post-intervention survey rated the eight principles in the same way, as being in the ‘mid-portion’ of the spectrum in terms of current organisational culture. Again, there seems to be consensus that members of staff were more or less content with the current ‘way of life’ (the ethos) in the maternity unit. This is evident from the high cumulative total of responses in the ‘Above Average’ column and ‘Average’ column, as seen in Table 5-16. The shaded boxes denote the highest respondent ratings (mode) for each of the eight principles in the section.

**Table 5-16: Organisational Characteristics Section – All survey respondents (N=184)**

Principles (8)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
Staff share a common ethos and aspirations for high quality care	6 (3)	14 (8)	40 (22)	30 (16)	94 (51)	184 (100%)
There is a robust clinical governance structure throughout the unit	10 (5)	9 (5)	21 (11)	71 (39)	73 (40)	184 (100%)

Principles (8)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
Women are empowered to make informed choices about their maternity care	19 (10)	6 (3)	65 (35)	27 (15)	67 (37)	184 (100%)
Maternity care is delivered by a multidisciplinary team with high levels of mutual respect between professionals	1 (1)	10 (5)	41 (22)	107 (58)	25 (14)	184 (100%)
Maternity services provide value for money	12 (7)	10 (5)	47 (25)	88 (48)	27 (15)	184 (100%)
There is an embedded and sustainable model of good clinical practice	7 (4)	15 (8)	51 (28)	63 (34)	48 (26)	194 (100%)
Timely, relevant information is used to inform clinical practice and service development	4 (2)	23 (1)	51 (28)	60 (33)	46 (25)	184 (100%)
Effective communication and information enhance decision-making	3 (2)	26 (14)	54 (29)	50 (27)	51 (28)	184 (100%)

**Note:** The exact descriptions (statements) for each of the columns are included in *Appendix 4C*. The shaded areas identify the majority ratings for each principle. The highlights in *green* denote the widest rating difference in the Pre- and Post-intervention survey comparison.

The unit was rated as ‘Excellent’ on three survey principles (*Table 5-16*). This was one principle more than in the pre-intervention period. Although the two

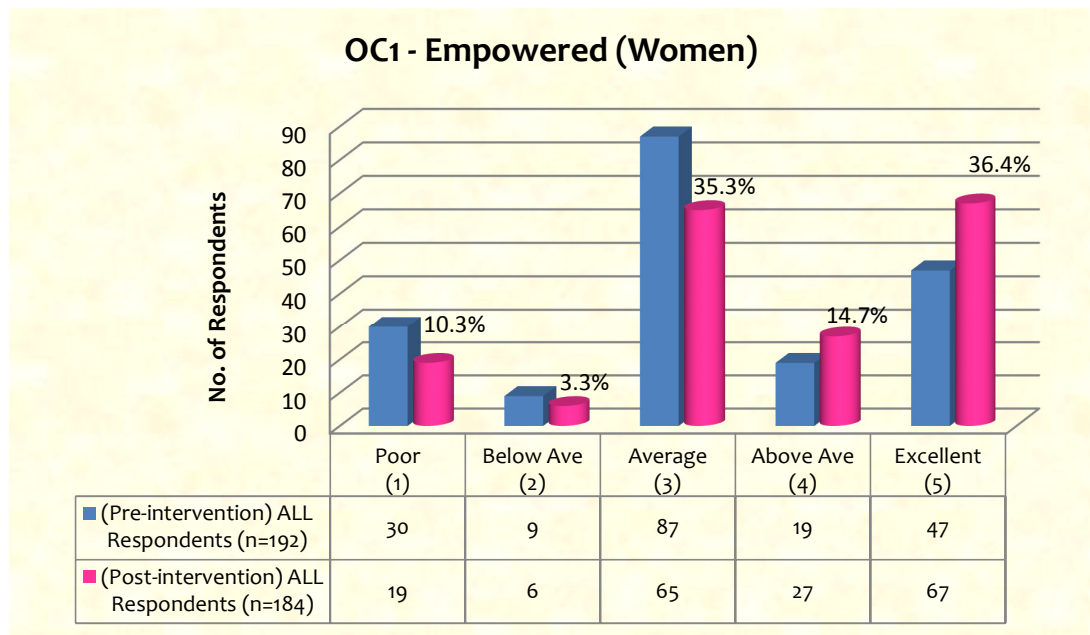


principles: *'staff share common ethos and aspirations for high quality care'*, and *'there is a robust clinical governance structure throughout the unit'* have a similar rating of 'Excellent' (pre- and post-intervention), a marginal increase in responses for the particular rating was noted. For example: 51% (n=94) of the respondents in the Post-intervention survey reported that staff in the unit focus on achieving high quality care and optimal outcomes for both the mother and baby (Table 5-16). This was an increase from 38% (n=73) in the pre-intervention phase (Table 5-3). Similarly, 40% (n=73) of the respondents in the Post-intervention survey agreed that there was good clinical governance structure in the maternity unit, with channels for improvement through risk reporting and review (Table 5-16). These responses increased from 36% (n=70) (Table 5-3).

Rating in regards to the principle on empowerment and women making informed choices (highlighted in green) increased from an 'Average' at pre-intervention to 'Excellent' in this post-intervention finding. Furthermore, the cumulative ratings of 'Excellent' and 'Above Average' improved from 34.4% to 51.1%, when comparisons were made pre- and post-intervention (Figure 5-17). This progress is crucial to enhancing women's position as active partners in decisions about their care.

Only one principle in this section was rated as being 'Average' by respondents of the survey (Table 5-16). Again, this is an improvement from four principles rated as 'Average' in the Pre-intervention survey. Twenty nine percent (n=54) of the respondents concurred that although they communicated well and had good multi-disciplinary relationships within the unit, there was no ongoing channel for user views.

**Figure 5-17: Comparisons between Pre- and Post- Intervention Ratings - 'women are empowered to make informed choices about their maternity care'**



When these data were compared by professional groups (between nursing/midwifery respondents and doctor respondents), differences were noted in ratings of two principles. The survey principles *'staff share common ethos and aspirations for high quality care'* as well as *'women are empowered to make informed choices about their maternity care'* were rated less favourably [*'Average'*] by the doctor respondents compared to nursing and midwifery respondents, who rated it as *'Excellent'*. The doctorshighlighted that while clear aims and standards were set in the unit, providers were too busy to reflect on the service they were actually delivering. In a similar way, while they respected women's views in the unit, each clinician has different interpretation of risks and choices; outcomes depend largely on which clinician the woman talks to.

*Summary of 'Significant' Post-Intervention Findings in Organisational Characteristics Section (between Pre & Post-intervention survey comparison)*

Apart from the improving trend on empowerment and women making informed choices discussed in *Figure 5-17*, similar improvements (as rated by respondents

in the Pre- and Post-intervention survey comparison) were noted for: *Figure 5-18 – ‘timely, relevant information is used to inform clinical practice and service development’* [combined ratings of ‘Excellent’ and ‘Above Average’ increased from 40.6% to 57.6%], and *Figure 5-19 – ‘there is an embedded and sustainable model of good clinical practice’* [combined ratings of ‘Excellent’ and ‘Above Average’ increased from 44.3% to 60.3%] (also highlighted green in *Table 5-16*).

**Figure 5-18: Comparisons between Pre- and Post- Intervention Ratings - ‘timely, relevant information is used to inform clinical practice and service development’**

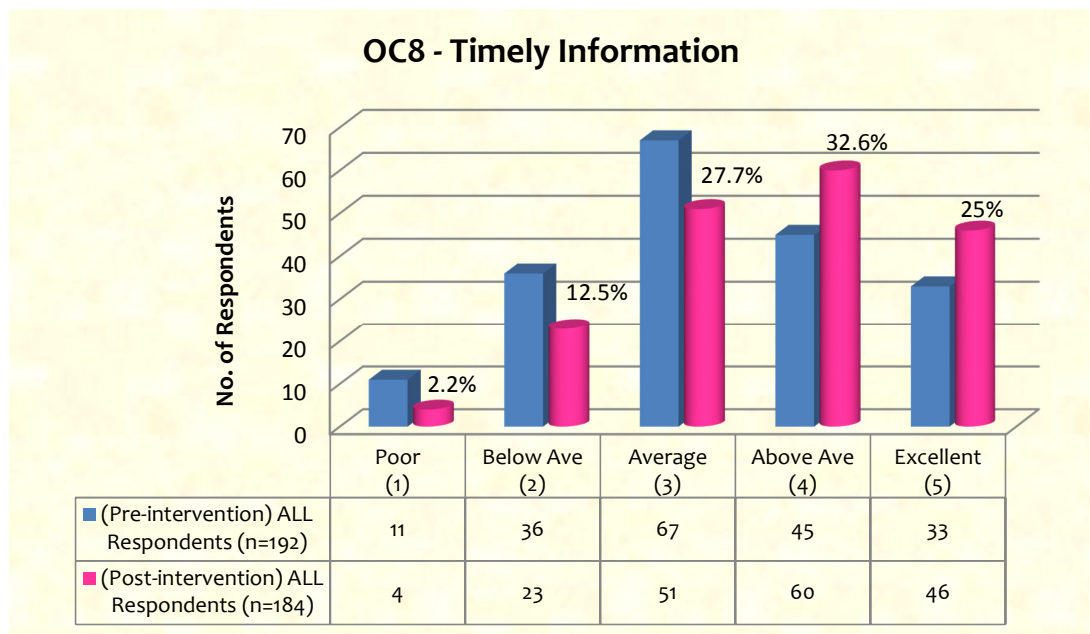
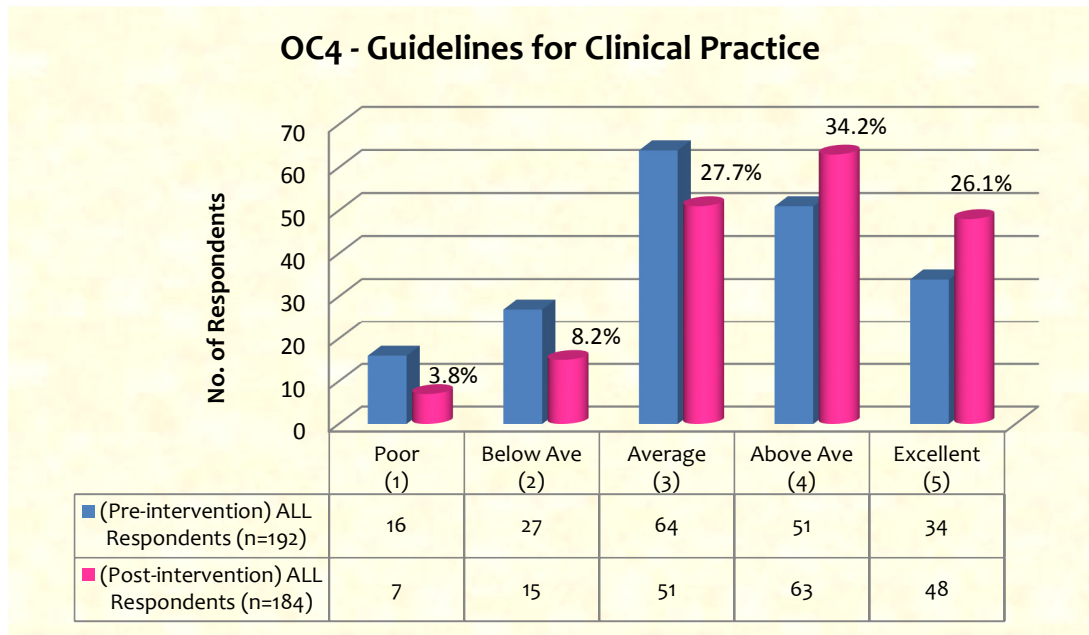
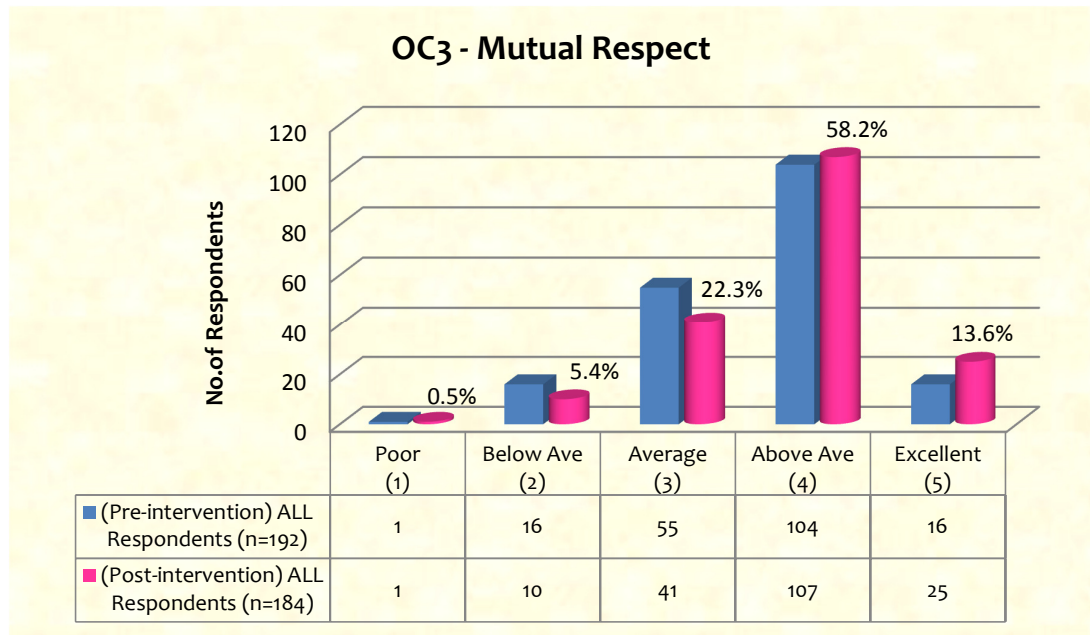


Figure 5-19: Comparisons between Pre- and Post- Intervention Ratings - *'there is an embedded and sustainable model of good clinical practice'*



Perceived post-intervention effects of significance to the study were also noted with systematically higher ratings for one other principle. This was on the principle: *'maternity care is delivered by a multidisciplinary team with high levels of mutual respect between professionals'* (Figure 5-20), where combined ratings of 'Excellent' and 'Above Average' increased from 62.5% to 71.7%. The findings in Figure 5-20 suggest that staff in the unit understand each other's roles and were mutually respectful of one another. The survey respondents reported that they communicated well, and shared teaching and training [ratings of 'Above Average']. These results are also consistent with responses for the principle *'we are a real team'* rated 'Above Average' in the previous Key Characteristics section.

**Figure 5-20: Comparisons between Pre- and Post- Intervention Ratings - 'maternity care is delivered by a multidisciplinary team with high levels of mutual respect between professionals'**



These findings provide insight into the ‘significant’ developments for principles in the Organisational Characteristics section, as a result of the PFL initiative. The next section discusses the Post-intervention findings from the Pregnancy and Labour section.

**iii) Characteristics of Normal Birth Practices: Pregnancy and Labour Care**

Survey principles in the Pregnancy and Labour section were intended to bring together an illustration of clinical care practices and processes in the maternity service (study setting) following implementation of key developments in the study. The post-intervention findings, as those in the Key Characteristics and Organisational Characteristics section, would assist with the evaluation of the implemented key actions (Maternal Position for Labour (PFL) initiative) and further inform areas for improvement in the study in working towards the promotion of normal birth. Again, the principles in this section were divided into two sub-sections: ‘Antenatal’ and ‘Labour & Birth’; to assist with understanding the area of focus in the survey. *Table 5-21* summarises the results. The shaded

boxes denote the highest respondent ratings (mode) for each of the 17 principles in the Pregnancy and Labour section.

**Table 5-21: Pregnancy and Labour Section – All survey respondents (N=184)**

Principles (17)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
<b>Antenatal</b>						
Women a with breech presentation are offered an external cephalic version by a skilled professional	7 (4)	51 (28)	18 (10)	93 (50)	15 (8)	184 (100%)
We work with women to ensure they have a realistic expectation of labour, birth and parenthood (antenatal education)	15 (8)	26 (14)	36 (20)	66 (36)	41 (22)	184 (100%)
We focus on keeping pregnancy and birth normal	7 (4)	18 (10)	50 (27)	61 (33)	48 (26)	184 (100%)
We manage women's expectations, we prepare them for the reality of labour (CS request)	8 (4)	21 (12)	77 (42)	37 (20)	41 (22)	184 (100%)

Principles (17)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
There are no social inductions	24 (13)	66 (36)	15 (8)	41 (22)	38 (21)	184 (100%)
<b>Labour &amp; Birth</b>						
Women are discouraged from lying on the bed	28 (15)	30 (16)	29 (16)	47 (26)	50 (27)	184 (100%)
Doctors enter the rooms of labouring women by invitation only	45 (24)	14 (8)	26 (14)	81 (44)	18 (10)	184 (100%)
The consultant obstetrician and co-ordinating midwife provide strong visible leadership	6 (3)	25 (14)	30 (16)	74 (40)	49 (27)	184 (100%)
Our skills drills are genuinely multi-disciplinary	9 (5)	16 (9)	42 (23)	71 (38)	46 (25)	184 (100%)
High risk women receive team-based care to optimise the potential for normal outcomes	3 (2)	27 (15)	26 (14)	67 (36)	61 (33)	184 (100%)

Principles (17)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
There is an open culture in which staff are supported and challenged in their decision-making	11 (6)	25 (14)	50 (27)	66 (36)	32 (17)	184 (100%)
Birth rooms are equipped with aids to facilitate active birth	14 (8)	25 (14)	45 (24)	59 (32)	41 (22)	184 (100%)
1:1 support is provided during labour by a trained carer	21 (11)	13 (7)	67 (36)	45 (25)	38 (21)	184 (100%)
Labour is managed using evidence-based guidelines	6 (3)	16 (9)	58 (32)	48 (26)	56 (30)	184 (100%)
The decoration of the birth rooms is homely with clinical equipment out of sight	23 (13)	34 (19)	47 (25)	35 (19)	45 (24)	184 (100%)
Labour is managed using evidence-based guidelines (fetal	65 (35)	31 (17)	28 (15)	24 (13)	36 (20)	184 (100%)



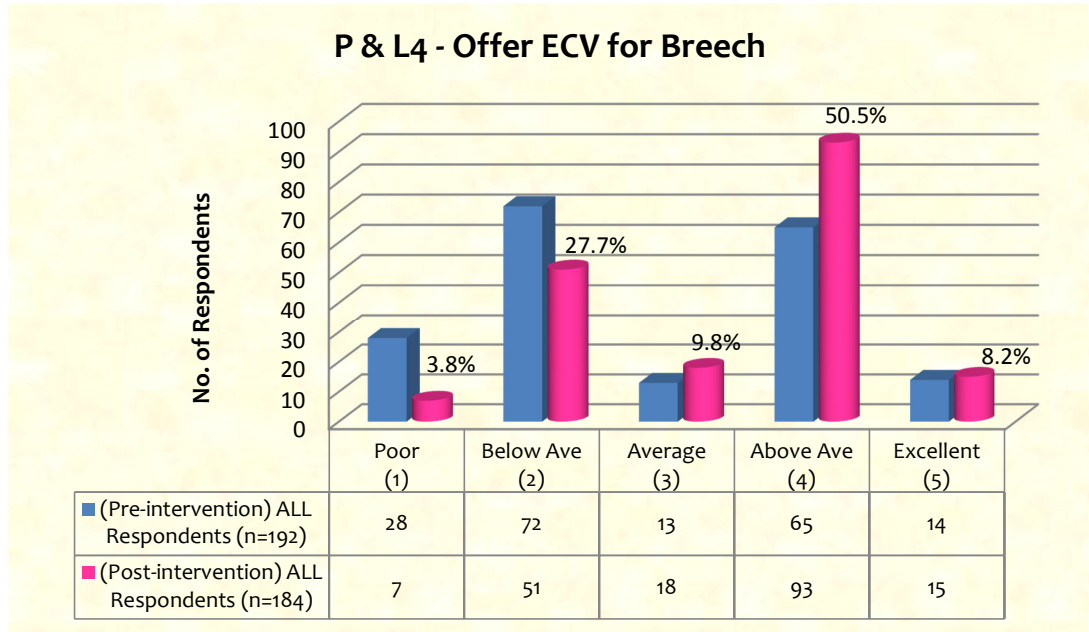
Principles (17)	Respondent Rating - n (%)					Total
	Poor (1)	Below Ave (2)	Average (3)	Above Ave (4)	Excellent (5)	
monitoring)						
The labour ward is reserved for labouring women	54 (29)	17 (9)	31 (17)	31 (17)	51 (28)	184 (100%)

**Note:** The exact descriptions (statements) for each of the columns are included in *Appendix 4D*. The shaded areas identify the majority ratings for each principle. The highlights in *green* denote the widest rating difference in the Pre- and Post-intervention survey comparison.

Overall, respondents rated principles in the Pregnancy and Labour section as having marked improvements compared to the Pre-intervention survey. Of the 17 principles, a total of 13 were rated as either 'Above Average' or 'Average'. This is an increase of four principles compared to (only nine principles rated as such) pre-intervention. When ratings of 'Below Average' and 'Poor' were compared, respondents only rated three principles (compared to eight in pre-intervention) as requiring attention. The positive results indicate progress and possible improvements in pertinent areas of development in the maternity service, as rated by respondents. These positive differences were however, more prominent in data from the nursing and midwifery respondents than those of the doctors.

