



NEW ZEALAND  
COLLEGE OF  
MIDWIVES (INC)

## JOURNAL

New Zealand and Canadian  
midwives' use of complementary  
and alternative medicine

Smoke free outcomes with midwife  
lead maternity carers: an analysis of  
smoking during pregnancy from the  
NZCOM Midwifery Database

Rhetorical (de)vices, discourse and  
shifting terrain of natural childbirth

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monitoring - using audit  
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 Provoke discussion of midwifery issues. Support the development and dissemination of New Zealand and international midwifery research.

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## EDITORIAL

# Different yet similar - ways of being and knowing

Joan Skinner

Recently I had the privilege of having some sabbatical leave from the university and took the opportunity to head to Canada and the United States for a couple of months. Sabbatical is a great opportunity to do some uninterrupted research, but is also a time to do some thinking and to get a bigger picture of what one's work is all about (we could all do with this I think!). Most of the time I spent in Vancouver, based in the University of British Columbia's site in the Women's hospital. I was hosted by Michael Klein and his team and it was a great experience to be immersed in a big, well funded maternity research project. They were looking at the differences in attitudes to birth between obstetricians, family doctors, midwives and doulas and hopefully we will be able to collaborate on a similar piece of research in New Zealand. While in Vancouver I had the opportunity to replicate my PhD research with the midwives in British Columbia. I also spent some time at the very beautiful Seattle School of Midwifery, a private, direct entry midwifery programme and also with Holly Powell Kennedy at the University of California in San Francisco. What struck me most was not so much the differences between us but more how similar we are. Although the contextual issues with which midwives in North America and New Zealand differ, when we sat down to talk midwifery we had much in common.

The 'with womaness' of midwifery was present everywhere. So too was the sense of resistance to the medicalisation of childbirth and the need to protect the normality of birth. In some sense we were all struggling with how to undertake this within a socio-cultural context, fundamentally at odds with what we are trying to achieve.

What also struck me was that many of the questions that we have about our practice are also very similar across the developed world at least, and there is a great deal of possibility of forming sound international research collaborations. We in New Zealand have made such a profound difference to the way maternity care in general and midwifery care in particular has been enacted that we have a very important role in growing this knowledge and in communicating this to the rest of the world. They are fascinated with how we practice, how we came to practice like this and what difference it makes to women giving birth and to the families and communities in which this care is embedded.

This edition of the journal is a good example of how we are contributing to this growth in knowledge. The research on New Zealand and Canadian midwives' use of complementary and alternative medicine adds considerably to our understanding and knowledge of CAM use and opens up some important questions of how this fits within an evidence-based knowledge framework. How do we know what we know

and what claim to authority does this knowledge have? The research on smoke free outcomes from the MMPO database is a powerful indication of the impact of the care that we provide and we need to know more about how and why this seems to have made such a difference. Jeannie Douché's research into the discourse of what is 'natural' in childbirth is an illustration of the depth and thoughtfulness that is possible when we, as midwives, look at how maternity care is constructed. The knowledge that is lifted and the depth to which this is explicated really helps us as midwives to understand the context in which we provide maternity care and to be much more sophisticated and canny in how we position ourselves within this context. And of course it is always critical to examine in detail how we are providing care and to ensure that it is provided appropriately and safely. The audit of the intrapartum fetal monitoring is a salient reminder for us not only to continue to do this but also to make improvements to the way we work.

So I would like to thank the contributors to this edition and am proud of what we are developing. We really do need more contributions and I know there are many of you out there with great pieces of research, including discussions on practice and professional issues that are calling out for publication. Remember they are of little use sitting on your hard drives. I am always happy to provide advice and support to get them into print.



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## NEW ZEALAND RESEARCH

# New Zealand and Canadian midwives' use of complementary and alternative medicine

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### ABSTRACT:

**Background:** Complementary and alternative medicine (CAM) is widely used by women and midwives in maternity care despite the lack of strong evidence for safety or efficacy. The purpose of this research was to investigate how midwives in primary midwifery care practice in two countries use CAM.

**Methods:** A pre-tested survey was administered to all registered midwives (265) in two provinces of Canada (British Columbia and Ontario) and a sample (383) of midwives in primary care practice in New Zealand. The two part survey consisted of 40 items including Likert scale, yes/no and open ended questions. Part one collected midwives' demographics and information regarding the use of CAM by midwives and women, the types of CAM therapies, referral patterns and midwives' opinions regarding the role of CAM in midwifery practice. Part two examined the use of evening primrose oil, chosen as an exemplar to explore typical patterns of CAM use by midwives, and is reported elsewhere.

**Results:** A total of 343 midwives responded (53%) with results indicating that CAM is widespread in both countries. The most commonly used therapy was homeopathy, followed by herbs, aromatherapy

and acupuncture. CAM was perceived as an essential part of midwifery practice by 71.5% of respondents. A similar number agreed that CAM enhances midwifery care and supports normal birth. However, 74.4% of respondents perceived CAM use as an intervention. Although 77.4% concurred that CAM is a traditional part of midwifery practice, 63.3% felt that the long history of CAM use is not evidence for safety in practice. There was strong support (81.4%) by midwives for the statement that CAM is used to avoid medical interventions. Midwives who may not discuss CAM with every client indicated they would discuss CAM options in circumstances such as breech presentation or postdates pregnancy. A qualitative analysis interpreted four main reasons for the use of CAM, identified in this study as 'Resistance' to the dominant medical paradigm, 'Efficacy' since CAM is perceived to make a difference, supporting 'Women's Choice' and as a way of 'Keeping Birth Normal'.

**Conclusions:** This study demonstrates that midwives regard CAM as an essential and traditional part of midwifery practice, supporting normal birth. However, midwives also regard the traditional and empirical basis of CAM as problematic since contemporary midwifery care requires midwives to base their practice on robust evidence of efficacy.

### Keywords

Alternative therapies, midwifery, Canada, New Zealand

### INTRODUCTION

Complementary and alternative medicine (CAM) is a term used to delineate forms of health care that are separate and distinct from conventional western medicine. The Cochrane Collaboration Complementary Medicine Field carries a broad definition of CAM noting that these practices are defined by their users as "preventing or treating illness, promoting health and well-being" and "complement mainstream medicine by 1) contributing to a common whole, 2) satisfying a demand not met by conventional practices and 3) diversifying the conceptual framework of medicine" (Cochrane Library, 2000).

Complementary and alternative medicine in some midwifery communities is an essential part of midwifery practice and in others it is utilised only as a personal health care choice of the midwifery clients. It may be applied as an adjunctive measure to support normalcy, or as an alternative option to resolve complications in the childbearing process. For many midwives and women, CAM is a preferred option to reduce medical interventions in childbirth. However, most CAM therapies are not well regarded by orthodox medicine (Relman & Weil, 1999) and with the current focus on evidence-based practice it is important to develop a greater understanding of the interface of CAM and midwifery practice.

Although there is a scarcity of clinical evidence and published information in regard to the efficacy of CAM in pregnancy, birth and postpartum there has been a marked increase in the amount and variety of information concerning CAM in the midwifery literature over the last 15 years. Despite this proliferation on CAM in relation to midwifery practice, very few publications are what would be regarded as "evidence on which to base practice" if using the accepted definition of evidence-based practice which is "...integrating clinical expertise with the best external clinical evidence from systematic research" (Sackett, Strauss, Richardson, & Rosenberg, 1997).

### Research regarding midwives' use of CAM

There are few systematic studies of midwives' use of CAM. A systematic review by Huntley, Coon and Ernst (2004) also noted the paucity of evidence and published research regarding complementary therapies used during labour. A literature search using the terms complementary and alternative medicine/ complementary therapies in midwifery practice, pregnancy and birth indicated one national survey of herbal preparation use for labour stimulation by nurse-midwives in the US (McFarlin, Gibson, O'Rear, & Harman, 1999), a survey of complementary therapy use in pregnancy by nurse-midwives in North Carolina (Allaire, Moos & Wells, 2000) and a retrospective chart audit of evening primrose oil to aid in cervical ripening (Dove & Johnson, 1999).



There are a small number of randomized controlled trials that investigated the effects of specific therapies in pregnancy, labour and postpartum, for example, raspberry leaf capsules during pregnancy (Parsons, Simpson, & Ponton, 1999; Simpson, Parsons, Greenwood, & Wade, 2001), castor oil to induce labour (Harris & Nye, 1994), cabbage leaves on breast engorgement (Nikodem, Danziger, Gebka, Gulmezoglu, & Hofmeyr, 1993), lavender oil in the bath water to relieve perineal discomfort (Dale and Cronwell, 1994), ginger for nausea and vomiting in pregnancy (Vutyavanich, Kraissarin, & Ruangsri, 2001), acupuncture to treat nausea and vomiting in pregnancy (Smith, Crowther, & Beilby, 2002) and massage on pain and anxiety during labour (Chang, Wang, Chen, 2002). More recently, a study has been conducted on women's views on moxibustion for cephalic version in breech presentation (Mitchell & Allen, 2008) and a randomized controlled trial investigated the effects of yoga during pregnancy on maternal comfort, labour pain and birth outcomes (Chuntharapat, Petpichetchian, & Hatthakit, 2008).

## Method

This descriptive study investigated the relationship of CAM to midwifery practice. Complementary and Alternative Medicine in this survey are considered health care modalities that include but are not limited to herbal medicine, homeopathy, acupuncture, and aromatherapy. A postal survey was sent to 648 midwives in two countries, New Zealand and Canada. The survey was intended to elicit information regarding midwives' and clients' usage of complementary therapies in midwifery, including the kinds of alternative therapies utilised, referral patterns and midwives' opinions regarding the role and relationship of complementary therapies in midwifery practice. It was designed to take 15-30 minutes to complete, in order to accommodate midwives' usually busy schedules and was comprised of 40 items including Likert type, yes/no, and open-ended questions. The survey was divided into two parts; the first consisted of 34 questions about a participant's general use of complementary therapies in midwifery practice and the second part asked 16 specific questions regarding the use of Evening Primrose Oil.

An open-ended question provided the opportunity for midwives to report the primary reason they included the use of CAM in their midwifery practice. The respondents (N=333) provided varied and multiple responses. Some described the various situations where CAM was employed and others provided an explanation of their personal philosophy and experience of CAM. Four composite and connected themes emerged from the thematic analysis of this question (Table 4). Statements with common threads were grouped into sub-themes and then placed into four broad themes that expressed the collective intent (Graneheim & Lindoman 2003).

