



NEW ZEALAND  
COLLEGE OF  
MIDWIVES (INC)

## JOURNAL

### **Practice Wisdom**

Utilising the unborn baby's  
in-labour movements

Maggie Banks

### **Practice Issues**

Birth in a caul: a discussion  
on the role of amniotomy  
in physiological labour

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## Breastfeeding: are we making a difference?

Julie Stufkens

Coordinator, New Zealand Breastfeeding Authority

The New Zealand Breastfeeding Authority (NZBA) was formed in 1999, mainly due to the work of Karen Guilliland and Bronwen Pelvin and with the support of the College of Midwives. Since this time NZBA has advocated for the implementation of the four recommendations of the World Health Organisation (WHO) Innocenti Declaration (1990). These are:

1. Appointing a national breastfeeding coordinator of appropriate authority, and establishing a multi-sectoral national breastfeeding committee composed of representatives from relevant government departments, non-governmental organisations and health professional associations.
2. Ensuring that every facility providing maternity services fully practises the Ten Steps to Successful Breastfeeding set out in the joint WHO UNICEF statement "*Protecting, promoting and supporting breastfeeding: the special role of maternity services*".
3. Taking action to give effect to the principles and aim of all articles of the International Code on the Marketing of Breastmilk Substitutes and subsequent World Health Assembly resolutions in their entirety.
4. Enacting imaginative legislation protecting breastfeeding rights of working women and establishing means for its enforcement.

### New Zealand Breastfeeding Authority Actions

In 1999 New Zealand had only acted on one of these recommendations, to develop a NZ stance on the WHO Code of Marketing of Breast Milk substitutes. However, this was developed as a voluntary agreement with the infant formula manufacturers, and only applied to infants up to the age of 6 months rather than the recommended one year.

NZBA requested a review of the New Zealand stance on the WHO Code. We felt that in the current form the Code was not having any protective effect on breastfeeding, in that there had been no significant improvements in the rates since its adoption. The Ministry of Health (MoH) began the review in 2002 and this is still in progress. Obviously the formula industry manufacturers are not keen for any changes to the current stance, which might mean a return to the original guidelines. We will continue to advocate for the adoption of the WHO Code and the related resolutions in their entirety. Ensuring

protection of breastfeeding is as important as its promotion and support.

### Baby Friendly Hospital Initiative

The NZBA has primarily focused on seeing the Baby Friendly Hospital Initiative (BFHI) established and maintained. In 1999 NZBA gained a contract with the MoH for the establishment of BFHI. The requirements were launched in August 2000 and since then the following changes have occurred:

- The maternity contracts have changed from encouraging facilities to "*follow the Ten Steps to Successful Breastfeeding*" to now in 2003 requiring facilities "*to establish a timeline for becoming Baby Friendly*". The MoH is now requiring all facilities to work towards accreditation as Baby Friendly.
- The 2001 MoH Nutrition toolkit for District Health Boards has recommendations for breastfeeding and the Baby Friendly Hospital Initiative.
- In 2001 the MoH contracted the Breastfeeding Authority to undertake a BFHI audit of 30 of the 87 maternity facilities. These audits involved only the facility and staff being assessed and no consumers were interviewed. However, the audits have helped to provide benchmarks for the facilities' progress towards implementing the Ten Steps.
- In November 2002 the MoH launched "*Breastfeeding: A Guide to Action*". Seven goals were outlined to improve the breastfeeding rates in New Zealand. This information is available on the MOH website [www.moh.govt.nz](http://www.moh.govt.nz). One of these goals is to achieve Baby Friendly hospitals throughout NZ.

The maternity facilities have displayed varying degrees of support for BFHI. Some are actively working on this and have designated or appointed BFHI coordinators, or have a committee working on achieving each of the Ten Steps. These facilities are closely monitoring their breastfeeding rates to work towards achieving an exclusive breastfeeding rate of 75% or more. Six facilities have been accredited in the last year since assessments began. Ranging across the spectrum of primary, secondary and tertiary facilities, both public and private facilities have been accredited. A number of maternity facilities have arranged dates for assessment in the next 12 months. Practice within a Baby Friendly facility does support breastfeeding. The current initiative assesses the facility and facility staff. The next phase is to develop Baby Friendly guidelines for Lead Maternity Carers and Well Child providers.

### National Breastfeeding Committee

A proposal was submitted by NZBA, in 2001, to the Minister of Health for the establishment of a national breastfeeding committee with a national coordinator. We outlined the role of this committee, and the importance of having a national strategy for breastfeeding.

In late 2002 NZBA was given a contract to establish a multi-sectoral national breastfeeding committee, using a consultative process, which ensured all sectors would have opportunity to comment. The consultation documents were developed involving Māori, consumers and health professional groups. The consultation documents were widely circulated. The written submissions are at present being reviewed. Māori are arranging for a national hui as part of the consultation process. The development of this committee is an important step towards ensuring a national strategy.

NZBA has also written to the Minister of Health requesting that the Ministry undertake a policy review and adopt the WHO Global Strategy for Infant and Young Child Feeding. This strategy recommends exclusive breastfeeding for the first six months, and the provision of safe complementary foods, with continued breastfeeding for up to two years or beyond. If adopted this strategy would alter our current infant feeding guidelines, which recommend breastfeeding for the first four to six months. Other countries, such as the United Kingdom, Australia, and Ireland have already adopted these WHO guidelines.

### Conclusion

Each of these initiatives will take time to achieve a significant improvement in the New Zealand breastfeeding rates. But never before has there been such a concerted focus on breastfeeding. It is exciting to see the many activities being undertaken throughout our country to address a variety of issues: breastfeeding support for women in employment, breastfeeding support by businesses in the local community, the formation of Māori breastfeeding committees in some regions and an increased awareness of the importance of protecting breastfeeding by not providing free infant formula samples.

So to answer the question, "Breastfeeding: are we making a difference?" I believe that the answer is yes. The value of working collaboratively has made a difference; work has begun on the four goals of the Innocenti. The Baby Friendly Initiative is making progress. We still have a long way to go to see breastfeeding as the cultural norm, but I believe we have made a difference!!

## EDITORIAL BOARD COMMENT

We have pleasure in presenting the Spring issue of the New Zealand College of Midwives Journal. This is the first issue that will be entered on CINAHL (Cumulative Index of Nursing and Allied Health Literature) database, making it more accessible to both current and potential readership.

As the time we go to print the Health Practitioners' Competency Assurance Bill (HPCA) has passed into legislation. This will begin a new era where New Zealand midwives will have a regulatory body which is separate from that of nurses. In this new environment, the introduction of competency based practicing certificates will require practitioners to provide evidence of scholarly activity. Both contributors to, and reviewers for, the Journal could include these activities in their professional portfolios as evidence of scholarship. We would like to take this opportunity to thank our reviewers, both in New Zealand and overseas, for the valuable feedback that they offer which enhances the development of the Journal.

New Zealand midwives are set to celebrate their centenary of registration in 2004. To mark this event we will be publishing a centenary issue of the Journal in October 2004. The Editorial Board is seeking expressions of interest from people who wish to write articles for this edition that map the past and/ or chart the future of midwifery practice. Please contact Alison Stewart at [alison.stewart@tekotago.ac.nz](mailto:alison.stewart@tekotago.ac.nz) if you are interested.

This issue features a breastfeeding theme. Judy Stufkins introduces some of the current issues whilst MaryAnne Levine, Joan Edelstein and Maralyn Fourer report a New Zealand study exploring the relationship between pregnancy planning and duration of breastfeeding. Annette Hagan provides a case report and review of practice about breastfeeding attachment difficulties that are related to nipple size. On a topical note, given the interest in cosmetic surgical procedures, Kathy Manhire explores the implications of breast

surgery for breastfeeding. Other features include birth in a caul as part of waterbirth by Lesley Dixon and exploration of the issues and opportunities for rural midwives within historical and future contexts by Jean Patterson. Finally, we are delighted to present the first Practice Wisdom Column with a contribution from Maggie Banks. We anticipate that this will prove to be a popular forum, stimulating interest and debate among midwives. Readers are reminded that Rhondda Davies is keen to receive your stories, anecdotes or short case studies ([rhondda.d@clear.net.nz](mailto:rhondda.d@clear.net.nz)). Further details about the column were presented in the October 2002 issue. We would also encourage any student midwives interested in publication to send in their work, so that we can continue to present the Student Corner section of the Journal.

We wish you all enjoyable reading of this issue.

## BOOK REVIEWS

*Sarah Stewart, Midwifery Lecturer*

### **Emergencies around childbirth: a handbook for midwives**

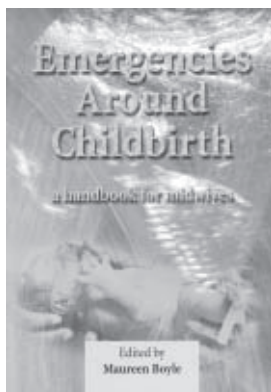
*Editor: Maureen Boyle. 2002*

*Oxford Radcliffe Medical Press ([www.radcliffe-oxford.com](http://www.radcliffe-oxford.com))*

*ISBN 1 85775 568 5 \$NZ119 £24.95*

*Available from local bookshops or Ace Graphics ([www.acegraphics.com.au](http://www.acegraphics.com.au)).*

This book is well-presented and is easy to read. It contains useful diagrams and illustrations, and provides a wide variety of references for midwives who are interested in pursuing issues further. The book covers a range of subjects/scenarios that face midwives at some stage in their careers from pre-eclampsia, antepartum haemorrhage, maternal resuscitation to shoulder dystocia.



What I particularly like about the book is that it also considers the more unusual emergency situations such as amniotic embolism, cord prolapse and uterine inversion. It can be quite difficult to find information about these conditions, so this book provides some useful information about the conditions, pre-disposing factors and management. The chapter on shoulder dystocia is helpful, and I would recommend that midwives read it in conjunction with Carol Soutter's (2002) dis-

cussion. The thing to remember about books such as this, is that it is not long before certain aspects are out of date. For example, the recent results of the Magpie Trial (The Magpie Trial Collaborative Group, 2002), which indicate that magnesium sulphate halves the risk of eclampsia, are not included. The final chapter about risk management is written from a British perspective including discussion about the National Health Service and British midwifery regulations, which might not be of great interest to New Zealand midwives. Nevertheless, it is worth reading because the issues facing midwives regarding risk management are the same the world over.

The book is a great resource for midwives and students, and whilst it might be rather expensive for individual midwives to buy, I would recommend that every educational/medical library have a copy.

### **The social context of birth**

*Editor: Caroline Squire. 2003*

*Oxford: Radcliffe Medical Press*

*ISBN 1 85775 554 5 \$NZ119 £24.95*

This book is another great resource for midwives and students, both at undergraduate and post-

graduate level. Again, the perspectives are that of the United Kingdom, but are no less relevant to the New Zealand context. The book is well referenced and easily understandable, and discusses issues such as poverty, 'race', domestic violence, maternal-fetal bonding and medicalisation of childbirth. I have found this book to be particularly helpful in my role as midwifery lecturer as well as midwife. For instance, the chapter on female genital mutilation provides extensive information and diagrams to explain definition, prevalence, and effects on women. The only area that I feel could have been developed is the role of the midwife, particularly when it comes to caring for the woman in labour. After reading the chapter on sexual abuse, I felt considerably more informed and confident about caring for women who may have been sexually abused.

The book is very expensive for midwives to buy in New Zealand, but is an excellent investment, especially for students.

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- The Magpie Trial Collaborative Group. (2002). Do women with pre-eclampsia, and their babies, benefit from magnesium sulphate? The Magpie Trial: a randomised placebo-controlled trial. *Lancet*, 1877-90. Available online at: [www.thelancet.com](http://www.thelancet.com)

I am delighted to introduce the first contribution to this column. Few among you will not have heard of Maggie. She describes herself below as home birth midwife, but she is also researcher and author. She has written *Breech Birth Woman-Wise* (1998) and *Home Birth Bound Mending the Broken Weave* (2000). She may also be known to you from the *Breech Birth Workshops Tour in 2001*. Currently she is the Convenor of the *Birthspirit Intensive Midwifery Skills for Emergencies workshops* which are planned to run monthly from October to February at Tamahere, near Hamilton in the Waikato. Her website is [www.birthspirit.co.nz](http://www.birthspirit.co.nz). She is currently undertaking doctoral study. Typically, in her challenge below, she goes directly to our midwife soul, questions a routine practice and substitutes one which quintessentially involves the midwife endorsing the woman's unequalled knowledge of her baby's welfare, or otherwise... Readers are encouraged to offer any thoughts to Maggie directly at [banks@ihug.co.nz](mailto:banks@ihug.co.nz) with a copy to Rhondda Davies, Practice Wisdom Column host ([rhondda.d@clear.net.nz](mailto:rhondda.d@clear.net.nz)).

## Utilising the unborn baby's in-labour movements

Maggie Banks, Home Birth Midwife

Aspects of midwifery practice, just as in obstetrics, can be validated in the absence of quality evidence simply because many repeat a certain action. Listening to the unborn baby's heart rate every 15-30 minutes in labour and after every contraction when the woman is pushing is one such practice (World Health Organisation, 1996). However good the intent is to counter intervention-inducing electronic foetal monitoring (EFM), it has developed the authority of a prescribed practice – not because it has shown to be of benefit but because it has been acknowledged as a common midwifery practice.

Those who are familiar with an undisturbed labour scene acknowledge that lack of stimulation enables the primitive brain to help the woman to be 'on another planet'. Any stimulus to the neocortex of the brain makes the labouring woman more alert, and can inhibit her labour (Odent, 1999), thus intellectual stimulation is to be avoided. While intermittent auscultation is less invasive to the woman's 'birthing head' than EFM, any disturbance to the woman in labour has the potential to interrupt physiological birthing. It becomes imperative to consider other ways to assess and monitor the unborn baby and to utilise what exists in the physiological labour state.

As I discuss in *Home birth bound: mending the broken weave* (Banks, 2000), the unborn baby has distinct behavioural states in pregnancy. I have observed over many years of home birth practice that the majority of unborn, well babies continue to move throughout the labours of their well mothers. Reflection on this knowledge and how it can be utilised has resulted in a change within my practice from listening to the unborn baby's heart rate at prescribed intervals to incorporating movements into the assessment of the baby's well being in labour.

There are three aspects of 'known' that are important for this method of monitoring:

1. The known midwife, as occurs with continuity of care throughout the childbearing continuum;
2. The known environment, as in home birth; and,
3. Known movements by the woman of her unborn baby.

While, for the purpose of this paper, the first two 'knowns' will be presumed to exist, the third is discussed.

An awareness of the known pattern of the baby's movements is initiated when movements are first reported in pregnancy. The importance of the woman monitoring her baby's movements is affirmed and recognition of any pattern is nurtured. Any pattern that has established over time becomes her baby's norm. Kick Charts are not used - not only because of the false sense of security that may be created by dismissing a change in a pattern outside the allotted time frame, but also, because the interpretation of the Kick Chart is done by the health professional and therefore can invalidate the woman's own knowledge. Thus the woman's own knowledge remains central to assessment.

Assessing the baby's well being with in-labour movements is discussed with the woman in late pregnancy. The knowledge of this process helps her to participate and a frequent spontaneous acknowledgement of baby's in-labour movements is for the woman to report, "moving" or "kick".

Rolling movements and limb kicks can be visualised by the midwife in the pool, especially where millpond stillness gives way to shimmering with the baby's movements. Movements can be felt through comforting hot cloths on the abdomen and back. Those movements felt through the perineal hot packs are most likely to be those of the baby descending rather than specific baby in-labour movements.