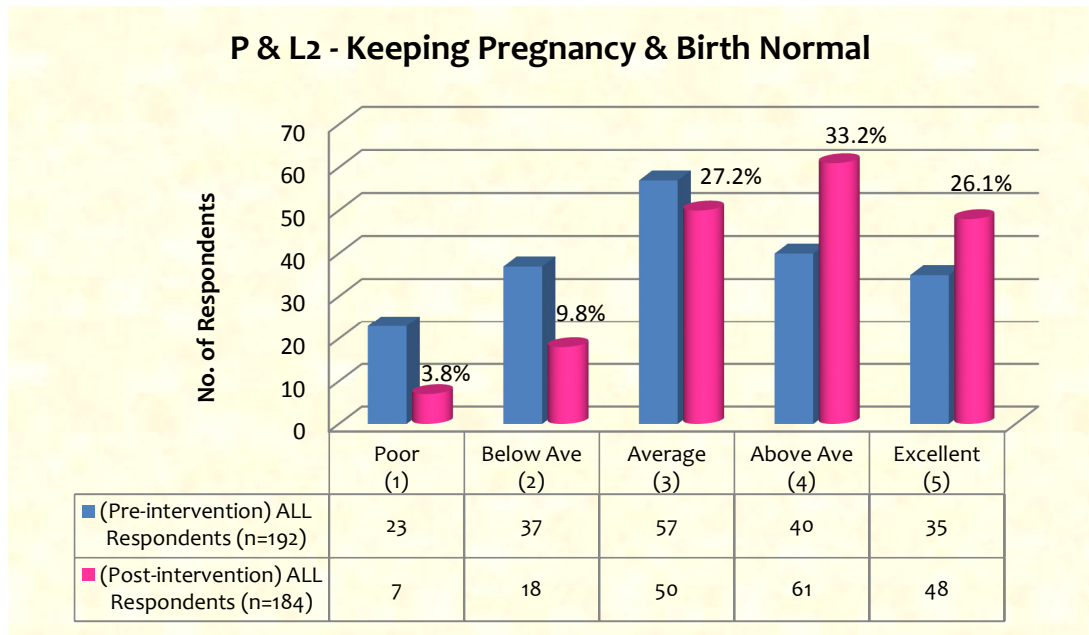
From the 'Antenatal' sub-section, a significant upward trend was noted for two principles (highlighted green in *Table 5-21*). The two principles: '*women with a breech presentation are offered an external cephalic version by a skilled professional*'; as well as '*we focus on keeping pregnancy and birth normal*' were rated by respondents as having an improvement after the intervention in the unit. The following graphs *Figure 5-22* and *Figure 5-23*, detail the trend comparisons of the pre- and post-intervention findings. Tabulated ratings of 'Excellent' and 'Above Average' for each of the principles were shown to have increase post-intervention, from 41.1% to 58.7% and from 39.1% to 59.2% respectively.

**Figure 5-22: Comparisons between Pre- and Post- Intervention Ratings - 'women with a breech presentation are offered an external cephalic version by a skilled professional'**



The unit was rated to have only one out of the five principles in the 'Antenatal' sub-section as 'Below Average' (Table 5-21). This was with regards to induction in labour for social reasons. Thirty six percent (n=66) of the respondents reported a variety of practices in regards to social inductions, depending on the clinician. This finding was reflected in respondent data when compared with both the professional groups (between nursing/midwifery respondents and doctor respondents).

Figure 5-23: Comparisons between Pre- and Post- Intervention Ratings - 'we focus on keeping pregnancy and birth normal'



Overall, none of the principles in the 'Labour and Birth' sub-section were rated by respondents as 'Below Average' in the Post-intervention survey (Table 5-21). Only two principles (out of five at pre-intervention) were rated by respondents as being 'Poor'. For instance, on the use of evidence-based guidelines, 35% (n=65) of respondents reported that continuous fetal monitoring was used routinely in the unit for women in labour. This is not surprising, given that unit guidelines recommend the use of continuous fetal monitoring unless stated otherwise by the woman's booking doctor or consultant obstetrician. The other highlighted area pertains to admissions in labour ward. Twenty nine percent (n=54) of the respondents reported that all women presenting with pregnancy problems are admitted to labour ward for assessment.

When results were examined for pre- and post-intervention variances, half of the 12 principles in the 'Labour and Birth' sub-section were shown to have considerable shifts in trends (highlighted green in Table 5-21). Post-intervention respondent ratings for these six principles shifted towards the positive direction,

to that of 'Average', 'Above Average', and 'Excellent'. Further, the changes were more significant for *three* key principles (out of the six identified) which were areas of focus in the PoNB study. The following section provides a brief summary of the Pre- and Post- intervention survey trend changes for these six highlighted principles.

*Summary of 'Significant' Post-Intervention Findings in Pregnancy and Labour Section (between Pre & Post-intervention survey comparison)*

Besides the significant changes discussed in the 'Antenatal' sub-section (*Figure 5-22 and Figure 5-23*), other variances in the 'Labour & Birth' sub-section will be detailed here. The following graphs provide comparison of the six principles identified to have changed. Like before, the overall combined positive ratings of 'Excellent' and 'Above Average' (4) will also be listed alongside each principle.

Firstly, graphs displaying trends in the *three* focus areas (key implementation areas of the PFL initiative) will be shown. This is then followed by trends for the remaining three principles. Trends for the three key focus areas are:

- Figure 5-24 – *'Women are discouraged from lying on bed'*;
- Figure 5-25 – *'Birth rooms are equipped with aids to facilitate active birth'*; and
- Figure 5-26 – *'The decoration of the birth rooms (environment) is homely with clinical equipment out of sight'*.

Figure 5-24: Comparisons between Pre- and Post- Intervention Ratings – ‘women are discouraged from lying on bed’

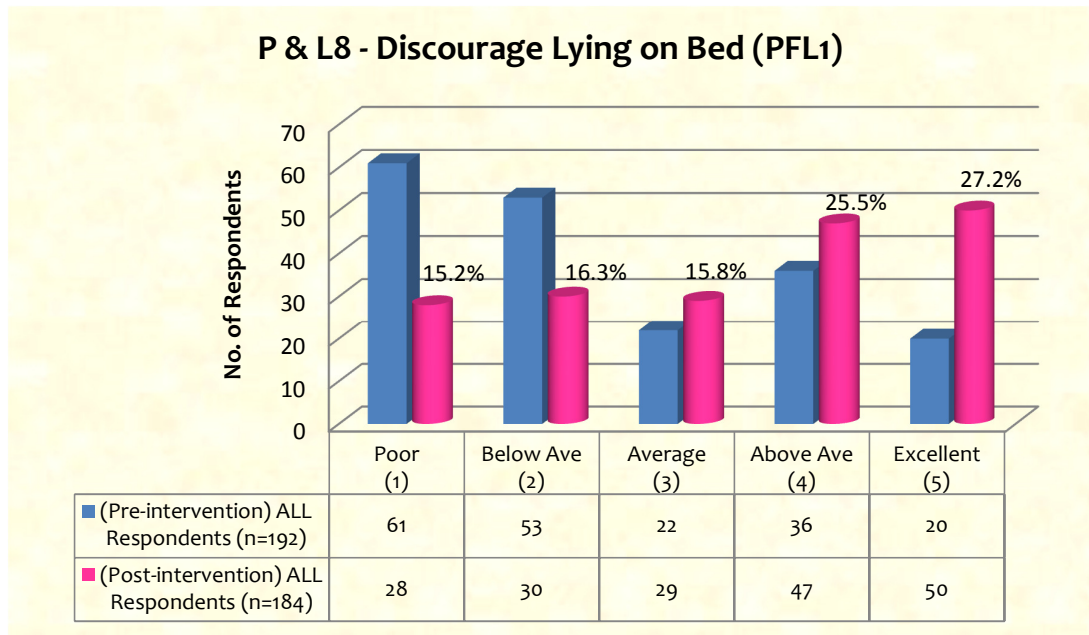


Figure 5-25: Comparisons between Pre- and Post- Intervention Ratings – ‘birth rooms are equipped with aids to facilitate active birth’

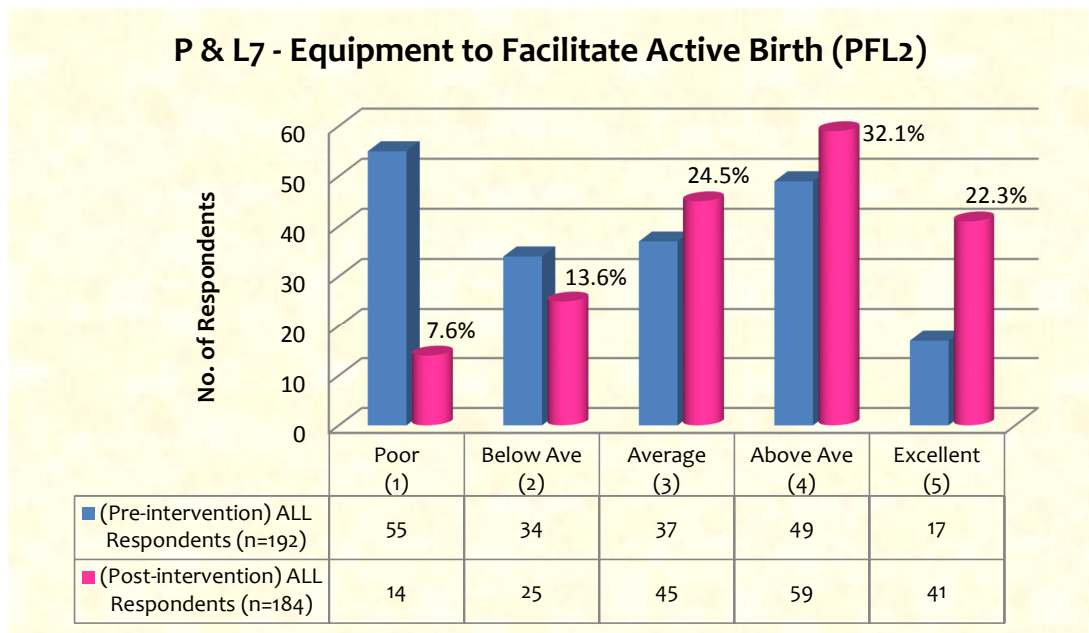
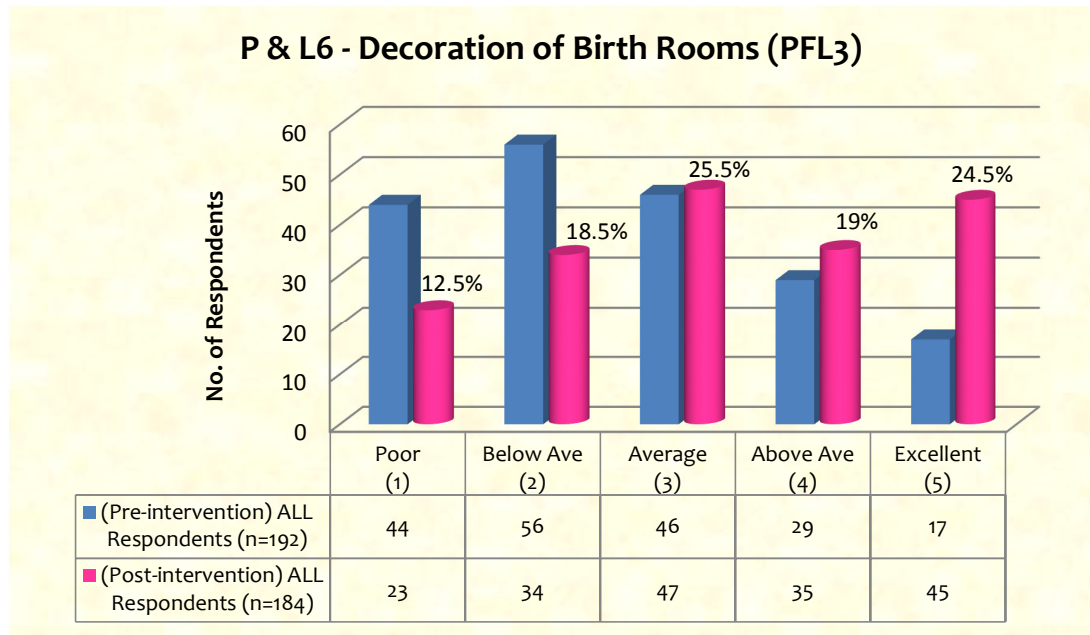


Figure 5-26: Comparisons between Pre- and Post- Intervention Ratings – ‘the decoration of the birth rooms (environment) is homely with clinical equipment out of sight’



Perceived improvements were reported in the unit for all the three key areas of focus (key implementation areas of the PFL initiative) post-intervention. As seen in Figure 5-24 – ‘women are discouraged from lying on bed’ respondents rated the practice as being ‘Poor’ pre-intervention, this however improved to a rating of ‘Excellent’ as seen in the post-intervention results. There was an increase in combined positive scores, ratings of ‘Excellent’ and ‘Above Average’, which went from 29.2% to 52.7%. A similar trend was noted for the principle ‘birth rooms are equipped with aids to facilitate active birth’ (Figure 5-25), with initial respondent ratings of ‘Poor’ pre-intervention, to ‘Above Average’ post-intervention. For this principle, the combined ratings of ‘Excellent’ and ‘Above Average’ increased from 34.4% to 54.3%.

Only a slight improvement was seen with ratings from ‘Below Average’ to an ‘Average’ for ‘the decoration of the birth rooms (environment) is homely with clinical equipment out of sight’ (Figure 5-26). Although clinical equipment was

hidden away in both the ward areas and birth rooms, the bed remained in the middle (focus) of the room. However, combined ratings of ‘Excellent’ and ‘Above Average’ showed an increase from 24% to 43.5%.

The subsequent graphs display trends for the remaining three principles noted to have considerable post-intervention changes: *Figure 5-27 – ‘our skills drills are genuinely multi-disciplinary’* [combined ratings ‘Excellent’ and ‘Above Average’ increased from 41.7% to 63.6%]; *Figure 5-28 – ‘there is an open culture in which staff are supported and challenged in their decision making’* [combined ratings ‘Excellent’ and ‘Above Average’ increased from 37% to 53.3%]; and *Figure 5-29 – ‘doctors enter the rooms of labouring women by invitation only’* [combined ratings ‘Excellent’ and ‘Above Average’ increased from 38.5% to 53.8%]. These positive results relating to multi-disciplinary skills drills, open communication channels, as well as shared information and collaborative decision making processes indicate probable post-intervention involvement and collaboration between professionals in the care of women in the maternity unit.

**Figure 5-27: Comparisons between Pre- and Post- Intervention Ratings – ‘our skills drills are genuinely multi-disciplinary’**

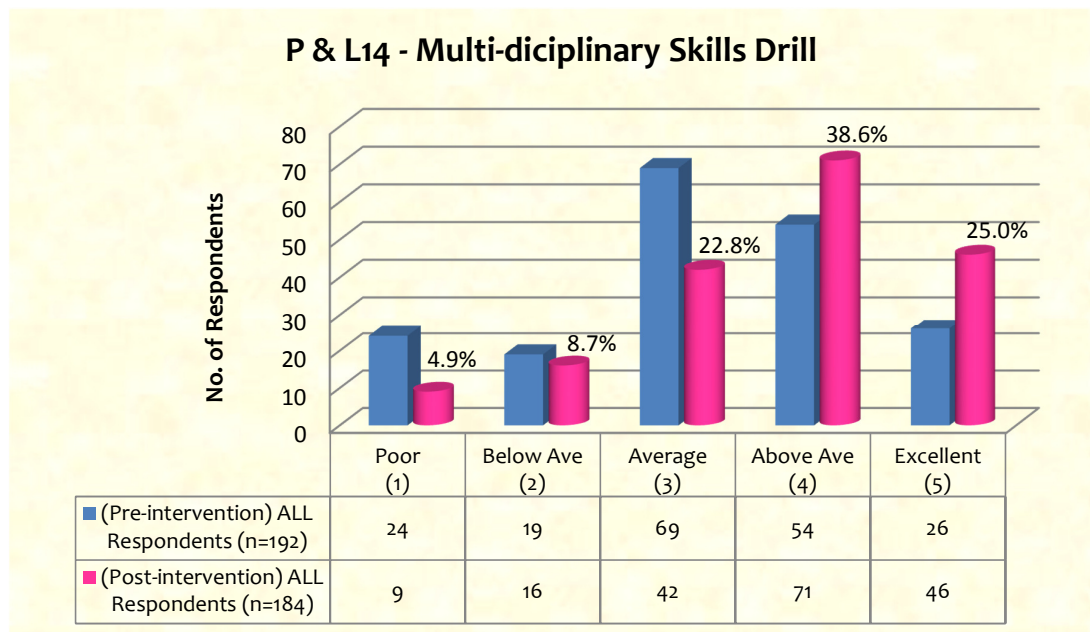


Figure 5-28: Comparisons between Pre- and Post- Intervention Ratings – ‘there is an open culture in which staff are supported and challenged in their decision making’

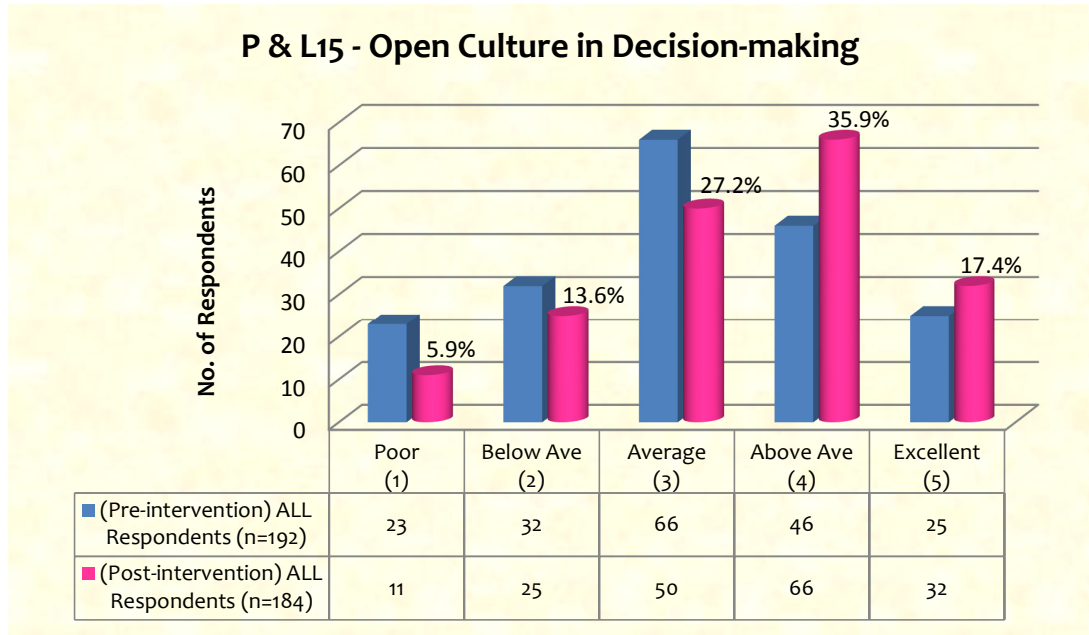
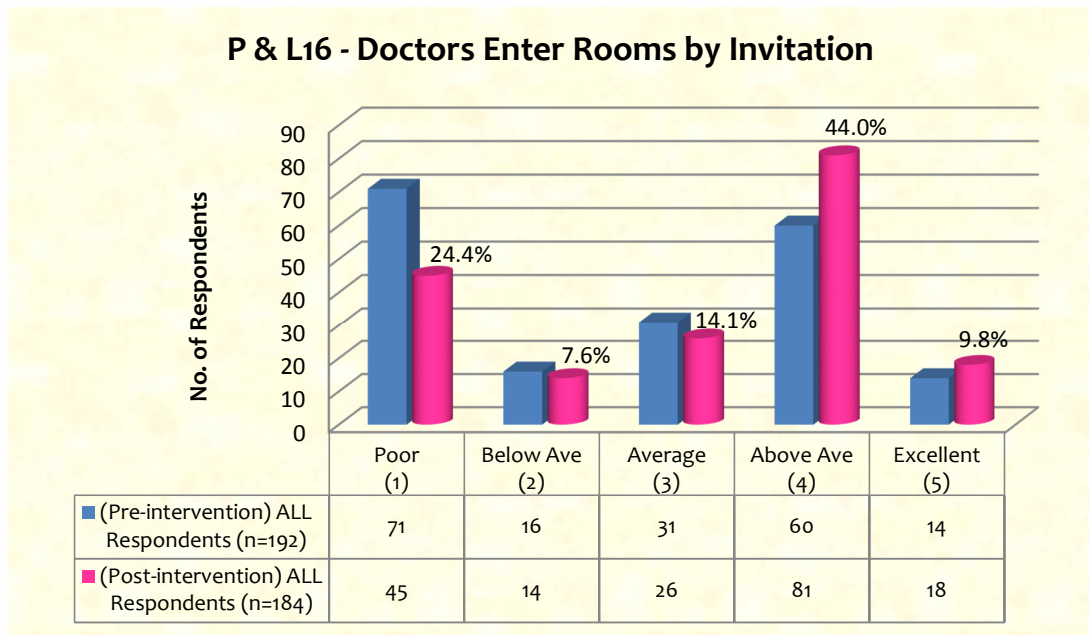


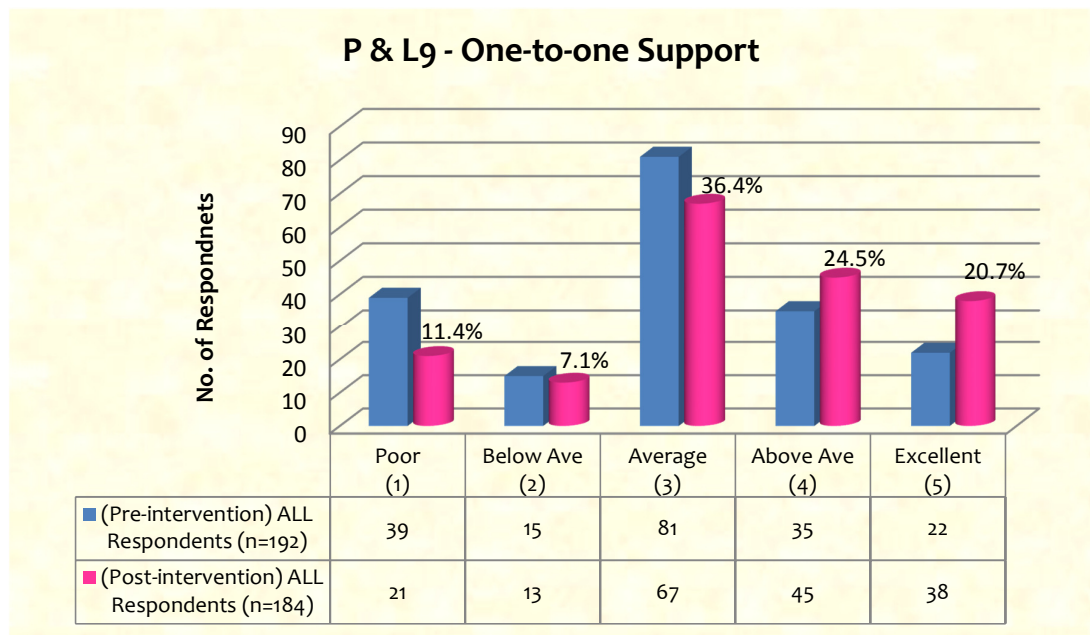
Figure 5-29: Comparisons between Pre- and Post- Intervention ratings – ‘doctors enter the rooms of labouring women by invitation only’





One other principle of interest in the 'Labour & Birth' sub-section was one-to-one labour support. Although a similar respondent rating of 'Average' was given pre- and post-intervention for this principle, comparisons in overall cumulative ratings of 'Excellent' and 'Above Average' increased from 29.7% pre-intervention to 45.1% post-intervention (Figure 5-30).