## Study Population and Sample

The participants in the study comprised of registered midwives in two countries, New Zealand and Canada

who were currently practising in a model of full scope (i.e. prenatal, labour, birth and postpartum) community based, primary midwifery care. The rationale for setting these criteria was that midwives in autonomous or independent practice, having primary care responsibility for childbearing women are most likely to have the opportunity to prescribe or offer options for alternative therapies to their clients. Registered midwives were accessed throughout New Zealand and from two provinces in Canada, British Columbia and Ontario. These two countries were chosen because the practice situation for the midwives is very similar in that they receive public funding, have independent access to hospitals, prescribing rights and self-referral for clients. Excluded from the study were those provinces in Canada that differed markedly in terms of the nature and scope of practice as well as funding arrangements.

The New Zealand sample was obtained by sending surveys to every second midwife on the New Zealand Nursing Council database (2002) identified as carrying a caseload (n=383). Since the population of midwives in Canada is much smaller than in New Zealand the Canadian survey sample was generated by sending surveys to every midwife registered with the Midwives Association in the provinces of British Columbia and Ontario (n=265). Membership in these organisations is mandatory for practising registered midwives. Approval was received from both associations to use their membership lists. Follow-up letters were sent to midwives in both countries to enhance response rates. Ethical approval for the study was obtained from the Victoria University of Wellington, Human Ethics Committee.

## FINDINGS

A total of 171 valid completed surveys were received from New Zealand midwives indicating a response rate of 44.6%. A total of 172 valid surveys were received from Canadian midwives indicating a response rate of 64.9%. The overall combined response rate of the two countries was 343 or 52.9%. The denominator varies throughout the presentation of the results as not all midwives answered all questions.

Combined New Zealand and Canadian results are presented in most tables unless statistically significant differences between the two groups were identified.

The demographic profile of midwives in the two countries was similar, the exceptions occurring in years of experience, and the location of births attended. Care was provided in home and hospital settings. Home births ranged from 1 to 40 annually (Mean 11.34 SD 7.6) with four midwives (4%) doing no home births. Hospital births was from 1 to 100 (Mean 34.54 SD 18.11) and two (1%) midwives indicated they did no hospital births per annum.

## Use of CAM

Midwives were asked to indicate how CAM featured in their practice. Most (71.95%) indicated they recommended or offered CAM often (31%), very frequently (28%) or always (12.95%). There was similar distribution between countries. As well, 40.6% of respondents indicated they initiated discussions regarding CAM with every client.

Midwives estimated a majority of their clients utilised CAM during their midwifery care. Nearly a third of the respondents estimated over 60% of their clients use CAM. Reporting was similar between countries.

Data was obtained about four CAM therapies that are considered to be alternative medical systems or have therapeutic applications that may affect or change the body's responses or condition (Table 1). These four modalities frequently appear in the literature and offer alternative options and adjunct support to conventional medical obstetrical management.

The most commonly used therapy was homeopathy with 42.8% (n=336) of midwives indicating 21-60% of their clients used homeopathics. There was no apparent difference between countries in the use of homeopathy. The next most frequently used modality was herbs with Canadian midwives (n=169) estimating a greater use of herbs by their clients than New Zealand midwives (n=167), ( $\chi^2=65.121a$ ,  $p<0.001$ ). Aromatherapy was not a frequently used modality and there were no apparent differences in the use of aromatherapy between countries. Acupuncture was the least frequently used with 8.7% of midwives indicating 21-60% of clients included acupuncture in their care

## Referrals

When midwives were asked whether they made referrals to practitioners of CAM, 95.2% (n=292)

**Table 1:** Percent of midwives estimating clients' use of specific therapies (n= 336)

% of clients	Herbs	Homeopathy	Aromatherapy	Acupuncture
<20	54.4	37	72.8	88.7
21 - 60	29.5	42.8	18.1	8.7
61-100	15.5	19.5	9.3	2.7





indicated yes. The responses indicated overall most midwives referred to Homeopaths (50.7%) followed by 49.7% to Acupuncturists, 48 % to Naturopaths, 35.7% to Chiropractors, 31.3% to Massage Therapists and 20.1% to Osteopaths. These percentages were developed from a content analysis of an open-ended question on the survey and therefore may not indicate an accurate picture of the actual referral rate to the specific practitioners. There were some differences between countries in referral choices, which are outlined in Table 2.

There were statistically significant differences in most categories with New Zealand midwives referring more often to homeopaths, osteopaths, herbalists, and Canadian midwives referring more often to naturopaths, massage therapists and chiropractors. These differences may be representative of cultural divergences of the two health systems. For example, osteopaths are not a common health care practitioner in Canada and may practise under another professional designation.

### Information and Training

Midwives were asked how they learned about CAM therapies. Most midwives indicated multiple sources with 80.8% of respondents from both countries learning from workshops; 89.7% by reading the literature; 95% learned from discussions with midwives; 65% from consultations with other health care professionals and 30% from the Internet. Overall 51.6% (n= 341) of respondents reported having attended workshops, courses, seminars and educational programmes related to CAM training and education. The distribution was similar in both countries. Of the 51.6% who sought education, 10.4% identified as having obtained certification or licensure in modalities such as homeopathy, acupuncture (five midwives), herbal medicine and others. A significantly greater number of New Zealand midwives (17%) indicated obtaining certification than Canadian midwives (4%) ( $\chi^2=15.718$ ,  $p<0.001$ ).

### Specific Circumstances

Reasons midwives gave for not discussing CAM with clients were; lack of interest or belief in CAM, religious objections, language or communication difficulties; affordability, medical appropriateness. Although some midwives did not discuss CAM with every client they did report specific circumstances where they would suggest a CAM therapy to remedy a complication or condition and these are described in Table 3.

The only statistically significant difference between countries was in the category of postdates with 27.8% of New Zealand respondents and 64% of Canadian respondents indicating this as a specific circumstance for suggesting the use of CAM ( $\chi^2=19.142$ ,  $p<0.001$ ).

### Informed Choice

Informed choice regarding CAM was most commonly provided by discussion, for 96.7% of 337

**Table 2:** Referral Choices of Midwives in New Zealand and Canada \*

Practitioners	New Zealand % n=143	Canada % n=151	X <sup>2</sup>	P value **
Homeopath	62	40	40	<0.001
Acupuncturist	55	45	--	NS
Osteopath	40	1	65.612	<0.001
Naturopath	24	71	63.366	<0.001
Herbalist	23	10	8.209	0.003
Cranial Sacral Osteopath	15	6	--	NS
Massage Therapist	13	49	43.631	<0.001
Chiropractors	4	66	117.812	<0.001
Chinese Medicine (TCM)	3	10	--	NS

\* multiple responses were possible

\*\* significant difference between countries

**Table 3:** Specific circumstances for discussions of CAM

Specific Circumstances	N=158	% of Respondents
Fetal Malpresentation - e.g. Breech	116	73.4
Urinary Tract Symptoms	79	50.0
Postdates	75	47.5
Common discomforts of Pregnancy	56	35.4
Breastfeeding Problems	33	20.9
Slow progress in labour	32	20.3
Vaginal or yeast infections	30	19.0
Induction of Labour	26	16.5
Postpartum Healing	25	15.8
Sciatic / Back Pain	21	13.3
Anemia	21	13.3
Other	61	38.6

midwives from both countries, followed by printed material (69.0%). Discussion content included the midwife's own practice experience (88.9%), possible side effects (70.4%) and research (69.1%). Many respondents noted discussion on research was included only "when research was available." The two areas of discussion content where a significant between country difference was noted were including research in the discussion (NZ 60%, Canada 77%;  $p=0.002$ ) and possible side effects (NZ 62%, Canada 78%;  $p=0.001$ ).

Only 6.2% of midwives provided informed choice consent forms regarding CAM for clients to sign.

### CAM Use in Hospital Setting

Complementary and alternative medicine was used in the hospital setting by a majority of respondents (67.3% indicating yes). Fewer documented the use on the institutional charts (42.5%). The distribution was similar between New Zealand and Canadian midwives.

## Midwives' Opinions

Seven questions sought midwives opinions regarding CAM therapies and their relationship to midwifery practice. The scale provided six choices from strongly agree (1) to strongly disagree (6) and the findings are shown in figures 1-7 at right, and on the next page.

Midwives affirmed a relationship of CAM with midwifery practice; 76.2% strongly agreed, agreed or somewhat agreed that CAM supports normal birth, 71.5% that CAM is an essential part of midwifery practice, and 78% that CAM enhances midwifery care. There was strong support by 81.4% of midwives that CAM is used to avoid medical interventions. Although 77.4% concurred that CAM is a traditional part of midwifery practice, 63.3% felt that the long history of CAM use is not evidence for safety in practice. Midwives also indicated their awareness of the effects of CAM with 74.4% disagreeing with the statement that CAM is not an intervention.

In general, there was a congruent pattern in the responses from both New Zealand and Canadian midwives. However Canadian respondents (74.4%) demonstrated stronger disagreement with the statement that CAM therapies are not interventions and this was statistically significant ( $\chi^2=58.233a$ ,  $p<0.001$ ).