At times it remains necessary to ask the woman if the baby has moved in the last few minutes. Where there have been no further movements since the last noting, a common response to this question is for the baby to move, in the same way that discussion about the baby in the antenatal period often invokes movements. This invasion of her 'birthing head' is minimal in comparison to asking her to shift her position so the baby can be listened to. Where recent movement has not been sensed, wherever possible, the Pinard or Allen Fetoscope is used to avoid unnecessary ultrasound exposure via a handheld Doppler.

It is doubtful if baby's in-labour movements monitoring would be valid where physiological labour has been interrupted by artificial rupture of membranes, induction of labour, nitrous oxide, narcotics and/or epidural anaesthesia use – the latter three measures affecting the woman's innate connection with her baby. It is also unknown whether it would be a valuable adjunct for the unfamiliar environments of birthing units. It is of limited value for those few women who do not readily sense their babies' movements, in breech presentation where the movements of the legs and bottom - the commonest 'moving parts' – may be restricted, or in multiple pregnancies where the individual baby's movements may be difficult to differentiate from that of his sibling.

Knowing how important the reclamation of midwifery knowledge is, the researcher in me urges auscultation of the baby's heart rate after in-labour movements to gather 'hard evidence' that this sign of well being equates in labour equally as it does in pregnancy. However, my commitment to not disturbing a physiological state prevents this action from taking place. Just as I trust the woman's reporting of movements so I also trust the development of my practice wisdom.

This method of assessment is a useful tool to minimize stimulation. Monitoring of the unborn baby's in-labour movements has become integral to the care I provide in labour to well women and has proved to be highly acceptable to and welcomed by women in my home birth practice.

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## Birth in a caul: a discussion on the role of amniotomy in physiological labour

Lesley Dixon RN RM BA (Hons) Midwifery Practice IBCLC

*Lesley is currently Charge Midwife, Burwood Birthing Unit, Christchurch. She has been 17 years in midwifery practice, the last four in New Zealand, as an employed core, and self employed independent midwife.*

*She is currently undertaking postgraduate midwifery papers through Otago Polytechnic.*

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### Abstract

In my midwifery practice I observed that membranes often remained intact when women were immersed in water during labour. I wondered what would be the optimum care for water birth in a caul. This article reviews existing information about the reasons for amniotomy and management of intact membranes at birth. Recommendations for practice are offered.

### Introduction

Whilst working in independent practice I saw my role as supporting women in labour and trying to minimise intervention. I encouraged women to use water as a means of maintaining the normality of labour and helping with the pain of labour. When women were immersed in water I noticed that often the membranes remained intact until transition or when the women started to push. I started to wonder how would I manage intact membranes during a water birth? I discussed my concerns with my colleagues who reassured me that it had never happened to them. However, shortly after this discussion I did experience a birth in water with the baby being born into the caul. The birth was fast and there was no time to do anything other than guide the baby in the caul to the surface, then tear the membranes. Both mother and baby were fine, but it left me wondering whether my management was optimum. Whilst undertaking postgraduate study I decided to review management of birth in water with intact membranes. The result of my investigation was disappointing as I found that this area of midwifery practice has been absent from recent discussion and research. The majority of research focuses on amniotomy and having reviewed the reasons for amniotomy, it has strengthened for me the argument for leaving the membranes intact. I have also reviewed the information on management of intact membranes at birth and have made recommendations for practice.

### Background

Most midwives have heard of babies being born in a 'caul' or have had births in which the membranes remained intact. A caul according to the dictionary is the inner fetal membrane of higher vertebrate animals (e.g. humans), especially when covering the head at birth (The New Penguin English Dictionary, 2000). There are several references to babies being born in a caul in "*The Midwife's Tale*" (Hunter & Leap, 1993), which provides an historical look at midwives' practice from the 1900s to the 1950s in the United Kingdom (UK). This was a time when rupturing the membranes was not done routinely and occasionally a baby was born 'in the caul'. It was considered lucky and the caul would be dried out and given to a sailor so he would not drown. In normal labour the membranes usually rupture towards the end of the first stage, although rupture of the membranes can occur before labour or at any time during labour. It is estimated that 6-19% of women at term will experience spontaneous rupture of membranes before labour starts (Grant & Keirse, 1989) and that 66% of all labours will reach full dilatation without rupture of the membranes. Of these labours 12% will still have the membranes intact at delivery (Martell, Belizan, Nieto & Schwarcz, 1976).

### Anatomy and physiology

The amniotic membrane is composed of a single layer of cuboidal epithelial cells supported by a thick basement membrane composed of collagen and fibroblasts. It is formed from a layer of ectoderm which is gradually displaced by accumulating extracellular fluid. Some of these cells differentiate into amnioblasts that later form the amniotic membrane, separating the cavity from the surrounding cytotrophoblast cells. The amniotic fluid increases until it reaches approximately 20 mL in volume between 4-8 weeks gestation. The amnion gradually takes over the chorionic space and brings the amnion and chorion into contact with each other. The volume of the amniotic fluid increases to 350-450mL at 20 weeks and 800-1000mL at 36-39 weeks, and then begins to decline (Moore & Persaud; Johnson & Everitt, cited by Sweet, 1998). During the first half of pregnancy the composition of amniotic fluid is similar to the fetal or maternal plasma and the increasing volume is closely related to fetal weight. During the second half of pregnancy the fetal kidneys and lungs make a growing contribution to the amniotic fluid. At present the mechanisms

regulating amniotic fluid volume are poorly understood, although it is thought that prolactin and prostaglandin from the amniotic membrane and umbilical cord may be involved with other hormones in regulating amniotic fluid volume (ibid).

### Amniotic fluid functions

During pregnancy the amniotic fluid acts as a shock absorber to protect the baby from jarring and trauma, and equalises temperature. In late pregnancy the fluid provides space for the baby to grow and move. During labour the amniotic fluid equalises the pressure exerted by the contractions to reduce interference with placental circulation, prevents compression of the umbilical cord and moderates the degree of overriding of the skull bones during the descent and rotation in the pelvis. This latter moderating function protects the delicate underlying cerebral membranes and blood vessels (ibid).

### Formation of the forewater and hindwaters

As the lower uterine segment stretches and the cervix starts to efface, some chorion becomes detached from the decidua and both membranes form a small bag containing amniotic fluid. When the fetal head descends onto the cervix, it separates the small bag of amniotic fluid in front (forewaters) from the remainder behind (hindwaters). The forewaters aid effacement (drawing up), the softening and thinning of the cervix, and early dilatation of the os uteri (cervical opening). The hindwaters help to equalise the pressure in the uterus during uterine contractions and thereby provide some protection to the fetus and placenta (ibid).

### Rupture of the membranes

The membranes are thought to rupture as a result of increased production of prostaglandin in the amnion during labour, the force of the uterine contractions causing an increase in the fluid pressure inside the forewaters and a lessening of the support as the os uteri dilates. Recent experiments have found that amnion obtained from spontaneous deliveries is 42% heavier than that obtained following elective caesarean sections. This is thought to be a result of a prostaglandin-stimulated increase in the hydrolysis of collagen which results in an increased uptake of water in the collagen matrix. This change is thought to facilitate the spontaneous rupture of membranes during labour (McCoshen, Hoffman, & Kredentser, 1990).

*continued over...*

## Birth in a caul: a discussion on the role of amniotomy in physiological labour

### The effects of water immersion during labour and birth

Since the 1960s water births have become increasingly popular in many countries. The option of being immersed in water provides an extra dimension to the resources which are available to support women and their families during birth. Water helps women in labour by reducing the effects of gravity and encouraging a state of relaxation. Balaskas and Gordon (1990) discuss the Archimedes Principle; that is any body which is completely or partially submerged in a fluid at rest is acted upon by an upward or buoyant force. The magnitude of this force is equal to the weight of the volume of fluid which is displaced by the body when totally or partially immersed.

The object will be supported by the buoyancy of the water which is relative to its weight. The fluid pressure increases as water becomes deeper and its weight increases. Buoyancy is caused by this increase in fluid pressure at increasingly greater depths. The pressure on a submerged object, therefore is greater on the parts more deeply submerged (ibid). It is possible that this counter pressure from the water during labour and birth reduces the risk of rupture of the membranes, by equalising the pressure within the vagina and uterus. To date there are no recently published New Zealand statistics to show how frequently babies are born in intact membranes either during a land birth or during a water birth.

### Research review

The significant benefits of intact membranes are the maintenance of an even hydrostatic pressure to the whole fetal surface during labour and a reduced likelihood of infection. Fetal hypoxia is less likely because retraction of the placental site, and thus impairment of the uteroplacental circulation, will not occur (Henderson, 1990). It has been known for some time that uterine blood flow is normally affected by contractions reducing oxygen transfer to the fetus (Ramsey, cited by Henderson, 1990) but in a normal labour the fetus is unlikely to be compromised. Once the membranes rupture, fluid is lost which leads to:

- compression of the placenta, umbilical cord and fetus during contractions
- an increased interruption of the oxygen supply.

It is difficult to find any statistics related to babies born in intact membranes. However, two small South American studies which looked at neonatal outcome following labours with intact membranes and following amniotomy, discuss the incidence that they found. Martell et al. (1976) carried out a small study of 38 women with full term single pregnancy to determine the blood acid-base balance of the neonate at birth. By looking at the differences between early amniotomy in labour and late spontaneous rupture of mem-

branes they found that when the amniotic membranes remain intact at least until full dilatation, the baby has a better acid-base balance. They noted that 66% of labours reaching full dilatation without rupture of the membranes, whilst 12% still had membranes intact at delivery. In a small study (n=37) prior to this, undertaken by Schwarcz et al. (1973), 10% of women had membranes intact at the birth.

My perception, however, is that birth in intact membranes occurs less frequently than the incidence reported in these studies, primarily because of frequent use of amniotomy during labour. Amniotomy is performed for several reasons (see subsequent discussion). These are:

- as a means of induction
- to augment a slow labour
- to determine the presence or absence of meconium in the liquor
- to be able to more closely monitor the fetal heart rate by means of fetal scalp electrode.

Amniotomy does, however, have some associated risks (see subsequent discussion). These are:

- cord prolapse
- antepartum haemorrhage (undiagnosed placenta praevia or polyhydramnios)
- increased risk of intrauterine infection
- amniotic fluid embolism.

I am currently unable to find any published statistics on the frequency of amniotomy in New Zealand.

### Augmentation of labour

Enkin, Marc, Keirse and Chalmers (1990) state that amniotomy has been used to augment labour for decades but whether the procedure conferred more benefit than harm was at that time still undetermined. Subsequently the UK Amniotomy Group (1994), in a multicentre randomised trial of amniotomy, stated that beyond a modest shortening of labour, a policy of routine amniotomy has little effect on important outcomes and should **not** be recommended. Fraser, Turcot and Kraus in the latest update from the Cochrane Library (2001) suggest that amniotomy should be reserved for women with abnormal labour progress, since in a review of one large trial they found an increased rate of caesarean section following amniotomy.

### Meconium liquor

Meconium stained liquor has a relationship with meconium aspiration syndrome (MAS), a disorder characterised by persistent pulmonary hypertension. This disorder has high associated perinatal mortality and morbidity rates (Mahomed & Masona, 1994). It was thought that MAS was caused by the chemical and mechanical irritant of

the meconium. However, Houlihan and Knuppel (1994) suggest that it is more likely caused by fetal hypoxaemia. They state that as the fetus matures there is more likelihood that he/she will pass meconium in utero. They have found that the passing of meconium occurs in 3% of babies at less than 36 weeks of gestation, 13% at 36-39 weeks gestation, 19% at 40-41 weeks and 23% at more than 41 weeks gestation. This increased frequency is not associated with an increased incidence of MAS. It is not known why babies pass meconium in utero. The theories are:

- increased vagal activity
- fetal hypoxaemia
- normal physiological function related to gut maturity.

Houlihan and Knuppel (1994) suggest that fetal hypoxaemia is a more likely cause of MAS as it increases the potential for the baby to pass meconium and the powerful breaths that are needed to aspirate it into the lungs in utero. It appears that MAS is more common in America than in the UK although no reason is known for this.

A lot of research is now focused on preventing MAS by using an amnioinfusion. This is the infusion of a solution into the uterine cavity. It is believed to prevent or help relieve cord compression and can also dilute the meconium therefore reducing the risk of aspiration (Hofmeyr, 1998). It is, however, associated with an increase in chorioamnionitis-endometritis. Hofmeyr states that amnioinfusion was associated with improvements in perinatal outcome. Spong and Ross (1994) suggest that the benefit of amnioinfusion for meconium stained amniotic fluid is a result of the alleviation of variable fetal heart rate decelerations rather than meconium dilution. This supports the argument that membranes should be **preserved** throughout labour and birth for both high and low risk women.

### Closer monitoring of fetus by means of fetal scalp electrode

Monitoring the fetus by means of a fetal scalp electrode is often a reason for amniotomy. Thacker, Stroup and Chang (2001) state that the only clinically significant benefit from continuous electronic fetal monitoring is the reduction of neonatal seizures. There is however an increase in caesarean and operative vaginal delivery with continuous monitoring (Thacker et al 2001). Despite this evidence the use of electronic fetal monitoring in practice continues. Dover and Gauge (1995) found that 83% of clients about whom they collected maternity statistics, had continuous fetal monitoring during labour. A high number of the midwives in the unit stated that they preferred a form of intermittent auscultation to monitor fetal wellbeing for low risk clients. However, the authors discuss the perceived need of the midwife

to have a permanent record of the fetal heart rate which fulfils legal and hospital requirements.

### Women's opinions on amniotomy

There has been little research into women's opinions of amniotomy. The UK National Childbirth Trust (1989) sent out questionnaires, concerning many aspects of maternity care, in an issue of their quarterly journal. Three thousand women replied, including 700 women who also wrote letters about their experiences. The results of the questionnaire showed that the majority of women had not wanted amniotomy at any stage and tried to have it delayed. They were concerned at preserving the physiology of labour and wanted to protect their baby from increased trauma. There were also concerns about having more painful contractions which would be difficult to cope with, unless additional pain-relieving drugs were used. The results of this questionnaire cannot be seen as representative of all women but do show an area where more research is necessary especially when there is very little evidence to support the use of amniotomy in spontaneous labour. Monro and Spiby (2000) in their guidelines for midwifery care in labour state that amniotomy is not part of normal physiological labour and should be reserved for women with abnormal labour progress. The decision of whether to rupture membranes should only be taken in direct consultation with the woman with the evidence discussed. The consequences of the intervention should not be minimised.

### Management issues

When asking pregnant women about previous births and expectations for the next birth, I have heard many women recall that their membranes 'had to be broken', and their expectation was that the baby could not be born without the waters being broken. This may be a result of high levels of the use of amniotomy which is often not considered to be strictly speaking an *intervention* within a medical model of care. If, as midwives, we practise with the intent of maintaining intact membranes for as long as possible in labour for all women, then we need to discuss this management with the women and prepare them for a birth where the membranes may be intact.

I reviewed many books to see if management of intact membranes at birth was discussed. I started by looking at authors who advocate a non-interventionist approach to birth such as Caroline Flint (1986), Michel Odent (1984), and Janet Balaskas (1989). Interestingly, I found no mention of it. There were three books that did discuss management of intact membranes at birth.