**Figure 5-30: Comparisons between Pre- and Post- Intervention Ratings – 'one-to-one support is provided during labour by a trained carer'**



This section concludes the findings from the Pregnancy and Labour section. The results provided useful evaluative information on the developments of 'significant' Pregnancy and Labour practices, as a result of the Maternal Position for Labour (PFL) initiative. The Post-intervention AMP survey findings suggest that the interventions had an effect on practices aimed at promoting normal birth.

Table 5-31 highlights developed improvements on the *three* focus areas of change in relation to the preceding AMP survey principles: 'Women are discouraged from lying on bed', 'Birth rooms are equipped with aids to facilitate

*active birth*, as well as *'The decoration of the birth rooms (environment) is homely with clinical equipment out of sight'*. The implementation actions in the Maternal Positions for Labour (PFL) initiative facilitated change in these three key areas: (1) Maternal mobility and movement in labour, (2) Birthing aids to facilitate an active birth, and (3) Environment of birthing rooms i.e. homely ambience, implemented as part of working towards the promotion of normal birth in the study unit.

**Table 5-31: Highlights on Improvements in Three Focus Areas of Change with the Maternal Positions for Labour (PFL) Initiative**

<b>Key Areas of Change</b>	<b>Maternal Mobility and Movement in Labour</b>	<b>Birthing Aids to Facilitate Active Birth</b>	<b>Environment of Birthing Rooms (homely ambience)</b>
Pre-implementation (Baseline status) <sup>a</sup>	Poor (1)	Poor (1)	Below Average (2)
PFL Implementation actions <sup>b</sup>			
Identification of facilitative items required + purchased	√	√	√
Development of PFL educational forum and workshops with staff	√	√	√
On-site hands-on PFL training sessions for staff at the birthing suite	√	√	√
PFL promotional notice boards & posters	√	√	√
PFL stamp on records of women to indicate position(s) used	√		
PFL women's educational tool/ setting-based photos on positions	√	√	√
<b>Post-implementation (Evaluation)<sup>a</sup></b>	<b>Excellent (5)</b>	<b>Above Average (4)</b>	<b>Average (3)</b>

<sup>a</sup> Respondent ratings on AMP survey - 'Excellent' (5), 'Above Average' (4), 'Average' (3), 'Below Average' (2), or 'Poor' (1)

<sup>b</sup> Implementation actions associated with area of change - √

### ***5.5.2 Focus Group (Normal Birth Collaborative [NBC] Workgroup)***

To further guide evaluations in the *'reflect'* phase, a focus group session of up to 90 minutes duration was undertaken with members of the Normal Birth Collaborative (NBC) workgroup. This was to encourage *'collective evaluation'* through participant's conversations; reflecting on experiences of their involvement in the workgroup, as well as to understand intervention outcomes as they saw it (Kamberelis & Dimitriadis 2008; Liamputtong 2011). Evaluative information on the implementation of changes (PFL intervention) in the unit was identified through this process.

The focus group was audiotaped and analysed using thematic content analysis. This similar method of qualitative descriptive methodology was also used to analyse data from the focus group with women, childbirth educators and doulas as explained earlier in the *'fact-find'* phase (Creswell 2007; Sandelowski 2000). Quotes from the participants will be also be used to facilitate description of these findings.

#### *Focus Group with NBC Workgroup members*

Out of eight members in the NBC workgroup, seven were present at the focus group session. An obstetrician was unavailable at the time of the session, as he was called away to attend to a woman in the operating theatre. The following reflective questions were considered by members in the group to assist with the evaluation: *'Did it [PFL implementation] make a difference and if so, why?' 'If it did not make a difference, why and what could be done differently?' 'Describe your personal experience of participating/collaborating in the workgroup'.*

Participants' responses were generally positive. Consistent themes in regards to successes (opportunities) and challenges were highlighted by the NBC workgroup members, with feedbacks on important (implementation) actions that could be learnt based on the experiences and outcomes of conducting the PFL initiative in

the study. Although the participants reported that the process was challenging and difficult at times, the effort was considered worthwhile and beneficial to improving services for women. These reflections provide a basis for reflection on improving key changes (i.e. services for women) and further developments on promoting normal birth in the unit.

*Five* major themes were identified as central to the evaluative discussion. These were: i) opportunities derived from the Positions for Labour (PFL) initiative; ii) inter-disciplinary collaboration and interdependence, iii) transformation process, iv) perception of the culture in the birthing environment, and v) situational challenges affecting change. These themes were broadly categorised in terms of successes, challenges, and present experience, as presented in the following section. In order to indicate areas for improvement from the collective evaluation, focus was directed on the challenges and experiences as described by participants.

When asked to identify the successes of the key changes in the study, participants' discussion centred on an array of development opportunities presented as a result of the PFL intervention. Issues around optimal care provision, sharing of information, stakeholder participation, guideline (clinical practice) development, and consequential outcomes (i.e. women's satisfaction and experience, as well as effects on staff) were some areas reflected on, in relation to the PFL initiative.

Analysis revealed strong sentiments from participants that the PFL initiative presented an opportunity for the staff to work on 'structuring' practices in support of normal births in the unit. Although the unit had a commitment to supporting women who want a natural birth (through the unit's existing 'natural birth programme' since 2006), it is thought that present developments and implementation processes of undertaking key PFL changes in the unit 'paves the

way' in influencing further practice changes for optimal care provision. One participant made the following assessment:

*'For me, I feel that the unit has always been open, receptive to natural birth, since the time we started water births here in 2006. However, this project on position change, supporting [and] encouraging women to be as mobile as possible, helps formalise things in a way that it enhances what we say we do. For this study, we [NBC workgroup members] had thought through important and relevant issues that may have eased the implementation and enable action of this project in our unit - the experience is extremely useful to setting-up the next practice change!'* (Midwife)

Other participants brought up the PFL initiative's course of action which included guiding principles of information sharing, inclusivity and participation among stakeholders, as well as the potential to re-look unit guidelines (so as to strengthen the drive for evidence-based practices) as areas pertinent to enhancing changes in practice. These actions were identified as supportive of efforts aimed at enriching the philosophy of care and midwifery skills which promotes normal birth for women in the unit.

The midwife and nurse participants seem to have the opinion that the PFL initiative was beneficial to both women and staff. They believe that the implementation of the key PFL developments and resulting changes in care provision in the unit (i.e. extra support and encouragement for women during the initiative) have made a positive difference for not only the women but staff too. When sharing data on customer satisfaction trends in the birthing suite, the midwifery manager pointed out that increases in women's positive responses were received in the unit's satisfaction survey. The women seem to enjoy being supported to change positions and were grateful for the continual support and encouragement they received from staff. This inference to women's satisfaction is congruent to satisfaction scores collated in the PFL survey, where a total of

91.9% (n=376) women respondents reported being 'very satisfied' (61.6%, n=252) or 'satisfied' (30.3%, n=124) with the staff support received.

Apart from the increase in patient satisfaction, the focus group participants also acknowledged that the midwifery/nursing staff reported feelings of contentment as a result of spending time (being) with the women they provide care for. The increase in patient and staff satisfaction was reported to have started around the time of the study. The following comments highlight examples of the discussion in relation to women's and staff's positive experiences, as well as possible reasons for the increase in satisfaction:

*'One thing I feel very positive about this [PFL initiative] is that this project enhances the support for women. During the process of explaining positions for labour and supporting women to change positions, women feel that we [maternity providers] really take care of them... and that we are there to support them... This is part of the reason why the patient satisfactions increase to around 85-90% during this time, because the staff had spent time with the women.'* (Midwife Manager)

*'...also the openness, communication and encouragement from the care provider are what a woman needs at this stage... they [women] appreciate the midwife's care in this sense...and the midwife feels good... even the women who have taken epidural were asking for assistance with position change...they wanted to try changing positions too... I think it's the contact time they wish for...for someone to support them during labour. Although visible changes in [clinical] outcomes might take time, I can definitely see that women's satisfaction has increased with this project.'* (Midwife)

In the participants' opinion, the PFL initiative had made an impact in the unit, by creating staff 'awareness' on the benefits of support and encouragement for women in labour and in influencing the 'culture' of promoting normal birth. One of the comments attests to the possible changes as a result of the PFL initiative:

*'The staff are definitely seen to encourage women to change positions...[al]though favourite positions seem to be the sitting... and also lying on their side. Compared to past practice, more women are now encouraged to be active and mobile and to change positions in labour. For example, antenatal women are now encouraged to walk to the antenatal wards, instead of being transferred on a wheelchair.'* (Midwife)

The obstetrician in the group was presently surprised by the reported increase in patient satisfaction scores and changes in the unit from the accounts of the midwife and nurse participants. This is one of the supportive comments given, relating the PFL initiative to the positive satisfaction and practice changes:

*'Wow it means we are doing something right here! In encouraging positions for labour, we are also providing women with the additional support... in a way, facilitating the labour itself for the women... and they [the women] appreciate the care and our support.'* (Obstetrician)

#### *Summary of Focus Group*

Overall, the participants in the focus group discussed numerous strategies and ways to improve on promoting normal birth in the service. Much of the discussion focused on the their perception of the culture of the birthing environment and what needed to change in order to move towards an environment supportive of normal birth. The participants believed that providing women the support and understanding was essential to supporting women to have a normal and satisfactory birth.

#### **5.5.3 Clinical outcomes (birth statistics)**

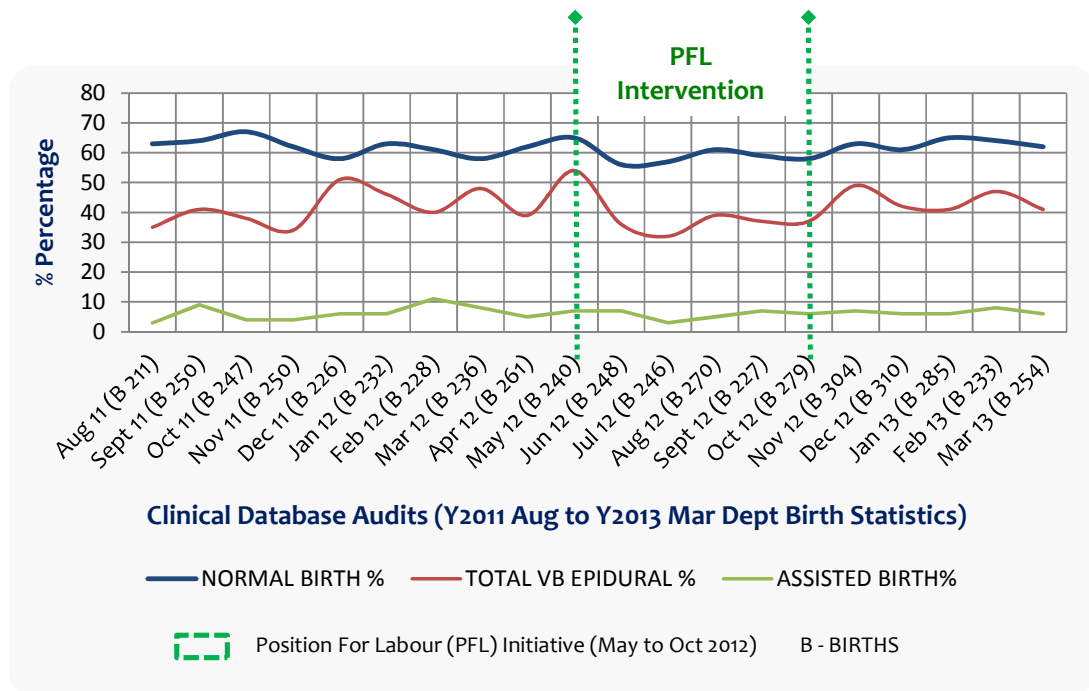
This section provides the clinical outcomes (birth statistics) collected throughout the study. Approximately 20 months of birth statistics were collected for review. These statistics include a wide range of data on rates of: births – normal and assisted; CS – elective and emergency; epidural use for vaginal births; post-

partum haemorrhage; third and fourth degree tears; as well as monthly births in the unit. The data collection commenced in August 2011 through to March 2013. Descriptive statistics was used to analyse the data.

*Clinical Outcomes (Birth Statistics) Trend Changes*

Based on the analysis of clinical data collected, only two outcome variables showed changes that might be related to the implementation of the Position for Labour (PFL) initiative in the study. The two outcome variables with potential trend changes (not statistically tested) were: on the uptake of epidural anaesthesia (total vaginal birth epidural), and assisted birth rates as presented in Figure 5-32.

**Figure 5-32 - Clinical Outcomes Database Audits (20 Months Statistics August 2011 – March 2013)**

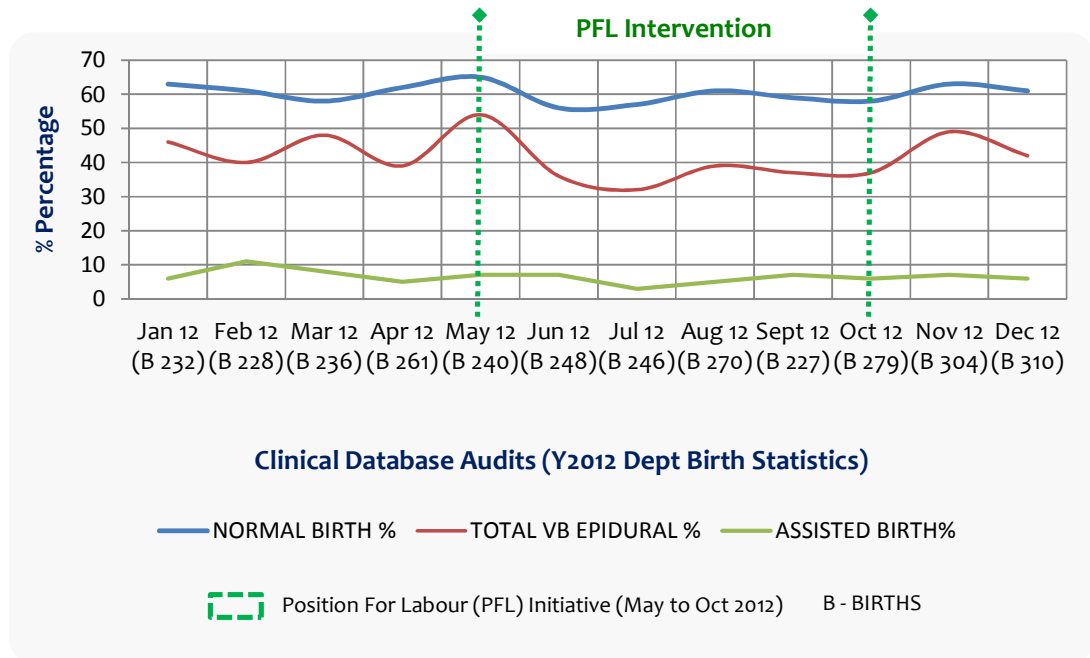


To assist with a clearer interpretation of the potential trends, data on the uptake of epidural anaesthesia and assisted birth rates are shown for the 2012 calendar



year (Figure 5-33). Changes from the baseline trend of increasing uptake of epidural anaesthesia as well as assisted birth rates, followed by declining rates during the PFL implementation period in Figure 5-33, suggest that some improvement in these outcomes might be related to the study's intervention.

**Figure 5-33 - Clinical Outcomes Database Audits (Y2012 – January to December 2012 Statistics)**



Trends for the other outcomes however do not suggest similar improvements. The unit had a steady normal birth and CS rate from baseline through the implementation period, suggesting that the study's PFL implementation actions may not have altered its baseline. There were also no notable changes in third and fourth degree tears, as well as post-partum haemorrhage rates over time.

## 5.6 Summary of overall study findings

Table 5-34 on the following pages presents a summary of the findings study which will be further discussed in the next chapter (Chapter 6 – Discussion). The summary table highlights study findings in the order of the following phases

(processes): *'fact-find'*, *'plan/re-plan'*, *'action'* and *'reflect'* (Parkin 1999) where findings from preceding phases assist to inform the next. The findings at each phase of the Action Research (AR) cycle (*Table 5-43*) demonstrate the process of developing and implementing practice in the overall study on working towards the promotion of normal birth in a tertiary maternity unit.

**Table 5-33: Overview of findings from the Promotion of Normal Birth (PoNB) study**

Phase of Research	Methods	Summary of Findings
<b>Phase I (Pre-implementation)</b>		
<b>Fact-find Phase: Identifying a focus for change</b>	Pre-intervention Anonymous Maternity Providers (AMP) survey with staff in the unit (August to September 2011).	<p>Five significant areas were identified by maternity care providers (n=192, 91%) as requiring attention in the maternity unit. These were:</p> <ol style="list-style-type: none"> <li>1. evidence-based guidelines in fetal monitoring;</li> <li>2. admissions to labour ward (i.e. triage system);</li> <li>3. maternal movement in labour;</li> <li>4. environment (decor) of birthing rooms i.e. clinical equipment is out of sight; and</li> <li>5. birthing aids to facilitate and promote active birth.</li> </ol>
	Focus groups with women, childbirth educators and doulas from the community (October 2011).	<p>Five major themes were identified by women (n=6) and childbirth educators/doulas (n=5) as conducive in promoting normal birth. These were:</p> <ol style="list-style-type: none"> <li>1. supportive care during labour and birth (i.e. continuous one-to-one care);</li> <li>2. mobility in labour and birth (i.e. free to move within their environment);</li> <li>3. birthing aids to facilitate and promote an active birth;</li> <li>4. environment of birth room (i.e. 'homely' ambience); and</li> <li>5. specifically tailored antenatal classes(i.e. to needs of women in the group).</li> </ol>
<b>Phase II (Plan/re-plan)</b>		
<b>Plan/re-plan Phase: Consideration of key changes and strategies for intervention</b>	Setting up of Normal Birth Collaborative (NBC) workgroup (October 2011); Meetings to refine problem	<p>Considerations for change(s) in the maternity unit to focus on <i>three</i> key areas. They were:</p> <ol style="list-style-type: none"> <li>1. to encourage maternal mobility and movement in labour;</li> <li>2. to provide birthing aids to facilitate and promote an active birth; and</li> </ol>

Phase of Research	Methods	Summary of Findings
	<p>focus from findings in <i>Phase I</i>.</p> <p>Meetings with maternity care providers on focus for change in the unit; Walkabout sessions in birthing suite to garner ideas and strategies for intervention; Formal departmental presentations on Maternal Positions for Labour (PFL) initiative; Field notes.</p> <p>Further Normal Birth Collaborative (NBC) workgroup meetings; Maternal Positions for Labour (PFL) educational forum and workshops with staff; Field notes; Application for funding to purchase facilitative items (birthing aids).</p>	<p>3. to improve on the environment of birthing rooms (i.e. decor/ambience and that clinical equipment is out of sight)</p> <p>Maternity care providers were optimistic and supportive of the proposed change(s) in the <i>three</i> key areas.</p> <p>The doctors as well as midwifery and nursing staff provided ideas and suggested strategies for implementation. These included:</p> <ol style="list-style-type: none"> <li>1. the identification of facilitative items (birthing aids) required in the unit;</li> <li>2. development of a PFL educational tool/setting-based photographs (as patient information to facilitate movement);</li> <li>3. suggestion for promotional boards/posters designs; and</li> <li>4. the creation of a PFL stamp to indicate positions women were using/encouraged to use (on records of women).</li> </ol> <p>Decisions were made on the strategies and proceedings of the PFL initiative based on staff suggestions. These included discussions on details of educational forum/workshops with staff, as well as PFL educational tool/setting-based photographs for women.</p> <p>Funding was approved by the Head of Department (HoD) in the unit to enable the purchase of facilitative items such as pillows, straight-back portable chairs, birth balls, mats, and disposable underpants and to support processes for implementation of change in the unit.</p>

Phase of Research	Methods	Summary of Findings
The Maternal Positions for Labour (PFL) initiative was ready to be launched.		
<b>Phase III (Implementation)</b>		
<b>Action Phase: Implementation of change and collection of 'measurement' data</b>	Establishment of change(s) in the unit including the Maternal Positions for Labour (PFL) initiative from findings in <i>Phase II</i> .	Maternity care providers (doctors, midwifery and nursing staff) collaborated and were involved in the implementation. The majority of care providers were keen to support and encourage positioning (movement and mobility) in labour.
	Commencement of initial Positions for Labour (PFL) surveys with women which consisted of only a maternal feedback component ( <i>May to August 2012</i> ).	The PFL survey itself created a sense of awareness in the unit towards the PFL initiative. The midwifery and nursing staff were observed to support and encourage women to move and change position(s) in labour. However, the response rate from the initial PFL survey conducted over four months was noted to be low (n=52, 6.5%).
	Reviews conducted mid-implementation to appraise the initial PFL survey; Further Normal Birth Collaborative (NBC) workgroup meetings; Further meetings with maternity care providers; Field notes.	Feedback and further suggestions from the staff assisted with improvements on the 'flow' (process) of survey collection. Revisions were also made on the initial PFL survey.