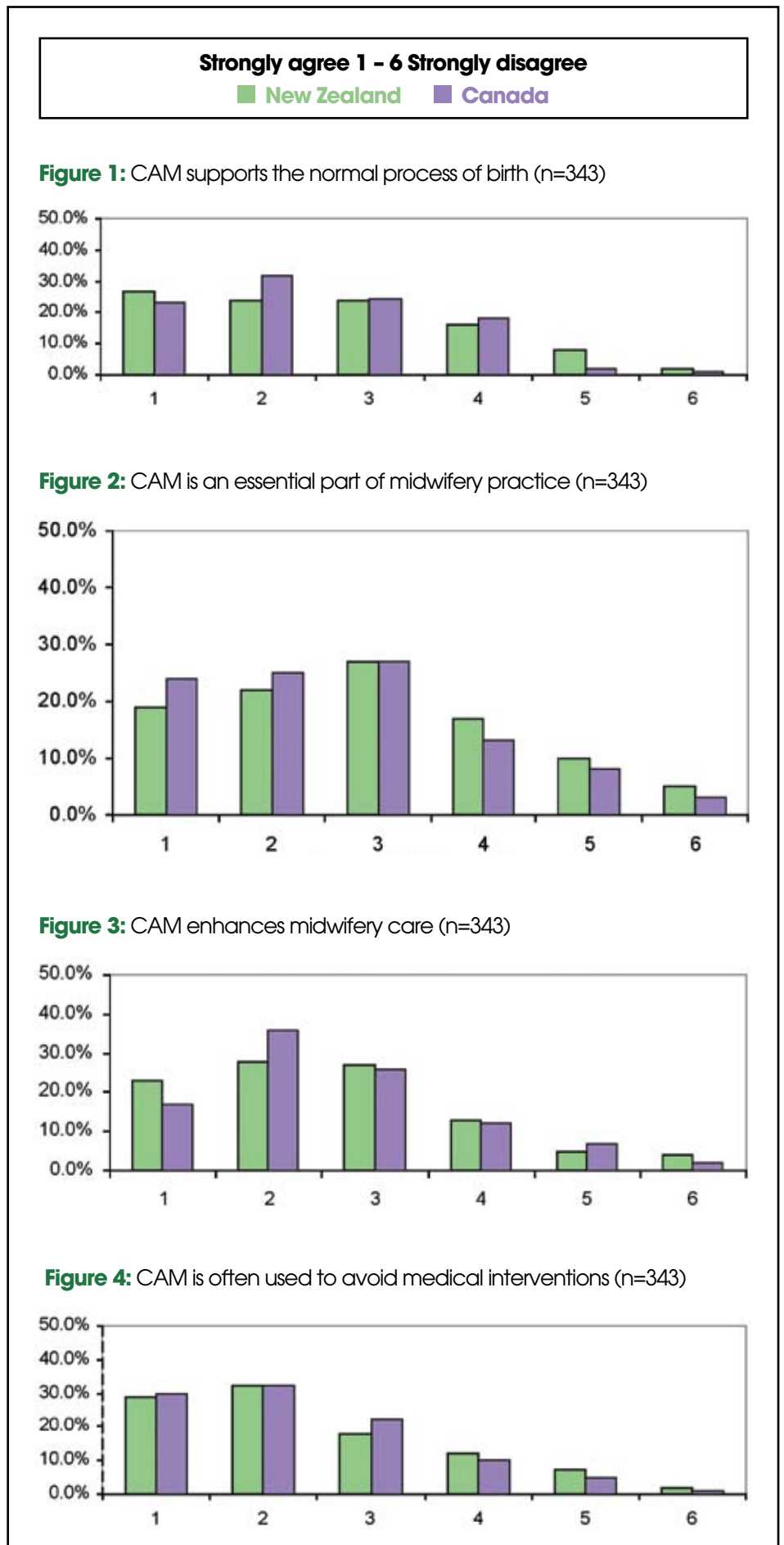
## Primary Reason for Use of CAM

Thematic analysis of the open-ended questions revealed four composite and connected themes (Table 4 - over page). "Resistance", the first theme, related to using CAM to avoid medical interventions, seeking natural alternatives instead of following conventional obstetrical management, and providing more options in care including informed choice (37%). The notions of CAM being helpful, safe, gentle and effective in the process of birth were expressed in the second theme "Efficacy" (35%). The third theme "Women's Choice" presented that women's interest in, or preference for CAM options was an important factor in using CAM and part of supporting women's choice and autonomy (18%). The fourth theme, "Keeping Birth Normal", pertained to supporting the normal process of birth and health promotion, which is perceived to be a normal part of midwifery practice (10%).

Other common reasons cited for use in specific conditions were postdates/induction, breech, malpresentation, labour that was slow or prolonged, common complications and discomforts of pregnancy, pain relief, breastfeeding, relaxation, urinary tract infection, and newborn issues such as colic. There was a general consensus of reasons for use expressed by midwives from both countries.

## DISCUSSION

Traditionally complementary and alternative health care is an inherent part of midwifery practice. Its utilisation is part of the social framework of health care, from an historical perspective (Vickers, 2000; Ramsey, 1999) as well as resistance to the dominant,





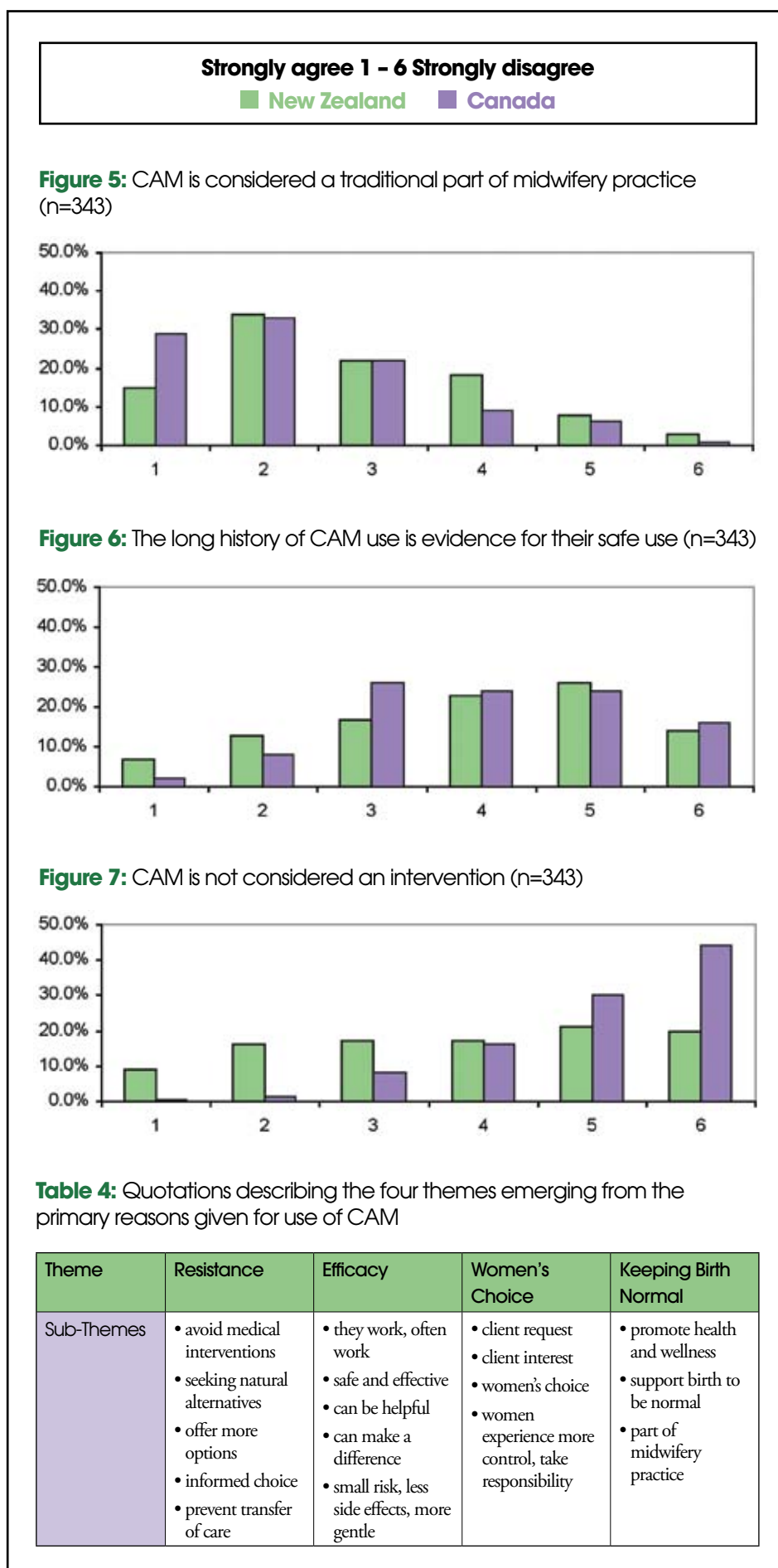
conventional, biomedical approach to childbearing. The findings of this study confirm that CAM is a usual part of autonomous midwifery practice and that the majority of midwives' clients utilise CAM. Most of the midwives responding to the survey recommend CAM to their clients. There were similar patterns of CAM recommendation across education levels, suggesting the route of education did not appear to influence use. Midwives in the study perceive CAM as enhancing midwifery care, supporting normal birth and to be an essential part of midwifery care. Respondents also affirmed that CAM is a traditional part of midwifery care.

More than half of the midwives responding estimated that most of their clients use CAM. These figures are congruent with the estimates of CAM use in the general population (Boedeker & Kronenberg, 2002; Ernst & Fugh Berman, 2002; Ramsay, 1999; Zolman & Vickers, 1999; Eisenberg et al., 1998). Midwives noted that many clients who choose midwifery care are already using CAM as part of their health care. For some women CAM is their first choice for any health care intervention.

Midwives indicated they integrate the use of CAM therapies into all aspects of their care, employing them in the home and hospital. Although the majority of midwives use CAM in the hospital setting, around half of the respondents in both countries indicated this use was not noted on hospital charts. There are likely medico-legal concerns for this, as well as encountering negative regard from hospital personnel. Not documenting CAM use is of concern since some CAM therapies may interact with conventional biomedicine therapies. Some midwives reported that mothers used CAM therapies in both settings on their own initiative.

Midwives are interested in learning about CAM. They participate in workshops or programmes, read the literature and network extensively with one another. Given that 95% of respondents indicated they learn about CAM from discussions with other midwives this is a rich field of information and perhaps misinformation and raises questions relating to what midwives should know about CAM when graduating from midwifery programmes and what should be included in curricula.

We propose the notion that the use of CAM by midwives is in resistance to the conventional biomedical approach to childbearing as expressed by their comments of "avoiding medical interventions" and "supporting birth to be normal" and using CAM in situations that have a strong potential to result in medicalised birth with its associated morbidity. Midwives cited reducing the incidence of postdates or imminent induction of labour as a common reason for using CAM. Given that the rates of induction and caesarean birth are rising, these are real and present concerns evident in every pregnancy and birth (Moon, 2002). By considering CAM, women and midwives have increased the options and opportunities to achieve a normal birth and they do not perceive any increased risks to the mother and baby.



There are questions to be asked and answered about the evidence base for CAM use in childbearing. Respondents did acknowledge the lack of research and evidence for use and were cognisant that using CAM is an intervention albeit a "natural" or more gentle one. However, this did not appear to affect the incidence of use overall. There is some evaluation and evidence for the use of CAM therapies appearing in specific circumstances, for example, acupuncture as a treatment to reduce nausea and vomiting in early pregnancy (Smith et al., 2002) and moxibustion for turning breech to cephalic presentations (Budd, 2000). Breech presentations were commonly cited as a reason for employing CAM, both by midwives who do not routinely or commonly utilise them and midwives who do. A breech presentation is most often an indication for an elective caesarean section (Hannah et al., 2000) and as the number of vaginal breech births decrease so do women's chances of finding a practitioner willing or able to provide safe care. Therefore employing a CAM therapy in this instance is not only providing an option but also providing a way to avoid medical intervention, to avoid transfer of care, to support birth to be normal and a way for women to take responsibility and maintain control in their care. Evidence for the use of CAM in obstetrical care is however scarce, making informed choice difficult for women and midwives. Many of the research questions remain locked in paradigmatic conflicts and the answers may not be available unless the politics of health care are put aside and a genuine search for the knowledge and truth in each therapy is the principal motivation in the research.

## LIMITATIONS OF THE STUDY

The lower response rate of the New Zealand midwives may limit the generalisability of these findings. New Zealand has a busy midwifery community with an active research agenda generating from the undergraduate, graduate and postgraduate midwifery programmes and practising midwives are frequently called upon to participate in research projects, which may have decreased the number of participants. In Canada, midwifery research is relatively new and the practitioner requests are less frequent. Alternatively the lower response rate in New Zealand may reflect less use of CAM in the larger midwifery population and therefore less interest in the survey.