- In *"A Textbook for Midwives"*, Myles (1981, p.308), suggested that the membranes should have ruptured by the end of the first stage and that by then their function is finished. *"They become a hindrance during the second stage as the descent of the fetus will be retarded if it is still contained within the intact sac of fluid."* No reason for this is given but Myles advises that the membranes should be ruptured either when they appear at the vulva or prior to this. If they are not ruptured there may be more delay and when the baby is born covered with amnion (a caul) then it needs to be removed from the face immediately to allow the infant to breathe (ibid). I have often ruptured the membranes when they are visible at the vulva, probably because this was the practice that I saw when training.
- In *"A Guide to Midwifery: Heart and Hands"*, (Davis, 1983) the author says that when the bag is left intact then the baby can be born in the caul. Should this happen then her advice is to hook a fingernail into the membrane below the chin and peel it back over the face so the baby can breathe. She states that it is important to be quick!
- Finally in *"The Midwife's Tale"* (Hunter & Leap, 1993), there are several references to babies born in a caul and again there is advice for the need to whip it off! The midwife interviewed who advised this, suggested that this mostly happened with quick births, and that she found that it was a good thing to have the membranes intact until the second stage as *"you get a better sort of pushing then"* (ibid, p. 163).

It would appear that the management of intact membranes advise to date is to remove the membranes as quickly as possible as the baby would be unable to breathe.

With advanced knowledge and experience with water births, we are now aware that the baby is unlikely to breathe until s/he has the stimulation of colder air. The chemoreceptors located in the larynx assist the baby in identifying fluid that should be swallowed rather than inhaled and that it is the drop in temperature of 1-2 degrees that initiates breathing activity (Johnson, 1996). If we extend this physiological explanation to babies born in intact membranes it can be seen that the baby will not initiate respirations until the membranes are ruptured. Therefore, it would seem that there is no more urgency than there is during a water birth. However, due to a reducing placental surface, and therefore a reduced gaseous exchange following the birth of the body, the membranes will need to be broken as soon as able after delivery of the shoulders.

In my limited experience of encountering birth in a caul I have found the membranes can break spontaneously as the shoulders are born so the concerns about breaking the membranes may be unfounded. I have personally been involved in the births of four babies born inside their cauls, one on land and three in water. With the land birth I found it quite difficult to break the waters due to oligohydramnios (this followed a rapid birth of a growth restricted baby), but was able to tear the membranes around the neck. Regarding the three water births with intact membranes, two sets of membranes ruptured spontaneously as the babies' shoulders were born, the other set were very easy to break after bringing the baby in her membranes to the surface. By holding her under one arm I was able to tear the membranes between the chin and the neck. It is my perception that when babies are born in intact membranes there appears to be no difference in resuscitation outcome. It is difficult to generalise as there are no published figures on the outcomes for, and number of, babies born in intact membranes. Other outcomes that are of interest in births with intact membranes are whether:

- less pain relief is necessary
- there is a reduction in perineal damage
- the birth is perceived to be easier or more difficult from the viewpoint of both the woman and her midwife.

### Recommendations for practice

It would seem from the available research that I have found, amniotomy is an unnecessary intervention which can disrupt the normal physiology of labour. In the majority of labours the membranes will rupture spontaneously sometime in the first or second stage of labour. However, on rare occasions, the membranes may not break. In these circumstances the midwife needs to know that, if the membranes do not break as the head is born, they will probably break as the shoulders are born. For those babies that are fully born in intact membranes the membranes can be broken by tearing between the chin and the neck and, as with water births, the baby will not start breathing until the membranes are broken.

### Conclusion

Intact membranes at birth will happen in some labours when there is no intervention. In order to maintain the physiology of normal labour midwives need to strive for intact membranes for as long as possible during the labour and birth. Intact membranes reduce the risks of cord compression and interruption to the oxygen supply. As a profession midwives need to discuss issues such as these which are directly related to midwifery practice in physiological labour. At present we are

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## Birth in a caul: a discussion on the role of amniotomy in physiological labour

collecting information about outcomes of birth such as vaginal or assisted birth but we should also be focusing on what is happening during normal labours and births.

- We need to know how often amniotomy is performed, how often babies are born in intact membranes, and if the frequency really is 12% as reported by Martell et al. (1976).
- We need to investigate the outcomes of birth in intact membranes to explore fully any difference in outcomes for the mother or baby.
- We need to look at the number of waterbirths and whether there is an increased incidence of intact membranes when birthing in water.
- We may find that the incidence of assisted births and perinatal infection are reduced if we aim to maintain intact membranes during labour and birth.
- We also need to educate the parents about birth in intact membranes and try to find out the mother's perceptions of labour and birth when the baby is born in intact membranes.

When midwives work in partnership with women they aim to provide information to help aid choice. The information to date about amniotomy when presented to women will probably lead to a decrease in this intervention. Maintaining the normality of birth and minimising intervention during labour and birth will lead to more births with intact membranes, whether on land or in water. We should be prepared, watch and wait, and discuss our outcomes.

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## PRACTICE ISSUE

### Breastfeeding attachment difficulties related to large nipple size: a case report and review of practice

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#### Abstract

One of the major reasons for lack of breastfeeding success is attachment difficulties. Skill development in practice is dependent on experience and knowledge. This articles considers the professional

interaction between a midwife and a mother when she was experiencing breastfeeding difficulties. The difficulty was related to a baby struggling to latch on correctly when the mother had large nipples.

#### Introduction

Problem solving during breastfeeding is a primary task of midwives. The key to successful resolution of a breastfeeding problem is thorough assessment and diagnosis followed by implementation of evidenced based interventions. Mothers who experience breastfeeding difficulties have feelings of disappointment, disempowerment and frustration and the result is often early and unwanted cessation of breastfeeding (Harper, 1998). Successful initiation and long-term maintenance

of breastfeeding is influenced by three main factors. The **first** being cultural factors including: social history; communication patterns; family influences; health practices such as lay and biomedical; religious beliefs and practices, socio-political systems; infant care and feeding practices (Riordan & Auerbach, 1998; Stevenson & Allaire, 1991). The mother's breast structure and functionality are the **second** aspect to breastfeeding interaction (Neifert et al., 1990). The **third** aspect of breastfeeding interaction is dependent on the infant's psychomotor development, temperament, behaviour, nutritional and health status, physiological function and orofacial structure (Stevenson & Allaire, 1991).

# Breastfeeding attachment difficulties related to large nipple size: a case report and review of practice

This paper examines some of the issues large nipples had on the breastfeeding experience of a mother-baby dyad including the impact specific interventions and maternity care practices had on the mother's breastfeeding experience. It begins with the case history of Judy and Jon. Judy chose the author as her independent midwifery practitioner but as her pregnancy became post mature she required transfer to a regional hospital for delivery. Throughout a midwife's practice there are clinical situations that require significant reflection and critique to enable the practitioner to consider the practice implications and be able to learn from the situation. This was such a case for me. Written consent has been gained prior to publication. The mother and child's identity have been protected by the use of pseudonyms.

## Case history

Jon was a healthy baby, born at 42 weeks gestation following a syntocinon-induced labour because of spontaneous ruptured membranes followed by an otherwise unmedicated normal vaginal birth. Jon latched and breastfed intermittently during the first three days. Judy described the assistance she was given by maternity staff as often violent and unhelpful. Jon was frequently forced on to the breast and nipple. Judy had previously breastfed her first child for three weeks and her second infant for seven months. She had a strong desire to breastfeed Jon for as long as possible. On day three postpartum Judy transferred to a rural area and presented with severely cracked nipples and difficulty in latching Jon.

- An assessment of Judy's breasts revealed normal lactating breasts with large bulbous nipples of approximately 2.5 centimetres in diameter and similar depth with a significant degree of nipple trauma at the base of both nipples. Judy was feeding Jon expressed breast milk by bottle along with formula when Jon would not feed or became frantic.
- Jon had lost 10% of his birth weight by his 3<sup>rd</sup> day of life and was vomiting both fresh and old blood. His urinary output and bowel actions were becoming less than acceptable and he was mildly jaundiced. He had no evidence of an oral, structural or other physical defect. On digital examination of his mouth he displayed an effective suck but had a tendency to "chomp" when he was attached.
- Judy was correctly positioning Jon at the breast but he seemed unable to open his mouth sufficiently wide to latch correctly on either breast. He would become fussy and frantic when moved to the breast for feeding and would hit the breast with a clenched fist. When it was possible to

persuade him to attempt latching he would take a small amount of the nipple into his mouth, then suck frantically for a few seconds and then slide off the nipple.

- Judy experienced significant nipple pain when Jon was latched. The situation deteriorated with the nipple trauma unresolved and Jon refusing the breast entirely by the sixth day postpartum. On day 7 Judy developed a right breast infection treated with oral erythromycin. Both Judy and Jon were readmitted to hospital for observation and intensive assistance with breastfeeding. This assistance included vigorous manhandling of Jon at the breast and was not at all successful. Jon continued to be alternatively frantic at the breast or uninterested and "shut down".

A complex care plan was developed with a variety of interventions, which included: application of various creams, ultrasound treatment to the nipple trauma, offering the breast as much as possible, having as much skin-to-skin contact as possible, using a nipple shield, and combination feeding of expressed breast milk with formula. However, Jon was never able to establish breastfeeding and by 6 weeks Judy elected to discontinue expressing and Jon was fully formula fed from this time.

## Large nipples; are they a problem?

The literature provides a wide and varied range of studies, commentaries and case reports, concerning assessment, latching and infant feeding. However, there is little commentary or research that specifically explores the impact large nipple size has on breastfeeding success. Breast functionality is described in the literature in three main areas:

- breast milk production
- anatomical structure
- the relationship of the breast and the infant during breastfeeding.

Milk production is dependent on numerous factors that will not be explored in this discussion.

The anatomical factors that influence **functionality** include breast size, mammary gland tissue and nipple protuberance (Neifert et al., 1990). The nipple is usually described as normal and protuberant, flat or inverted (La Leche League, 1997; Lawrence & Lawrence, 1999; New Zealand College of Midwives, 1992; Riordan & Auerbach 1998; Wilson-Clay, 1996; Woolridge, 1986a) although Wilson-Clay and Hoover (1999) and Neifert, Lawrence and Seacat, (1995) differentiate very large or small nipples from flat, inverted or excessively long nipples. Protractility of nipple tissue is also considered necessary for correct latching (Biancuzzo, 1999; Fisher, 1994; Walker, 1989;

Woolridge, 1986a) with inelastic breast tissue and inverted nipples resulting in inadequate amounts of breast tissue for the baby to latch successfully. Biancuzzo (1999) and Riordan and Auerbach (1999) identify large nipples as a cause of latching difficulties. However, Wilson-Clay and Hoover (1999) consider infant latching difficulties are solely a "fit problem" between a baby with a small mouth compared with a mother's large nipple. The usual management of a "fit problem" is to encourage the infant to open his/her mouth widely (Biancuzzo, 1999).

The infant's **ability to latch and suck effectively** also affects breastfeeding. Latching and sucking problems may be the result of abnormalities of the baby's face structure including the mouth or pharynx, manifestation of the peripheral, central nervous system, or musculature dysfunction (McBride & Danner, 1987). Prematurity, and other causes of low birth weight, birth injuries or infant medical conditions can also detrimentally affect latching and sucking behaviours (Alper & Manno, 1996; Bovey, Noble & Noble, 1999; La Leche League, 1997; McBride & Danner, 1987; Marmet, Shell, & Aldana, 2000; Neifert et al., 1995). Early introduction of infant feeding by artificial means, for whatever reason, can result in an infant who appears to be unable to suck at the breast. This behaviour has been labelled "*nipple confusion*" (La Leche League, 1997; Righard, 1998; Stuart-Macadam & Dettwyler, 1995; Wilson-Clay, 1996) and defined as "*an infant's difficulty in achieving the correct oral configuration, latching technique, and sucking pattern necessary for successful breastfeeding after bottle feeding or other exposure to an artificial nipple*" by Neifert et al., (1995, p. 125). Fisher and Inch (1996) argue that babies who exhibit difficulties attaching have experienced conditions that have left them averse to feeding at the breast and are not nipple confused. These babies may also have some underlying condition, which reduces their ability to latch and feed correctly.

It has been recognised for decades that the type of support and information given to breastfeeding mothers is not neutral. Erroneous information about breastfeeding practices given by health care professionals may well be detrimental to the breastfeeding experience (Harper, 1998; Riordan & Auerbach, 1998; Schlegel, 1983). In 1983 Schlegel commented "*if nurses had the correct information about the physiology of lactation and were taught accurate breastfeeding technique, many of the complications of breastfeeding could be avoided*" (p.204). Finally, other breastfeeding attachment issues discussed in the literature include the

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## Breastfeeding attachment difficulties related to large nipple size: a case report and review of practice

infant problems of: ankyloglossia (Berg, 1990; Notestine, 1990; Wiessinger & Miller, 1995); short labial frena (Wiessinger & Miller, 1995); bubble palate (Snyder, 1997); and the presence or absence of the extrusion reflex (Stephens & Kotowski, 1994).

### Anatomy of the nipple and nipple dysfunction

An understanding of breast and nipple functional anatomy is essential if we are to link nipple size, shape and elasticity to infant attachment. The feeding baby provides tactile stimulation causing erection of the nipple tissue and stimulates the afferent nerves resulting in milk "let down" (Stephens & Kotowski, 1994). The focus of this discussion is on the second function of conveying breast milk to the infant. Effective milk removal is dependent on the nipple and areola being taken into the baby's mouth by movement of the baby's tongue. The nipple must fill all the baby's oral space and the nipple tip must reach the junction of the soft and hard palate and this is dependent on the elasticity, protractility and size of the nipple. Protractility and elasticity can change during pregnancy and are usually significantly improved during each breastfeeding experience. A normally functioning nipple becomes erect in response to stimulation. Nipple dysfunction is usually recognised as either limited, or no nipple response to stimulation. The nipple thus presents as a flat, inverted or retracted nipple, which may be unilateral or bilateral (Riordan & Auerbach, 1998). Various interventions, both antenatally and postnatally, have been proposed to rectify flat or inverted nipples. Large nipple size is recognised a possible cause of breastfeeding difficulties by Biancuzzo (1999), Neifert, et al., (1995), Riordan and Auerbach (1998) and Wilson-Clay and Hoover (1999). However, large nipples were not identified nor viewed as nipple dysfunction by these authors.

### Newborn oral development and conditions associated with sucking dysfunction

Fetal maturity at birth and normal central nervous system development are essential for normal sucking (McBride & Danner, 1987). At term, infant development allows the baby to perform the complex movements of sucking, swallowing and breathing enabling the infant to obtain sufficient nutrition to support rapid growth (McBride & Danner, 1987; Riordan & Auerbach, 1998). Suckling and latching is dependent on the infant having an intact phasic bite reflex which McBride and Danner, (1987, p.110) described as "*the rhythmic closing and opening of the jaws in response to stimulation of the gums*". The tongue responds to

stimulation by moving in the direction of the touch and will respond to anterior surface touch by protruding thus enabling the infant to "latch" on to the nipple once it has been located. In the infant the tongue fills the oral cavity and easily contacts the cheeks because of the fat within the masseter muscles of the cheeks. The lower jaw is slightly recessed with the upper gum protruding slightly. The baby's lips are easily able to form an airtight closure around the breast. The epiglottis and soft palate are approximated within the mouth (Lawrence & Lawrence, 1999; McBride & Danner, 1987).

Abnormalities of sucking are categorised as either abnormalities of the structure of the face, mouth or pharynx, or as an expression of dysfunction of the central or peripheral nervous system (McBride & Danner, 1987). Structural and neurological problems may be interrelated. Neurological problems in the newborn infant may lead to a weak or absent sucking reflex (McBride & Danner, 1987) or absent extrusion reflex (Stephens & Kotowski, 1994). Weak or absent sucking reflexes also occur as a result of underdevelopment of the brain in prematurity and is not a pathological state. Prenatal and perinatal central nervous insults can result in dysfunction and/or developmental problems causing decreased or weak sucking (McBride & Danner, 1987).