Phase of Research	Methods	Summary of Findings
	<p>Use of revised Positions for Labour (PFL) surveys which comprised a maternal component (to be filled by women) as well as a staff component (to be filled by the maternity provider caring for the woman) (<i>September to October 2012</i>).</p>	<p>Improvements were seen on the survey data collected. Over the two months, respondent rates of the PFL survey had increased to 95% (n=189) in September and 92% (n=220) in October. A total of 818 surveys were completed (n=189 women and n=189 staff respondents in September; n=220 women and n=220 staff respondents in October). The adjustments on survey collection and use of the revised PFL surveys had proved beneficial in increasing the overall respondent rates.</p> <p>The staff reported that they found the revised survey easy and simple to use. The PFL survey findings provide important information (measurement data) on the <i>three</i> key areas of change, specifically the PFL initiative. These included: particular position(s) used during labour; time spent in position(s) of choice; importance of changing position(s); barriers to position(s) change; usefulness of 'setting-based' PFL pictorial tool; the support and encouragement received in changing position(s); as well as suggestions to further encourage movement and position(s) change.</p>
<b>Phase IV (Post-implementation / Evaluation)</b>		
<b>Reflect Phase: Review data and draw conclusions</b>	<p>Evaluation of change(s) in the unit including the Maternal Positions for Labour (PFL) initiative from findings in <i>Phase III</i>.</p>	<p>Results from the PFL survey were positive. The overall findings suggest that women were supported to move and change position(s) in labour as they wish. Both the women and staff respondents provided useful 'measurement' information on the change(s) implemented.</p>

Phase of Research	Methods	Summary of Findings
	<p>Post-intervention Anonymous Maternity Providers (AMP) survey with staff in the unit (February to March 2013).</p> <p>Focus group with Normal Birth Collaborative (NBC) workgroup members (March 2013).</p> <p>Audits on Clinical (database) Outcomes (August 2011 to March 2013).</p>	<p>Notable improvements were identified by maternity care providers (n=184, 92.9%) on the <i>three</i> key focus areas of change in the unit. Other survey principles including: '<i>Women &amp; Stakeholder Involvement</i>', '<i>We are a Real Team</i>', '<i>Mutual Respect</i>' and '<i>Keeping Pregnancy and Birth Normal</i>' were also reported in the Post-intervention AMP survey to have improved as a result of the implementation.</p> <p>The NBC workgroup members (n=7 of 8) provided evaluative information on the implementation of change(s) in the unit. The members considered (responded to and reflected on) questions such as:</p> <ul style="list-style-type: none"> <li>• did it make a difference and if so, why?</li> <li>• if it did not make a difference, why and what could be done differently?</li> <li>• personal experience of participating/collaborating in the workgroup.</li> </ul> <p>Responses for the NBC workgroup members were generally positive. Although they reported that the process was challenging and difficult at times, the effort was worthwhile. Importantly, they were satisfied with the PFL initiative and that the women benefited from the change(s) implemented in the unit.</p> <p>Pre-implementation, implementation, as well as post-implementation clinical (database) outcomes were compared. No major variations (differences) were noted for outcomes such as vaginal births and CS. However, the uptake of epidural analgesia seemed to be lower during the implementation of the change(s) including the Maternal Positions For Labour (PFL) initiative.</p>

Phase of Research	Methods	Summary of Findings
<b>Phase V (Utilisation of study findings)</b>		
<b>Dissemination: Use of information based on research</b>	Utilisation and dissemination of findings from ALL phases of the PoNB study in the unit including the Maternal Positions for Labour (PFL) initiative.	



## CHAPTER 6: DISCUSSION AND CONCLUSION

### 6.1 Introduction

This final chapter reiterates the justification for the study (outlined in *Chapter 1*) and discusses the implications of the findings in relation to the research questions and relevant literature. The discussion will focus on the significance of the Promotion of Normal Birth (PoNB) research process and the opportunities it offered (see *Table 5-34* in *Chapter 5 - Findings*) when mobilising action for desired change within a hospital maternity setting. The impact of the findings and critical issues are explored in relation to ongoing global efforts to promote normal birth and reduce CS rates. The limitations of the study, implications for practice and recommendations regarding normal birth promotion will also be highlighted. An understanding of these issues may be useful in shaping ongoing efforts to optimise a woman's chance of achieving a normal birth in both Singapore and comparable maternity units.

### 6.2 Significance of the findings of the PoNB Study

This action research study took place in a public hospital tertiary maternity unit in Singapore. The aim was to explore and develop an understanding of the experience of implementing practice change and developing an organisational culture supportive of normal birth. The research is the first of its kind to be carried out in a tertiary maternity unit in Singapore. This is not surprising since, globally to date, few studies have considered the options to facilitate normal birth in tertiary maternity environments with obstetric-led models of care (Carolan-Olah, Kruger & Garvey-Graham 2014; Hunter & Segrott 2010; Keating & Fleming 2009; Walton, Yiannousiz & Gatsby 2005). This is despite widespread interest in finding ways to support the normal birth agenda in countries across the world (Baldwin et al. 2007; Cheyne, Abhyankar & McCourt 2013; Downe

2009; MCWP 2007; NHS 2006; NSW 2011; Renfrew et al. 2014; Sandall 2014; WHO 1999).

As most births in Singapore occur in hospital (99.6% in 2013, see *Table 1-3*), it is crucial that maternity service providers are aware of strategies to promote and encourage normal birth practices as identified in *Chapter 2*. The impact of factors that facilitate or inhibit support for normal birth inform further work on the provision of woman-centred care that is evidence-based and physiologically focused (NICE 2014). The following sections discuss the impact of key findings and opportunities identified during this study.

### ***6.2.1 Benefits of using an Action Research framework***

An action research (AR) methodology was chosen, integrated with Parkin's (1999, 2009a, 2009b) approaches to managing change in healthcare. The AR approach presented a unique opportunity to work with, and involve, stakeholders (the 'maternity community': women, midwives, nurses, obstetricians, as well as childbirth educators and doulas) in the process of supporting women to have a normal birth in the maternity unit. Care providers and consumers were able to critically examine existing routines and practices (through the Anonymous Maternity Providers [AMP] surveys and focus groups) to uncover practices that inhibit normal birth, thereby identifying key areas for change. Armed with this information, members of the Normal Birth Collaborative (NBC) workgroup were able to propose actions, such as the Maternal Positions for Labour (PFL) initiative, in working towards the promotion of normal birth. The reflection component at each stage of the AR cycle design further allowed the identification and articulation of the enablers and challenges experienced during the change process.

Fundamentally, the AR framework, guided by the philosophy of critical social theory, created opportunities for engagement in a process with the potential for

empowerment for women and maternity care providers (Coghlan & Brannick 2014; Kemmis, McTaggart & Nixon 2014). Through working together with an aim to transform maternity care for the better, there was an opportunity for all members of the 'maternity-community' in the locality to collaborate, negotiating complex clinical-practice situations through systematic change processes (Bridges & Meyer 2007; Koch & Kralik 2006; Parkin 2009a). For instance, at the start of the PoNB study (in *Phase I – 'fact-find'* phase), focus group (FG) sessions with women, childbirth educators and doulas enabled valuable contributions to be made to promote normal birth. During the FG interviews, there was a general sense that the women were eager to share their labour and birth experiences and were excited to inform developments in supporting women to have normal births. As identified by Kitzinger (2005) and Lehoux et al (2006), such engagement of consumers is particularly appropriate when encouraging participants to explore issues of importance to them. Concerns and priorities can be expressed using the participants' own vocabulary, helping them to articulate feelings they might not have expressed before (Creswell 2007; Kamberelis & Dimitriadis 2008; Lehoux, Poland & Daudelin 2006; Ritchie et al. 2014). This approach is important in the context of providing respectful care that is tailored to the needs of women and allows for the potential to strengthen women's capabilities through collaborative processes (Homer et al. 2014; NICE 2014; Renfrew et al. 2014; ten Hoop-Bender et al. 2014).

Women's perceptions are important when researching maternity service provision (Green 2012; Larkin, Begley & Devane 2009). The experiences described by women provide insights into the quality of care provision and indicators to help maternity services in their efforts to meet the needs of local women, families and communities (Fenwick et al. 2013; Hauck et al. 2007; Leap et al. 2010; Todd et al. 2014). In this study, bringing participants together to share experiences through the FGs helped trigger lively discussions, which proved crucial in establishing relevant information to underpin decision making. Women were able to share their labour and birth experiences, and identify

strategies that they saw as supportive of normal birth. Others have also highlighted the importance of encouraging women to play a prominent role in committees or projects that make decisions about the funding and planning of maternity services (Cheyne, McCourt & Semple 2013; Cornwall 2014; Renfrew et al. 2014; Teate et al. 2011).

Members of the NBC Workgroup shared a common philosophy of valuing feedback from women and staff alike and such congruence was an important strategy to engage consumers and professionals (midwives, nurses, obstetricians, and childbirth educators/doulas). The dynamic nature of the AR framework facilitated the generation of information about the processes, experiences and effects of the study from the perspectives of staff working in the unit and women they cared for, as well as from the perspectives of private childbirth educators and doulas. Additionally, the use of FGs after the pre- and post- intervention AMP surveys enabled the NBC Workgroup members to explore further the meaning of the survey results, a process that, according to Kitzinger (2013) validates research through enabling challenges to the interpretations of findings from surveys.

Within the maternity unit, the AR process promoted interdisciplinary collaboration; heightened awareness of the need to develop woman centred care; and facilitated motivation of staff to engage in the process of making changes. Each of these developments will be discussed in turn in the next section.

*a) AR - Effecting change through interdisciplinary collaboration*

Before the start of the PFL initiative (in *Phase II – ‘plan/re-plan’* phase), considerable time was taken to engage members of staff in the study site (midwives, nurses and obstetricians) in mutual dialogue and learning. The regular interdisciplinary meetings and sharing/learning sessions on key aspects of the PFL initiatives created opportunities for discussion on how best to approach the

changes in the unit. This emphasis on collaborative engagement has been shown to help build consensus and enable team agreement and commitment to action in other settings (Bellman & Webster 2011; Hall 2006; Hockley 2006; Munn-Giddings & Winter 2013; Smith 2014).

Senior staff members from the obstetrics, midwifery and nursing teams were observed to be openly supportive of the PFL initiative. This included the ongoing support that was offered by the Head of Department (Obstetrics & Gynaecology), including funding for the purchase of necessary items to facilitate the initiative. 'Change champions' were appointed from each professional team to work with the NBC workgroup members in launching and supporting the PFL initiative. Change champions have been shown to be important in facilitating the process of organisational change and promoting service improvements in healthcare (Damschroder et al. 2009; Hendy & Barlow 2012). Their influential role, especially in the initial adoption of change initiatives, helps motivate and build support among local participants and addresses any resistance to change in bringing about innovation (Bingham 2007; Flodgren et al. 2011; Howell 2005; Suchman, Sluyter & Williamson 2011).

The findings of the Post-intervention AMP survey revealed that respondents rated highly improvements in the following principles since the '*reflect*' phase: 'Women & Stakeholder Involvement' (see *Figure 5-11*), 'We are a Real Team' (see *Figure 5-13*), 'Mutual Respect' (see *Figure 5-20*), and an 'Open Culture in Decision-making' (see *Figure 5-28*). Awareness of these principles contributed to interdisciplinary collaboration in this project, extending to the development of trusting relationships with consumers who were part of the AR process. Others have described this effect where interdisciplinary collaboration strengthened relationships with health care consumers (Green 2012; McIntyre, Francis & Chapman 2012; Zwarenstein, Goldman & Reeves 2009).

The collaborative approach to normal birth promotion provided staff with opportunities to explore new ways of working together with a common aim. Similar benefits have been demonstrated in other research projects involving interdisciplinary collaboration, where the concepts of sharing, partnership, interdependency and power sharing are key constructs (Brodie, Davis & Homer 2008; Burke, Grobman & Miller 2013; D'Amour et al. 2005; Lothian 2013; McIntyre, Francis & Chapman 2012; Schadewaldt et al. 2013; Waldman, Kennedy & Kendig 2012). A review by Downe et al. (2010), proposed that effective collaboration emerges from a dynamic interaction between organisational and personal characteristics. Taking time to consciously consider these issues and make space to build mutually respectful and trusting relationships within and between professional groups is fundamental to generating authentic collaboration in maternity care (Brodie & Leap 2008; Downe, Finlayson & Fleming 2010; Hockley 2006; Koch & Kralik 2006).

*b) AR - Promoting awareness of the need to develop woman-centred care*

The AR approach enables change in many areas of practice, particularly in healthcare (Bridges & Meyer 2007; Coghlan & Brannick 2010; McCormack, Manley & Titchen 2013). In my study, the involvement of all stakeholders as participants in the AR process promoted sustainability through what has been described as 'a bottom-up' process of change (Fullan 2014; Howard-Grenville, Bertels & Lahneman 2014; Kempster, Higgs & Wuerz 2014). While participation in an AR project was a new experience for most of the staff, individual NBC workgroup members acknowledged in the FG interviews (in *Phase IV – 'reflect'* phase), that they were motivated by the idea of being active participants in developing and implementing improved maternity care that supports the promotion of normal birth for childbearing women in the unit. For example, the midwives and nurses verbalised their pleasure at having an opportunity through this project to improve aspects of their practice in order to enable an approach that was more woman-centred and physiologically focused. Thus, AR enabled a way of facilitating change that was relevant for those involved (consumers and

maternity service providers), taking into consideration the importance of what would work in the particular culture (McVicar, Munn-Giddings & Abu-Helil 2012). The process allowed people in the group to listen to women's stories and work together to find ways of influencing women's childbirth journey in a positive way (Bradbury-Huang 2012).

*c) AR - Facilitating motivation to make change happen*

Within the complexity of a large institution, such as a tertiary maternity service, transformation is more likely to occur where staff are persuaded of the relevance and value of engaging in change processes (Anderson et al. 2013; Rycroft-Malone et al. 2002; Sharma, Conduit & Rao Hill 2014). The majority of nurses and midwives in the unit believed that birth is normal, and many of their actions were specifically aimed toward the support of birth as a physiological, rather than pathological process. During the FGs, midwife and nurse participants reiterated that the PFL initiative renewed their passion and confidence in their ability to support normalcy. This type of motivation occurs when the work interests of practitioners aligns with their values (Mander, Murphy-Lawless & Edwards 2009; Starkey & Madan 2001; Yukl & Becker 2006). Not surprisingly, the key to sustained practice improvement and effectiveness is having committed practitioners who feel empowered and intrinsically motivated (Fullan 2014; Hoffman et al. 2011; Kempster, Higgs & Wuerz 2014).

It was important to all members of the NBC workgroup that their participation was relevant and worthwhile. This valuing of contribution is enhanced when the 'environment' supports and affirms practitioners' perceived autonomy and competence in contributing to developments. This process, in turn, satisfies their internal motivation, leading to commitment; a sense of agency is enabled, overriding the culture of compliance that tends to dominate behaviours in hierarchical institutions (Nickel et al. 2013; Reiger & Lane 2013; Stringer 2013; West, Topakas & Dawson 2014). The NBC workgroup members saw value in the collective research project, which meant they were encouraged and better able

to engage other staff to participate in the study; it is likely that this enthusiasm and motivation explains the very high survey response rates and the positive experiences reported in the PFL survey. The NBC workgroup played an important role in confirming to others the relevance and value of the unique, collective (co-creation) approach to working towards the promotion of normal birth, highlighting the potential to achieve much for women and their babies.

In summary, the AR framework drew upon the philosophical premise of critical theory as presented in Parkin's (1999) approach; this was a powerful vehicle for realising the PoNB study aims. The approach enhanced learning with the study's fundamental standpoint of promoting collaboration in effecting change in a tertiary maternity unit. Essentially, the collective knowledge, planning and action allowed the opportunity to work towards transformation in the unit in terms of promoting normal birth and positive experiences for women and their families.

### ***6.2.2 The impact of the Maternal Positions for Labour (PFL) initiative***

Prior to the PFL initiative, maternity staff reported (in the Pre-intervention AMP survey) that the majority of women laboured lying down on the bed. This is consistent with global practice in hospital environments where supine positions are most frequently used, and where immobility throughout the labour process has become a common occurrence (De Jonge & Lagro-Janssen 2004; Gizzo et al. 2014; Lawrence et al. 2013; RCM 2010a; Zwelling 2010). The practice of encouraging women to choose different positions when in labour improved with the implementation of the PFL initiative, as seen in the comparative pre- and post-intervention AMP survey results (see *Figure 5-24*). The survey findings (in *Phase III – 'action'* phase) suggested that maternity care providers were supporting women to adopt the use of various positions during labour: more than half used more than one position with at least one upright position throughout their labour (see *Table 5-8*).



The practice of supporting women to be mobile and to adopt whichever position they find most comfortable in labour is in line with current evidence-based practice recommendations by the Royal College of Midwives (RCM 2012) and the National Institute for Health and Clinical Excellence (NICE 2007, 2014). A Cochrane systematic review by Lawrence and colleagues (2013) provides clear evidence on the benefits of physiological positioning during labour and its impact on maternal and neonatal outcomes, with no associated risks or negative effects. Women who are encouraged to assume upright and mobile positions have a shorter duration of labour, fewer birth interventions, lower rates of CS and are less likely to have an epidural (Lawrence et al. 2013).

Across the 20-month duration of the PoNB study, normal birth and CS rates remained relatively consistent in the maternity unit (with no obvious trend variations), however, epidural and instrumental births were noted to have reduced considerably (see *Figure 5-32*). Given the outcomes associated with upright positions and mobility identified in the Cochrane systematic review (Lawrence et al 2013), it may be that the PFL intervention played a role in reducing these epidural and instrumental birth rates during the study. There is reason to propose that, even in a highly medicalised environment, such as the study site, changes in practice to encourage mobility and upright positions are worth encouraging as part of a wider strategic focus in working towards the promotion of normal birth (Cotton 2010; Hodnett et al. 2013b; Ondeck 2014; RCM 2012; Romano & Lothian 2008).

Beyond the reduction in epidural and instrumental birth rates, the PFL initiative was associated with: positive feedback from women; reported feelings of control during labour; developing a supportive environment for labour; and positive experiences for care providers. Each of these developments will be discussed in turn:

*a) PFL – Supportive care and positive experiences for women*

Maternal positioning was associated with an increase in women's overall satisfaction during the study. For example, the unit manager shared that customer satisfaction trends from the unit's existing satisfaction survey scores had changed from borderline satisfaction to 85-90% during the time of the PFL initiative. This reference to women's satisfaction is congruent with the satisfaction scores and positive feedback from women in the PFL survey. Most women wrote commendations in the survey regarding their appreciation of the motivation and encouragement provided by staff with regards to positioning and the overall provision of care received. They reported that changing position(s) was important and helpful for them in coping with labour. These sentiments were also reported by midwives and nurses in the FG. They described how women seemed to enjoy being supported to change positions in labour and were grateful for the continual support and encouragement they received from staff.