## RECOMMENDATIONS FOR FUTURE RESEARCH

Given the high rate of use of CAM in midwifery practice, without strong evidence of efficacy and safety, it is imperative that research is undertaken in this area. The challenge is that the most robust research design to test the efficacy of an intervention is the randomised controlled trial (RCT). We need a midwifery profession prepared to undertake RCTs where appropriate and if not, to employ innovative research alternatives suitable to the situation. We need a situation of equipoise (where we are prepared to acknowledge that we do not know whether the CAM intervention makes a

difference or not to the outcome) and we need women prepared to participate in trials. Given the apparent prevalence of CAM use in midwifery practice and belief in its efficacy identified in this study, support for research of this nature may be low.

To develop an increased understanding of CAM efficacy the midwifery profession could be engaged in an international audit of its use in specific circumstances which would include a description of dose, timing and route of application together with maternal and infant outcomes. In this way the knowledge base for CAM use in pregnancy would gradually be increased. Current practices are ad hoc and based on the practice wisdom of individual practitioners and the individual experiences of women in their care. This is problematic for midwifery practice and makes it difficult to provide adequate informed choice to women.

## SUMMARY

CAM in midwifery care appears to be employed as a means to support the normal processes of pregnancy and birth and to respect women's autonomy. The inclusion of CAM in midwifery care appears to be congruent with a holistic approach to childbirth that many midwives, in primary care/autonomous practice, feel reflects a different care relationship; one of working with women as opposed to the perceived medical care relationship of working on women. Many questions about the inclusion of CAM and the interface with evidenced based practice are yet to be answered.

Complementary and alternative medicine is interwoven into the current health care paradigm and into midwifery care. Although the conventional biomedical approach dictates most of current obstetrical care, CAM consistently and persistently continues to be utilised during childbearing. Knowledge regarding CAM use for pregnancy and birth continues to be passed from woman to woman; mother to midwife, midwife to midwife, midwife to mother, maintaining a circle that has that been in place throughout the history of childbearing.

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## NEW ZEALAND RESEARCH

# Smoke Free Outcomes with Midwife Lead Maternity Carers:

An analysis of smoking during pregnancy from the New Zealand College of Midwives Midwifery database 2004 – 2007

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### ABSTRACT

Tobacco smoking during pregnancy has adverse health implications for both the mother and the baby. The New Zealand College of Midwives MMPO midwifery database was used to examine the smoking or smoke free status of women who had a midwife as their Lead Maternity Carer between the years 2004 to 2007. The database contained data for more than 61,000 women over a period of four years. Smoking and smoke free status during pregnancy and the postpartum period are provided for each

year along with the age and ethnicity of the women. Analysis of the data showed a small reduction in the incidence of smoking at pregnancy registration over the four years. This research was able to link the data from the antenatal to the post natal period so that changes in smoking behaviour could be identified. This revealed a much larger reduction in smoking during the post partum period. The groups with the highest reductions are women who are under twenty or of Maori ethnicity. Continuity of midwifery care over the pregnancy, birth and postnatal periods may contribute to these outcomes. This research has provided a unique and contemporary picture of the smoke free and smoking behaviour of women during pregnancy and following birth in New Zealand.

### Keywords

Smoking cessation, midwifery, New Zealand

### INTRODUCTION

Tobacco smoking is a major cause of ill health, disease and death, and during pregnancy has adverse health implications for both the mother and the baby. There is limited contemporary information available in New Zealand on smoking during pregnancy and thus there is real need for some robust information about smoking patterns. Since 2001, the prevalence of smoking in the general population within New Zealand has reduced from 24.9 percent to 19.9 percent, suggesting that the legislative and media campaigns that have been undertaken by the Ministry of Health are having some impact. One of the questions for this study was whether this trend had been reflected in the pregnant population.

### BACKGROUND

The Ministry of Health (2005) has identified smoking during pregnancy as the most important preventable cause of poor pregnancy outcomes, with links to increased infant mortality and morbidity.

The adverse health implications of smoking during pregnancy are well documented demonstrating causal relationships between maternal smoking and: miscarriage, premature labour, premature rupture of the membranes, placenta praevia, placental abruption, ectopic pregnancy, low birth weight babies, stillbirth and neonatal death, SUDI (Sudden Unexplained Death of an Infant) and decreased duration of breastfeeding (Herrmann, King, & Weitzman, 2008; McLeod, Pullon, & Cookson, 2003; Ministry of Health, 2008b; Schluter, Ford, & Ford, 2002; Benowitz & Dempsey, 2003; BRC Marketing and Social Research & T&T Consulting Limited, 2005; Martin et al., 2008). There are also health implications for children exposed to passive smoking in pregnancy. These include a reduction of lung function in infants, and increased rates of otitis media, respiratory infections, and asthma (McLeod et al., 2003). There are indications that poor fetal growth during pregnancy may trigger the development of diabetes, high blood pressure and cardiovascular disease, consequences which may only become apparent at a much later age (Herrmann et al., 2008).

### Prevalence of Smoking during Pregnancy in New Zealand

There has been no long-term, recent or reliable data collection about smoking prevalence during pregnancy for New Zealand women. Several studies have suggested a pregnancy smoking prevalence of 30 per cent (Ford, Wild, Glen, Price, & Wilson, 1993; Schluter et al., 2002). Tappin, Ford, & Schluter (1997) in a small study of 838 pregnant women attempted to establish a baseline for smoking during pregnancy by measuring antenatal serum cotinine (a by product of smoking). They found that smoking prevalence decreased over pregnancy so that by the third trimester 26.8 percent (225 women) remained cotinine positive (Tappin et al., 1997).

Research conducted with the general population however has revealed that there are some groups more likely to smoke and therefore are more at risk of

continued smoking during pregnancy. We know that the prevalence of smoking peaks in early adulthood and then declines with increasing age (Ministry of Health, 2008a). It is however young women who have the highest rates of smoking, a particular concern when they become pregnant. McDermott, Dobson, & Russell, 2004 found that this is mirrored in other Western countries, in which girls start smoking as teenagers, increasing until they are in their mid-20s after which smoking rates start to show a decline (McDermott et al., 2004).

Māori rates of smoking are higher than non-Māori rates, across all age groups (McLeod et al, 2003). In comparison with non-Māori women, Māori women begin smoking at a younger age and have the highest smoking rates among women of all age groups. Recently, there has been a slight decrease in the prevalence of smoking among Māori with data from the 2006/7 New Zealand Health Survey showing that smoking among Māori, while remaining high at 42.2 percent, is the lowest it has been for over a decade. This compares with smoking rates of 26.9 percent among Pacific peoples and 18.6 percent among other New Zealanders (BRC Marketing and Social Research & T&T Consulting Limited, 2005; Ministry of Health, 2008c)

### Smoking cessation during pregnancy

Pregnancy is widely believed to be an opportune time for smoking interventions, because women are likely to be concerned for the health of their baby and to be in regular contact with health practitioners. Some women become smoke free on discovering they are pregnant, others continue to smoke during their pregnancy, whilst other women stop and start smoking again in the postnatal period. McDermott et al. (2004) in an Australian study suggest that women are motivated to stop smoking when they are pregnant because they are primarily concerned about the health of their baby, and secondarily concerned for their own health. Women who become smoke free at this stage are defined in the literature as spontaneous quitters and are very successful at refraining from smoking throughout their pregnancy with little or no formal intervention. However, they are vulnerable to relapse either during pregnancy or post partum, with studies suggesting that between 50 and 80 percent of spontaneous quitters will relapse within six to twelve months of the birth (Severson, Andrews, Lichtenstein, Wall, & Akers, 1997; Carmichael, et al., 2000; Ko, & Schulken, 1998; Mullen, Richardson, Quinn, & Ershoff, 1997; Solomon et al. 2004; & McDermott, et al, 2004). This temporary cessation has been found less likely to occur during subsequent pregnancies (BRC Marketing et al., 2005).

Although the prevalence of smoking within New Zealand society as a whole has been reducing there

has been little research into the number of women who continue to smoke during pregnancy. This information is required in order that smoking cessation resources can be targeted appropriately.

## METHODS

Ethical approval to undertake this study was obtained from the National Ethics Advisory Committee. This study analysed data sourced from the Midwifery and Maternity Provider Organisation (MMPO) national database. The MMPO is a nation-wide organisation which provides a practice management system for midwives who work as LMCs (approximately 75% of all LMCs are members of the MMPO). Midwives enter all practice information prospectively into this national database. Information on smoking during pregnancy and at discharge from midwifery care is one of many variables that are entered for each pregnant woman. The database also contained about twenty percent more antenatal and postnatal data for each year sourced from women who had their intrapartum care provided (and recorded) elsewhere. The total number of records examined was 61,989 which included all records available from 1 January 2004 until 31 December 2007.

Over the four year period the number of LMCs providing data to the MMPO increased resulting in an increasing cohort size for each year. Over the same period there was an increase in the number of births. Table 1 demonstrates the percentage of the total childbearing population represented over this four year period.

The representativeness of this population needed to be established and this was done by comparing the women's demographic characteristics with those from the Statistical Information on Hospital-based

Maternity Events 2005 (Ministry of Health, 2007b; New Zealand Health Information Service, 2008a), and the Report on Maternity for 2004 (Ministry of Health, 2007b; MOH, 2007). The MMPO data closely resembled the national maternity population with two exceptions. The MMPO dataset had a slightly higher proportion of women in the less than 25 year age group than did the national datasets, and had a slightly lower percentage of women who identified as Māori (18% vs 20%). This second difference was present only in the first three years. Pacific Peoples and Asian ethnic groups were also under-represented in the MMPO cohort.

This longitudinal, prospectively collected data was analysed to describe the smoking behaviour of pregnant women at registration with a midwife Lead Maternity Carer and following birth at discharge from midwifery care. Each cohort year was described and analysed separately by ethnicity and age for: self reported smoking status at registration with the midwife, cigarette consumption, gestation at registration, and smoking status following the birth. A comparative analysis across the years was then undertaken. For those women who provided information on both the antenatal and postnatal smoking status the data was linked and paired. McNemar's test was used to analyse the associations for each separate year. The analysis also examined the relationship between smoking in pregnancy, and age and ethnicity. Statistical significance was assessed using chi-squared tests, McNemar tests, t-tests or ANOVAs, where appropriate. All data analysis was carried out in SPSS v16.