Decreased sucking may also be associated with decreased alertness, or apathy, and hypotonia. The sucking reflex may be present but diminished with the effect being the infant is unable to accomplish or sustain sucking. Hypotonia can be recognised by flattening of the nasolabial folds and lack of facial expression when the baby cries and may also be exhibited as generalised hypotonia in the infant. The baby may also fail to swallow correctly and may spill milk from the mouth or nose (McBride & Danner, 1987).

Infant incoordinate sucking is categorised into three causative groups (McBride & Danner, 1987):

- central nervous system insults such as asphyxia or hypoglycaemia
  - central nervous system maldevelopment
  - miscellaneous genetic and hereditary problems.
- Infants with these problems may be hypotonic with excessive reflex activity. Swallowing can also be incoordinated so that even if an infant gets milk into his or her mouth they may choke, cough and aspirate.

Infant orofacial abnormalities, which detrimentally affect successful breastfeeding, include the cleft palate and or lip (Snyder, 1997; Wilson-Clay

& Hoover, 1999), ankyloglossia and/or short labial frenum (Berg, 1990; Notestine, 1990; Wiessinger & Miller, 1995), abnormal palate shape (Marmet et al., 2000; Wilson-Clay & Hoover, 1999) or receding chin (Wilson-Clay & Hoover 1999). Sucking dysfunction may also be temporally affected by traumatic birth injuries such as bruising to the face/ head/ neck or pain in the temporomandibular joint (Marmet et al., 2000).

### Diagnosis

Successful resolution of breastfeeding problems lies with thorough and accurate assessment of the mother, the infant and then the mother-baby dyad. This leads to accurate diagnosis and then implementation of appropriate interventions. It is important to differentiate between the **presenting** problem and the **underlying** problem (Marmet et al., 2000). When difficulties with latching and sucking occur, without underlying anatomical problems, they are usually easy to resolve once birth trauma or effects of labour interventions dissipate. However, should breastfeeding difficulties persist then it is essential to undertake a full and complete assessment of both mother and infant, as well as the breastfeeding dyad, to identify or exclude underlying factors which may contribute to the ongoing breastfeeding problems.

### Breastfeeding history

Maternal assessment begins with the mother's personal and breastfeeding history. This will include: the mother's understanding of what 'normal' breastfeeding means for her; her expectations for breastfeeding this infant, her current feeding experience including difficulties being experienced; how her breasts feel or if her milk has 'come in', her awareness of milk-ejection reflex; what information and support has been provided by midwives; an antenatal, labour and birth history including adverse pregnancy or birth events and any previous breast or nipple pathology.

#### • Maternal physical assessment

The physical assessment will include: breast, areola and nipple structure, size, compressibility elasticity and protrusiveness (Marmet et al., 2000). Significant anatomical variations need to be noted, as well as nipple trauma, infective foci or other skin lesions or breast surgery (Walker, 1989).

#### • Infant history

The detailed pregnancy and birth history will provide information of events, which might have detrimental effects on the baby's behaviour and ability to feed. History taking includes: gestational age of the infant; pain relief in labour; meconium stooling in utero; fetal distress; low Apgar scor-

ing; assisted delivery; early oral insults to the baby such as deep suctioning and maternal recreational drug use (Marmet et al., 2000). A history of the infant's behaviours will determine sleep and waking patterns, crying behaviours, voiding and stooling patterns.

#### • *Infant physical assessment*

The physical assessment of the baby will identify physical abnormalities. The history should include:

- evidence of birth trauma such as bruising, distress when the head is moved from side to side or when the temporomandibular joint is massaged
- the infant's appearance and facial structure including lip and palate abnormalities, tongue size, ankyloglossia or tight labial frena
- infant hypertonia or hypotonicity or a combination of the two.

Indicators of good muscle tone are lip symmetry including lip closure when sleeping and a bow to upper lip, round cheeks and good hand-to-mouth movement by the baby. Indicators of poor tonicity include saggy cheeks and a loose gaping mouth, little or no expression because of poor muscle tone, or a protuberant tongue while sleeping (as in Down's syndrome infants). Abnormal tone can be diagnosed by trembling of the lips, asymmetrical lip movement; hypotonicity of lips or purse string lips which occurs with hypertonicity (B. Wilson-Clay, personal communication, November 7<sup>th</sup> 2000).

A digital examination is used to assess the baby's ability to maintain an effective suck, correct suck mechanism, correct use of the tongue and cheeks and the normality of the gag reflex. In normal sucking the baby should begin the suck by drawing the examiner's finger to the back of the mouth by suction and then the examiner will feel the roller-like action of the baby's tongue. If the baby's suck is abnormal there will be less vigour on the part of the baby and it may not suck until the finger reaches the soft palate or until the examiner applies soft pressure against the tongue and soft palate alternatively (McBride & Danner, 1987). Referral to an appropriate specialist should follow identification of hypertonia or hypotonia so that the cause and extent of the infant's neurological problems can be determined as accurately as possible.

#### **Assessment of the breastfeeding dyad**

The purpose of assessment of the breastfeeding dyad is to identify and correct breastfeeding problems. The assessment will commence with observation of the breastfeeding pair including: the mother's feeding position and posture; the way she handles her baby and how she positions the

baby at the breast for latching. The baby is assessed for alertness and readiness for feeding. Does s/he open his/her mouth wide when brought to the breast with the tongue reaching over the lower gum? Does the baby then cup the nipple drawing it into his/her mouth with widely flared out lips (Walker, 1989)? Observation includes the baby's: muscle tone; ability to latch, initiate and sustain rhythmic sucking (1 suck per second) (Woolridge, 1986b) and swallowing. Deviations from normal will include hollow cheeks, smacking sounds, small or large jaw excursions, feeding apnoea, nipple pain and/or a blanched, squashed or traumatised nipple at the conclusion of the feed (Walker, 1989).

*Unfortunately mothers and babies who present with complex breastfeeding problems often fail to establish an exclusive breastfeeding relationship.*

*Every breast is not ideal for breastfeeding every baby and breastfeeding depends on whether there is good 'fit'.*

#### **Resolving the breastfeeding problem**

When confronted with difficulty latching correctly or sustaining sucking the midwife needs to consider if it is a functionality problem in itself or the result of breastfeeding difficulties (Neifert et al., 1995). Whatever the final diagnosis the midwife needs to have the necessary skills and knowledge to provide rapid and appropriate assistance. Each breastfeeding situation is unique; assessment of the mother baby and the breastfeeding should identify all the factors contributing to the problem. A care plan is then developed with the goal of establishing or re-establishing breastfeeding. The principles are implemented of feeding the baby without damaging the potential breastfeeding relationship, protecting the mother's milk supply and keeping the breast and the infant together. The latter is achieved by both offering the baby the breast for feeding in a gentle encouraging manner, and kangaroo care type breast-to-baby skin-to-skin contact.

Whilst assisting the mother with a difficult attachment problem the midwife needs to follow all the appropriate good positioning and baby support as well ensuring that once the baby is attached the latch is correct. Incorrect latching will result in ineffective feeding and nipple trauma may also occur. Jon appeared unable or unwilling to correctly latch and feed because of Judy's large nipples.

Interventions in this case included encouraging Jon to open his mouth sufficiently widely to allow the nipple to enter his mouth. This is best achieved by encouraging the mother to elicit the rooting reflex by brushing the baby's lips with the nipple. A technique to encourage the baby to open his/her mouth wide is described in La Leche League (1997) "*Breastfeeding Answer Book*" as; the mother firmly

pulling down on the baby's chin when the rooting reflex is activated and, while the jaw muscles are relaxed, then quickly bringing the baby to the breast. This manoeuvre must be gently and skilfully executed or the baby will resist which will cause further harm and distress - an entirely unsuccessful manoeuvre with Jon. Jon was also tempted with expressed breast milk on

the nipple. Expressing milk can also stimulate a 'let down' so should the baby latch then s/he will get an immediate reward for his/her efforts. Other suggested interventions in this case included skin-to skin contact, offering the breast when Jon was sleepy and co-bathing. Co-bathing is a

gentle, non-invasive and non-interfering way of providing a warm and pleasing environment for the baby to achieve self-attachment (Saunders, 1998). A baby such as Jon, who appeared to be adversely affected by the various increasingly vigorous efforts to successfully latch him might well have responded to a non-interfering high touch intervention. Saunders discusses co-bathing as the opportunity to "*give them [the baby] the opportunity to equip themselves with skills to 'get it right'*" (p.717). Supporting mother and infant in co-bathing would give the baby an opportunity to "get it right" but also give mother and infant a beneficial intimate moment.

A baby who does not receive adequate milk from the breast requires supplementary feeding in some way and ideally this should be expressed breast milk. Alternative feeding options must be explored, as it was with Judy. Judy attempted nipple shield use, spoon-feeding and cup-feeding, none of which really suited her or Jon; so Judy settled on bottle-feeding using the largest sized teat available.

Practitioners argue that early introduction of a bottle may result in nipple confusion or at least a preference for the easier cue of a teat (Biancuzzo, 1999; Neifert, et al., 1995; Riordan & Auerbach, 1998). This is strongly refuted by Fisher and Inch (1996) who argue that whilst there are many maternal and infant risk factors and conditions that contribute to an infant's difficulty correctly attaching and feeding they exist regardless of whether the baby has been exposed to a bottle and teat; thus it is not the bottle or teat that causes the problem. Fisher and Inch's (1996) hypothesis is that a baby strug-

*continued over...*

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gling to feed is affected by the underlying breastfeeding problem causing the baby's distress rather than the baby's exposure to the artificial teat.

Expressing provides the baby with the best possible nutrition, maintains the milk supply and also buys time for the mother and the baby while the breastfeeding problem is solved. Choosing a method of expressing depends on individual circumstances and is ultimately a mother's choice. Suffice to say that teaching the mother to hand express will give her a convenient, effective, simple and inexpensive option which will hold her in good stead for the future, but it may not be the right method if she needs to express for long lengths of time. There are many commercial electric pumps available and if the mother wishes, or needs, to express for a long time then she may wish to investigate these options. Judy was supported in hand expressing and tried a hand pump with some success. She elected to hire a hospital grade electric breast pump which are the most expensive but efficient option. A mother with large nipples should use a large-size flange in the pump. As part of expressing education the mother needs clear guidelines for milk handling and storage. It may also be necessary to supplement expressed breast milk with an appropriate infant milk substitute that will be chosen in consultation with, and the consent of, the mother.

As in this case breastfeeding problem solving also includes resolving existing breast and nipple pathology and preventing new pathology from developing. Ongoing expressing prevented engorgement and Judy's mastitis was treated with appropriate antibiotics. Judy's nipple trauma was healed using moist wound-healing principles with purified lanolin.

Infant suck training is the deliberate manipulation of the baby's oral cavity to alleviate sucking problems (Biancuzzo, 1999) but without evidence of Jon having underlying pathology it was not appropriate in this situation. There have been no controlled studies to show the effectiveness of suck training, so it needs to be introduced with caution. When implementing suck training it is important not to introduce the digit so far back in the baby's mouth as to cause gagging or other negative effects.

### In summary

Large nipple size will only present as a breastfeeding problem in rare situations and usually when the baby is immature or small in size and thus unable to latch correctly on the large nipple (Biancuzzo, 1999). When large nipple size

causes a breastfeeding problem then midwifery support and early intervention is essential.

In the case of Judy and Jon, large nipple size was the significant contributing factor to the breastfeeding problem since there was no evidence of Jon having underlying pathology. I also believe that the concerted and best-intentioned efforts of many midwives did not assist Judy and Jon's breastfeeding relationship. In fact I believe that practitioner interventions contributed to Jon's behaviour, which was manifested in his distress at being 'manhandled'. For a mother committed to breastfeeding, failure is immensely distressing. Unfortunately mothers and babies who present with complex breastfeeding problems often fail to establish an exclusive breastfeeding relationship. Every breast is not ideal for breastfeeding every baby and breastfeeding depends on whether there is good 'fit'. An assessment of the breasts and nipples should readily identify women with anatomical risk factors (Neifert, et al., 1995), these can then be addressed or monitored thus giving the mother the best opportunity to successfully achieve her breastfeeding goals.

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## Breastfeeding and breast surgery - cut and dried?

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### Abstract

Women may have breast surgery for various reasons. The primary consideration when making the decision to have surgery may be the desire for breast augmentation or reduction. The implications of such surgery for future breastfeeding may become apparent for women and their midwives at a later date. This article discusses the implications of breast augmentation and reduction for midwifery practice.

### Introduction

Breast surgery appears to be becoming more common in New Zealand society. It is estimated that 3-5000 New Zealand women have had silicone implants since the 1960s (Barnes, 1997; Norris, Frost, Ryan, & Weenink 1998). There appears to be little data about the number of women having breast reduction in New Zealand and much of the current discussion about breast surgery comes from the USA (Norris et al., 1998).

Breast surgery impacts on breastfeeding and with the rise in breast surgery this issue has increasing significance for midwifery practice. The New Zealand College Of Midwives (NZCOM) journal recently reviewed a new publication about breastfeeding after breast reduction surgery and a new acronym has emerged "BFAR" which stands for Breastfeeding after Reduction. Breast surgery includes biopsy, breast augmentation, breast reduction, mastectomy and chest surgery (Widdice, 1993). When making the decision to have surgery women may only consider the reason for the surgery and not the possibility of breastfeeding in the future. While the surgeon may mention that the surgery could interfere with lactation, this may seem a small future sacrifice at the time (Widdice, 1993). Surgical procedures can also be adapted to preserve lactation (Marshall, Callan & Nicholson, 1994; McKenna & Black, 1994; Soderstrom, 1993). Research suggests that women require much more information prior to breast surgery (Marshall et al., 1994). In this article breast aug-

mentation and reduction are described and investigated in relation to breast feeding. Midwifery practice issues are explored including: antenatal and postnatal assessment; information sharing; support and monitoring.

This article is underpinned by the belief that a successful breastfeeding experience is based on the mother's goals for her breastfeeding and whether they are met for the duration of her relationship with her baby. Hoddinott and Roisin (2000) found that women's goals were more often about maternal, baby and family wellbeing rather than the breastfeeding centred goals of the health professional. Breastfeeding may include painful and challenging experiences and is not only concerned with nutrition but also feelings of maternal confidence, competence and nurturance (Minchin, 1998; West, 2001).

### Socio-cultural context of breastfeeding

Breasts are a pronounced part of the female body. Zimmerman (1998, p. 5) states, "they are a source of female pride and sexual identity as well as a source of competition, insecurity, shame and confusion. They are the chief badges of gender". In her research about breast reduction, Zimmerman (1998) wanted to understand how women arrived at a decision to surgically reconstruct a part of their body, one that is intrinsically linked to ideas about femininity. She uses a feminist perspective to critique the Western medical model that she believes has medicalised the breast. Medicalisation involves pathologising a condition or bodily process and then offering a cure. Zimmerman (1998) believes that terminology such as "micromastia" (small breasts) and "mammary ptosis" (breasts which have changed shape post-pregnancy) are examples of the pathologising process. The "cure" offered is breast augmentation or reduction. Plastic surgeons decide which female bodies are in need of attention and women become involved in this process when they rely on surgeons for a solution (Dettwyler & Stuart-Macadam, 1995; Hughes & Owen, 1993; Zimmerman, 1998). A woman's identity and attractiveness is linked to her breasts in Western society and there is a narrowly defined cultural image of that attractiveness (Zimmerman, 1998). She believes that plastic surgeons become "exterior decorators" (p.45) rather than healers. Her study revealed that after breast surgery, some women experienced feelings of anger, happiness and empowerment, self-consciousness and secretiveness (some hid their surgery from new part-

ners). Others felt that they were behaving falsely. In a similar New Zealand study, women revealed that their decision to have cosmetic breast surgery made them feel that they fitted cultural and societal expectations in order to assert their sense of who they were, as individuals (Rowse, Norris, Ryan, & Weenink, 2000).