There is a significant body of literature on the provision of support for women during labour, indicating that, where a woman feels supported during labour, this can alter her perception of pain, allowing her to respond instinctively to contractions, and leading to feelings of satisfaction with her birthing experience (Baker 2010a; Dahlberg & Aune 2013; De Jonge & Lagro-Janssen 2004; Hodnett et al. 2013a; Leap et al. 2010; Priddis, Dahlen & Schmied 2012). Furthermore, a Cochrane systematic review demonstrated that continuous support in labour can enhance a woman's likelihood of having a normal physiological birth (Hodnett et al. 2013a).

*b) PFL – Promoting women's feelings of control in labour*

Women in the PoNB study identified that the freedom to change position in labour was integral to their feelings of control and their ability to manage pain in labour. This is in keeping with a large volume of research suggesting that women's satisfaction with their experiences of labour and birth is directly related to feelings of having choice, control, and access to information as well as

appreciation of being active participants in decision-making (Green & Baston 2003; Meyer 2013; Smith et al. 2011; Snowden et al. 2011). In particular, perceived feelings of control are understood to stem from being treated with respect and supported to make decisions, for example, around which positions to assume (Hodnett et al. 2013a; Hundley, Ryan & Graham 2001; Page 2003; Tingstig et al. 2012; Waldenstrom, Rudman & Hildingsson 2006). Measuring satisfaction is inherently subjective and affected by complex factors such as the time of questioning; who asks the questions; and how the instrument is administered (Goodman, Mackey & Tavakoli 2004; Rudman, El-Khoury & Waldenstrom 2007; Sawyer et al. 2013). The findings of the PoNB study, however, suggest that a positive experience of labour for women was intrinsically related to being able to move around and adopt positions of their choice.

*c) PFL – Developing a supportive environment for labour*

Strategies that promote a woman's freedom to move around in labour and assume different positions depend on a supportive care environment, including the actions and encouragement of care providers (Baker 2010b; Jowitt 2014; RCM 2010b; Steen 2012; Walsh 2012; Westbury 2014; Zwelling 2010). In particular, the attitudes of midwives and nurses are consistently reported as strong indicators of maternal satisfaction (Anderson & Stone 2013). It is clear from the pre-intervention FG sessions with women and childbirth educators that fragmented care and a lack of personalised support impacted negatively on their birth experiences and this motivated them to try and make changes during the study.

In the PoNB study, midwives and nurses identified that the initiative to change the physical environment in order to make it easier for women to move around and change positions affected the relationship between the woman and her carer in a way that was positive for both. It has been suggested that the physical environment for birth, may have a physiological and psychological impact on

both women and care providers (Foureur et al. 2010; Hodnett et al. 2009; Meyer 2013). Where the environment is conducive to women adopting physiological birth positions, it is possible that the communication between the woman and her carers is enhanced, leading to positive experiences for all concerned (Dahlen, Barclay & Homer 2010; Hammond, Foureur & Homer 2014; Hunter 2003).

*d) PFL - Positive experiences for care providers*

Women appreciated the support and interaction that was offered during labour in order to help them move around and adopt positions of their choice. This, in turn, enhanced the quality of the experience for care providers. The involvement of staff in an initiative to promote and support normality in childbirth was particularly appealing to the nurses and midwives. It renewed their passion and confidence in their ability to support physiology. Staff participants in the FG reported a high degree of satisfaction in being appreciated for their supportive role; this was attributed to the contact time they had with women during the PFL initiative. They identified this supportive relationship as 'being with' women rather than their usual role of being focussed on tasks (Hunter 2009; ten Hoop-Bender et al. 2014).

### **6.2.3 The benefits of the different data collection methods**

*a) The Anonymous Maternity Providers (AMP) survey*

The 3-section AMP survey, adapted from a tool designed by the United Kingdom's National Health Service Institute for Innovation and Improvement (Baldwin et al. 2010; NHS 2006, 2007) has recently been evaluated. Marshall, Spiby and McCormick (2014) in their evaluation study involving 20 NHS Trusts (maternity services) in England that took part in the '*Focus on Normal Birth and Reducing Caesarean section Rates Rapid Improvement Programme*' initiative, documented fairly heavy usage of the tool as reported by the respondents in a web-based questionnaire. Telephone interviews conducted with five key individuals in each of six of the Trusts – the head of midwifery, lead clinician,

organisational development lead, clinical midwife or supervisor of midwives and a service user – demonstrated that they found the tool clear and easy to understand and use. Overall, respondents in this evaluative study thought that the tool provided focus, practical application and a framework to tackle areas that might not otherwise have been addressed. The researchers reported no negative comments about the tool and highlighted the fact that the tool enabled interdisciplinary teams to decide where as an organisation they wanted to be (Marshall, Spiby & McCormick 2014).

These findings by Marshall, Spiby and McCormick (2014) are comparable to conclusions drawn in PoNB study where the tool proved to be a useful resource in identifying a focus for change in the study unit in relation to promoting normal birth and efforts to reduce CS. The survey, modified to the local context, provided impetus for the staff members in understanding the ‘context’ and ‘culture’ of the service before planning any intervention or changes to practice.

The Pre- and Post-intervention AMP staff surveys served as a ‘measure’ for quality improvement in the PoNB study. The Pre-intervention AMP survey was helpful in identifying and providing direction and provided a focus for the study implementation initiative. The process of completing this survey assisted staff with their understanding and perceptions of the service in relation to what was needed in order to support normal birth best practices. Similarly, the Post-intervention AMP survey enabled staff to consider their perceptions of the effects of the study on the culture of the maternity unit in relation to promoting normal birth.

There was a high response rate for both AMP surveys, with the majority of the staff participating: a return rate of 90.6% (192 of 212) and 92.9% (184 of 198) respectively. Strategies that enabled such high response rates included tapping into pre-programmed time and space, as well as negotiations with the unit managers for ‘protected time’ during data collection. Also, the ease of using the

self-assessment tool, as reported in the recent evaluation of its use (Marshall, Spiby & McCormick 2014), could have contributed to these high responses in the PoNB study.

Overall, the AMP survey was valuable on a number of levels: it engaged staff; raised awareness about potential evidence-based strategies for promoting normal birth through the identification of key characteristics of normal birth practice; profiled staff working arrangements; and provided direction for the PoNB study. In particular, the survey provided useful information to inform Phase II (the '*plan/re-plan*' phase) and contributed to the development of strategies for improvement in five significant areas:

- ✓ Evidence-based guidelines for fetal monitoring
- ✓ Appropriate admissions to labour ward
- ✓ Maternal movement in labour
- ✓ Environment (decor) of birthing rooms
- ✓ Birthing aids to facilitate and promote active birth

#### *b) Focus group discussions*

The fluid nature of the FG discussions allowed for an analysis to go beyond the surface 'content' of the discussions between participants (Kamberelis & Dimitriadis 2008; Krueger 2009). This applies to the FG with women, childbirth educators and doulas in the '*fact-find*' phase, as well as with the NBC action research workgroup members in the '*reflect*' phase. I was able to reflect on how the participants interacted and communicated with one another, including an acknowledgement of the social spaces in which they co-constructed their views (Lehoux, Poland & Daudelin 2006, p. 2091). This was especially important when considering issues relevant to influences of power, and power dynamics both within the group and within the maternity unit. Consideration of these issues meant understanding the nature of some of the challenges to cultural norms posed by the study and this informed ongoing discussions within the NBC

workgroup about strategic planning. In this way, the FGs enabled stances to be adopted, knowledge mobilised, and ideas negotiated (Kitzinger 2013; Liamputtong 2011), both within the NBC workgroup and in the study site.

The focus groups were a relatively empowering data collection technique, with their 'participatory' (inclusive) nature, synonymous with the intent of action research. Inviting participants to reflect on their experiences in the NBC workgroup and the implementation of the PFL initiative enabled them to interpret the process of shared problem solving in which they had engaged. This included exploring some of the difficulties they had faced, for example, the tensions they had to manage with doctors when advocating for women to be mobile and active in labour in the unit. The dialogical, culturally sensitive and collective nature of discussion that occurred within the focus groups strengthened participants' understanding of the culture of birth within the study site and thus deepened their commitment to making change happen (Green & Thorogood 2014; Kitzinger 2005; Lindberg, Christensson & Öhring 2005).

### **6.3 Global efforts to promote normal birth**

The findings of the PoNB study need to be considered with global efforts to promote normal birth in mind. Over the last 10 years, in high income countries, many initiatives have responded to concerns about rising CS rates and the consequent decrease in normal births (Carolan-Olah, Kruger & Garvey-Graham 2014; Keating & Fleming 2009; Kennedy et al. 2010; Kennedy & Shannon 2004; Marshall, Spiby & McCormick 2014); these are driven by health concerns for both women and their babies as presented in *Chapter 2* (see *Section 2.3*). Research studies worldwide have documented the effectiveness of practices and initiatives that have the potential to promote normal birth and reduce CS rates. Details of these were also discussed in *Chapter 2* (see *Section 2.4*). Essentially, these include clinical interventions such as continuous support during labour (Hodnett et al. 2013a); upright positions in the first stage of labour (Lawrence et al. 2013);

midwife-led care and the contributions midwifery can make to improve the quality of care for women and infants (Cheung et al. 2011; NICE 2014; Renfrew et al. 2014; Sandall et al. 2013; ten Hoop-Bender et al. 2014; Tracy et al. 2013).

A systematic review by Catling - Paull et al. (2011) assessed the effectiveness of a range of non-clinical interventions with potential to increase uptake and success of vaginal birth after caesarean section. Policy-related interventions, such as CS guidelines with the support of local opinion leaders, mandatory second opinions, and peer review on CS decisions, were effective in reducing CS rates (Catling - Paull et al. 2011; Khunpradit et al. 2011). Audit and feedback mechanisms, clinical practice guidelines, quality improvement strategies and financial incentives are other strategies that have been associated with a reduced likelihood of CS (Chaillet & Dumont 2007; Stones & Arulkumaran 2014).

In the United Kingdom (UK), initiatives to promote a lower rate of operative birth and increase the rate of normal vaginal birth include policies, clinical practice guidelines (NICE 2007, 2014) and consensus statements aimed at supporting non-interventional approaches for normal birth (MCWP 2007). Revised guidelines published recently by the National Institute of Health and Care Excellence in England (NICE 2014) continue to identify practices that promote normal birth in the care of healthy (low-risk) women who go into labour at term. This includes drawing on the findings from the Birthplace in England programme of research into outcomes of planned place of birth for women at low-risk (Brocklehurst et al. 2011), which showed that obstetric units were associated with an increase in interventions when compared to midwifery-led units (freestanding or alongside birth centres) and birth at home. This is in line with a Cochrane systematic review, which showed that birth environments other than those in conventional hospital maternity settings are associated with lower intervention rates (Hodnett, Downe & Walsh 2012). Several studies have considered how reduced interventions and positive experiences for women in midwifery-led units may be associated, not only with the model of care, but also



with the impact of the design and aesthetics of spaces for labour and birth (Davis et al. 2011; Foureur et al. 2010; Hodnett et al. 2009; Overgaard, Fenger-Grøn & Sandall 2012).

Midwifery care can have a positive impact in efforts to reverse rising CS rates; this is attributed to a broad range of midwifery skills that support physiological birth, proven to be particularly effective in the context of midwifery continuity of care (Homer et al. 2014; McLachlan et al. 2012; Renfrew et al. 2014; Sandall et al. 2013; Tracy et al. 2013). The recent *Lancet Series on Midwifery* demonstrates the substantial health and well-being benefits for women, mothers and their infants, as well as families, when high-quality midwifery care is delivered by midwives and others with midwifery skills. The Series outlines this evidence and is the most critical, and wide-reaching examination of midwifery to date, with a broad range of clinical, policy, and health system perspectives (ten Hoop-Bender et al. 2014). Midwifery is associated with more efficient and effective use of resources and improved outcomes when provided by midwives who are educated, trained, licensed, and regulated (Renfrew et al. 2014).

An on-going study in Australia, in two health districts in New South Wales is looking to identify aspects of care and service provision that women identify as meeting their needs and that may be improved in line with the aspirations of the state policy directive, *Towards Normal Birth in New South Wales* (NSWH 2011; Todd et al. 2014). The study offers useful insights into the challenges that face maternity units when trying to promote normal birth: factors affecting CS rates are complex and determining the effectiveness of interventions to reduce CS is challenging. Even after recommendations are made, accomplishing actual changes to practice can be a slow process. With this in mind, suggestions were made that focus should be targeted on reducing CS for women with uncomplicated pregnancies having their first baby, given the escalating rates of elective repeat CS in subsequent pregnancies (Roberts et al. 2013).

## **6.4 Limitations of the Study**

All doctoral studies have limitations and this one is no exception. The main limitations include the challenges of transferability of the study methods; the unique nature of the setting; sustainability issues and my role as a researcher and staff member. These are discussed in the next section.

### ***6.4.1 Transferability of the study methods***

As already described, action research yielded rich information about the culture of the maternity unit and promoted a collaborative approach between consumers and maternity care providers. The extent to which these results can be generalised to a larger population of tertiary (hospital) maternity units remains questionable. Identified factors and strategies are likely to be context specific even if the processes employed through action research can be usefully undertaken elsewhere.

Whilst there is reason to suggest that the methods used in mapping issues and evaluating interventions related to the promotion of normal birth are ones that could usefully be employed elsewhere (Marshall, Spiby & McCormick 2014), it is important to remember that developing measurement tools, even with the right cultural variables, is not enough in itself to effect change. Denison (2012) and his colleagues show how measuring cultural elements is truly useful in helping organisations improve only if the measurement process itself becomes a useful intervention in the organisation's own change process.

### ***6.4.2 Site-specific issues***

The study took place in a maternity unit that already had a commitment to making improvements in order to facilitate choice for women wanting to have a birth without medical intervention or pharmacological pain management; a 'natural birth programme' had been in place for over eight years (since 2006)

before the study commenced. In 2010, changes to the Obstetrics and Gynaecology (O & G) Department management and leadership personnel renewed the unit's focus and motivation for supporting women seeking to give birth without interventions. Consideration of a postnatal home visiting service, the Baby Friendly Initiative, and the possibility for women to access one-to-one midwifery continuity of care and support were being proposed within the unit. This created a culture with a 'wave' of opportunity to enhance normal birth promotion and craft timely initiatives to develop evidence based, high quality care for women and their babies.

The high response rates in all the surveys (i.e. the AMP and PFL surveys) during the study also reflect this commitment from staff to improving care for women. Furthermore, discussions in the final, evaluative focus group session with the NBC action research members (in *Phase IV – 'reflect'* phase) suggest that the study objectives were aligned with the unit's focus and helped establish an approach (i.e. structure) to keep everyone on track.

Other maternity units wishing to replicate this study should be aware of the influence of such a positive culture, including the support of change champions from all disciplinary groups. The importance of the support of the Head of Obstetrics and key opinion leaders, including financial support for buying equipment, should not be underestimated.

Studies have shown various issues as a source of challenge in normalising birth in settings where care is based on a medical model or obstetrician-led (Carolan-Olah, Kruger & Garvey-Graham 2014; Hunter & Segrott 2010; Keating & Fleming 2009; Walton, Yiannousiz & Gatsby 2005). Inter-professional relationships between maternity care providers, specifically between obstetricians and midwives can be affected by differences in ideologies and belief systems. Within midwifery also, differing philosophies can be an influencing factor in determining

practices, particularly midwifery preference for facilitating maternal positioning in labour (De Jonge et al. 2008; Freeman et al. 2006; Sandall et al. 2013).

Each tertiary maternity unit is in a sense, a 'multi-cultural organisation' with different professional groups having their own image, identity, subculture, roles and rules of behaviour. These professional cultures are brought about through a socialisation processes of education, training systems, mentors, and also through occupation history and stories (Forman, Jones & Thistlethwaite 2014; Morgan et al. 2012). In maternity care, differing specialised knowledge, practices, language/jargon, values, beliefs and attitudes between midwives and obstetricians are all thought to further immerse members into the their own professional groups (Floyd & Morrison 2014; Hall 2005). Differing knowledge, which arises out of multiple belief systems within one health culture, has been discussed in the provision of maternity care, with the dominant knowledge base identified as the 'medical model' and the other knowledge base as 'midwifery, social or woman-centred' (Edwards 2005, p. 23). The authoritative nature of one set of beliefs (the medical model) serves to limit, threaten or undermine other belief systems, which, though equally legitimate, are not accepted to the same extent (Mander & Murphy-Lawless 2013). Power is maintained and reinforced with obstetricians as key-decision makers (Russell 2007). This can have a limiting effect on efforts to promote 'normal birth' (Keating & Fleming 2009). In particular, adherence to medical ideology and limited institutional support may reduce midwives' ability to support and facilitate normal birth practices (Hammond, Foureur & Homer 2014; Hunter 2005).

Another limitation relates to participant selection in the focus group interviews with women, childbirth educators and doulas. The applicability of findings from the focus group discussions may be limited to consumers who are similarly motivated in the promotion of normal birth. The self-selection of participants who elected to take part in the study's focus group interviews may have had a different experience than those who chose not to, or were unable to participate.

### ***6.4.3 Sustainability of the PFL initiative in the study site***

Findings from both the PFL surveys and FG interviews with women and maternity care providers in the NBC workgroup demonstrated that the PFL initiative was embraced by women and care providers as an attractive and empowering initiative in the promotion of normal birth in the unit. The long term sustainability of this initiative is, however, open to challenge. A limited timeline meant that this study was completed in 20-months. This is too short a duration to predict later implementation actions that may be important to ultimate adoption success, or to detect effects on clinical outcomes that might require more than 20-months to become observable.

In the study, maternal movement and positioning appeared to be associated with benefits for the women, as well as the care providers supporting women to change position(s) in labour. What is less certain is the level of support and acceptability for physiological birth positioning as standard care in the maternity unit, or at least in the labour ward, by other doctors, midwives, nurses and care providers in the absence of the driving influence of the action research project.

The potential sustainability of this practice is likely to be dependent upon factors associated with change management. Understanding influencing factors that are significant in affecting the change process and sustainability is central to managing change in healthcare (Baker et al. 2010; Parkin 2009b). In the PoNB study, Parkin's (1999) approach to managing change and action research (see *Figure 3-2 in Chapter 3*), identified potential influencing factors; this was useful in helping the action research group be aware of the dynamic interaction between the context, process and the change itself. The group were able to consider how both the specific and wider dynamics of the organisational and political environment can influence the effectiveness of the change process (Greenhalgh et al. 2004). Without the ongoing efforts of a committed group of people who

met regularly to consider how these dynamics may be facilitating or hindering normal birth practices, the achievements of the PoNB study may become vulnerable. Furthermore, the promotion of normal birth always requires the ongoing support of change champions, especially those who know the history of previous efforts; changes in personnel can, therefore, also affect sustainability.

#### ***6.4.4. My role as researcher and employee within the institution***

It is important to acknowledge that I had a dual role as researcher and educator within the study site. Facilitating AR in one's own organisation is a complex process. AR is collaborative and the raising of specific questions and judgements poses a threat to existing norms. As an employed member of the organisation there were inevitably times when handling interpretations or outcomes that could be perceived negatively by colleagues within the organisation was a sensitive matter. Conversely, it is possible that my dual role may have influenced or inhibited some members of staff, causing them to temper accounts and opinions with our collegial role and future working relationship in mind.

#### *Specific insider-researcher issues*

As an educator in the unit, I was able to have more 'insider' access to management meetings than other members of the group; this gave me access to a body of information, as well as minutes of meeting and reports. Whilst I attempted to share this information, it is possible that this exclusive access to knowledge may have affected power dynamics within the group. On the other hand, as identified by Costley et al (2010), this kind of insider-detailed knowledge is one of the reasons that projects can be fully informed and, arguably, better placed to propose effective change strategies.

My position within the maternity unit hierarchy may also have affected cooperation with the PoNB research. Colleagues may have felt obliged to

participate in and cooperate with the research and this may explain the high response rates to surveys.

There were times during this study when I felt that my role was blurred as I wore many hats at different times:

- as a Nurse/Midwifery Educator for nurses and midwives and clinical educator working within the unit;
- as a practice developer;
- as a clinical action researcher who was investigating practice from a research perspective within my own organisation; and
- as a postgraduate student studying for a PhD.

My involvement in the research was inevitably imbued with subjectivity as a result of the day-to-day challenges associated with working in all of these roles in the 'context' of my own organisation. At times, this felt immensely 'complex'. Personal reflection (using a reflective journal) and field notes along with formal supervision from supervisors in both fields (clinical and research) became an essential part of my own development and support during this time, helping me maintain the degree of objectivity and self-awareness that I felt was needed. This included an ongoing process of exploring the power dynamics associated with working in a hierarchical institution and how these affected me personally and impacted on my role as researcher.

#### *The advantages of having an insider relationship with participants*

In my role as a midwifery educator I was very familiar with the context in which the PoNB research was carried out, including the micro-politics of that particular community of practice. My awareness of the culture of the maternity unit arguably enhanced the integration of the project and development of credibility with all participants. I found it easy to 'jump right in' to discuss the project with fellow midwives and women, although a lot of thought and time was spent

considering how best to introduce and broach the study with colleagues (especially the medical team) at the outset. As a respected insider with knowledge of the values, attitudes and personalities of key players, I was able to put in place strategies to avoid or minimise conflict. I was also confident about engaging in careful and thorough negotiations to facilitate the backing of opinion leaders, and change champions, particularly from obstetric colleagues and senior managers.

In my role as midwifery educator, I had established networks with users of the service, including childbirth educators and doulas. I was thus in an ideal position to facilitate recruitment of consumers and build on existing trusting relationships when involving them in the research.