## RESULTS

Over the four years of data from 2004 through to 2007 there was a steady increase in the percentage of women who were smoke free when they registered

**Table 1:** MMPO midwifery database sample size 2004-2007

Year	MMPO cohort	Number of births in N.Z.	Percentage of births
2004	11,101	57,591 *	19
2005	14,397	57,196 #	25
2006	17,372	58,250 **	29
2007	19,119	61,612 **	31

\* Total mothers as per the MOH Report on Maternity 2004

# Total mothers as per the NZHS Statistical Information on Hospital based Maternity Events 2005

\*\* Live births from the Births Deaths and Marriages - Statistics New Zealand - this figure will include multiple births and exclude stillbirths so not as accurate as the MOH reports.





with their midwife (from 77.1 percent to 80.8 percent) and a corresponding decrease in the prevalence of smoking (Table 2).

From 2004 until June 2007, LMCs could not register women for care until the woman was at least 14 weeks pregnant due to the service specifications of the Maternity Services Section 88 contract. In July 2007, the Maternity Services Notice section 88 was updated, this change allowed women to register with their LMC at the beginning of pregnancy (Ministry of Health, 2007a). The median weeks of gestation at registration for the years 2004 to 2006 was 16 weeks, which decreased to 15 weeks in 2007. The median is one week less in 2007 than the other years, and this, together with an increased range in 2007, is accounted for by the changes in the Section 88 Notice. Overall, the results suggest that for the years 2004 to 2006 the majority of women registered with a midwife at between 14 and 18 weeks of pregnancy. The change to the Section 88 Notice is apparent in the 2007 cohort with a lowering of the median weeks of gestation suggesting a change in practice. We expect to see this change becoming more marked in 2008 as more women register with a midwife earlier in their pregnancy.

The implication is that there may be a number of women who have stopped smoking prior to registration and as soon as they found out that they were pregnant. These women would not be captured in this data. However, because the data has been acquired in the same way over the four year period, we can be assured that the numbers of women who report that they are smoking during pregnancy has reduced over the four year period covered by this research.

The picture is similar on discharge from midwifery care, which occurs most commonly between four and six weeks after the birth (Table 3).

In order to determine the true prevalence of smoking for an individual, it was necessary to examine the paired proportions of smoking status antenatally and postnatally. The percentage of smokers both before and after birth is reported in Table 4. The proportions are thus paired, and McNemar's test has been used to determine the significance of any difference between these correlated proportions.

When compared to the number of women reporting that they smoke during the antenatal period, there is a reduction in smoking at discharge from care across all the years in our sample. The reduction varied across the years from 10% to 15% with a mean reduction of 12.6% across the four years.

A comparison between the smoking behaviour in the general population and that of women during pregnancy and the post partum was made (Table 5). There has been a trend of reduced smoking prevalence in the general population

**Table 2:** Numbers of women smoke free at registration with midwife

Smoking status		Year of Registration				
		2004	2005	2006	2007	Total
Smoke free	%	77.1	78.8	80.1	80.8	79.5
	N	8,340	11,289	13,894	15,450	48,973
Smoking	%	22.9	21.2	19.9	19.2	20.5
	N	2,484	3,039	3,452	3,667	12,642
Total	%	100.0	100.0	100.0	100.0	100.0
	N	10,824	14,328	17,346	19,117	61,615

**Table 3:** Number of women smokefree at discharge from midwifery care

Smoking status postnatal		Year of Registration				
		2004	2005	2006	2007	Total
Smoke free	%	86.6	87.8	90.0	85.0	87.3
	N	9,250	12,451	15,550	16,182	53,433
Smoking	%	13.4	12.2	10.0	15.0	12.7
	N	1,426	1,731	1,736	2,848	7,741
Total	%	100.0	100.0	100.0	100.0	100.0
	N	10,676	14,182	17,286	19,030	61,174

**Table 4:** Mean reduction in proportion of smokers between antenatal and postnatal visit

Year	% Smoking		% Difference (95% CI)	McNemar $\chi^2$	P	Odds Ratio (95% CI)
	Antenatal	Postnatal				
2004	23.2	13.3	9.9 (9.3, 10.6)	746.2	<0.0001	6.2 (5.4, 7.2)
2005	21.3	12.2	9.1 (8.6, 9.7)	881.1	<0.0001	5.4 (4.7, 6.1)
2006	19.9	10.0	9.8 (9.4, 10.3)	1298.9	<0.0001	7.5 (6.6, 8.5)
2007	19.2	15.0	4.2 (3.8, 4.6)	324.4	<0.0001	2.4 (2.2, 2.6)
All years	20.6	12.6	7.9 (7.7, 8.2)	3100.5	<0.0001	4.6 (4.3, 4.9)

from 27 to 25 percent during the 1990's to 23.5 percent by 2005, and a further reduction to 19.9 percent in 2006/7 (Ministry of Health, 2008b).

When compared to the prevalence of smoking in the general New Zealand population our data suggests that the prevalence of smoking during the antenatal period follows the trends for the general population.

However, by the time the woman has been discharged from care there has been a further and significant reduction in smoking.

#### Age Differences

To determine whether age group was a significant determinant of smoking, the age and smoking status

for each year was examined. There were a greater proportion of women who smoked in the 'under 20 years' age groups (Table 6). Whilst the proportions for each group decreased from 2004 to 2007, the 'under 16 years' and 'between 16 to 19' years, were the groups which had consistently higher numbers of smokers. In comparison, the lowest proportion of smokers was in the forty plus age group. This pattern remained similar in both the antenatal smoking and post natal smoking data.

For each year, and for all years combined, the  $X^2$  value was highly significant ( $P < 0.0001$ ,  $df=6$ ) and indicated that there were significantly more smokers in the lower age groups. For the under 25 years of age groups, more than 30 percent reported smoking antenatally in any given year. This reduced to less than 21 percent after age 25 years.

Over the years, the percentage of smokers declined significantly in every age category apart from those respondents aged <16 years or >40 years ( $P < 0.05$ ,  $df=3$ ).

For the age categories 16-19 years, 20-24 years, 25-29 years, and 30-34 years, the relationship was also linear and the  $X^2$  trend was significant at  $P < 0.005$  in each instance, where all the variation within the groups can be attributed to this trend. This equated to a significant decrease in the smoking rates across the years for women in these age categories.

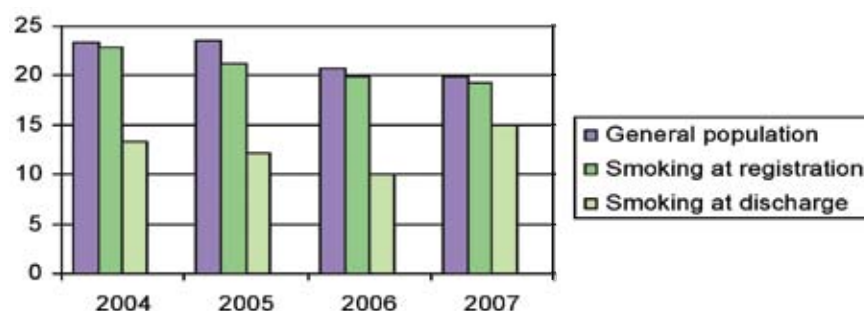
The pattern was similar for post-natal smoking (Table 7). For each year, and for all years combined, the  $X^2$  value was highly significant ( $P < 0.0001$ ,  $df=6$ ), and indicated that there were significantly more smokers in the lower age groups.

Overall, this data demonstrates that it is the women in the younger age groups who are more likely to smoke during pregnancy and to continue into the post partum period although they also had the greater reductions in smoking postpartum.

### Smoking by Ethnicity

To determine whether ethnicity was a significant determinant of smoke free or smoking behaviour, the ethnicity of the cohorts and smoking status was examined. The respondents' ethnic origin was re-categorised to give priority to Māori according to the ethnicity data protocols for the Health and Disability Sector (2004). There was a significant association with smoking and ethnicity, such that there were nearly twice the number of Māori smokers for each individual year, and for all years combined ( $X^2$ 's for each separate year and all years combined,  $df=5$ ,  $P < 0.001$ ) (Table 8 - over page). The lowest level of smoking was reported in the Asian ethnic group, although numbers within the Asian ethnic

**Table 5:** Comparison of pregnancy smoking trends with smoking in the general population.



**Table 6:** Antenatal Smokers within age group for all years combined and separately for 2004 to 2007

Year	Smoking	Age group							Total
		<16	16-19	20-24	25-29	30-34	35-39	>40	
2004	%	46.4	45.2	36.0	20.7	15.3	13.6	14.7	22.9
	N	26	412	720	577	515	191	43	2,484
2005	%	53.1	44.7	34.2	18.5	12.9	13.2	15.8	21.2
	N	34	528	902	695	567	258	55	3,039
2006	%	39.2	42.9	32.3	17.7	11.7	10.9	16.8	19.9
	N	29	654	1,034	785	607	276	67	3,452
2007	%	36.6	39.7	30.2	17.5	10.8	12.4	12.4	19.2
	N	26	680	1,098	870	578	359	56	3,667
All Years	%	43.4	42.7	32.7	18.3	12.4	12.3	14.8	20.5
	N	115	2,274	3,754	2,927	2,267	1,084	221	12,642

**Table 7:** Postnatal Smokers within age group for all years combined and separately for 2004 to 2007

Year	Smoking	Age group							Total
		<16	16-19	20-24	25-29	30-34	35-39	>40	
2004	%	28.1	28.0	20.1	12.0	8.3	8.6	11.1	13.4
	N	16	253	401	331	276	117	32	1,426
2005	%	28.1	26.7	19.5	10.2	7.5	7.8	10.4	12.2
	N	18	310	510	381	324	152	36	1,731
2006	%	10.8	21.6	16.4	8.6	6.4	5.7	5.8	10.0
	N	8	329	522	380	330	144	23	1,736
2007	%	36.6	28.8	24.1	13.6	8.5	9.6	12.1	15.0
	N	26	490	870	676	455	277	54	2,848
All Years	%	25.6	26.1	20.2	11.1	7.6	7.9	9.8	12.7
	N	68	1,382	2,303	1,768	1,385	690	145	7,741



category for each separate year were too small to be meaningfully interpreted, across all years combined the smoking rate was still only 1.7 percent (N=44).

From 2004 to 2007, there was a significant trend of decreased smoking for New Zealand European/Pakeha ( $X^2$ trend=2.5, df=1,  $P < 0.0001$ ), and Māori ( $X^2$ trend= 50.1, df=1,  $P < 0.0001$ ). This equates to a 3.7 percent decline for NZ European/Pakeha women and a 6.5 percent decline for Māori women.

The pattern of smoking at discharge was similar to that of antenatal smoking with twice the amount of Māori smoking postnatally in any given year, and all years combined. There are less postnatal smokers in every other ethnicity ( $X^2$ 's on df=5,  $P < 0.001$ ).

Comparing the antenatal and postnatal smoking tables on the right (tables 8 and 9) indicates that there is an overall reduction in the number of smokers postnatally within each ethnicity. This equates to approximately a seven percent reduction in smoking for New Zealand European / Pakeha, a 20 percent reduction in smoking for Māori, and between a six percent and 12 percent reduction for Pacific women.