Giles (2001) in her study of culture and lactation puts forward another view. She suggests that larger breasts mimic the third day engorgement of lactating breasts and the demand for augmentation in Western culture is created by a desire for motherly love. Other writers suggest that because Western culture eroticises the breast some women may see breastfeeding, which is not a perceived part of Western sexuality, as a conflicting role for the breast (Avery, Duckett & Frantzich, 2000; Beasley, 1999). It is suggested that societal pressure and responses from family and friends have a strong influence on the decision to have breast surgery (Zimmerman, 1998). That decision is made within the context of breasts as sexual organs and therefore the decision to breastfeed may be difficult for some women who have anxiety about how it might affect their relationship with their partner (Dettwyler & Stuart-Macadam, 1995). However, a recent North American study, which explored breastfeeding women's experience of sexuality, found a positive or neutral response from partners to breastfeeding within the sexual relationship (Avery, Duckett & Frantzich, 2000).

### The decision to have breast surgery

Breast **reduction** may be done to remove physical problems such as back, neck, shoulder pain and headache as well as for emotional reasons. Some women with large breasts may have suffered teasing and felt they could not swim or walk comfortably (Barnes, 1997).

Breast **augmentation** may be performed if breast development is absent, minimal or asymmetrical, as well as reconstruction after mastectomy or for gender reassignment operations (Barnes, 1997). Pregnancy and breastfeeding may change breast shape and post-lactational involution decreases the fat and glandular quantities in the breast (Lawrence & Lawrence, 1999). The authors state that this is usually resolved after 2-3 years but women may choose to have breast augmentation before this time. They also suggest that some surgeons may not be aware that the reduction in the quantity of fat and glandular tissue in the breast fol-

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## Breastfeeding and breast surgery - cut and dried?

lowing pregnancy may be temporary. Further, both Barnes (1997) and Guthrie (1994), in their consumer directed books, described breast atrophy after breastfeeding without suggesting it may be temporary. Breast augmentation surgery may also be performed for women who feel that their breasts need changing, either in shape or size.

### Breast reduction mammoplasty

Breast reduction (reduction mammoplasty) makes the breasts smaller by removing excess breast tissue and skin. The surgery also repositions the nipples. Mastopexy is a breast skin reduction for women where excess skin is removed and the nipple is elevated. The breasts remain the same size (Barnes, 1997). Women mainly access the surgery in their late teens or twenties before many have had children (Hughes & Owen, 1993). Recovery after the surgery takes 4-6 weeks. The surgery can be identified by scars around the nipple, vertically from the nipple to breast crease and horizontally under the breast.

Barnes (1997) describes a breast pedicle reduction operation where keyhole incision is made at the site of the new nipple in an area that is marked out prior to surgery. A pedicle of tissue is dissected free with the blood and nerve supply intact. If the breast pedicle is too long to maintain the blood supply then the nipple is removed completely and grafted back later in the surgical process. Some areolar tissue may be removed. Underlying fat, tissue and skin on the remainder of the breast is trimmed away from the outer, inner and middle segments of the breast. The pedicle is then placed into the newly shaped breast and sutured inside to prevent unnecessary scarring. The nipple may be shortened (Wilson-Clay & Hoover, 1999). Complications from the procedure include haematoma and infection. Grafted and transposed nipples may have reduced or absent sensory perception that includes light touch, pressure and pain (Courtiss & Goldwyn, 1976). The greater the resection, the greater the loss of sensation. In addition, sensation may take a year to return (Lawrence & Lawrence, 1999). If the muscle around the nipple has been removed, nipple erection may be lessened or absent (Courtiss & Goldwyn, 1976). Scars may become thickened and enlarged. There may also be sagging of skin behind the nipple and other regions of the breast (Barnes, 1997).

### Breast reduction and breastfeeding

In respect to the implications for lactation and breastfeeding, the literature demonstrates that reduction mammoplasty has been explored more often than augmentation (Soderstrom, 1993). The research shows a range of success for breastfeeding

women, which illustrates that each individual mother and baby dyad is different. However, there are more negative than positive results. Successful lactation after breast reduction surgery is related to moderate retention of glandular tissue compared with fat and fibrous tissue and the pedicle reduction surgical technique (Harris, Morris & Freidberg, 1992; Marshall, Callan & Nicholson, 1994; Neifert et al., 1990). A previously negative breastfeeding experience and lack of encouragement about the possibility of breastfeeding by surgeons may contribute to decreased success in breastfeeding (Brzozowski, Neissen, Evans & Hurst, 2000; Hughes & Owen, 1993; Marshall et al., 1994).

### Breast augmentation

Breast augmentation increases the size of the breast by placing a synthetic implant either behind the breast tissue or behind the pectoral muscle (Barnes, 1997; Hughes & Owen, 1993). Incisions for insertion of the implant are:

- peri/trans-areolar (Riordan & Auerbach, 1999)
- under the breast (sub-mammary)
- in the axilla
- beneath the pectoralis major muscle or
- via the umbilicus (Wilson-Clay & Hoover, 1999).

Nipple sensation may be altered through nerve damage causing decreased or hyperstimulation (Blechman & Brownell, 1998). Nipple erection may take two months to return and nerve sensation up to two years (Lawrence & Lawrence, 1999).

### Breastfeeding and augmentation mammoplasty

Hurst (1996) found a greater incidence of lactation insufficiency in women who had had breast augmentation. Augmentation may pose less risk to lactation than reduction, but if there is a peri/trans-areolar incision then damage to the neuro-hormonal reflex will occur and the risk of lactation insufficiency rises five-fold (Hurst, 1996; Neifert et al., 1990; Neifert, Seacat & Jobe, 1984; Wilson-Clay, 1999). The peri/trans-areolar incision has less visible scarring but more ductal, nerve and blood supply disruption (Riordan & Auerbach, 1999). If the incision avoids the nerve insertion there is better postoperative nipple sensation and protection of nerve pathways, which may protect lactation (Riordan & Auerbach, 1999). These authors suggest this may happen to women who have a supposedly safe type of incision but still have decreased production. There are no studies to explore either of these issues. In addition, Widdice (1993), proposes that poor wound healing may cause ductal damage.

## Midwifery practice: care of women breastfeeding who have had breast reduction or augmentation

### Antenatal assessment

The antenatal care of a woman who reveals she has had breast surgery and wishes to breastfeed, includes identifying the type of surgery and undertaking a breast examination. Sensitive exploration of her knowledge, feelings and goals for breastfeeding will help discover each woman's needs. Most importantly, a woman-centred approach is more valued than a breastfeeding-centred one. Her goals may be more about having a contented thriving baby than an exclusively breastfed infant (Henderson, Pincombe & Stamp, 2000; Hoddinott & Roisin, 2000). A breastfeeding relationship includes both maternal and infant physiological and psychological benefits.

If the woman has had augmentation breast surgery, discussion should include a description of her breasts prior to surgery, in order to find out if there were serious anomalies like amastia or unilateral/bilateral chest wall underdevelopment (Wilson-Clay & Hoover, 1999). Some authors (Lawrence & Lawrence, 1999; Neifert et al., 1990; Wilson-Clay & Hoover, 1999) believe a primary cause of lactation insufficiency is insufficient mammary tissue prior to the surgery and not the augmentation surgery itself. Insufficient mammary glandular tissue is revealed by little prenatal breast enlargement, minimal breast engorgement and an unusual appearance of the breast such as marked asymmetry (Hamosh & Goldman, 1986; Neifert et al., 1990; Wilson-Clay & Hoover, 1999). Lawrence and Lawrence (1999) and Neifert et al. (1990) recommend that an ultra sound or diaphonography (light scanning) should be done prior to augmentation mammoplasty to ascertain if there is adequate functional tissue for breastfeeding. However, this may not provide a full assessment of whether breastfeeding is possible, since growth of ducts and alveoli during pregnancy can be prolific (Fetherston, 2001).

If the woman has had breast reduction surgery there are three main potential problem areas. These include the amount of glandular tissue removed, nerve damage and lactiferous ductal damage. Removing a significant amount of breast tissue may reduce the chances of sufficient milk production because the lactiferous ducts are removed; with estimates that removal of over 500gms is considered a marker of poor potential lactation (Riordan & Auerbach, 1999). Milk ducts are severed if the nipple is removed (transplantation) or moved (transposed). Some nerve regrowth and duct recanalisation may occur after nipple transplantation but normal breastfeeding may not be possible. Widdice (1993) cites evidence from

microscopy and mammograms of cross-ductal connections between lobes developing during pregnancy after breast reduction. Breastfeeding ability may increase with each subsequent pregnancy after breast reduction. This is anecdotal, but may be explained by the considerable new ductal growth which occurs during each pregnancy (Smith, 1997). Figures of 0-70% exist for breastfeeding rates after breast reduction surgery (Widdice, 1993).

Medical records of the breast surgery may be useful to provide better understanding of the surgery (Soderstrom, 1993). Information about the surgery should include the type, specific technique, the amount of breast tissue removed, neural damage or other complications (Riordan & Auerbach, 1999).

It is also important to discuss the woman's previous breastfeeding history and post-operative nipple sensation (then and now) in order to assess the neuro-hormonal reflex following breast reduction or augmentation with a peri/trans areolar incision (Hamosh & Goldman 1986; Neifert et al., 1984). The neural response can be assessed by finding out whether the woman experiences an increase in sensation of the nipple or breast during sexual activity, or at other times, and whether her nipples become erect if stimulated (Soderstrom, 1993). If the nerve supply to the breast is damaged or severed, this is shown by an alteration of sensation. The release of oxytocin and prolactin will be affected which affects both milk production and milk release (Neifert et al., 1984). In reduction mammoplasty where a pedicle is formed (nipple transposition), the nipple and areola are not removed completely. Lactiferous ducts and nerves are less likely to be as damaged and therefore milk production and the "let down" reflex are less likely to be affected (Soderstrom, 1993). Wilson-Clay and Hoover (1999) believe that, theoretically, there is a greater chance of lactation with the pedicle technique but that it is difficult to predict. West (2001) in her book about breast surgery, suggests that surgeons may have differing objectives for breast surgery. A reduction in scar tissue may be more important than the preservation of nerve, blood and lactational tissue. The latter will result in more scarring – hence minimal scarring may be achieved at the expense of lactation outcomes. Scar tissue forming around the areola incision may further impede milk transfer and nerve sensation (Cambardella, 2000).

Questions should be asked about breast changes since the surgery and during pregnancy, including questions about tenderness and enlargement (Wilson-Clay & Hoover, 1999). Neifert's et al.

(1990) study suggests that lack of prenatal growth and postnatal engorgement are warning signs of possible poor glandular growth and milk production. Research studies have indicated that breast size, marked asymmetry and flat nipples prenatally do not show a correlation with lactation insufficiency, but numbers in these studies were too small to demonstrate statistical significance (Hurst, 1996; Neifert et al., 1990).

Breast changes may occur at any time during pregnancy and may be gradual or more sudden (Smith, 1997). If colostrum has appeared or been expressed during the pregnancy this may indicate ductal patency. However, not all women are able to express colostrum so this is not a foolproof assessment (Nicholson, 1991; Soderstrom, 1993). Breast changes may cause pressure on implants but are unlikely to cause discomfort (Hughes & Owen, 1993). Finally, a physical breast assessment is beneficial to help identify the type of incision made for the implant insertion and the type of reduction surgery conducted (Hoddinott & Roisin, 2000).

#### **Information sharing**

Practical aspects such as positioning and latching the baby, the physiology of lactation and the effect the surgery might have on breastfeeding for the woman should be discussed (Hoddinott & Roisin, 2000; International Lactation Consultant Association (ILCA, 1999).

Women who have experienced breast surgery may have heightened information needs (Hughes & Owen, 1993). A recent publication by West (2001) has been written for women who have had breast reduction surgery. Other resources for women include La Leche League, contact with other women if possible who have breastfed and had breast surgery and lactation consultants (Hughes & Owen, 1993). There is also a web site dedicated to supporting women breastfeeding after breast reduction (<http://www.bfar.org/index.html>).

There has been anxiety about breastfed children being affected by silicone, its by-products, or autoantibodies from a pregnant or breastfeeding mother with silicone implants (Blechman & Brownell, 1998; Guthrie, 1994; Widdice, 1993). The results from small studies have been inconclusive (Levine & Ilowite, 1994; Levine et al., 1996; Teuber & Gershwin, 1994). However, Flick

(1994) responded to suggestions about the ambivalence by noting that despite the possibility of silicone in breast milk, breastfeeding benefits still outweigh any unproven effects. Hamosh and Goldman (1986) note that larger studies about breastfed babies and mothers with breast implants, the biology of silicone and gastrointestinal absorption are needed. Currently, the FDA (Federal Drug Association) of the USA, have stated that silicone has no mutagenic or teratogenic effect and silicone implants will not interfere with lactation (cited in Lawrence & Lawrence, 1999; Zimmerman, 1998).

*In conclusion the literature suggests that successful breastfeeding is likely with augmentation breast surgery, possible after breast reduction with nipple transposition and unlikely if the nipple has been transplanted or cut through in either surgery.*

Some women who have had breast augmentation feel ashamed, embarrassed and secretive about their surgery (Zimmerman, 1998); so revealing this to a midwife may be difficult for them. Women may be extremely anxious about breastfeeding (Hughes &

Owen, 1993). Emotional support could include exploring their anxieties about breastfeeding and promoting realistic expectations. Literature exploring the positive predictors of breastfeeding success suggests that confidence in one's ability to breastfeed is critical to choosing, performing and maintaining breastfeeding (Dennis & Faux, 1999; Wambach, 1997). A prospective or new mother feels more confident if their behaviour or anticipation of behaviour is associated with pleasure rather than pain, or stress. Self-efficacy is built by personal accomplishments, experience of breastfeeding and encouragement and praise by others particularly those credible to the mother (Dennis & Faux, 1999; Hughes & Owen, 1993). For midwives there is a fine balance between supporting positive expectations and confidence and providing a realistic assessment of breastfeeding potential for each woman. Discussion about the possibility of breastfeeding needs to be honest. Available literature makes no definitive statement about inability to breastfeed following any type of surgery (Neifert et al., 1990; Widdice, 1993). The outcome is not known until breastfeeding is tried.

#### **Post-partum assessment, support and monitoring**

A woman who has had breast surgery and is breastfeeding needs close post-partum follow-up and their baby's growth needs careful monitoring (Mohrbacher & Stock, 1997; Wilson-Clay & Hoover, 1999), whilst also encouraging the mother to enjoy her breastfeeding relationship.

The formation of a breastfeeding plan with the mother may be useful to clarify her goals and un-

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## Breastfeeding and breast surgery - cut and dried?

derstanding. Hughes and Owen (1993) found women often had great anxiety about their first feed. Women also wanted to know the difference between **normal** feelings of frustration when establishing breastfeeding and an **abnormal** experience as a result of surgery. They wanted careful assessment of their feeding. Positive practical help is appreciated by women learning to breastfeed (Hoddinott & Roisin, 2000). Usual best practice should be encouraged which includes:

- early initiation of feeding
- observation
- support with positioning
- recognising infant cues
- unrestricted demand feeding.

This helps to maximise milk production, enhances the maternal and baby interaction and promotes effective feeding (ICLA, 1999; Nicholson, 1991).

Neifert et al. (1990) suggest that if unilateral surgery has damaged the neurohormonal mechanism on one side, then breastfeeding from the other side may stimulate prolactin and "let down" in both breasts, but they do not provide evidence to support this statement. Mohrbaker and Stock (1997) suggest there are three potential scenarios for breastfeeding after breast surgery:

- breastfeeding progresses normally and exclusive breastfeeding is the outcome,
- the baby gains weight for the first week, then weight gain declines and supplements become necessary or
- the mother's milk supply is low from the onset and the baby needs supplementation early on.