My existing relationship with staff in the maternity unit was useful in promoting a research-aware culture. Midwives and nurses participated in research that was conducted alongside everyday practice. A sense of pride was engendered through being involved in a project that had the potential to make a valuable contribution to international research, linking theory and practice in maternity care (Greenwood & Levin 2007; McKellar, Pincombe & Henderson 2010; Munn-Giddings & Winter 2013). This was particularly pertinent for medical staff as the hospital was in the process of establishing itself as the only university hospital in Singapore and needed to fulfil its mission as an academic medical centre.

Overall, I consider that, although there were challenges associated with my insider role in this study, these were outweighed by the advantages. My previous work in the unit promoting normal birth and my existing relationships with staff and consumers meant that they readily embraced the research process. I was able to engage with them in reflective processes at every stage of the research and this enhanced my own ability to be reflexive.



## 6.5 Implications

The findings from the PoNB study have the potential to impact significantly on efforts to improve systems of maternity care in Singapore, as well as in similar organisations internationally. Evidence generated by the study supports the efforts to promote normal birth within the study site in Singapore should continue with confidence, building on the processes and achievements of the study. The findings should inform interdisciplinary education, research and practice at the study site, and ongoing collaborative efforts to engage with users of the service in promoting positive experiences for women, their supporters and staff.

The key implications from this study to inform the promotion of normal birth and woman-centred care in this and other maternity units are as follows:

- Addressing practice change requires effective leadership
- Action research can provide a useful framework
- Collaboration between disciplines and with consumers is essential
- Addressing the culture of maternity units is important
- Encouraging women to adopt different positions in labour is important

Each of these implications are summarised in turn in the next section.

### ***6.5.1 Addressing practice change requires effective leadership***

The role of change champions was crucial to the success of the PoNB study and facilitated the relatively rapid adoption of the practice of PFL in the care provided to women. The 'role-modelling' of interprofessional working by senior personnel (obstetricians as well as midwifery and nursing managers) had a positive influence on the uptake of the PFL practice and fostered a team-based approach in working towards the promotion of normal birth.

Change that challenges existing cultures and power dynamics is challenging and requires skilled leadership (Schein 2010; Sheridan 2010). Kirkham (1999)

observed such skilled leadership in a maternity unit where effective, culturally aware senior midwives facilitated practice and cultural change to promote woman centred care. They appeared to achieve this through various strategies, such as role modelling behaviours and supporting and equipping midwives to consciously resist adverse cultural pressures and gain confidence in their new ways of working. This was further supported through sensitive and appropriate challenges and praise of midwives in the context of a changing culture. Paradoxically, however, organisational culture sets the criteria for leadership (Schein 2010) and it takes fresh aspiration and fresh eyes to recruit the kind of leaders who are able to and willing to bring about change.

Leadership for change operates within a creative tension (Senge 1998) and will often demand key elements of transformational leadership (Kouzes & Posner 2012). This includes an accurate perception of the reality (Huczynski & Buchanan 2001); the development of a 'shared vision' for the desired future (Johnson et al. 2011); the ability to articulate the need to buy into this vision and foster the motivation required to bring about change (Schein 2010); and a strong focus on people's strengths with a firm belief that social systems are able to transform themselves (Suchman, Sluyter & Williamson 2011). Organisational culture can take many years to change and leadership capabilities must be planned and developed accordingly (Schein 2010).

### ***6.5.2 Action Research can provide a useful framework***

Leaders in other maternity units could adapt the action research approaches used in this study in order to foster an environment that is likely to succeed in the strategic aim of supporting normal birth. These findings of the PoNB study make a robust case for AR as a significant vehicle for developing, implementing and evaluating meaningful change and professional development in maternity services.

### ***6.5.3 Collaboration between disciplines and with consumers is essential***

Of primary importance in the PoNB study was the collaboration between midwives, nurses, doctors and consumers. Blending the collective shared experiences of the 'maternity-community' can help identify factors and cultural assumptions that abound in maternity units (Brodie, Davis & Homer 2008; Downe, Finlayson & Fleming 2010; Smith 2014; Suchman, Sluyter & Williamson 2011; Waldman, Kennedy & Kendig 2012), making explicit the need for change and exploring how this can be brought about.

### ***6.5.4 Addressing the culture of maternity units is important***

When promoting normal birth and woman-centred care, techniques need to be developed to raise concerns and tackle cultural values that are at odds with best practice, for example, addressing how the birth environment can be viewed as symbolic of a culture that values professional expertise, control and hygiene over supportive, woman-centred care (Hunt & Symonds 1995). Consideration of whether or not change is needed and whether this is possible within the parameters of cultural paradigms is important (Johnson et al. 2011).

The tool designed by the United Kingdom's National Health Service Institute for Innovation and Improvement (Baldwin et al. 2010; NHS 2006, 2007) and recently evaluated by Marshall, Spiby and McCormick (2014) can usefully be employed by action research groups and others wanting to reduce CS rates. With adaptations to fit local contexts, it is a valuable tool where there is a commitment to mapping the cultural practices of maternity services against principles and practices that promote effective interdisciplinary collaboration in the promotion of normal birth.

### ***6.5.5 Encouraging women to adopt different positions in labour is important***

The implementation of initiatives to encourage movement and positioning for women in labour has potentially wide reaching consequences for childbearing women and their babies. There is strong evidence that encourages efforts for position change to be incorporated into intrapartum care for all women, regardless of their low or high-risk status (Gizzo et al. 2014; Hodnett et al. 2013b; Lawrence et al. 2013; Ondeck 2014; RCM 2012).

## **6.6 Conclusion**

A clear understanding of the key recommendations described in this thesis may contribute to identifying progress, gaps and ways forward in supporting normal birth, within the intricacies of contemporary maternity practice. The availability of a strong, effective leadership and inter-professional working by senior personnel (obstetricians as well as midwifery and nursing managers) is critical to generating the necessary strategies to encourage a team-based approach in working towards the promotion of normal birth.

Action research was a significant vehicle in enabling the successes of this study, through a process of 'fact-find', 'plan/re-plan', 'action', and 'reflect'. Undertaking the study through an inclusive and collaborative approach to normal birth promotion allowed for the contribution of multiple perspectives from the maternity-community in achieving practice change and increased professional development among staff members in the unit.

The promotion of normal birth (PoNB) study provides useful insights to enhance efforts to improve normal birth. The study findings suggest that a collaborative approach based upon an action research framework has the potential to impact on efforts not only in promoting normal birth but to improve systems of maternity care in Singapore as well as in similar organisations internationally.

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## APPENDICES

## Appendix 1: Ethics approval for research at study site in Singapore



*Adding years of healthy life*

**DSRB Ref: D/11/268**

6 Commonwealth Lane  
Level 6 GMTI Building  
Singapore 149547  
Tel: 6496 6600 Fax: 6496 6870  
www.nhg.com.sg  
RCB No. 200002150H

23 June 2011

Ms Leta Loh  
Department of Nursing  
National University Hospital

Dear Ms Loh

### **NHG DOMAIN-SPECIFIC REVIEW BOARD (DSRB) APPROVAL**

#### **Project Title: Towards the Promotion of Normal Birth: Action Research in a Tertiary Maternity Unit in Singapore**

We are pleased to inform you that the NHG Domain Specific Review Board has approved the above research project to be conducted in National University Hospital.

The documents reviewed are:

- a) Complete Application Form: Towards the Promotion of Normal Birth: Action Research in a Tertiary Maternity Unit in Singapore, **Version 1 dated 13/06/2011**
- b) Participant Information Sheet and Consent Form for Focus Group: **Version 2 dated 3/06/2011**
- c) Consent Form for Audio Recording of Focus Group Session: **Version 1 dated 3/06/2011**
- d) Verbal Consent Script for Anonymous Survey: **Version 1 dated 3/06/2011**
- e) Respondent Demographics for Anonymous Survey: **Version 1 dated 3/06/2011**
- f) Anonymous Survey - Top Ten Characteristics section: **Version 1 dated 3/06/2011**
- g) Anonymous Survey - Organisational Characteristics section: **Version 1 dated 3/06/2011**
- h) Anonymous Survey - Pregnancy and Labour section: **Version 1 dated 3/06/2011**

The DSRB has approved your request for waiver of documentation of consent.

The approval period is from **23 June 2011** to **22 June 2012**. The reference number for this study is **DSRB-D/11/268**. Please use this reference number for all future correspondence.

Continued approval is conditional upon your compliance with the following requirements:

1. Only the approved Participant Information Sheet and Consent Form should be used. It must be signed by each subject prior to initiation of any protocol procedures. In addition, each subject should be given a copy of the signed consent form.



DSRB Ref: D/11/268

2. No deviation from, or changes of the protocol should be implemented without documented approval from the NHG DSRB except where necessary to eliminate apparent immediate hazard(s) to the study subjects, or when the change(s) involves only logistical or administrative aspects of the trial (e.g. change of monitor or telephone number).
3. Any deviation from, or a change of, the protocol to eliminate an immediate hazard should be promptly reported to the NHG DSRB within seven calendar days.
4. Please submit the following to the NHG DSRB:
  - a. All unanticipated problems involving risk to subjects or others should be reported. In order to assist the DSRB, all reports should be accompanied by the NHG DSRB Unanticipated Problems Involving Risk to Subjects or Others Reporting Form. Please find all forms and guidelines on reporting on the internet at [www.research.nhg.com.sg](http://www.research.nhg.com.sg).
  - b. Report(s) on any new information that may adversely affect the safety of the subject or the conduct of the study.
  - c. NHG DSRB Project Status Report Form – this is to be submitted 4 to 6 weeks prior to expiry of the approval period. The study cannot continue beyond **22 June 2012** until approval is renewed by the NHG DSRB.
  - d. Study completion – this is to be submitted using the NHG DSRB Project Status Report Form within 4 to 6 weeks of study completion or termination.
5. The NHG Research QA Program was launched in May 2006. The program aims to promote responsible conduct of research in a research culture with high ethical standards, and to identify potential systemic weaknesses and make recommendations for continual improvement. This research project may be randomly selected for completion of self assessment worksheet or for a study review by the QA team. For more information please visit [www.research.nhg.com.sg](http://www.research.nhg.com.sg).

Yours sincerely,

Production Note:

Signature removed prior to publication.

A/Prof Low Yin Peng  
Chairman  
Domain Specific Review Board D  
National Healthcare Group

Cc: Institution Representative, NUH c/o NUH OBR  
Department Representative of Nursing, NUH

## Appendix 2: UTS HREC Ethics Clearance - Ratification

Eth: HREC Clearance Letter - UTS HREC 2011-289R

### **Eth: HREC Clearance Letter - UTS HREC 2011-289R**

Ethics Secretariat [Research.Ethics@uts.edu.au]

**Sent:** Thursday, 18 August 2011 1:47 PM

**To:** Ms Deborah Lee Davis [Deborah.Davis@uts.edu.au]

**Cc:** Leta Loh; Ethics Secretariat [Research.Ethics@uts.edu.au]

**Categories:** Initial Research Engagement

Dear Deborah and Leta,

Re: "Towards the Promotion of Normal Birth: Action Research in a Tertiary Maternity Unit in Singapore"

[External Ratification: National Healthcare Group (NHGI Domain Specific Review Boards (DSRB) - Domain D Human Research Ethics Committee HREC approval - DSRB Ref: DSRB-D/11/268 - 23/06/2011 to 22/06/2012]

At its meeting held on 9/08/2011, the UTS Human Research Ethics Committee reviewed your application and I am pleased to inform you that your external ethics clearance has been ratified.

Your UTS clearance number is UTS HREC REF NO. 2011-289R

You should consider this your official letter of approval. If you require a hardcopy please contact the Research Ethics Officer (Research.Ethics@uts.edu.au).

Please note that the ethical conduct of research is an on-going process. The National Statement on Ethical Conduct in Research Involving Humans requires us to obtain a report about the progress of the research, and in particular about any changes to the research which may have ethical implications. This report form must be completed at least annually, and at the end of the project (if it takes more than a year). The Ethics Secretariat will contact you when it is time to complete your first report. You must also provide evidence of continued approval from the Human Research Ethics Committee you originally received approval from.

I also refer you to the AVCC guidelines relating to the storage of data, which require that data be kept for a minimum of 5 years after publication of research. However, in NSW, longer retention requirements are required for research on human subjects with potential long-term effects, research with long-term environmental effects, or research considered of national or international significance, importance, or controversy. If the data from this research project falls into one of these categories, contact University Records for advice on long-term retention.

If you have any queries about your ethics clearance, or require any amendments to your research in the future, please do not hesitate to contact the Ethics Secretariat at the Research and Innovation Office, on 02 9514 9772.

Yours sincerely,

Professor Marion Haas  
Chairperson  
UTS Human Research Ethics Committee

C/- Research & Innovation Office  
University of Technology, Sydney  
Level 14, Tower Building  
Broadway NSW 2007  
Ph: 02 9514 9772  
Fax: 02 9514 1244  
Web: <http://www.research.uts.edu.au/policies/restricted/ethics.htm>

## Appendix 3: Anonymous Maternity Providers (AMP) Survey – Verbal Consent Script

### Towards the Promotion of Normal Birth Action Research in a Tertiary Maternity Unit in Singapore

#### Verbal Consent Script for Anonymous Survey

**Dear Colleague,**

Thank you for your participation in this survey. You are invited to partake in this research study because your views and valuable response (to this survey) enables the maternity unit / service to understand, review and assess its current practice against 'frameworks' in identifying the characteristics (context and culture) in working towards the promotion of normal birth, while maintaining safe outcomes for both mothers and babies.

All staff from the Inpatient Wards (antenatal / postnatal wards and delivery suite) as well as the Outpatient Clinics within the maternity unit are invited to respond to this survey. As such, an estimate of 220 participants will be involved in the overall research which will run over a period of 2 years (2011-2013).

This survey, adapted from the United Kingdom [UK] National Health Services [NHS] Institute for Improvement, Pathways to Success Toolkit: Focus on Normal Birth and reducing Caesarean section rates, forms a crucial component of the overall research study which aims:

- *To promote maternity care practices that support normal birth in the tertiary maternity unit.*
- *To encourage participation among stakeholders of maternity care, in working together (co-creation) as a 'team' through systematic problem-solving processes in promoting normal birth.*
- *To develop a culture within a tertiary maternity unit that is supportive of normal birth.*

Consequently, *your* involvement in this research is seen to be part of a wider global movement in working towards the provision of quality maternity care. Maternity services that support safe practice and a satisfying birth draw attendant benefits not solely for the women, but also for the staff, the unit / service, as well as the organisation. Hence, answering the survey *honestly* will help us improve future maternity care practices that support normal birth in the tertiary maternity unit.

If you agree to take part in this survey, you will need to fill in the attached **three** (3) sections (*Key Characteristics, Organisational Characteristics, Pregnancy and Labour*) as well as the *Respondent Demographic* sheet. You are asked to answer the sections by ticking **one** box (from the *five* options) that **best** or **closely** represents / describes the **current situation** for each of the statements (highlighted in **bold**). Upon completion, you



could either choose to return the completed survey by dropping it into the sealed collection boxes located at the staff room / O&G Department office *or* dispatch it in a sealed-envelope addressed to the study team – whichever is most convenient for you.

Your participation in this study is voluntary and your identity will be kept *anonymous*. Your answers and information collected from this research will be combined with data from other survey participants to report as aggregated statistics, totals and averages. Your records, to the extent of the applicable laws and regulations, will not be made publicly available and there will not be information that identifies you individually.

If you have questions about this research study, you may contact Leta Loh (*Principle Investigator*) directly, either by phone (Hp: [REDACTED] or via email ([leta\\_wl\\_loh@nuhs.edu.sg](mailto:leta_wl_loh@nuhs.edu.sg) / [wei.l.loh@student.uts.edu.au](mailto:wei.l.loh@student.uts.edu.au)). This study has been approved by the National Healthcare Group (NHG), Domain Specific Review Board (the central ethics committee). For more information on ethics issues pertaining to the study, you may contact the NHG Domain Specific Review Board Secretariat at 6471 3266.

--- Thank You Once Again for Your Time & Participation in This Survey ---

#### Study Team Members (Singapore)

Ms Chan Yah Shih, Assistant Director of Nursing, National University Hospital.

Dr Chong Yap Seng, Senior Consultant, Department of Obstetrics & Gynaecology, National University Hospital & Associate Professor, Yong Loo Lin School of Medicine, National University Singapore.

Ms Loh Wei Ling, Leta, Midwifery / Nurse Educator, National University Hospital & Doctoral Candidate, Centre for Midwifery, Child and Family Health, University of Technology, Sydney.

Ms Pua Siew Keing, Nurse Manager, National University Hospital.

Ms Seow Hui Cheng, Lydia, Nurse Clinician, National University Hospital.

#### Study Team Members (Australia)

Dr Deborah Davis, Adjunct Professor of Midwifery (Practice Development & Research), Centre for Midwifery, Child and Family Health, University of Technology, Sydney & Professor of Midwifery (Clinical Chair), Australian Capital Territory Health and University of Canberra.

Dr Nicky Leap, Adjunct Professor of Midwifery (Practice Development & Research), Centre for Midwifery, Child and Family Health, University of Technology, Sydney & Visiting Professor, Florence Nightingale School of Nursing & Midwifery, Kings College, London.

## Appendix 4A: Anonymous Maternity Providers (AMP) Survey – Respondent Demographics

### Towards the Promotion of Normal Birth Action Research in a Tertiary Maternity Unit in Singapore

#### Respondent Demographics for Anonymous Survey

The following information will help in the analysis of the survey results.  
Please **circle** ONE answer only for each question.

1. Area where you often work?

- a. Antenatal / Postnatal / OG Clinic
- b. Antenatal / Postnatal Ward
- c. Delivery Suite
- d. Rotate through ALL areas
- e. Other, please specify: .....

2. What is your staff position in this hospital?

(Circle ONE answer that best describes your staff position)

- |   |   |
|---|---|
| a. Administration / Management                  | i. Registered Nurse                     |
| b. Anaesthesiologist                            | j. Research Staff                       |
| c. Assistant Nurse (includes PAN, SAN, AN, HCA) | k. Resident Physician                   |
| d. Lactation Consultant                         | l. Ultra-sonographer                    |
| e. Neonatologist / Paediatrician                | m. Unit assistant / Clerk/<br>Secretary |
| f. OB/GYN Physician                             | n. Other, please specify:<br>.....      |
| g. Registered Midwife                           |   |
| h. Registered Midwife & Registered Nurse        |   |

3. What is your job status at the hospital?

- a. Full-time
- b. Part-time
- c. Contract staff
- d. Other, please specify: .....

**Appendix 4B: Anonymous Maternity Providers (AMP) Survey –  
Key Characteristics**

## Key Characteristics

This survey is adapted from the UK National Health Services [NHS] Institute for Improvement, Pathways to Success Toolkit: Focus on Normal Birth and reducing Caesarean section rates.