The mean difference between age and ethnicity was analysed for smokers and non smokers for each year and the results indicated that the mean age for each of the years of a non-smoker compared to a smoker was greatest in the New Zealand European group and this difference was just over three years. The difference was significant both antenatally and postnatally. For Māori women the difference in age between being a smoker and non smoker was less than a year, and for Pacific women there was no significant difference. This suggests that New Zealand European smokers are significantly younger than non smokers. However this difference is not significant in Māori or Pacific women where smoking may not be related to age for these groups.

### The self reported cigarette consumption during pregnancy and at discharge

Every woman who reported smoking during pregnancy or postpartum was asked by the midwife how much she was smoking. The number of cigarettes was documented and was categorised on input into the database. The cigarette consumption was therefore a self reported measure by the women.

The antenatal smoking consumption is reported in Table 10 across the years 2004 to 2007. Within each year the most likely number of cigarettes smoked is between five to 10 cigarettes a day, with more than 40 percent of smokers smoking this amount antenatally.

Table 11 indicates the smoking consumption at discharge. The association between smoking intensity

**Table 8:** Antenatal Smoking within prioritised ethnicity for all years combined and separately for 2004 to 2007.

Year	Smoking	Ethnicity						Total
		NZ European /Pakeha	Maori	Pacific Islander	Asian	Other	Not stated	
2004	%	17.9	49.4	17.7	2.7	4.8	28.6	22.9
	N	1,414	970	55	9	12	24	2,484
2005	%	16.0	48.0	16.7	1.9	5.3	24.5	21.2
	N	1,649	1,261	78	10	18	23	3,039
2006	%	15.5	43.5	16.5	1.7	4.1	20.0	19.9
	N	1,893	1,406	106	13	17	17	3,452
2007	%	14.2	42.9	15.7	1.3	5.1	26.7	19.2
	N	1,847	1,639	124	12	29	16	3,667
All Years	%	15.7	45.3	16.4	1.7	4.9	24.8	20.5
	N	6,803	5,276	363	44	76	80	12,642

**Table 9:** Smokers at discharge within prioritised ethnicity for all years combined and separately for 2004 to 2007.

Year	Smoking	Ethnicity						Total
		NZ European /Pakeha	Maori	Pacific Islander	Asian	Other	Not stated	
2004	%	10.5	29.4	8.1	0.6	0.4	12.9	13.4
	N	811	576	25	2	1	11	1,426
2005	%	9.0	29.0	7.3	1.4	3.0	16.0	12.2
	N	911	754	34	7	10	15	1,731
2006	%	7.8	23.0	4.7	0.4	1.5	14.1	10.0
	N	946	739	30	3	6	12	1,736
2007	%	11.1	34.1	9.8	1.1	3.4	20.0	15.0
	N	1,434	1,296	77	10	19	12	2,848
All Years	%	9.5	29.1	7.5	0.9	2.3	15.4	12.7
	N	4,102	3,365	166	22	36	50	7,741

**Table 10:** Antenatal smoking intensity across the years 2004 to 2007

Smoking Consumption	Smoking	Year				Total
		2004	2005	2006	2007	
1-4 cigarettes	%	27.6	30.5	30.4	29.3	29.6
	N	686	926	1,050	1,074	3,736
5-10 cigarettes	%	40.5	42.4	43.1	39.6	41.4
	N	1,006	1,290	1,487	1,451	5,234
11-20 cigarettes	%	26.7	21.6	20.8	26.0	23.7
	N	664	655	719	953	2,991
More than 20	%	5.2	5.5	5.7	5.2	5.4
	N	128	168	196	189	681

and year was significant ( $X^2=60.5$ ,  $df=6$ ,  $P<0.0001$ ) as was the  $X^2$  for linear trend ( $c2trend = 52.5$ ,  $df=1$ ,  $P<0.0001$ ). This signifies that the amount smoked in each category, except the 11 to 20 cigarettes category, appears to be decreasing.

## DISCUSSION

The aim of the research was to describe and analyse the smoking behaviour of women during pregnancy and the post partum period over a four year period. The MMPO midwifery database has provided information on a representative cohort of pregnant women registering with a midwife LMC. The results demonstrate that there has been a reduction in the prevalence of smoking in pregnant women over the four year period during which the data was collected. When compared to smoking prevalence in the general population, our data demonstrates a remarkable synchronicity with the smoking prevalence and reduction that has occurred in the general population over the same time period.

It has been argued that many women will stop smoking when they become pregnant due to concerns about the health of the baby, and it was previously thought that many women would stop smoking when they were first aware of the pregnancy, and therefore during the first trimester (McLeod et al, 2003). The MMPO midwifery data has measured the prevalence of smoking at registration with a midwife LMC, where the majority of women registered between 14 and 18 weeks gestation. This research has therefore measured the prevalence of smoking during the second trimester of pregnancy and there is no way of knowing, or indeed measuring how many women had stopped smoking prior to registration with the midwife LMC. The similarity in the rate of smoking during the second trimester and that of the general smoking population is of concern as it indicates that there may not be as many women ceasing to smoke when they first find out they are pregnant as previously thought (McLeod et al., 2003). This suggests that women may not be getting the message that they should stop smoking at this time. There needs to be some consideration of how to focus the smoke cessation messages so that women understand the health impacts of smoking prior to conception.

Women who are still smoking during the second trimester have already been smoking for a third of their pregnancy suggesting that they may be more challenged by their addiction to smoking and may not be ready to stop. It is reassuring therefore to see that the MMPO midwifery data found a significant reduction in smoking at discharge when compared with smoking at registration. This suggests that women have stopped smoking at some time

**Table 11:** Postnatal smoking intensity across the years 2004 to 2007

Smoking Consumption	Smoking	Year				Total
		2004	2005	2006	2007	
1-4 cigarettes	%	31.7%	33.4%	31.3%	28.2%	31.0%
	N	662	870	790	869	3191
5-10 cigarettes	%	48.8%	47.6%	42.6%	38.6%	44.8%
	N	1,019	1,237	1,164	1,189	4,609
11-20 cigarettes	%	15.9%	15.9%	19.4%	30.0%	21.0%
	N	333	414	490	924	2,161
More than 20	%	3.5%	3.1%	3.1%	3.3%	3.2%
	N	74	80	77	102	333

following the antenatal registration visit, and are smoke-free following birth in the post natal period at the discharge visit with the midwife. The reasons for this reduction require further research to provide a fuller explanation. However, the one consistent factor within this cohort is that all of the women had a midwife providing care as a Lead Maternity Carer to them.

In New Zealand midwives have several frameworks which provide standards and guidance on care provision such as the NZCOM Handbook for Practice (2008) and the Section 88 contract (MOH, 2007). Within these frameworks are the expectation that there is the provision of information advice and referral related to healthy lifestyles and the promotion of each woman's right to self determination and informed choice ( MOH, 2007; NZCOM, 2008). Midwives recognise and understand the impact of smoking during pregnancy and the importance of smoking cessation and referral for cessation support at this time. The reduction in smoking at discharge from midwifery care suggests that there has been some influence from midwifery care on smoking behaviour.

The majority of women in New Zealand can access continuity of care from midwives from registration during pregnancy, through the labour and birth and into the post partum period with discharge occurring between four and six weeks postpartum. This continuity of care facilitates a relationship in which the midwife and the woman can get to know each other and build a relationship based on trust, sharing of information and fully informed decision making. Midwives develop a partnership relationship in which women are often more able to have honest and open discussion and the midwife is able to promote healthy lifestyles. The impact of this relationship and the decision and support for women to stop smoking during this period was not

the focus of this research. Therefore the impact that continuity of care may have on the decision to stop smoking cannot be defined but it is an area that would benefit from further research.

The two groups which had the greatest reductions in smoking behaviour were the women under 25 years of age and the group of women who identified as Māori. As stated earlier, the MMPO midwifery cohorts had a higher proportion of younger women in the less than 25 age groups when compared to the national datasets. Despite this the results demonstrated that it was this age group who were more likely to be smoke free at discharge from the midwife. The reduction in smoking behaviour in this group is important because these women are in their early childbearing years and are more likely to have subsequent children. Whilst we cannot assume that the women in this group have continued to be smoke free following discharge from the midwife, the increase in smoke free behaviour suggests that they are aware of the impact of smoking during pregnancy. This is likely to have an influence on their behaviour in subsequent pregnancies.

The MMPO midwifery data supports the existing research that Māori rates of smoking are higher when compared to all other ethnic groups. Women who identified as Māori had higher rates of smoking at registration with a midwife but were also the group which had the greatest reduction of smoking at discharge from midwifery care. This trend was consistent across the four years. The change to smoke free behaviour in Māori women is an important element of this research and demonstrates that this group were strongly influenced to make cessation efforts. There is no available information on smoking behaviour following discharge from midwifery care, so it is difficult to know what the long term benefits will be. However, it is possible that the increase in smoke free behaviour has created possibilities for the woman





and her family which may result in increased and sustained cessation efforts. It is also likely to influence smoke free behaviour in future pregnancies.

## Strengths and limitations

This research has provided contemporary and reliable information about a representative group of women during pregnancy and the post partum period over a four year period. The profile of the sample provides confidence that it is representative. The MMPO midwifery practice management system has a number of inbuilt features that reduce the risk of data entry error which adds to the integrity and reliability of the data. Added to this is the ability to link from the antenatal period to the post natal period which is unique to this research and enhances the reliability of the findings. Finally, the close relationship that is built during pregnancy between the MMPO midwives and the pregnant women adds to the reliability of primary data collection. The main limitation was that some responses are self reported and may be subject to recall biases or self-denial. There is also the possibility of some mothers having more than one birth episode during the four year cohort

## CONCLUSION

This research has provided data on smoking behaviour for more than 61,000 women over a four year period and has looked at rates of smoking at registration with a midwife and at discharge. We found that the majority of women registered with a midwife at between 14 weeks and 18 weeks of pregnancy. This was due to the MOH service specification (Section 88) requirement that women register with their midwife after 14 weeks of gestation. However, with changes made in July 2007 which enabled women to register at any time in their pregnancy, we expect to see women registering at an earlier time in their pregnancies in future years.

The percentage of women who report that they are smoke free during pregnancy has increased over the four year period from 77.1 percent in 2004 to 80.8 percent in 2007. There has been a corresponding reduction in the percentage of women reporting that they are smoking during pregnancy over the four years from 22.9 percent in 2004 to 19.2 percent in 2007. This is synchronous with the reduction that has occurred in the prevalence of smoking in the general population.