### Breasts and breastmilk

As part of lactation assessment, the mother or carer should observe milk or colostrum coming through the ducts and out the nipple. Such assessment might include expression of breast milk and watching the baby feed. Evidence of slow, rhythmic deep jaw movements, audible swallowing, and appearing satisfied after feeding is a positive sign (ILCA, 1999). In 1990, Neifert et al.'s prospective study followed 319 women who intended to breastfeed for the first time. Lactational insufficiency was demonstrated by infant weight gain of less than 20-28 g per day. Fifteen per cent of the women had persistent milk insufficiency by this classification, 6.9% of these women had had breast surgery. The researchers conclude that mothers' perceptions of milk insufficiency are not always unjustifiable, they may be based on real anatomical and surgical problems. The study found that any previous breast surgery resulted in a three-fold risk of lactation insufficiency and if periareolar surgery had occurred the risk was five fold (Neifert et al., 1990). However poor weight gain alone does not define insufficient lactation, since other factors

such as behaviour, passage of urine and faeces and family history of growth patterns are important (Minchin, 1998; Riordan & Auerbach, 1999).

Assessment includes asking the mother if the breasts have become firmer. Any hard lumps or engorged breast areas may be glandular tissue, which has no exit to the nipple. Of significance by 7-8 days post-partum is:

- persistent engorgement that is unrelieved by feeding
- no discernible change in a) weight / size of the breasts or b) change in milk volume or composition.

The effect of breast engorgement on the implant integrity may be an issue and mothers may worry about this (Hughes & Owen, 1993). Engorgement with an implant may hasten involution by increased intra-mammary pressure, which causes atrophy of the alveoli cellular wall and acts to decrease milk supply (Riordan & Auerbach, 1999). In Hughes and Owen's study (1993), women developed plugged ducts and mastitis and babies became jaundiced at the same rate as non-breast surgery mothers. Scarring within the breast, following augmentation, may cause pain during breastfeeding (Mohrbacher & Stock, 1997). Second stage lactogenesis may be delayed in women who have experienced breast surgery. In particular, for women who have had augmentation breast surgery milk production may be delayed for over ten days (Fetherston, 2001; Hughes & Owen, 1993; ILCA, 1999). Normally full milk supply is not reached for 6 weeks (Nicholson, 1991).

### Infant growth and behaviour

Observation of the growth and wellbeing of the baby will indicate if there are any problems. If there is lack of weight gain, then there is a need to assess breastfeeding techniques and frequency. In the absence of other abnormal infant health deviations and with observed correct breastfeeding behaviour then assumptions should be made that insufficient milk is being transferred to the baby (ICLA, 1999).

Signs of ineffective feeding or insufficiency include weight loss exceeding 7% by 3 days after birth and the baby continuing not to gain weight. Less than three bowel movements a day and six wet nappies after 4 days postpartum are signs of insufficient milk intake (ILCA, 1999). Infant behaviour such as an irritable, restless or sleepy baby who is refusing to feed indicates a need for further assessment. It is important that the mother and family know that one factor may not be an issue but it is a combination of these factors that may signal problems. Assessment also needs to recognise the variation that occurs in the size and

growth of individual babies. If the baby fails to gain weight or maintain an adequate weight gain then supplementary feeds are essential (ILCA, 1999).

### Assessment tools

It is important that the family understand the process of milk production, appropriate breastfeeding behaviour, elimination patterns and signs of effective breastfeeding (Nicholson, 1991). A tool may be useful for parents. Breastfeeding tools have been developed over the last 20 years to evaluate aspects of breastfeeding behaviour and interaction between a mother and her baby. Limitations are that they may be inflexible, prescriptive and may "de-legitimise" a mother's own interpretation of successful breastfeeding. However, they may be useful to identify and detect specific problems rather than evaluating the entire breastfeeding experience. In a critical analysis of six breastfeeding evaluation tools Moran, Dinwoodie, Bramwell and Dykes (2000) describe the Breastfeeding Evaluation and Education Tool (BEET) developed by Tobin in 1996. The BEET tool appears to be useful for parents and health professionals when assessing infant health, effective feeding and the mother's experience of feeding in the early post-partum period. The assessment criteria include:

- baby's behaviour
- mother's behaviour
- positioning and attachment,
- healthy baby indicators
- mother's experience of breastfeeding.

The healthy baby assessment includes questions about alertness, activity, appearance of skin/ fontanelles, urine/ bowel activity and weight gain. The mother's experience includes an evaluation of the baby's suck, fullness of breasts and evidence of milk transfer. The latter includes; uterine cramps, thirst and sleepiness. It could also include an increase of lochia, breast-ache, tingling and milk leaking from the opposite breast. Empowering a mother to become her own breastfeeding expert is the goal of midwives. This tool may assist midwives to work with the mother and her baby to identify whether breastfeeding will be exclusive or supplemented by formula feeds.

### Supplementation

Hughes and Owen (1993) found that mothers who had breast surgery were recommended to use supplements and breastfeeding equipment (e.g. breast pumps, nipple shields) earlier and more frequently than other mothers. It is not known whether these recommendations were based on anxiety or proactive responses on the part of mothers and health professionals. Expressing breast milk may help to increase milk supply for some women (ILCA, 1999). The authors suggest watching and

being positive and supportive rather than rushing in and overreacting. Mothers may feel guilty, angry and disappointed when babies begin supplementation (Hughes & Owen, 1993). Supporting the mother to feel comfortable about the decision to supplement is paramount. Options for supplementation include:

- the supplemental nursing system where the baby is breastfed and fed through a tube connected to a milk supply
- bottles
- a cup (Mohrbacher & Stock, 1997).

### After breastfeeding

Hughes and Owen's (1993) study of the experiences of women who breastfed following breast surgery found that after weaning, women entered a reflection and planning phase for next time. Overall they felt personal satisfaction about the breastfeeding that they had achieved. The women also noticed health professionals' lack of knowledge about breastfeeding following breast surgery. Discussion, and celebration, of the achievements of the mother's breastfeeding goals and achievements may offer a positive resolution after breastfeeding.

### Conclusion

In conclusion the literature suggests that successful breastfeeding is likely with augmentation breast surgery, possible after breast reduction with nipple transposition and unlikely if the nipple has been transplanted or cut through in either surgery. However, each situation is individual. Each woman and baby bring their own experiences to the breastfeeding equation. The health professional needs to offer information and encouragement as well as discovering the breast surgery history of the woman antenatally. After birth, careful assessment of breastfeeding and infant growth, combined with support, is needed. It is important that women have the tools to examine their own breastfeeding experience and reach an awareness that exclusive breastfeeding may be an unreachable goal. Supporting a mother to achieve her goals, where possible, is part of health professionals' practice. This requires the health professional to have knowledge about the physiological and psychological ramifications of breast surgery on breastfeeding and lactation. Where possible, surgeons need to minimise the effect of the surgery on future lactation and discuss the implications of the surgery with their clients. Confidence in a successful breastfeeding outcome has been shown to be a predictor of success. The skills of health professionals can help to maximise the confidence of women, and their families, to achieve a positive infant feeding experience.

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## The relationship between pregnancy planning and breastfeeding duration

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### Abstract

This exploratory study, using a convenience sample of 102 primiparous women in New Zealand, examined the relationship between pregnancy planning and duration of breastfeeding. These women, who had chosen to exclusively breastfeed their infants, responded to a two-part survey: Part I self administered on the day of discharge from hospital; Part II completed during a telephone interview at 6 weeks postpartum. **Results:** No relationship was found between planning of pregnancy and duration of exclusive breastfeeding. At 6 weeks postpartum, 66 (65%) were exclusively breastfeeding and 34 (35%) were not. Women who had completed 12<sup>th</sup> grade were significantly more likely to exclusively breastfeed at 6 weeks postpartum than women who had not completed high school ( $X^2 = 5.38, p = 0.02$ ). **Conclusions:** Although a relationship between planning of pregnancy and breastfeeding has been found in previ-

ous studies in the United States, it was not found in this small and potentially unrepresentative group of breastfeeding women in one New Zealand setting. One reason may have been that all the women in this study had already chosen to breastfeed. The relationship between level of education and exclusive breastfeeding at 6 weeks is not well recognised. Further research is recommended to address the issue of increased breastfeeding support for women with lower levels of education.

### Introduction

An influential article published by Saadeh and Akre in 1996 asserted that:

*"breast-feeding is as important to the health of children in industrialized countries as it is to children in developing countries. Scientific evidence demonstrates the incomparable benefits of breast-feeding in all environments, including highly sophisticated industrialized countries. Morbidity (disease) and mortality (death) are always higher among artificially-fed than among breast-fed infants" (p.156).*

This evidence was the reason that the World Health Organization (WHO) and the United Nations International Children's Fund (UNICEF) established the Baby Friendly Hospital Initiative (BFHI) in 1991. The goal of the BFHI is to increase breastfeeding rates globally through maternity practices that encourage and promote breastfeeding (UNICEF, 1999).

Given the numerous, well documented health benefits of breastfeeding for both women and their infants (Beral, Bull, Doll, Peto & Reeves, 2001; Newman, 1995; Newman, 1999; Riordan, & Auerbach, 1999; Saadeh & Akre, 1996), it is important that midwives are aware of those factors that may interfere with a woman's decision to breastfeed. In the United States, the Committee on Unintended Pregnancy (1995) established that an association exists between a woman's intention to become pregnant and her health-related behaviours.

The relationship between unplanned pregnancy and breastfeeding behaviours has received attention in two large studies that were conducted in

the United States (Dye, Wojtowycz, Aubrey, Quade & Kilburn, 1997; Kost, Landry & Darroch, 1998). Dye et al. obtained data on 27,700 of the 33,735 women who delivered live babies in central New York State between January 1, 1995, and July 31, 1996. Kost et al. obtained data from 11,670 women in 1998. Results of both studies indicated that unplanned pregnancies sig-

nificantly reduced the probability that women would breastfeed their newborns. However, these studies addressed only the intent to breastfeed and not ongoing breastfeeding behaviours. The purpose of the New Zealand study was to explore this question further. Specifically,

this exploratory study focused on whether planning of pregnancy also affects the duration of breastfeeding in women who have already made the choice to breastfeed.

### Methodology

#### Sample and setting

The study design was a two-part survey administered to a convenience sample of 105 primiparous women who experienced a normal vaginal birth and who intended to breastfeed. The appropriate regional ethics committee provided ethical approval for the study. The women were approached and invited to participate by a midwife researcher in the postnatal ward of a New Zealand hospital in June, July and August of 2001. All women agreed to participate and 102 completed both parts of the study. The women were aged between 16 and 40 with 73% Pakeha, 13% Māori, 8% Pacific Island, and 6% of other ethnic background. Ethnicity was self described by each participant. This sample is dissimilar to the ethnicity of the total population of NZ women as described in the Ministry of Health *Report on Maternity:1999*, where 58% were Pakeha, 19% Māori, 10.1% Pacific Island, 5.9% Asian, and 4.6% other. This may limit the generalisability of the study findings.

#### Methods

The first survey was completed in the hospital upon day of discharge. This consisted of a brief

*More studies need to be done to address issues related to variables that increase exclusive and successful breastfeeding and could explore what women of higher education levels have in place that might be provided for women of lower education levels.*

questionnaire, which took approximately 5 minutes to complete. Women were asked about use of birth control prior to this pregnancy, breastfeeding intent, level of education, and household income. The researcher then telephoned each woman 6 weeks later. They were asked whether they had continued to breastfeed and when the first, if any, non-breastmilk feeding was given.

### Data analysis and results

For analysis, women were identified as two groups: those who planned the pregnancy and those who did not. The results were analysed using the Chi-squared test with significance set at  $p=0.05$  to determine relationships between planned or unplanned pregnancies and the duration of exclusive breastfeeding status by 6 weeks postpartum. The definition of exclusive breastfeeding in this context was: currently providing no food other than breastmilk. Of the 102 women breastfeeding on discharge from the hospital, 66 (65%) were exclusively breastfeeding at 6 weeks, and 34 (35%)

Level of education	Total number of women	Planned pregnancy	Unplanned pregnancy	Exclusively breastfeeding at 6 weeks
> 12 <sup>th</sup> Grade	64	30 (47%)	32 (53%)	48 (75%)
≤12 <sup>th</sup> Grade	38	18 (47%)	20 (53%)	20 (53%)

statistically significant relationship between these factors and breastfeeding duration (see Table 1). Range of income was \$7900 to \$230,000 and above per annum. The intent was to examine the level of income to determine whether any significant relationships existed in the planning of pregnancy or breastfeeding behaviours relative to income. However, only eight women fell into the less than \$20,000 category, making any statistical analysis questionable. From the small sample in this study it appears women with a higher income were more likely to plan their pregnancy.

### Discussion

This exploratory study examined the relationship between planned pregnancies and breastfeeding incidence and duration in primiparous women who experienced normal vaginal birth. Although previous studies did find a relationship between planning of pregnancy and breastfeeding, this was not the case in this study.

There are several possible explanations for the differences in this study. First, this study addressed only women who had already made the decision to breastfeed. According to Heath et al. (2002, p.937) "...*Intention to breastfeed increased the likelihood of successful breastfeeding initiation*". Also, the previous studies (Dye et al., 1997; Kost et al., 1998) took place in the United States. Findings of these studies may not be generalisable to the population in New Zealand. Further, the culture in which this study took place is very different from the culture in the studies cited above, both in diversity of population and the obstetric setting. Midwives were the main providers of care in New Zealand, whereas physicians tend to take that role in the United States. This might create a difference. For example, midwives may stress breastfeeding more during the pregnancy, and the New Zealand culture may expect women to breastfeed. This is not necessarily the attitude that prevails in the United States. A major limitation of this study is the small sample size and the sampling technique which may have influenced both the actual findings as well as their generalisability.

In the second phase of this study, during the follow-up phone call, in which two questions related to breastfeeding were asked, the majority of the women provided considerable detail about their 6 week breastfeeding experience. Many of the women seemed to feel comfortable on the phone, perhaps because their confidentiality was protected

Income level	Total number of women	Number (%) who planned their pregnancy
\$5000-\$19,999	8	1 (13%)
\$20,000-\$39,999	27	12 (44%)
\$40,000-\$59,999	18	11 (61%)
\$60,000-\$79,999	13	8 (62%)
≥\$80,000	28	19 (69%)
No information on income	10	4 (40%)

were not. A total of 100 women provided information regarding whether the pregnancy was planned. Of the 57 women who planned to become pregnant, 39 were exclusively breastfeeding at 6 weeks, and 18 were not. Of the 43 women who did not plan their pregnancies, 27 were exclusively breastfeeding at 6 weeks, and 16 were not. Two women did not respond to the question whether the pregnancy was planned. This difference was not significant ( $X^2=0.556$ ;  $p = 0.55$ ). Therefore, in this population, planning of pregnancy was not associated with duration of exclusive breastfeeding.

Data relating to socio-economic status (according to level of income) and level of education were also analysed to determine whether there was a

Level of education was also examined to determine whether any significant relationships existed in the planning of pregnancy or breastfeeding behaviours relative to education (see Table 2). The sample was divided into two groups, those whose level of education was greater than the 12th grade (completed high school), and those whose level of education was equal to or less than the 12th grade. The difference between the two groups in terms of planning their pregnancy was not significant ( $X^2 = 0.92$ ,  $p = 0.92$ ). However, women whose education was greater than 12<sup>th</sup> grade were significantly more likely to exclusively breastfeed at 6 weeks postpartum than women whose education was equal to or less than 12<sup>th</sup> grade ( $X^2 = 5.368$ ,  $p = 0.02$ ).