Please answer the following section by ticking one box (from the five options) that **best or closely represents/ describes the current situation for each of the statements (highlighted in bold).**

<p><b>We focus on keeping pregnancy and birth normal</b></p>	<p>Staff believe that birth is only normal in retrospect.</p> <p>The obstetric staff are involved in every labour.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>There is a protocol for managing normal pregnancy and labour. Once any deviation occurs, women become high-risk obstetric cases.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Staff recognise that some elements of the management of normal pregnancy and labour can be applied to enhance the care of high-risk women.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Staff recognise that pregnancy and birth have the potential to be normal and are working towards this.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Although unique to each woman, birth is seen as a normal life event which requires no intervention unless clinically proven to be of benefit.</p> <p style="text-align: right;"><input type="checkbox"/></p>
<p><b>We are a real team – we understand and respect roles and expertise</b></p>	<p>Staff group do not mix.</p> <p>"Midwives hide things from us..."</p> <p>"Doctors interfere with our cases..."</p> <p>There is a blame culture.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>"We are careful what we say. We don't like to ask questions – when we do, others will feel we are being troublesome."</p> <p>Communication occurs only within staff groups. Incidents are reported upwards but we do not get feedback.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Clinical information is shared amongst senior staff but it is passed down from midwife to midwife or doctor to doctor.</p> <p>There are separate training sessions for midwives and doctors.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Staff communicate well with each other and share teaching and training. They gain mutual respect by understanding each other's roles.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Staff communicate freely and learn together. They trust each other and can challenge each other constructively and openly.</p> <p style="text-align: right;"><input type="checkbox"/></p>
<p><b>Our leaders are visible and vocal</b></p>	<p>Sometimes we do not know who is in charge.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Those in charge never seem to be around unless there is a crisis.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We have identifiable leaders. There are clear channels of communication and staff are able to raise concerns.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Our leaders are champions for our service. We feel valued and are encouraged to discuss and try out new ways of working.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We are all potential leaders. We champion our service and work together to make it even better.</p> <p style="text-align: right;"><input type="checkbox"/></p>



<b>Our guidelines are evidence-based and up to date</b>	We have some guidelines but they are not reviewed regularly. <input type="checkbox"/>	New or updated guidelines appear from time to time – we find out by chance. <input type="checkbox"/>	There is someone in charge of producing and circulating all our guidelines. They are regularly updated. <input type="checkbox"/>	Guidelines are produced by a group of staff. Some key guidelines are evidence-based. <input type="checkbox"/>	Everyone has an opportunity to contribute to guideline development. Evidence-based care is adopted whenever available and guidelines cover our entire service. <input type="checkbox"/>
<b>We all practice to the same guidelines – no opting out</b>	"This guideline was written for someone else – it doesn't apply to me."  "I think there are some guidelines, but I haven't actually seen them." <input type="checkbox"/>	Our guidelines are not accepted by some senior staff, so they are for information only. <input type="checkbox"/>	All senior staff have signed up to our guidelines, but some do not change their personal practice. <input type="checkbox"/>	We have evidence-based guidelines, but allow staff to use other evidence-based guidance they are more familiar with. Variations remain unchallenged. <input type="checkbox"/>	We all use the same guidelines in our practice. Variations are recorded and justified. Staff feel empowered to challenge each other's practice. <input type="checkbox"/>
<b>We manage women's expectations, we prepare them for the reality of labour</b>	We do not provide any preparation for labour, for women in their first pregnancy. <input type="checkbox"/>	Women in their first pregnancy are offered a class about labour after 34 weeks. <input type="checkbox"/>	Pregnancy classes are readily accessible but focus on what might go wrong. <input type="checkbox"/>	Midwives following a fixed programme to support women in preparing for normal labour. <input type="checkbox"/>	Women are supported to explore their feelings for labour and birth. We know that women feel prepared and confident about their own labour. <input type="checkbox"/>
	If a woman asks for a caesarean section (CS) in her first pregnancy, we agree – it is her choice. <input type="checkbox"/>	Maternal request for a CS is agreed only after a second opinion. <input type="checkbox"/>	When women ask for a CS we try to find out what is behind the request. <input type="checkbox"/>	There are formal support services for women with underlying fears and concerns. <input type="checkbox"/>	We work with women to agree on personal birth plans if there are concerns about childbirth. <input type="checkbox"/>

<p><b>We are proactive in recommending VBAC, giving accurate information about risks and benefits</b></p>	<p>Women, their midwives and their obstetricians expect the next delivery to be by CS.</p> <p>VBAC is only considered at the insistence of individual women.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>In their subsequent pregnancy, women discuss mode of delivery with a consultant late in pregnancy, shortly before a CS is booked.</p> <p>The information given is inconsistent and the subsequent advice varies by clinician.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>VBAC is represented as a high-risk process that must be sanctioned by a consultant obstetrician.</p> <p>All clinical staff give consistent information and advice about delivery.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Women are briefed on the reasons for their CS soon after the birth.</p> <p>Each woman discusses the management of her next birth with a doctor early in her next pregnancy.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Each woman is well briefed postnatally on the reasons for her CS and the implications for the future.</p> <p>In her next pregnancy, all staff are able to lead the discussion on VBAC at the booking appointment.</p> <p style="text-align: right;"><input type="checkbox"/></p>
<p><b>If a Caesarean section is planned, the process is efficient and effective</b></p>	<p>There is no agreed pathway for women having an elective CS.</p> <p>There are ad hoc arrangements with labour ward.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Individual teams have custom and practice arrangements for elective CS.</p> <p>Elective CS is a low priority on labour ward.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>There is an agreed pathway for CS, but this is inefficient for the woman and the staff (i.e. women are admitted on the day of operation and have to wait for their preoperative investigations before surgery).</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>There is an efficient pathway for CS; however, delays often occur because elective CS is a low priority on labour ward.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Women and staff are fully informed partners in following an agreed pathway for CS that optimises quality of care and resource utilisation.</p> <p style="text-align: right;"><input type="checkbox"/></p>
<p><b>We get accurate, timely relevant information on our performance</b></p>	<p>There is no formal clinical case review.</p> <p>Adverse incident reporting is sparse.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Senior staff discuss problem clinical cases behind closed doors.</p> <p>If there is an incident we prefer to deal with it informally rather than reporting it.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Clinical case reviews are ad hoc. We do not have time for regular meetings.</p> <p>We do not get information on trends in our adverse incidents.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>There are regular meetings for the discussion of interesting clinical cases.</p> <p>There is a process for disseminating learning from adverse incidents.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>There are daily clinical case reviews open to all staff.</p> <p>Lesson learnt from adverse incidents inform service development.</p> <p style="text-align: right;"><input type="checkbox"/></p>

<b>We get accurate, timely relevant information on our performance</b>	There are no detailed performance figures for maternity. <input type="checkbox"/>	Maternity performance data is collected for management purposes only. <input type="checkbox"/>	Monthly performance statistics are collected and widely publicised. <input type="checkbox"/>	The maternity information system produces customised monthly clinically relevant figures that staff can access directly. <input type="checkbox"/>	Monthly clinical information is presented as Statistical Process Control charts showing trends. They are available on the intranet. <input type="checkbox"/>
<b>We work closely with our users (women) and stakeholders</b>	We reply to complaints.  We have minimal user involvement in our service committees. <input type="checkbox"/>	Someone carries out occasional patient satisfaction surveys, but we do not hear about the results. <input type="checkbox"/>	We carry out patient satisfaction surveys. The results are fed back to staff. <input type="checkbox"/>	Our regular user satisfaction surveys are used as a basis for a service improvement action plan. <input type="checkbox"/>	Users actively engage with the service through a number of different channels and help to inform service development.  We facilitate users to act as peer support - e.g. for breastfeeding. <input type="checkbox"/>

Additional comments (if any):

**Appendix 4C: Anonymous Maternity Providers (AMP) Survey –  
Organisational Characteristics**



## Organisational Characteristics

This survey is adapted from the UK National Health Services [NHS] Institute for Improvement, Pathways to Success Toolkit: Focus on Normal Birth and reducing Caesarean section rates.

Please answer the following section by ticking one box (from the five options) that **best or closely represents/ describes the current situation for each of the statements (highlighted in bold).**

<p><b>Women are empowered to make informed choices about their maternity care</b></p>	<p>Most women do not really want choice; they want recommendations from the professionals.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>It is difficult to explain risks and make them meaningful to women. It is unkind to frighten them with all the details; we are here to protect them and look after them.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We respect women's views, but we have different interpretation of risks and choices. The outcome depends largely on which clinician you talk to.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We have evidence-based information available, but not all women receive it.</p> <p>We encourage women to write birth plans and we try to respond to their requests.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We have consistent, evidence-based information that all members of staff use when discussing choices in maternity care.</p> <p>Women are active partners in decisions about their care.</p> <p style="text-align: right;"><input type="checkbox"/></p>
<p><b>Staff share common ethos and aspirations for high quality care</b></p>	<p>Recruitment and retention is difficult – we take the staff we can get.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We expect all health professionals to know what high quality care is, we do not spell it out for them.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We set clear aims and standards, but we are too busy to reflect on the service we are actually delivering.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Our senior staff are committed to achieving optimal outcomes, but when new staff join the unit things are 'unstable' for a while.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>All staff from the clinical director to the housekeeping staff are focused on achieving optimal outcomes for both the mother and baby. It is part of their job description.</p> <p style="text-align: right;"><input type="checkbox"/></p>
<p><b>Maternity care is delivered by a multi-disciplinary team with high levels of mutual trust and respect between professions</b></p>	<p>Staff group don't mix.</p> <p>"Midwives hide things from us..."</p> <p>"Doctors interfere with our cases..."</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>"We are careful what we say. We don't like to ask questions."</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We know who is in charge and where to find them. In theory, anyone can approach the senior midwife or doctor but in reality, there is communication only at the top.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Staff communicate well and share teaching and training. We gain mutual respect by understanding each other's roles.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Our leaders are highly visible. We look to them as role models. Staff trust each other and can challenge each other constructively and openly.</p> <p style="text-align: right;"><input type="checkbox"/></p>



<p><b>There is an embedded and sustainable model of good clinical practice</b></p>	<p>We have some guidelines but they are not reviewed regularly.</p> <p>Many people do not use them or know what is in them.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>New or updated guidelines appear from time to time – we find out by chance. They are for information only – not everyone agrees with the content.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>There is a nominated person who produces and circulates our guidelines. Some are available as paper format, some electronic format. Senior staff have signed up to them, but they do not always change their personal practice.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Guidelines are consulted on by a group of staff. They are regularly updated.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Everyone is encouraged to contribute to guideline development. Guidelines cover our entire service and are evidence-based where possible. They are available electronically and every printout is dated. Variance from guidelines is recorded and audited.</p> <p style="text-align: right;"><input type="checkbox"/></p>
<p><b>There is a robust clinical governance structure throughout the unit</b></p>	<p>We are reluctant to fill in incident forms; there is still a blame culture in the unit.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Our managers support us in identifying and reporting risks, but nothing seems to change as a result.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>When there is a serious problem and the whole unit is involved it feels very unfair on us; we have often been raising concerns for months.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>There is a good clinical governance structure in maternity, but no channel for sharing learning with other services.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Our managers have regular sessions to review our risks. We feel they are fully informed. We can give you examples of improvements that have come through our risk reporting.</p> <p style="text-align: right;"><input type="checkbox"/></p>
<p><b>Maternity services provide value for money</b></p>	<p>Every year we are caught by surprise when our expenditure goes out of control.</p> <p>We do not know how our clinical outcomes compare with other maternity units.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We agree on our budget based only on expenditure, not on our income. Overspending is from unmet cost pressures.</p> <p>Clinical quality is not used as a performance measure.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We are active partners in budget setting and control our expenditure. We believe we provide an appropriate clinical service, but we have no detailed information on our income.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We have basic costing model that allows us to understand the impact of variance in our activity, staffing, etc.</p> <p>We use a balanced scorecard to review performance.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We have a robust costing model and budget setting process that allow us to understand and control income expenditure.</p> <p>We are developing clinical outcome measures as a local performance indicator.</p> <p style="text-align: right;"><input type="checkbox"/></p>

<p><b>Effective communication and information enhance decision-making</b></p>	<p>We get on with our own jobs, what happens in the rest of the unit is not our business.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Our managers will tell us if there are important things we need to know.</p> <p>We probably understand our business better than anyone, but no one asks us for our ideas or input.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Within the unit, we communicate well and have good multi-disciplinary relationships.</p> <p>We do some user surveys, but have no ongoing channel for user views.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>The team is inclusive, open and challenging. Our managers seek our opinions and keep us informed, but we are frustrated that we cannot influence or drive change in the organisation.</p> <p>User views are routinely sought and valued.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>There are effective formal and informal communication channels up and down the organisation. Everyone's opinion is respected; we are able to challenge each other.</p> <p>Users help to shape our services.</p> <p style="text-align: right;"><input type="checkbox"/></p>
<p><b>Timely, relevant information is used to inform clinical practice and service development</b></p>	<p>"As clinicians, we should focus on the particular woman we are caring for at that moment, we don't care about statistics."</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Limited information about our service is collected and fed upwards; it seldom comes back in a form that is relevant to clinicians.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We have a simple information system that supplies us with basic figures, but is not responsive to our changing needs.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>We receive monthly lists of figures about our clinical performance. It is possible to get specific information from our maternity system.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Clinical information is circulated widely every month, using trend charts and Statistical Process Control formats where appropriate. Our clinical information informs service development.</p> <p style="text-align: right;"><input type="checkbox"/></p>

Additional comments (if any):

**Appendix 4D: Anonymous Maternity Providers (AMP) Survey –  
Pregnancy & Labour**

## Pregnancy & Labour

This survey is adapted from the UK National Health Services [NHS] Institute for Improvement, Pathways to Success Toolkit: Focus on Normal Birth and reducing Caesarean section rates.

Please answer the following section by ticking one box (from the five options) that **best or closely represents/ describes the current situation for each of the statements (highlighted in bold).**

<p><b>We work with women to ensure they have a realistic expectation of labour, birth and parenthood</b></p>	<p>Antenatal education is not a high priority within the resources available.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Antenatal education is offered to all women.</p> <p>There is a low uptake, with many women choosing to make their own arrangements.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Antenatal education is accessible to all women in a variety of settings. Classes tend to follow rigid format with emphasis on the 'medical pain relief model' (i.e. emphasis on medicated pain relief).</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Antenatal education is accessible to all women in a variety of settings. Classes explore a full range of coping strategies. Sessions are run by core midwives.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>All midwives support and encourage the uptake of classes. They are well attended and led by a birth educator or midwife.</p> <p>Midwives use the opportunity of each contact to inform and prepare women for birth.</p> <p style="text-align: right;"><input type="checkbox"/></p>
<p><b>We focus on keeping pregnancy and birth normal</b></p>	<p>There is no focus on normality within the unit.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Some effort has been made to assess current service provision (on normal birth) in line with international guidelines, standards and recommendations (i.e. National Institute for Health &amp; Clinical Excellence – NICE guidelines, Royal College of Obstetricians &amp; Gynaecologists – RCOG standards, World Health Organisation – WHO standards, etc ).</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>There is recognition of the need to work towards the key goals (on normal birth) identified through international guidelines, standards and recommendations (i.e. National Institute for Health &amp; Clinical Excellence – NICE guidelines, Royal College of Obstetricians &amp; Gynaecologists – RCOG standards, World Health Organisation – WHO standards, etc)</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Implementation of international guidelines, standards and recommendations (on normal birth) is well established.</p> <p>Normal birth is visibly promoted across the service (i.e. posters on positions for birthing on view for women; information boards with best practice recommendations for staff).</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Implementation of international guidelines, standards and recommendations (on normal birth) is well established.</p> <p>Normal birth is actively promoted within the service and the multi-disciplinary team focus on achieving normal outcomes. We learn from each other to achieve this.</p> <p style="text-align: right;"><input type="checkbox"/></p>



<p><b>There are no social inductions</b></p>	<p>Women are induced before 41 weeks for uncomplicated post dates.</p>	<p>There is variety of practices depending on the clinician.</p>	<p>A stretch and sweep is offered and an induction of labour (IOL) is booked for 41 weeks.</p>	<p>A stretch and sweep is offered. IOL is booked for 41 weeks onwards.  The clinician decides to induce or wait depending on the clinical findings.</p>	<p>All women are offered stretch and sweep no earlier than 41 weeks.  Full discussion and information enables each woman to make a decision to await events or commence IOL.</p>
<p><b>Women with a breech presentation are offered external cephalic version (ECV) by a skilled professional</b></p>	<p>Women with a breech are not routinely offered ECV.</p>	<p>Some clinicians offer women with a breech ECV.</p>	<p>All women with a breech are offered ECV, but there is a low uptake.</p>	<p>All women with a breech are given information about the risks and benefits of ECV unless clinically contraindicated.</p>	<p>All staff feel confident to discuss ECV including the benefits and risks.  Each woman with a breech receives written information on ECV.  There is a high uptake of ECV.</p>
<p><b>We manage women's expectations, we prepare them for the reality of labour</b></p>	<p>If a woman asks for a Caesarean section (CS) in her first pregnancy we agree, it is her choice.</p>	<p>Maternal request for CS is agreed only after a second opinion.</p>	<p>When a woman ask for a CS, we try to find out what is behind the request.</p>	<p>There is a defined pathway to support women with underlying fears and concern.</p>	<p>We do not offer CS for maternal choice.  We have a variety of pathways for addressing individual needs of women with fears of childbirth, including appropriate follow-up.</p>
<p><b>The decoration of the birth rooms is homely with clinical equipment out of sight</b></p>	<p>The labour ward and birth rooms are 'clinical' looking, with the bed as the main focus of the room.</p>	<p>Some improvements have been made to the decor, but it is still 'clinical'.</p>	<p>Equipment is hidden away in both the ward areas and birth rooms, but the bed remains in the middle of the room.</p>	<p>There is a 'homely' environment in most birth rooms with some limitations. The position of the bed is dependent on the midwife.</p>	<p>There is a 'homely' environment in all of the birth rooms, where clinical equipment is out of sight. The bed is not the main focus.</p>

<p><b>Birth rooms are equipped with aids to facilitate active birth</b></p>	<p>The design and equipment in the labour rooms is governed by the requirements of the staff.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Women are able to bring in and use their own birthing aids.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Birthing aids are available to women on request.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Birth rooms are equipped with birthing balls, gym mats, etc, to promote active labour.</p> <p>Water-birth is available.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>All birth rooms are equipped with birthing balls, gym mats, etc to promote active labour.</p> <p>Staff are confident in offering water-birth.</p> <p style="text-align: right;"><input type="checkbox"/></p>
<p><b>Women are discouraged from lying on the bed</b></p>	<p>The majority of women labour on the bed.</p> <p>There is a reliance on pharmacological pain relief.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>The majority of women spend part of their labour on the bed.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Women are free to move around the room.</p> <p>Some staff are confident to support women with non-invasive techniques i.e. massage and breathing techniques, but many are not.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Women are encouraged to be mobile within their environment.</p> <p>All midwives encourage an 'active' birth, rather than a reliance on the bed.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>All staff believe in and have the skills to support the normal physiology of childbirth.</p> <p>Women are active and mobile.</p> <p>Midwives are skilled in non-invasive 'pain relief' techniques, i.e. massage and breathing techniques.</p> <p style="text-align: right;"><input type="checkbox"/></p>
<p><b>1 to 1 support is provided during labour by a trained carer</b></p>	<p>1 to 1 care in labour is rarely possible.</p> <p>Midwives spend a lot of time doing non-midwifery tasks.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>1 to 1 care is prioritised for high-risk women. This is at the expense of women in normal labour.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Midwives are clinically focussed on caring for women in normal labour, but they are short-staffed and may have to look after two women at the same time.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Midwives aim to give 1 to 1 care to women but this is not possible, therefore other members of staff are trained to provide 1 to 1 support.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p>Women receive 1 to 1 care in labour by a midwife.</p> <p>The skill mix is used innovatively to enable midwives to do this.</p> <p>The midwife recognises the value of other supporters and work with them.</p> <p style="text-align: right;"><input type="checkbox"/></p>

<p><b>The labour ward is reserved for labouring women</b></p>	<p>All women presenting with pregnancy problems are admitted to labour ward for assessment.</p>	<p>Women who are not in labour remain on labour ward for a long time. They are regarded as low priority.</p>	<p>We have a separate assessment centre for women presenting with pregnancy problems, which operates in the day (i.e. 9am-5pm).</p> <p>During the night, assessment is made on the labour ward.</p>	<p>There is a 24 hr triage area separate from the labour ward, where women in early labour or with antenatal problems are assessed.</p>	<p>Labour ward is kept free for labouring women.</p> <p>Women are assessed prior to arriving on the labour ward (i.e. a triage system).</p>
<p><b>Labour is managed using evidence-based guidelines</b></p>	<p>Staff tend to rely on their experience alone.</p>	<p>There are evidence-based guidelines, but most staff tend to rely on their experience / preferences.</p>	<p>Staff use a combination of evidence-based guidelines and (their) practitioner preference.</p>	<p>Evidence-based guidelines are used by all staff.</p> <p>Variations in practice are recorded and explained.</p>	<p>Evidence-based guidelines are regularly reviewed and updated. Variations in practice are explored.</p> <p>Women are given clear information about the benefits and risks.</p>
<p><b>Labour is managed using evidence-based guidelines</b></p>	<p>We use continuous fetal monitoring as a routine.</p>	<p>Our guidelines say we do an admission CTG.</p>	<p>The majority of staff prefer to do an admission CTG – just in case.</p>	<p>The majority of staff are happy with performing intermittent auscultation.</p>	<p>All women are offered intermittent auscultation in line with international recommendations (i.e. NICE guidelines).</p> <p>Continuous electronic fetal monitoring is only used when there is a clinical indication.</p>
<p><b>The consultant obstetrician and co-ordinating (in-charge) midwife provide strong visible leadership</b></p>	<p>Consultant obstetricians are only present in an emergency and they are rarely involved in the decision making process for emergency caesarean sections (CS).</p>	<p>Consultant obstetricians are present on labour ward for less than 40 hours per week.</p> <p>They are always aware of any emergency CS.</p>	<p>The consultant obstetrician and co-ordinating (in-charge) midwife are involved in the decision making process of all potential CS.</p> <p>There are limited channels of communication.</p>	<p>Consultant obstetricians are present on the labour ward during the day. They attend at night for emergencies only.</p> <p>The consultant obstetrician and co-ordinating (in-charge) midwife are involved in the</p>	<p>Consultants provide hands on training and support day and night for difficult instrumental deliveries, ECV, etc.</p> <p>All staff feel enabled to discuss and debate care with the co-ordinating (in-charge) midwife</p>



				decision making process. There are open communication channels.	and consultant obstetrician.
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Our skills drills are genuinely multi-disciplinary</b>	There is no multi-disciplinary learning.	We have ad hoc skills drills when there is time. Staff find them threatening.	There are regular skills drills sessions, but they are not multi-disciplinary.	All staff attend a yearly update in skills drills. This is multi-disciplinary.	All staff are involved in frequent impromptu skills drills followed by a debrief. These are viewed positively by staff.
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>There is an open culture in which staff are supported and challenged in their decision making</b>	Decisions are often criticised behind people's backs. There is no forum for open discussion and debate.	We have ad hoc discussions when there is time.	We have scheduled regular discussion forums to enable reflective practice. It is difficult for staff to find time to attend.	There is a monthly review of interesting cases. Staff members are encouraged to attend whenever possible. We provide protected time for staff to attend at least one review a year.	There is a multi-disciplinary review of care daily (i.e. all emergency CS as well as births with a positive outcome are discussed).  There is an open and honest 'no blame' culture.
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Doctors enter the rooms of labouring women by invitation only</b>	There is a formal ward round of all women on the labour ward. Doctors meet all women.	There is a ward round of all women. Doctors do not meet low-risk women.	Doctors are informed of the progress of all women, but only review women when requested by a midwife.	Doctors and midwives share information at their formal handovers and there is a board (central census) round, not a ward round.  Information is updated on a board (central census) in real time for all clinicians to see.	Doctors are not informed of details of low-risk women.  Doctors only enter a room when asked to review by a midwife.
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>High-risk women receive team-based care to optimise the potential for normal outcomes</b>	There is no 'team' working and a lack of guidance for high-risk women.	Obstetricians decide the plan of care for high-risk women.  There is often a lack of clear written guidance as to how	A written intrapartum plan of care including the role of the midwife is clearly documented by the consultant obstetrician. This is adhered to by all staff.	There is a clearly defined intrapartum plan of care for all high-risk women.  This is team-based involving the midwife, obstetrician,	There is a clearly defined intrapartum plan of care for all high-risk women.  This is team-based involving the midwife, obstetrician,

		the midwife should be involved.		paediatrician and the woman.	paediatrician and the woman. All staff respect the importance of attaining a normal outcome for these women wherever possible.
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments (if any):

## Appendix 5: Focus Group – Participant Information Sheet

### Towards the Promotion of Normal Birth Action Research in a Tertiary Maternity Unit in Singapore

#### Participant Information Sheet for Focus Group

#### Principal Investigator & Contact Details:

Ms. Leta, Wei Ling LOH  
Nurse Educator (O&G Unit), National University Hospital (NUH)  
Doctoral Candidate, University of Technology, Sydney (UTS)  
Contact: [REDACTED] (Mobile) or 6772 2631 / 6772 5220 (NUH)  
Email: [wei.l.loh@student.uts.edu.au](mailto:wei.l.loh@student.uts.edu.au) or [Leta\\_wl\\_loh@nuhs.edu.sg](mailto:Leta_wl_loh@nuhs.edu.sg)

#### Important Information for Interested Participants

Thank you for your interest in this research. It is important to us that you first take time to read through and understand the information provided in this *Participant Information Sheet* before you proceed and decide to take part in the focus group session, which forms a crucial component of the overall research study. The Principal Investigator (*Leta Loh*) will also be readily available to explain and re-iterate the contents of the study provided in this sheet, as well as to answer any questions you have to facilitate your understanding of the purpose and process involved in this research.