Our data has also demonstrated a significant increase in the number of women reporting that they are smoke free at discharge from the midwife, when compared to smoking at registration. A consistent element in the research is that all women have had maternity care provision from an LMC midwife. Women receive

continuity of care from the midwife throughout their maternity experience, how this influences smoking behaviour has not been examined in this research but should be a focus for future research.

We found that age and ethnicity were strong influences of smoking behaviour during pregnancy with women under 20 years of age group and women who identified as Māori more likely to smoke during pregnancy. These were also the groups that had the greatest behaviour changes with increased rates of smoke free behaviour at discharge from midwifery care. Our data suggests that these groups can be influenced to make cessation efforts.

This research has provided reliable and valuable information about the smoking behaviour of women during pregnancy for the years 2004 to 2007. It can be used to inform practice and support strategies aimed at improving smoking cessation during pregnancy.

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## NEW ZEALAND RESEARCH

# Rhetorical (de)VICES and the construction of a 'natural' caesarean.

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### ABSTRACT

Meanings emerging from both popular and professional discourses, have the potential to shape the experience of childbirth. As an embodied practice, childbirth occupies a space in which many shifting meanings are engraved upon the birthing body. These inscriptions are enabled through the availability of reproductive technologies and legitimised in professional and popular discourses. It is in this space that the concept of a 'natural' caesarean surfaces in search of authenticity. This article draws from the ideas of Post-structuralism to examine how language can shape reality and argues that the choice for a caesarean section, as an alternative birth mode, is the product of social process and disciplinary practices. These discursive strategies have been played out on a number of platforms, the key of which is the appropriations of the media for the transposition of medical knowledge into common knowledge in the interests of popular appeal and willing truth.

### Keywords

Caesarean section. Post structuralism, discourse

### INTRODUCTION

As embodied practice, childbirth occupies a territory in which a multiplicity of shifting meanings become engraved upon women's (birthing) bodies. These inscriptions are enabled through an alignment with birth technologies and have significance for how

childbirth is experienced (Ettore, 2002; Kent, 2000). As birth technologies advance, options available for women increase.

The construction of the choice of caesarean section, as an alternative birth option, regardless of clinical need, attests to a volatile moment in the history of childbirth in which an explosion of discourses compete on a shifting terrain for a 'truth' about how women are to give birth and how babies are to be born. Framed within the liberal humanist discourse of autonomy, the choice of caesarean regardless of need has sparked off considerable debate in both professional and popular discourse (Douché, 2007). It is through this controversial domain that women's decisions for childbearing are negotiated.

In Aotearoa New Zealand, calls for choice in childbirth emerged from a groundswell of political movements throughout the 70s and 80s in response to the increasing intervention in maternity services (Donley, 1998). These events culminated in a series of reforms and legislative changes during the 90s that affirmed women's right to informed decision-making in pregnancy and childbirth. Since that time ideals regarding autonomy in childbirth have been taken for granted. Of late, nationally and internationally, there has been a growing perception in both professional and popular media that women have the right to elect a caesarean section regardless of need (Al Mufti, McCarthy & Fisk, 1997; Patterson-Brown, 1998; Cotzias, Paterson-Brown & Fisk, 2001; Johnston, 2001; Parson, 2002; Gallop, 2006).

The trend is part of an international drift and its momentum into the 21st Century was to some extent propelled with predictions in the popular press, by one British obstetrician, Nicholas Fisk, that by the year 2010 over half of all women would choose a caesarean as an alternative birth mode (Johnston, 2001; Coney, 2001; Parsons, 2002). At the time of writing, evidence to suggest women's choice for caesarean is soaring toward the 50% mark has eluded the author. Yet by spilling over into popular

discourse the effect has been to create caesarean, in the absence of clinical indications, as a new object of consumerism. More recently, in obstetric discourse, has been the emergence of a new 'truth' about caesarean, the 'natural' caesarean (Morehead, 2005; Smith, Plaat & Fisk, 2008). This adeptly fashioned oxymoron is testimony to the strategic use of language in reconfiguring caesarean as a natural event.

This article draws on the theoretical ideas of post-structuralism to argue that the construction of caesarean section, in the absence of clinical indications, as an alternative to a vaginal birth, is a product of a complex array of social processes and disciplinary practices. How caesarean, as an alternative to vaginal birth, is represented in popular discourse is examined alongside the strategic use of language. The construction of a new phenomenon surfacing in the imagination in obstetric discourse, the 'natural' caesarean, is unpacked to reveal how the media is appropriated in the conversion of scientific (obstetric) knowledge to common knowledge in the interests of popular appeal and the willing of truth.

### THEORETICAL FOUNDATION: THROUGH THE POSTSTRUCTURALIST LOOKING GLASS

A poststructuralist perspective, informed by the theoretical ideas of French philosopher Michel Foucault (1926 - 1984), is an appropriate means for unpicking the construction of a caesarean as an optional extra (Kitzinger, 2001). Post-structuralism makes no claim for a blanket truth about reality. Rather, it acknowledges that plurality of 'truths' are possible, constituted through the discourses and disciplinary practices people encounter in their daily lives (Weedon, 1997). For Foucault (1972), discourses do not simply reflect (an impartial) reality but are "...practices that systematically form the objects of which they speak" (1972, p. 49). Thus a discourse is a body of knowledge inherent within social and disciplinary practices such as the social practice of childbirth and the disciplinary practices of midwifery and obstetrics. Discourses enable and constrain that which is possible. By implication,





truth is inextricably linked to power, since knowledge is the product of power relations and power is key in sanctioning what can be true (Carabine, 2001; Jordan, 1997; Mc Houll & Grace, 1998).

Discourses do not stand alone. They intersect with a wider network of social and political relations that serve to strengthen their influence and provide the conditions that make possible claims of truth (Fahy, 2002; Carabine, 2001; Hook, 2001; Powers, 2001). For example within the context of Aotearoa New Zealand, midwifery statements concerning continuity of care and partnership with women (New Zealand College of Midwives (NZCOM, 2008) have been constituted within midwifery discourse. These statements have been reinforced within the (disciplinary) practice of midwifery which is regulated by the Midwifery Council of New Zealand (MCNZ) (MCNZ, 2004). Under the auspices of the Health Practitioners Competency Assurance Act, 2003, the MCNZ sets the conditions of possibility for midwifery's scope of practice which takes place in consultation with the profession, through the NZCOM and consumer groups.

Some discourses are more powerful than others in upholding particular realities, as in the case of who has authority over what constitutes a normal birth (Jordan, 1997). As such, divergent realities are possible depending upon one's positioning within a particular social group. Therefore the meanings women give to childbirth is informed discursively, that is, through multiple discourses that sit alongside institutional and social practices encompassed in everyday life. A post-structuralist focus lends itself to unravelling the complexities that occur within a discourse. Foucault's interest lay in the relationship between "who was speaking" (1972, p. 50) including their qualification to speak and the institutions that give a discourse its legitimacy (Foucault, 1972). What is said and not said, how subjects are positioned in discourse and the effects of language are also central to his analysis.

The recent upsurge of interest about caesarean section on demand in the national and international media (Coney, 2001; Daily Telegraph, 2001; Fitzsimons, 2001; Gallop, 2006; Healy, 2006; McCurdy, 2001; Parson, 2002; Patterson, 2003; Song, 2004; Vanderberg, 2002) has particular relevance because of the contentious and contradictory nature of the topic. Its importance lies in the extent to which media discourse serves as a potential force in shaping how women position themselves in relation to childbirth. It is to an examination of how language is used within media discourse that this article now turns.

## LANGUAGE USE AND THE 'FASHIONING' OF CAESAREAN IN MEDIA DISCOURSE

In shaping reality the media is a prevalent force paving the way for events to unfold; its success largely

attributed to a lack of alternative views (Peterson, 2002). In citing the work of Hilgartner (1990) Peterson explains that the media is often used to disseminate scientific knowledge, literally mediating between what is deemed to be genuine (pure, as in scientific) knowledge and popularised (contaminated, as in the media) knowledge (in Peterson, 2002, p. 108). In negotiating the border crossing of this transformation "rhetorical boundaries" are drawn up to mitigate against the risk of negative press and to protect scientific knowledge from external challenge (Peterson, 2002, p. 108). Boundary lines are devised so as to enable language to be used strategically for the purposes of simplification and presentation. Scientific knowledge becomes accessible, aided and abetted through rhetorical devices. The metaphor is one such device used to bridge gap in meaning between the esoteric and the tangible (Lupton, 2003). Lupton however cautions, far from being neutral, these figures of speech play an active role in shaping reality. Furthermore, they can be utilised as an ideological tool. For example Billig & MacMillan (2005) suggest, metaphors can be "rhetorically mobilised" in support of ideology as well as having the potential to "... dull literal meaning to the point of ideological concealment" (p. 478).

Headlines in popular discourse proffer a rich source of rhetoric to bring about their effects. Apocalyptic accounts of childbirth have the potential to fuel fears engendering beliefs about caesarean as an escape from anxiety surrounding childbirth. One article that appeared in the features section of the Dominion Post by Parson's (2002) entitled "When push comes to shove" accompanied by a caption "Labour pain: the thought of birth is the ultimate nightmare for some women" (p. B8) exemplifies this point. Fear of childbirth is represented as an overriding concern for middle class women.

*For women such as us, pregnancy is just one more situation to be dealt with. But faced with the brutal forces of life and death, the house of cards we like to call our inner confidence collapses quicker than you can say Enron. It turns out that our self-promotion has been as misplaced as much of corporate America's. The truth is not that we are too posh to push but that we are too scared (Parson, 2002, p. B8).*

Parson's satirical approach has a provocative tone which by now has produced its effect; the construction of caesarean section as a salvation for today's self-governing women. Her allegorical use of the demise of Enron serves to strengthen fear through evocative imagery. A spoof, be that as it may, the article is compelling in evoking anxiety in the hearts and minds of its readers, around the prospect of vaginal birth.

Celebrities and experts can also bolster a story (Lupton, 1995; Williams & Fahy, 2004). The slogan "Too posh to push" has gained substantial ground since its inception as a cautionary tale in 2001 (Daily

Telegraph, 2001) to its idiom as a modern-day fashion statement (Song, 2004). The slogan has become a universal expression for conveying celebrities such as Posh Spice of the British pop group Spice Girls' fame, as being too posh to give birth vaginally. In what has evolved as an urban myth, Posh is alleged to have had a Caesarean to fit in with her busy schedule. Images depict women as chic trend-setters, in control of time and space, taking advantage of the frills technology has to offer. It is in popular culture that the foundations of normalisation are laid through the summoning of celebrity iconography from which ideal identities are sculptured as is evident in the following excerpt.