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## The relationship between pregnancy planning and breastfeeding duration

and the interviewer was perceived as "safe". They discussed:

- some problems that they were encountering
- the joys of breastfeeding
- the health information given to them by the hospital and their maternity care provider
- their new role as parent
- the evolving relationship with their spouse/significant other and family members
- their commitment to breastfeeding, even when it seemed to them that the odds were against succeeding.

Women also talked about the difficulties that they had initially encountered when breastfeeding, their occasional use of artificial feeds and their pride that they were now exclusively breastfeeding. They also raised the issue of altered sleep patterns. Many mothers felt that they had not been prepared for how often their sleep would be interrupted in order to breastfeed. At the end of the phone call, participants thanked the researcher for her concern and for taking the time to listen to their issues and support their decisions.

The women who were artificially feeding their babies revealed that they had regarded themselves, to a degree, as failures. The researcher fully supported each woman's decision and reinforced that the modality of feeding the baby was the woman's own choice; in this case, what was best for the woman was best for the baby. This was much appreciated by the women. The desire these women had to talk about their experiences is worth consideration for future research and may serve as a reminder for midwives and nurses to listen to the stories of women. Recent studies provide support for such an approach. Colin and Scott (2002, p.13) note that "Most mothers experience some problems during breastfeeding, especially in the early stages. Proper advice and management is required to ensure that the problems do not lead to cessation of breastfeeding." Gill (2001, p.401) advises that "Breastfeeding mothers expected the nurses to support their feeding efforts by providing information, encouragement, and interpersonal support... Health care providers can help breastfeeding mothers, but the support offered must be the kind that mothers want." The desire of the women in this study to talk about their experiences seems to be a reflection of the kind of support they expect from midwives and nurses.

Although 55% of the women in this study wanted to become pregnant, a significant proportion (45%) were not planning on a pregnancy. Only 21% of the entire group of participants in this study was using a family planning method when pregnancy occurred, and it is not known if the pregnancy resulted from a user or a product failure. Also the method of family planning utilized is unknown. Of the 45% of the women who were not planning on a pregnancy, many causes were cited for their pregnancies. The reasons why women continue to experience unplanned pregnancies may be complex and merit further investigation. It may be simplistic to suggest that contraceptive information is either not adequately provided nor clearly understood.

### Conclusion

This study notes that level of education, rather than of income, had a significant relationship to breastfeeding behaviours. According to Dennis (2001), level of education has not been identified as a consistent predictor of breastfeeding behaviour in the literature. To increase the numbers of less educated women who continue to exclusively breastfeed, interventions should address these women and might include support for breastfeeding both during and after the pregnancy. More studies need to be done to address issues related to variables that increase exclusive and successful breastfeeding and could explore what women of higher education levels have in place that might be provided for women of lower education levels. Future research should also look at both the choice to breastfeed and the duration of exclusive breastfeeding and should address potential interventions for maintaining exclusive breastfeeding.

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## The case for rural birth

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### Abstract

Birth in rural New Zealand has been eroded by increased medicalisation and the process of regionalisation, despite evidence supporting rural birth. If women are to continue to have the option of a local birth, then skilled and committed rural midwives need to be adequately resourced and supported.

### Introduction

In New Zealand birth has traditionally been a local affair. Women in the early days of European settlement gave birth at, or close to, home attended by midwives or women, assisted by doctors only if the birth was complicated. Thus to give birth near home in a rural area was a normal expectation. However, this pattern changed inexorably over the succeeding century.

The medicalisation of birth in New Zealand was the result of successive legislation, changes in technology, women's expectations, lobbying and debate; plus movements in both social and political spheres. Doctors became increasingly involved in normal birth as obstetrics, a specialty of medicine, developed. This change contributed to the movement of the birthplace from home to hospital. Midwives and women were also caught up in these social and political moves, some promoting and supporting the changes, while others protested what they saw as medical capture of the birth process (Cooper, 1998; Donley 1998; Mein Smith, 1986).

For rural areas a project of regionalisation in the 1970s was pursued on the basis of safety. This movement continued despite strong evidence that for well women, at or close to term, their local area was the most appropriate choice for birth. Regionalisation had the effect of reducing services and, more critically, the availability of skilled practitioners in rural areas (Rosenblatt, Reinken & Shoemack, 1985). It is possible that the notion of 'risk' continues to cast a shadow over some primary maternity services. Regional organisation of primary maternity services also occurred in other Westernised countries. Common with the New

Zealand experience, no evidence was found to support these moves. Rather there is now a recognised need for the retention and reintroduction of such rural services (Campbell & Macfarlane, 1994; Tew, 1995).

If rural birthing services are to be sustained and women given the opportunity to birth in their local areas, then they will need midwives who believe in, and are confident to, support this possibility. Opportunities exist for midwives to consolidate or establish practices that are locally relevant, personally satisfying and based on good evidence. This article traces the historical and future contexts of rural midwifery.

### Midwives urban and rural

Following European colonisation of New Zealand between 1840 and 1900, a system of charitable hospitals had been established but despite the predominantly young population of the colony, birth facilities were not included. Births were attended by whoever in the locality was deemed appropriate. This could be, "a medical man, a midwife, traditional or trained, or the woman next door" (Cooper, 1998, p.37). Midwives at this time were reliant on the goodwill of doctors for referrals, though, some were sought out by women according to their reputation and ability. Handywomen (untrained and unregistered midwives) often assisted with the birth and would usually stay on to care for the woman and help with the family (Donley, 1998; Mein Smith, 1986).

Birth was a risky business in the 19<sup>th</sup> century. A quarter of all women giving birth in hospital died of puerperal fever, whereas those at home fared better, except where they were attended by a doctor (McNulty & McLellan, 1990). However these findings did not stop midwives being blamed for the increase in deaths related to infection. Cooper (1998, p.108) records, that prior to 1904 the traditional New Zealand midwife was characterised as "...an elderly woman, educationally and professionally disadvantaged, who carried death and disease with her to all cases of childbirth she attended."

Shorter (1982) suggested that in the past there has been a clear divide between urban and rural midwives. Rural or traditional midwives worked in small country towns using trial and error, often struggling to earn a living with a poor and uneducated clientele. The rural midwife was generally regarded as ignorant, uneducated and unable to summon help should she have a problem birth. In contrast, some urban midwives were highly regarded in their communities, had received

some training in obstetrics, and in some areas were registered with a guild. Graduates from such training establishments, as were available, opted to work in the cities, shunning the poor pay and demands of rural work (Turner, 1992).

If such notions of ignorance and incompetence persist today, they are not consistent with the role that midwives play in rural areas. Davis (1987) observed that rural midwives needed a wide range of skills to deal with all contingencies and the confidence to act promptly and appropriately in an emergency.

### Moving birth into hospital

In 1904 the Midwives Bill, introduced by Grace Neill the then Assistant Inspector of Hospitals, was subsequently enacted by Parliament, leading to registration and state control of midwives in New Zealand. According to Cooper (1998), the blueprint for this move came from Britain where there was concern about the declining birthrate and high maternal and infant mortality rates. The catalyst for some of the changes over this period was the realisation that New Zealand women were dying of infection at a higher rate, than women in comparable nations. The *Kelvin Commission*, convened in 1923, was named after the hospital in which an outbreak of puerperal sepsis had occurred. The response was the campaign for 'safe maternity', which emphasised the need to institute antenatal care, standardise aseptic care, inspect premises, and improve training opportunities for midwives and doctors. To reduce contact with infectious agents hospitals were required to separate their maternity beds and staffing from medical and surgical areas (Mein Smith, 1986).

For women, the attractions of hospital birth in the 1920-30s included a rest from family responsibilities, and the promise of pain relief with chloroform and twilight sleep (Donley, 1998). These sedatives resulted in an increased number of forceps deliveries, infections and births of heavily sedated babies. The response of the Kelvin Commission, rather than being aimed at the cause of the problem, was to draw up regulations for asepsis. These regulations led to the instigation of shaving, draping and delivery of women in operating theatres (Donley, 1998; Mein Smith, 1986). This medicalisation of birth brought an increased need for funding and personnel as more women were confined in the larger hospitals. This trend continued, despite consistently better outcomes from the smaller or state run St. Helen's hospitals staffed by midwives (Parkes, 1991).

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## The case for rural birth

During the 1920s, approximately 65% of women had home births, or birthed in small units or 'homes'. Of the remainder, approximately 4% were born in the St Helen's hospitals; 5% in hospital board premises or Salvation Army hospitals with the balance of 26% being confined in private hospitals (Mein Smith, 1986). By 1935 however, hospital care became the norm with doctors attending all births. At this time 78% were born in maternity hospitals, 8% of these in the remaining St. Helen's hospitals, 27% in public and the remaining 43% in private facilities (Mein Smith, 1986).

For Māori, health matters until 1935 had been managed separately by the Division of Māori Hygiene. It was only after the election of a Labour government in 1935, that the health statistics of Māori women and children were included in the national data-sets (Mein Smith, 1986). In 1938 records show that the Māori birth rate in hospitals was 17% compared to 87% for Pakeha (Papps & Olssen, 1997). The popular perception was that Māori birth was risk free. However Papps and Olssen (1997, p.103) citing the 1937 *Committee of Inquiry into the Maternity Services of New Zealand*, claim that "both infant and maternal mortality rates were higher amongst Māori than amongst Pakeha." It is suggested that new patterns of infection and poorer socio-economic conditions may have contributed to this finding. Nevertheless, by 1962 Māori and Pakeha women were giving birth in hospitals in equivalent numbers.

Thus over the last century, the hospital has come to be the most common place for birth for all women in New Zealand. Moreover, this is not just any hospital but one equipped and staffed for all possible contingencies. This custom has effectively put a question mark over the safety of those who choose to birth at home or in small maternity units, and over the care provided by those who support and encourage this choice.

### The project for regionalisation

*A rural community will fight to save its hospital even when it has lost its last apparent vestige of utility; the hospital ranks with the church and the school as one of those elements of rural society through which communities define themselves.*

(Rosenblatt, & Moscovice, cited in Heydon, 1990, p. 71).

In the early part of the last century, Paget, the Inspector of Private Hospitals, supported the retention of rural maternity units and promoted home birth as a cost effective and appropriate choice for women anticipating a normal birth. As an experienced rural doctor Paget saw the need to retain small units to service the scattered populations in country areas (Mein Smith, 1986).

During the 1970s however, obstetric services were linked with secondary services in a "formal regionalised perinatal care system" (Rosenblatt, et al., 1985, p.429). Thirty-three rural units "closed between 1970 and 1984 [and] most of these units were the only hospitals in the rural communities that they served" (ibid, p.429). In 1982 the *Maternity Services Commission Report* advocated regionalisation of maternity care as a safer option for women. The objective was for all women to give birth in an obstetric unit that could provide specialist obstetric, and paediatric care. Contributing to this was the *Code of Risk Factors* introduced by the Maternity Services Committee that, according to Donley (1998), swept women into the level two and three hospitals.

### The evidence for safe rural birth

According to Rosenblatt et al., (1985, p. 429) "[I]t is possible that there is an advantage, particularly for normal-weight children, in being born in smaller obstetric units." In addition, there was no evidence that satisfactory maternity outcomes were dependent on a minimum number of births at any facility. In fact the lowest perinatal mortality rates occurred in the smallest hospitals and rates rose as hospital birth numbers increased (Rosenblatt, et al., 1985). Nor was there any foundation for suggesting that practitioners must manage a minimum number of deliveries (ibid).

In 1988 the neonatal morbidity outcomes and transfer patterns of urban and rural general practitioners were compared. The aim was to assess whether the number of births attended per year by the practitioner influenced outcomes or transfer rates. "No association was found between the number of deliveries undertaken by general practitioners both urban and rural and maternal and neonatal morbidity" (Tilyard, Williams, Seddon, Oakley & Murdoch, 1988, p. 207).

In Canada, the Canadian Medical Association's *Joint Position paper on rural maternity care* (1998, p.6) revealed similar findings. Populations with small hospitals had "perinatal loss rates similar to the rates in those served by larger secondary or tertiary care facilities, even when all adverse outcomes were attributed back to local hospitals." Small community hospitals in Nova Scotia with less than 100 deliveries per year had the lowest perinatal mortality and morbidity rates in the province. While populations that did not have access to local maternity care had the worst perinatal outcomes. Also of concern was the loss of local skill and expertise, particularly for obstetric emergencies. Thus one objective was to confirm that maternity care in rural communities was effective, appropriate and safe, even when caesarean section was not available on site (Canadian Medical Association, 1998).

In Britain, regionalisation, according to Campbell and Macfarlane (1994), halved the number of isolated general practitioner (GP) maternity beds between 1980 and 1990. Decisions about closure were made on economic grounds plus the notional risk of distance from secondary services. These small units, generally staffed by midwives with a GP on call, were found to have comparable and sometimes better outcomes than units sited close to, or within, specialist units. An analysis of 50,000 births failed to show a higher risk in the GP units and little evaluation was done with regard to the cost of these changes (Campbell & Macfarlane, 1994).

The 1992, the *Winterton Report*, followed a comprehensive inquiry commenced in 1991 into maternity services in the United Kingdom (Tew, 1995). It began from the premise that poor outcomes were likely to be related to socio-economic factors, rather than the premise that birth was dangerous. Women's concerns were taken seriously and submissions were invited from all stakeholders. The report found that the policy of encouraging hospital birth was unable to be "justified on the grounds of safety" (ibid, p.215). Therefore, the provision of maternity care, should not be driven by, a "medical model of care based on unproven assertions" (ibid, p.216). Moreover options for homebirth and birth in small maternity units ought to be supported (ibid).

The desirable outcomes cited above are a tribute to the skills of rural practitioners including midwives, GPs and other experienced staff. It is acknowledged that the New Zealand research by Rosenblatt et al., (1985) and Tilyard et al. (1988) was undertaken prior to the 1990 Amendment to the Nurses Act (1977), which restored midwifery autonomy. Similarly the evidence from rural Canada and the United Kingdom relates to a doctor-led system. Nevertheless, at the time these studies were done, midwives would have been the ones to alert the GP of concerns about progress, or, signals of distress during labour. Similarly, they would have been present at the time of birth and required to assist if intervention or resuscitation was required. Frequently, the midwife may have been the only person present if the doctor was unavailable, and would be expected to take full responsibility for the safety of both the woman and her infant.

### Rural birth in other countries: some issues in common

Comparing New Zealand rural maternity services with other Western nations is problematic, as each varies with regard to their historical, political, economic and social contexts. Nevertheless articles and research reports from North America, Canada, Europe, Britain and Australia all agree about the critical contribution of local maternity services to improved maternal and perinatal outcomes

(Fullerton et al., 1997; Jones, 1997; Nesbitt, Larson, Rosenblatt & Hart, 1997; Stone, Brown & Westcott, 1996; Travis, 1999; Woodcock, 1994). Rural midwives in these countries found the challenge of providing a rural service satisfying and worthwhile, appreciating the sense of autonomy and their relationships with the women and the community. Areas of concern included lack of locum cover and exposure to litigation, as a result of their isolation (Barnes & Dossey, 1999; Gordon, 1990; Langley, 2001; Lode, 1991; Van Daalen, 1988; Walmsley, 1999; Watson, Potter & Donahue, 1999).

Common findings in the above literature show that outcomes appear to be at least as good, and in some cases better, in rural areas than in the major centres. It is also clear that most countries are looking at how primary rural maternity services can be maintained, and in some areas re-introduced.

### Defining 'rural'

In the previously cited literature it was not always clear what services were available or exactly how remote some of the locations were. Similarly in New Zealand people travel freely between rural and urban areas sometimes every day; thus distinctions are, at best, arbitrary. The degree of 'rurality' in health care is currently calculated as the distance from the nearest level two or three hospital. Kilometre range is one determining factor, but New Zealand's geographical features and unpredictable weather patterns, may well be more relevant.