Following this, if you decide and choose to participate in the research, you will be required to sign two of the attached informed consent forms (*Consent Form for Focus Group & Consent Form for Audio Recording of Focus Group Session*) prior to the focus group meeting. You are also asked to RSVP with *Leta Loh* directly, either by phone (Hp: [REDACTED]) or via email ([Leta\\_wl\\_loh@nuhs.edu.sg](mailto:Leta_wl_loh@nuhs.edu.sg)), so she could make contact with you to organise the date and place for the focus group session. All copies of the consent forms will be made available and you will be given a copy to take home for your reference.

#### Purpose of the Research

You are invited to partake in this research because your views and valuable response (in the focus group session) will enable the tertiary maternity unit / service to understand, review and assess its current practice (context and culture) in working towards the promotion of normal birth, while maintaining safe outcomes for both mothers and babies.

This focus group session, forms a crucial component of the overall research study which aims:

- *To promote maternity care practices that support normal birth in the tertiary maternity unit.*
- *To encourage participation among stakeholders of maternity care, in working together (co-creation) as a 'team' through systematic problem-solving processes in promoting normal birth.*
- *To develop a culture within a tertiary maternity unit that is supportive of normal birth.*

Women and childbirth educators/doulas external (*independent*) to the tertiary maternity unit / service are invited to participate in the two focus group sessions (*6 women & 6 childbirth educators/doulas*). However, an estimate of 220 participants will be involved in the overall research, which will run over a period of 2 years (2011-2013).

### **Methods and Demands on Participants**

If you choose to take part in this research, you will be asked to participate in **one focus group session of up to 90 minutes duration** on a date and in a place to be negotiated. Questions in the focus group will include: *What sort of things helped you while you were in labour? What sort of things do you think would have helped (or is conducive), but weren't available to you during your labour and birth? What sort of (practical) things can the hospital (or service) put in place to help women who are planning a normal birth?*

The focus group will be run by Leta Loh and the session will be audio recorded and transcribed verbatim. Participants who do not consent to the audio recordings of the focus group session will *not* be able to participate, as the audio recordings are required to assist with documentation of the transcript. Additionally, the audio recorded focus group session will represent a 'group' discussion and recordings will include all participants' comments.

### **Possible Risks and Inconveniences**

Apart from the 90 minutes of your time for the focus group meeting, we can foresee minimal risks from your participation in this study. The Principle Investigator (*Leta Loh*) will be the only person who is aware of your identity and every effort will be made to protect your anonymity by removing any identifying information from the transcript, research report or subsequent publications. Only the *Principle Investigator* will have access to the raw data which will be secured in a locked system in accordance with the records management standards and guidelines by the University of Technology, Sydney (UTS) and the National Healthcare Group (NHG) Domain Specific Review Board (DSRB), and not be accessed by any other person.

### **Possible Benefits**

*Your* involvement in this research is seen to be part of a wider global movement in working towards the provision of quality maternity care. Maternity services that support safe practice and a satisfying birth draw attendant benefits not solely for the women, but also for the staff, the unit / service, as well as the organisation. The focus on normal birth provides an opportunity for all stakeholders (i.e. women & maternity care providers) within the health economy to promote and protect practices that are likely to lead to normal outcomes.

Data derived from the focus group (perspectives of women & childbirth educators/doulas) will provide fundamentally relevant information about the normal birth practices of maternity services in Singapore. These data will be invaluable not only to guide maternity care providers with effective and sustainable initiatives in the promotion of normal birth, but also to enhance the quality of and satisfaction with the maternity services provided, in creating a better birth environment for women and their families.

### **Funding and Payments**

This study has received no funding at this time. As such, we regret to inform that you will not be reimbursed for your time, inconvenience and transportation costs. However, a light snack and refreshments will be provided in appreciation of your participation and contribution.

### **Voluntary Participation**

Your involvement in this study is voluntary and you may withdraw your participation at any time without consequence. If you decide to withdraw participation after the focus group has commenced, we will not however, be able to delete the comments that you have made to that point, as the transcript of the focus group will represent a 'group' discussion and recordings will include all

participants' comments. Declining to participate in the study will not affect your relationship with the hospital / service / unit or maternity care providers in any way. Thus, if you do choose to stop taking part in this study, you should inform the Principle Investigator (*Leta Loh*) of your decision.

### **Compensation for Injury**

We do not anticipate that your participation in this research will require any compensation for injury or illness based on the nature of the study. Nonetheless, you will *not* be waiving any of your legal rights or release the parties involved in this research from liability for negligence by signing the attached consent forms (*Consent Form for Focus Group & Consent Form for Audio Recording of Focus Group Session*).

### **Confidentiality, Storage and Disposal of Research Records**

Information collected for this study will be kept confidential and measures will be taken to anonymise the data collected. Your records, to the extent of applicable laws and regulations will not be made publicly available and there will not be information that identifies you individually.

The research data and electronic recordings (digital audio files) will be stored for *5 years* after the final report has been completed and will subsequently be deleted and disposed. This is in accordance with records management standards, retention and disposal requirements by the University of Technology, Sydney (UTS) and the National Healthcare Group (NHG) Domain Specific Review Board (DSRB) guidelines on safekeeping of archived databases and storage of data. However, the NHG Domain Specific Review Board (DSRB) will be granted direct access to your original records to check study procedures and data, without making any of your information public.

By signing the consent forms attached (*Consent Form for Focus Group & Consent Form for Audio Recording of Focus Group Session*), you are authorising such access to your records arising from your participation in the study.

### **Who to Contact if You Have Questions**

If you have any questions or concerns about this research study, you may contact Leta Loh (*Principle Investigator*) directly, either by phone (Hp: 9673 8828) or via email ([leta\\_wl\\_loh@nuhs.edu.sg](mailto:leta_wl_loh@nuhs.edu.sg) / [wei.l.loh@student.uts.edu.au](mailto:wei.l.loh@student.uts.edu.au)). Alternatively, you may wish to contact the National Healthcare Group, Domain Specific Review Board Secretariat at 6471 3266 for an independent opinion or further information on ethics issues pertaining to the study. This research has been approved by the National Healthcare Group, Domain Specific Review Board (the central ethics committee).

--- Thank You Once Again for Your Time and Interest in This Research ---

### Study Team Members (Singapore)

Ms Chan Yah Shih, Assistant Director of Nursing, National University Hospital.

Dr Chong Yap Seng, Senior Consultant, Department of Obstetrics & Gynaecology, National University Hospital & Associate Professor, Yong Loo Lin School of Medicine, National University Singapore.

Ms Loh Wei Ling, Leta, Midwifery / Nurse Educator, National University Hospital & Doctoral Candidate, Centre for Midwifery, Child and Family Health, University of Technology, Sydney.

Ms Pua Siew Keing, Nurse Manager, National University Hospital.

Ms Seow Hui Cheng, Lydia, Nurse Clinician, National University Hospital.

Study Team Members (Australia)

Dr Deborah Davis, Adjunct Professor of Midwifery (Practice Development & Research), Centre for Midwifery, Child and Family Health, University of Technology, Sydney & Professor of Midwifery (Clinical Chair), Australian Capital Territory Health and University of Canberra.

Dr Nicky Leap, Adjunct Professor of Midwifery (Practice Development & Research), Centre for Midwifery, Child and Family Health, University of Technology, Sydney & Visiting Professor, Florence Nightingale School of Nursing & Midwifery, Kings College, London.

## Appendix 6: Focus Group – Consent Form

### Towards the Promotion of Normal Birth Action Research in a Tertiary Maternity Unit in Singapore

#### Consent Form for Focus Group

#### Principal Investigator & Contact Details:

Ms. Leta, Wei Ling LOH

Nurse Educator (O&G Unit), National University Hospital (NUH)

Doctoral Candidate, University of Technology, Sydney (UTS)

Contact: [REDACTED] (Mobile) or 6772 2631 / 6772 5220 (NUH)

Email: [wei.l.loh@student.uts.edu.au](mailto:wei.l.loh@student.uts.edu.au) or [Leta\\_wl\\_loh@nuhs.edu.sg](mailto:Leta_wl_loh@nuhs.edu.sg)

I voluntarily consent to participate in the focus group session as part of the research study. The nature of the research has been explained to me in the English language by Leta Loh (Principal Investigator) and I have fully read, discussed and understood the purpose and process involved in this study as described in the *Participant Information Sheet for Focus Group*.

I have been advised of the potential risks and burdens associated with the focus group, which include taking time to attend one **focus group session of up to 90 minutes** duration, and have had an opportunity to ask Leta Loh any questions I may have about the research and my participation.

I understand that I am free to refuse to participate and I am free to withdraw from the research at any time. If I decide to withdraw my participation during the focus group session however, I realise that the information I have provided up to that point will not be able to be deleted from the transcript. I am informed that measures will be taken to anonymise the data collected and am aware that the data collected from my participation will be used for preparing a report on the research, professional journal publications and conference presentations and I consent for it to be used in that manner.

..... /..... /.....  
Name of Participant                      Signature                      Date

..... /..... /.....  
Name of Principal Investigator      Signature                      Date

## Appendix 7: Focus Group – Consent Form for Audio Recording of Focus Group Session

### Towards the Promotion of Normal Birth Action Research in a Tertiary Maternity Unit in Singapore

#### Consent Form for Audio Recording of Focus Group Session

##### Principal Investigator & Contact Details:

*Ms. Leta, Wei Ling LOH*

*Nurse Educator (O&G Unit), National University Hospital (NUH)*

*Doctoral Candidate, University of Technology, Sydney (UTS)*

Contact: [REDACTED] (Mobile) or 6772 2631 / 6772 5220 (NUH)

Email: [wei.l.loh@student.uts.edu.au](mailto:wei.l.loh@student.uts.edu.au) or [Leta\\_wl\\_loh@nuhs.edu.sg](mailto:Leta_wl_loh@nuhs.edu.sg)

I voluntarily consent to have an audio recording of my focus group session taken as part of the research study. The nature of audio recording has been explained to me in the English language by Leta Loh (*Principal Investigator*) and I understand that the audio recording is required for the purpose of assisting with documentation of the transcript from the focus group session. Data collected from my participation will be used for preparing a report on the research, professional journal publications and conference presentations and I consent for it to be used in that manner.

I understand that measures will be taken to anonymise the data collected, to protect my privacy. I also understand that the audio recording taken will be secured in a locked system and not be accessed by any other person apart from the Principle Investigator. The audio recordings will be destroyed after 5 years of the completion of this research study, in accordance with records management standards and retention requirements of the University of Technology, Sydney and the National Healthcare Group, Domain Specific Review Board, Singapore.

...../...../.....	...../...../.....	...../...../.....
Name of Participant	Signature	Date

...../...../.....	...../...../.....	...../...../.....
Name of Principal Investigator	Signature	Date



# Appendix 8A: Positions for Labour (PFL) Survey – Women’s Record Tool



## Towards the Promotion of Normal Birth Action Research in a Tertiary Maternity Unit in Singapore



### Positions for Labour (PFL) – Maternal Satisfaction Record Tool

NRIC / HRN No: ..... Delivery Date: .....

The following information will help in the analysis of results on the survey of labour positions. Please **tick** ✓ answers in the **columns** □ provided for each question.

1. Which position(s) were you encouraged to use during your labour? (you may **tick** ✓ more than one answer)

<input type="checkbox"/> Standing 	<input type="checkbox"/> Sitting 
<input type="checkbox"/> Kneeling 	<input type="checkbox"/> On-all-fours 
<input type="checkbox"/> Side-lying 	<input type="checkbox"/> Lying on your back 

Other, please specify: .....



**Towards the Promotion of Normal Birth  
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2. How much time did you spent in the position(s) selected above (*in Question 1*) during your labour?

- more than 50% of the time                       less than 50% of the time
- Other, please specify: .....

3. How important was it for you to be able to change position(s) in labour?

- Very important  
 Important  
 Neutral  
 Not important at all\*  
\*If not, why?.....

4. Was changing position(s) helpful in coping with your labour (i.e. to help you feel more comfortable)?

- Very helpful  
 Helpful  
 Neutral  
 Not helpful at all\*  
\*If not, why?.....

5. What did you find difficult in changing position(s)?  
(you may **tick** ✓ *more than one answer*)

- Being attached to a monitoring machine  
 On an Intravenous (IV) drip  
 On epidural  
 Space available  
 Other, please specify: .....

6. Are photographs on different position(s) in labour useful for you?

- Very useful  
 Useful  
 Neutral  
 Not useful at all\*  
\*If not, why?.....



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7. How will you rate the staff support you received in changing position(s) during your labour?

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied\*

\*If dissatisfied, why?.....

Additional comments:

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If you have questions about this survey, you may contact Ms Leta Loh (*Normal Birth Collaborative Workgroup Coordinator*) directly, either by phone (Hp: 9673 8828) or via email ([leta\\_wl\\_loh@nuhs.edu.sg](mailto:leta_wl_loh@nuhs.edu.sg)).

--Please return this completed form to the staff--

**\*Thank You Once Again for Your Time & Participation\***

## Appendix 8B: Positions for Labour (PFL) Survey – Staff Record Tool

**\*DS Staff to Complete\***

### Towards the Promotion of Normal Birth Action Research in a Tertiary Maternity Unit in Singapore



#### Positions for Labour (PFL) – Staff Record Tool

Patient's NRIC / HRN No: ..... Delivery Date: .....

The following information will help in the analysis of results on the survey of labour positions. Please **tick** ✓ answers in the **columns** □ provided for each question.

1. Which position(s) did you encourage the woman to use during her labour? (you may **tick** ✓ more than one answer)

- Standing
- Sitting
- Squatting
- Kneeling / On-all-fours
- Side-lying (includes right and/or left lateral)
- Lying on her back (includes semi-recumbent)
- Other, please specify: .....

2. How much time did she spent in the position(s) selected above (in Question 1) during her labour?

- more than 50% of the time                       less than 50% of the time
- Other, please specify: .....

3. What did you find difficult in supporting her to change position(s)? (you may **tick** ✓ more than one answer)

- Being attached to a machine i.e. electronic fetal monitor (EFM)
- On an Intravenous (IV) drip
- On epidural
- Space available
- Other, please specify: .....

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Action Research in a Tertiary Maternity Unit in Singapore**



4. Are photographs useful to encourage position(s) change for this woman?

- Very useful
  - Useful
  - Neutral
  - Not useful at all\*
- \*If not, why?.....

5. Please give *ONE* suggestion that might further encourage the woman to change position(s) in labour.

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Additional comments:

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If you have questions about this survey, you may contact Ms Leta Loh (*Normal Birth Collaborative Workgroup Coordinator*) directly, either by phone (Hp: 9673 8828) or via email ([leta\\_wl\\_loh@nuhs.edu.sg](mailto:leta_wl_loh@nuhs.edu.sg)).

--- Thank You Once Again for Your Time & Participation ---

## Appendix 9: Normal Birth Collaborative (NBC) Workgroup – Sample Meeting Minutes

### NORMAL BIRTH COLLABORATIVE WORKGROUP MEETING Towards the Promotion of Normal Birth: Action Research in a Tertiary Maternity Unit


#### MINUTES OF MEETING HELD ON 15 MAR 2012, 10.00 to 11.30 HRS IN NUH TOWER BLOCK, MEETING ROOM T12-01

**Present:**

Dr. Anita Kale	- Consultant, O&G
Ms Deborah Fox	- Midwife
Ms Genly Samontanes	- Senior Staff Nurse
Ms Lydia Seow HC	- Nurse/Midwife Clinician
Ms Pua Siew Keing	- Nurse/Midwife Manager
Ms Leta Loh WL	- Nurse/Midwife Educator

**Absent With Apologies:**

Dr Tan Eng Kien	- Consultant, O&G
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S/N	OPEN ISSUES	ACTION BY
1.0	<p><u>Agenda</u></p> <p>The meeting commenced at 1015hrs. The agenda was reiterated by Leta.</p>  <p>Normal Birth Collaborative Workgr</p>	
2.0	<p><u>Data from the Anonymous Maternity Staff Survey</u></p> <p>Members discussed their opinions and views on a) <i>the areas that necessitate improvement</i>; and b) <i>the areas identified as requiring 'major', 'moderate' and 'minimal' improvements, based on the results collated from the anonymous surveys.</i></p> <p>It was agreed that the workgroup focus on the <b>Pregnancy &amp; Labour Pathway: Keeping first pregnancy and birth normal</b> at this stage, where 'tangible' practice improvements can be made in the unit.</p> <p>The 'principle' – <b>discouraging women from lying on the bed</b> (<i>i.e. encourage women to be active and mobile</i>) was the <u>dominant</u> priority chosen from the Pregnancy &amp; Labour Pathway. However, members concur that two other 'principles' – <b>birth (clinical) environment</b> and <b>equipments to facilitate active birth</b> were interlinked with the main priority, and hence had included <u>all three</u> as part of the 'principles' to work on (<i>Refer to Appended Table, Page 2</i>) .</p>	Information



S/N	OPEN ISSUES	ACTION BY
	<p>position (i.e. walk, sit-up on the couch/chair, etc)</p> <ul style="list-style-type: none"> <li>o Resources / Materials or 'tools' (i.e. tranquil wall pictures, flora, information pamphlets / leaflets, photographs of positions for labouring out of bed) to assist with principles</li> </ul> <p>*Further considerations will be tabled for the next meeting [i.e. how will we measure success, what tools will we use, who will do (and lead) the work, etc].</p>	Core Team (On-going)
6.0	<p><u>Significance</u></p> <p>Members are positive that selected 'principles' will enhance labour and normal birth in the unit.</p> <p>There is an overall sense that these 'principles' are workable, and can be promptly initiated in clinical practice.</p>	Information
7.0	<p><u>Proposed Agenda for Next Meeting</u></p> <ul style="list-style-type: none"> <li>- Further discussion on Plan of Action*</li> <li>- Finalise Key Changes and Strategies of Intervention</li> <li>- Set the 'schedule' for Improvement and Change</li> <li>- Present Proposal to Department</li> </ul> <p><u>Adjournment</u></p> <p>Meeting was adjourned at 1130hrs.</p>	Core Team

Minutes submitted by: SSN Genly Samontanes Bernardino  
Confirmed by: NE Leta Loh  
Next Meeting scheduled on: 29 March 2012 (Thursday)  
Time: 1000 Hrs  
Venue: Tower Block, Meeting Room T12-01  
Next Minute Recorder: TBA



**Appendix 10: Maternal Positions for Labour (PFL) Poster – Setting-based Photographs on PFL**

## Maternal Positions for Labour (PFL)



**Standing / Walking / Leaning**

- All may help stimulate effective contractions
- All use gravity to help baby's descent



**Hands & Knees (On-all-fours)**

- May relieve back pain
- Helps baby rotate to most favourable position: occiput anterior (OA)

+ The NUH team is committed to support women who wish to mobilise and remain in upright positions during the first stage of labour +



**Forward-leaning**

- May help your baby turn and align properly



**Side-lying / Semi-sitting**

- Positions to try if you have had an epidural (if legs feel 'heavy')



**Sitting**

- Good resting position
- Uses gravity to help baby's head descent
- Keep your knees lower than your hips to give baby enough room to rotate