The range of services offered in rural maternity facilities also varies. Some premises are equipped and staffed to offer 24-hour emergency care on site, whilst others are opened and staffed only as required (Hendry, 2002). Even more complex is defining "who is a rural midwife?" While some midwives practice in an area remote from major cities, others are located on the fringes of towns, working with women in both rural and urban areas. Since the introduction of budget holding and the Lead Maternity Carer (LMC) concept (Southern Regional Health Authority, 1996), some urban-based midwives travel into rural areas. This activity can affect the viability of some rural practices, as local midwives see women being persuaded to birth outside the area. Perhaps a simple definition of "a rural midwife" might be someone who confidently supports women to birth in their local area, at a distance from secondary services (Patterson, 2002).

### Future proofing rural birth

Just as houses are weather proofed to provide protection for the future, so services for rural birth need 'future proofing'. This will enable midwives to enjoy the practice that one rural midwife described:

*But its neat working and it is nice being part of that community and [rural midwifery] has got the autonomy that you can kind of enjoy... as long as... yeah... you can actually do the practice you want. It's cool.* (Rural Midwife, T5: 22-3, in Patterson, 2000)

Despite the satisfaction of rural practice, Guilliland (1998, p.3) suggests, that "reliance, on midwives as the predominant maternity service providers in towns and rural areas is not understood at a political and policy level." This lack of understanding can lead to a shortage of midwives in some areas, leaving the community without a maternity facility and women with no choice in regard to their care.

To maintain a birth option for women in rural New Zealand remains a challenge. In some areas it is difficult to attract women back to local services. Midwives in sparsely populated areas can experience financial insecurity and have difficulty obtaining locum cover. Further, they are uncertain how their unique contribution will be recognised within the proposed Primary Health Organisation (PHO) structures, as outlined in the *Primary Health Care Strategy* (King, 2001).

In my research project (Patterson, 2002) rural midwives were individually interviewed and subsequently met for a focus group. This meeting provided a forum for the participants to canvas current and potential tactics for their survival as rural midwives. These included management of the local maternity facility, promotion of their services to women, taking care of their personal and professional selves, and ways of attracting new graduates into rural practice.

Below, is a distillation of these discussions and strategies, some of which may resonate with midwives in other rural areas. It is possible, that this window in history holds real opportunities for rural midwives to strategise and strengthen their role in the rural maternity service.

### Becoming known and trusted

Rural women have demonstrated their ability to birth in their local area. The midwives who work with them also have the belief and confidence to support these women to labour at a distance from secondary services. Thus the best publicity and promotion for local midwifery care is this 'one-to-one' relationship with women. To increase their profile local midwives can advertise in the local media, and establish contact with local women's groups, particularly those groups geared towards the needs of women and families. Hobbs (1993) suggests, that clear communication of service, production of quality flyers and business cards, plus networking is important.

The confidence of women is increased where their midwife has cordial and established links that facilitate referral and transfer in an emergency (Creasy, 1997). Therefore, it is important that local midwives are involved whenever emergency protocols or new technology are being introduced. Nesbitt (1996) explores technologies such as tele-ultrasound and tele-medicine, which can transmit images directly to specialists and enable practitioners to access expert opinion electronically. Such tools can facilitate timely, appropriate referral and increase the confidence of the practitioner and of the woman. The downside is the possibility that such technology would be used routinely rather than selectively. Over-reliance could lead to a lack of practitioner confidence and the degradation of their skills (Nesbitt, 1996). Thus for rural midwives, the challenge will be to select wisely from the technology available, whilst keeping a normal focus in their midwifery practice.

### Taking care of business

In New Zealand the rural maternity annexes, homes and hospitals have historically been the pride of many isolated areas in New Zealand, and are concrete evidence that a local maternity service is available (Patterson, 2000). Where local midwives assume responsibility for the facility it adds substantially to their commitments with regard to staffing, maintenance, and the provision of an 'on call' service; particularly during 'down' time. These costs are partly offset by the facility fees, which can provide for the employment of staff. However, for sparsely populated areas with erratic birth numbers, the financial risks may be too high.

Critical to any business venture, is a sound business plan with attention to cash flow management. This would include accountancy and legal advice, particularly if there were agreements between partners with regard to practice responsibilities and income disbursements (Hobbs, 1993). Baseline information needed for future planning would be the number of women who have accessed the local service compared to those who have chosen, for whatever reason, to seek care elsewhere. The goal would be to increase the uptake of local services.

### Taking care of yourself

Flint (1994) advises that midwives plan their leave breaks in advance by discussing their needs for relief and "time-out" with their colleagues. Clearly no team benefits from members who are burnt out or resentful. Locum cover may be required but arranging this from outside the area can be problematic. There are issues of payment, accommodation and transport to be considered and it is often a challenge for a stranger to come to grips with the culture and geography of the local area. Therefore, in most situations, local midwives

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## The case for rural birth

are best placed to relieve the full-time LMC, particularly in times of personal or family crisis.

Disagreements and disputes are an inevitable part of working in a group and should be anticipated. Young, (1990) suggests that for a group to be able to work together there needs to be the willingness to accept the many facets of the individuals. Thus valuing difference and increasing tolerance to avoid the splintering that can occur. Taylor (2000) adds that personal and professional reflection are valuable skills to develop. Such reflective activity with a trusted friend or colleague who is supportive and non-judgmental but also challenging can, according to Carr (1996), help put practice experiences into perspective.

### Looking to the future

The survival of midwifery in rural New Zealand is dependent on a percentage of new midwifery graduates choosing to live and work in these areas. Solutions, however, require the cooperation of educational institutions, rural communities and the wider midwifery profession. There may be opportunities for midwifery students from rural areas to be supported to gain their midwifery registration and subsequently be mentored into the area. In addition, extending the time that students spend in rural placements may allow them to absorb the range of practice skills and develop confidence for rural work. Such exposure would also give graduates choosing urban work, a deeper appreciation of their rural colleagues.

### Conclusion

In the early days following colonisation, New Zealand women birthed at or close to their homes whether in an urban or rural area. This tradition has been steadily eroded over the last century to a point where all but a small number of women birth in large hospitals. The medicalisation of birth was accelerated with the introduction of aseptic principles, the availability of birth analgesia and the increasing involvement of doctors in normal birth. This combination led to women choosing, or being persuaded, to birth in hospitals (Cooper, 1998; Donley, 1998; Mein Smith, 1986).

The project of regionalisation in the 1970–80s, which advocated for all women to be delivered in large hospitals, closed or reduced services in many rural centres and eroded the confidence and expertise of rural practitioners (Rosenblatt, et al., 1985). The consequent fall in birth numbers made many of the smaller hospitals uneconomic and precipitated closure, despite strong evidence that babies and women fared better, and had better outcomes in these smaller units (Donley, 1998; Rosenblatt, et al., 1985). Regionalisation also occurred in other Westernised countries without any

evidence that it could improve outcomes (Campbell & Macfarlane, 1994; Tew, 1995).

The unique geography, unstable climate and small population of New Zealand underscore the need for local expertise in primary birth care. Research has confirmed the safety of birth in rural areas where women are anticipating a normal labour. Therefore, it would seem reasonable to assume that with the improved emergency transport and other technical assistance now available, that birth in rural New Zealand is a safe and appropriate choice for well women. However for this to continue to be a choice, women will need the support of competent and confident midwives. And while midwives can be proactive in promoting and developing sustainable practices, they also need to be logistically supported by their colleagues, their community, and the funders of maternity care.

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I have been having great fun with the Internet recently as I have been preparing lectures for midwifery students, and looking for images of birth. Andrea Noll is a Dutch/Hungarian woman with a strong interest in childbirth. She has published the most amazing photos of her water birth on her web site. The births of her children are also available as video, but I had little luck downloading them. It is well worth checking this web site, especially if you are interested in learning more about waterbirth.

[www.nandu.hu/English/Childbirth/chbmain.htm](http://www.nandu.hu/English/Childbirth/chbmain.htm)

For those who have never seen the birth of a baby presenting as a face, check out the great photograph at this web site. The web site has not been updated for some years, but is worth visiting for the photograph.

[www.socalbirth.org/pathways/resources.htm](http://www.socalbirth.org/pathways/resources.htm)

Another wonderful web site for photographs is Earth Mamas Web. This is an Australian web site for 'Australia's natural parenting community'. I particularly love a photograph of a baby in a pool with his/her mother but still attached to the placenta, which is floating in the water. Don't forget however, that if you ever use the images you download from the internet, you may be in breach of copyright.

[www.earthmamasweb.com/articles/pregnancy/katrina.html](http://www.earthmamasweb.com/articles/pregnancy/katrina.html)

The World Health Organisation has published a manual called *"Managing Complications in Pregnancy and Childbirth: A guide for midwives and doctors"*. It is available both in hardcopy and online. The manual includes problems such as fetal distress in labour; outlines general management; and then provides links to information about conditions that may cause the problem such as vaginal bleeding, infection and cord prolapse. The manual also describes procedures such as vacuum extraction, caesarean section and correcting uterine inversion, as well as providing information about drugs and general management principles. The web site is easy to navigate and is a great resource for midwives. My only complaint is that it took a long time for the pages to download, but that may have

been because I was having a 'slow computer day'.  
[www.who.int/reproductive-health/impac/index.html](http://www.who.int/reproductive-health/impac/index.html)

The MIDIRS informed choice leaflets have recently been updated and are available online, free of charge. I think that this is remarkably generous of MIDIRS and believe they should be congratulated. There are now 15 leaflets, including subjects such as prolonged pregnancy, ultrasound scan and screening in pregnancy, non-epidural pain relief, waterbirth, and post natal issues. Note that the web address is different from the web address I have previously discussed. [www.infochoice.org](http://www.infochoice.org)

The University of Pennsylvania Health System provides information about pregnancy and birth, aimed at women. I have been particularly fascinated by the animations of certain topics. These need a software plugin called 'Shockwave', which is easily downloaded from the internet. My particular favourite animations are the development of the baby over the nine months of pregnancy, cervical dilatation and vaginal birth. They are good resources for both women and student midwives.  
[http://pennhealth.com/health\\_info/pregnancy/index.html](http://pennhealth.com/health_info/pregnancy/index.html)

I have recently met an Australian midwife called Sue Kildea ([Sue.Kildea@uts.edu.au](mailto:Sue.Kildea@uts.edu.au)). She has developed a comprehensive web site that is a resource for nurses and midwives who work in the Australian bush. This project is part of Sue's PhD, which she is carrying out at the Centre for Family Health and Midwifery (CFHM), University of Technology Sydney. The web site provides link to a multitude of other sites that provide information ranging from the prevention of GBS to emergency contraception. Sue is very interested to talk to New Zealand midwives who work in rural practice, so feel free to email her.

[www.dwd.com.au/crana/sue/default.php](http://www.dwd.com.au/crana/sue/default.php)

Sue's web site is affiliated with the Council of Remote Area Nurses of Australia (CRANA). CRANA is an organisation that sets out to support rural health practitioners. The web site is worth having a look at if you are interested in rural health issues, and how they are approached in Australia. [www.crana.org.au](http://www.crana.org.au)

Another Aussie I met recently is Denise Callander ([denise.callander@health.gov.au](mailto:denise.callander@health.gov.au)). Denise is involved with HealthInsite, which is an initiative of the Australian government. This initiative is in response to the growing consumer demand for health information. The web site provides access

to a multitude of subjects from stem cell research to fitness and exercise, and covers all life stages including pregnancy and childbirth. Any web site that is linked with HealthInsite is very carefully vetted to ensure that all information is reliable and evidence-based. It is worth noting that some information is based on the Australian context, which in some cases is quite different to that of New Zealand.

[www.healthinsite.gov.au](http://www.healthinsite.gov.au)

A Norwegian report that advocates vaginal birth for breech babies, alongside with careful fetal monitoring and experienced obstetric staff has recently been published online. I recommend that anyone interested in the issue of breech birth should have a look at this web site.

[www.sintef.no/smm/News/FramesetNews.htm](http://www.sintef.no/smm/News/FramesetNews.htm)

Another interesting web site is the UK Confidential Inquiry into Maternal and Child Health. This web site publishes the report *"Why mothers die 1997-1999"*. The report reviews the causes of maternal deaths and makes recommendations for midwifery practice. It is also possible to download the annual reports into stillbirth and early childhood deaths. Whilst these are UK reports, the issues are just as pertinent to midwives in New Zealand.

[www.cemach.org.uk](http://www.cemach.org.uk)

The Health and Disability Commissioner has a web site which provides anonymous details about complaints pertaining to childbirth. They make for depressing reading at times, but are a tool for teaching/learning and reflection on practice.

[www.hdc.org.nz/casenotes/index.html](http://www.hdc.org.nz/casenotes/index.html)

It was with great sadness that New Zealanders heard of the death of Irihapeti Ramsden in April. Irihapeti's PhD thesis entitled 'Cultural Safety and Nursing Education in Aotearoa and Te Waipounamu', is available online. <http://culturalsafety.massey.ac.nz/thesis.htm>

I have also completed my Masters thesis entitled *'Midwives in New Zealand and their use of Internet resources'*. For those who are interested (or suffer from severe insomnia), the thesis is available on my web site. A big 'thank you' to those midwives who took part in my survey.

[www.midwife.net.nz](http://www.midwife.net.nz)



The NZCOM journal is published in April and October each year. It focuses on midwifery issues and has a readership of midwives and other people involved in pregnancy and childbearing, both in New Zealand and overseas. The journal welcomes original articles which have not previously been published in any form. In general, articles should be between 500-4000 words.

#### Format

Please ensure that the following requirements are followed.

- **Four** copies of article supplied – typed on A4 paper with doublespacing **OR**
- Article supplied as WORD document or RTF file
- Word count included
- Abstract of 100 words maximum included
- Diagrams, tables or photographs supplied in computer generated form
- Separate sheet containing biographical details of all authors (name, occupation, current area of expertise/practice, qualifications, contact address including phone and / or email details.
- Letter signed by all authors stating that they submit the article for publication
- All referencing in American Psychological Association (APA) 5<sup>th</sup> edition format.

#### Ethics

Any article which reports a piece of research needs to note the processes undertaken for ethical approval.

#### References

Authors are responsible for providing accurate and complete references. The journal uses the American Psychological Association (APA) format. Some details of this format are available on the APA website at [www.apastyle.org](http://www.apastyle.org). The 5<sup>th</sup> edition of the *APA Publication Manual* was published in 2001. In the text,

## JOURNAL guidelines for contributors

authors' names are followed by the date of publication such as "*Bain (1999) noted . . . .*" or "*this was an issue in Irish midwifery practice (Mary, 2000)*". Where there are three or more authors, all the names should appear in the first citation such as "*(Stoddart, Mews, Neill and Finn, 2001)*" and then the abbreviation "*(Stoddart et al., 2000)*" can be used. Where there are more than 6 authors then "*et al.*" can be used throughout.

The reference list at the end of the article should contain a complete alphabetical list of all citations in the article. It is the responsibility of the author to ensure that the reference list is complete. A comprehensive range of examples are provided on the APA website. Two examples are included here.

#### Journal article

Pairman, S. (1999). Partnership revisited: Towards a midwifery theory. *New Zealand College of Midwives Journal*, 21 (4), 6-12.

#### Book

Page, L. (Ed.). (2000). *The new midwifery*. London: Churchill Livingstone.

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#### Reference

American Psychological Association. (2001). *Publication manual of the American Psychological Association* (5<sup>th</sup> ed.). Washington, DC: American Psychological Association.

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