*Actress Elizabeth Hurley had one. So did supermodel Claudia Schiffer. Ex-Spice Girl Victoria Beckham and singer Toni Braxton had two each. TV mom Patricia Heaton had four. They're so popular among the upper class in Brazil that the only way you won't get one in Rio de Janeiro, as the joke goes, is if your doctor gets stuck in traffic.*

What all these women had are C-sections. Not the emergency caesareans that have been performed for hundreds of years to rescue babies from women in medical crisis. Rather, they had an increasingly popular modern-day variation: planned scheduled operations for all sorts of less-than-critical reasons. One young college student arranged her baby's birth to avoid conflict with her final exams. Another woman was convinced a C-section would ensure that her child's head had a nice round shape. Others are terrified of labour pains and complicated births or want to avoid the wear and tear on their bodies. Some, as the British tabloids have put it, are simply too posh to push (Song, 2004).

The frivolous tenor of the writer's text has the effect of glamorising caesarean and serves as a persuasive force for the construction of ideals around desirability. Technology has the semblance of lifestyle accessory, enabling the scheduling of birth around important events. Juxtaposed to Fisk's prediction that fifty percent of all women would choose caesarean by 2010 (in Coney, 2002) these images serve to normalise a caesarean in the future by raising expectations that this operation as an alternative to vaginal birth, is available to all. The use of the euphemism "natural" caesarean (Morehead, 2005; Smith, Plaat & Fisk, 2008) works to strengthen this normalisation through dulling the impact this major operation has for women.

## DISCOURSE AND THE CONSTRUCTION OF A 'NATURAL' CAESAREAN

The appropriation of the popular discourse to (re) produce and (re)circulate a new truth about caesarean, the 'natural' caesarean (Morehead, 2005) and a subsequent publication in professional discourse (Smith, Plaat & Fisk, 2008) reveals how different discourses create different effects. These effects are

contingent upon the particular social context and expectations to be gained from the way language operates (Richardson, 2007). Further, Arney and Neil (1982) suggest that in repositioning control over a domain such as childbirth, a discursive strategy by the dominant group is to co-opt another discourse, usually a marginalised discourse to bring about its effects. Such a strategy was revealed in the British press, The Guardian (Morehead, 2005) and represents a historical moment in which a 'natural' caesarean signals the promise of an attractive (abdominal) birth option. The article entitled, "Every bit as magical" (Morehead, 2005) uses the rhetoric of a natural birth to describe the event of a woman undergoing a caesarean, nuanced through images of splendour and magic. The subtitle of the press release was in itself revealing: A British doctor is challenging convention to pioneer the 'natural' caesarean. Joanna Morehead watched one baby's slow and gentle arrival. The caption positions British specialist obstetrician, Nicholas Fisk, as an expert to give credence to the story. The concomitant use of two diametrically opposed discourses are blended together to gain appeal with a wide audience of readers. Morehead sets the scene in the first paragraph.

*The scent of lavender fills the air and classical music is playing quietly. On the bed Jax Martin-Betts, 42, is calm, focussed and in control. With the birth of her second child just minutes away, the midwife Jenny Smith, is giving her a massage. Her husband Tedy McErlean, is whispering words of encouragement: just a tiny bit longer, and our baby will be in our arms.*

It could be a natural birth at any unit in Britain, but we are in an operating theatre at Queen Charlotte's and Chelsea hospital in west London, and the birth we are about to witness sounds a contradiction in terms: a "natural" caesarean (p.1/4).

While there may have been good reason for Jax Martin-Betts' caesarean, the seductive tenor of the text has the intent of luring the unsuspecting reader into the world of magic. Its not-so-satirical literary genre is a carefully constructed account, situating caesarean, the pinnacle of childbirth intervention, as a natural event. More than this, it constructs caesarean as a romantic event and draws from the neo-liberalist discourse of autonomy to position Jax Martin-Betts as in control. Jenny, the midwife is positioned as a modern-day witch, channelling the magic that encodes a 'natural' caesarean within the symbolism of lavender-scented-classical-music-room and a massage to boot. An interesting paradox lies beneath the text in that while it draws on the discourse of natural birth, it simultaneously positions natural birth on the margins. The irony in all of this is that midwives have been traditionally demonised in the dominant discourse of obstetrics and through the rhetoric of magic.

In popular discourse the media can function as a podium for making statements about caesarean and in the above excerpt it would appear the target audience are those who can afford entry to an elite setting. Following the description of the operation, Morehead's (2005) vibrancy continues.

*This groundbreaking approach to surgical delivery – Fisk calls "skin to skin caesarean" or "walking the baby out" – has been pioneered by him partly in response to the rising caesarean rate, which according to recent statistics reached a new high at 22.7 % (of deliveries in England, 2003-04) (p. 2/4).*

In the above text the concept "skin to skin caesarean" is touted as an innovation, where Fisk is positioned as opening up a new terrain. Omitted from the text are existing calls in favour of 'skin to skin' contact, in regard to initiating breast feeding and the provision of greater opportunities for parents to be involved in a caesarean (Coggins, 2003; Churchill, 1997; Hillan, 2000; Rowe-Murray & Fisher, 2002). In Smith, Plaat & Fisk (2008) 'skin to skin' contact is advocated not as a breakthrough, but rather to reinforce appeals for parent-centred care. While the contingency of the baby's condition is silent in Morehead's (2005) account, in Smith et al's (2008) version, exclusion criteria includes premature babies and breech presentations. Moreover the metaphorical appropriation of 'walking the baby out' conjures imaginations that potentially exploit every parent's dream to see their baby's first steps. In professional discourse (Smith, Plaat & Fisk, 2008) the expression is presented only as a heading accompanying a description of the procedure.

While both accounts of 'natural' caesarean promote greater involvement for women and their partners when undergoing an elective caesarean, clearly they have a different spin on how they represent this new object of obstetric discourse to their audience. In Morehead's rendition the naturalising of caesarean is portrayed as a scoop sensationalising 'natural' caesarean as a leap forward for bioscience. Some would venture that getting the media on side is a premeditated ploy, because in this particular discourse, the manner in which the facts are presented comes without challenge (Peterson, 2002; Weedon, 1997). Weedon (1997) is critical of the strategies used by the media which effectively remove the possibility for critique, rendering these texts even more plausible.

Smith, et al (2008) offers a more prosaic account of 'natural' caesarean. Their stated aim is to improve the experience of (healthy) childbearing women undergoing an uncomplicated caesarean. By their own admission these authors offer a description of "...a natural approach that mimics the situation of a vaginal birth..." (2008, p. 1037). Be that as it may, a contradiction is at once apparent, for while they extol the value of natural (vaginal) birth, their

interest appears to lie in the construction of a natural caesarean, not only for healthy women but also for healthy singleton babies at term. Obstetric colleagues are encouraged to take up the gauntlet of a budding enterprise which the authors claim as "...suitable for global export" (Smith et al, 2008, p. 1040). Implied here is the mobilisation of rhetoric in support of an ideology (Billig & McMillan, 2005) the intent being to secure a more tolerable attitude toward an unnecessary elective caesarean internationally.

Alongside the pursuit of caesarean, as an alternative birth mode, sits an earnest undertaking to report the risks and realities of the procedure in both professional and popular culture (Bewley & Cockburn, 2002; Coney, 2001; Daily Telegraph, 2001; Enkin, Keirse, Neilson, Crowther, Duley, Hodnett & Hofmeyr, 2000; Fitsimons, 2001; Leslie, 2004; McFarlin, 2004; MacDorman, DeClercq, Menacker & Malloy, 2006). Yet despite these efforts, the debate continues with no sign of reconciliation. A salient element that stands out in this construction of reality is that a disproportionate amount of time and publication space has been devoted to making caesarean, in the absence of indications, happen despite the evidence that attests to vaginal birth as most women's preferred birth mode (Gamble & Creedy, 2000; Hildingsson, Radestad, Rubertson & Waldeström, 2002).

## WILLING 'TRUTH'

The co-optation of a less dominant discourse, that of 'natural' childbirth and its incorporation into the dominant discourse, that of obstetrics (Arney & Neil, 1982) has implications for both midwives and proponents of normal physiological birth. On the surface commonsense would credit this naturalising of caesarean as a breakthrough in the humanising of what has been conceived of as a dehumanising process. While the beguiling imagery of "Every bit as magical" (Morehead, 2005) is enticing in its effect, disquiet concerning the ascendancy of 'natural' caesarean is evident in the same professional journal (Varner, 2008). Varner is unequivocal about the dangers of the increasing 'technicalisation' of childbirth particularly in relation to healthy women and babies. This disagreement as to what counts as 'truth' is central to Foucault's analysis of discourse (Hook, 2001). Caesarean has come to represent a contested and shifting terrain of knowledge claims within the discursive practice of obstetrics. Hook's reading of Foucault around how truth is willed exemplifies how new knowledge is possible.

*'The will to truth' (the way in which knowledge is put to work, valorised, distributed) makes for a vital component in the workings of a successful discourse, and as such a nodal point of analysis. The strongest discourses are those that have attempted to ground themselves on the natural, the sincere, the scientific – in short, on the level of the various correlates of the 'true' and reasonable (2001, p. 254).*





The incorporation of natural into caesarean has relevance to Hook's assertion about how truth is willed and lays down the conditions of possibility for caesarean to take on a new meaning. In this historical moment, caesarean has become the product of an orchestrated arrangement of social and disciplinary practices; the linchpin between a woman's desire for the natural and the creation of a new form of knowledge attained through birthing bodies. Within this contestable terrain, 'natural' caesarean has attained authority which guarantees to ripple into the wider culture where it will be (re)produced in the social practice of childbirth.

## CONCLUSION

The volatile nature of caesarean, in the absence of clinical indications, places a tremendous challenge for midwives in keeping birth normal. Greater options for women have been made possible, not merely through the driving force of technology, but also through the availability of the press. Aided and abetted through the use of rhetoric, media stories have the potential to take on a truth of their own. Knowledge of the various ways in which the choice of caesarean, in the absence of clinical indications, is represented in both professional and popular discourse opens up possibilities for enabling public debate around how the construction of this birth mode impacts on the health of women; the future of maternity services to boot.

A deconstruction of professional and popular discourse reveals how discourse, power and knowledge intersect at a number of sites to bring about their effects. What unfolds is a moment when the willpower of a few compete, co-opt and contradict, to bring about a new 'reality; the choice for a caesarean as an alluring alternative to vaginal birth. The promotion of natural caesarean in the absence of clinical indications has spilled over into popular culture and the media is wooed into a campaign awash with rhetoric and co-optation. Its success has yet to be determined, yet it has the hallmarks of accomplishment.

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This article is adapted from my doctoral thesis that explored the discourses constructing women's choice for a caesarean section in the absence of clinical indications (Douché, 2007) and in part, based on a conference presentation of the TASA & SAANZ Joint Conference: Public sociologies: Lessons and Trans Tasman Comparisons, December, 2007, Auckland University. The study commenced in March, 2003 following ethical approval from Massey University and Wellington Regional Central Ethics Committees and completed upon submission for examination in February 2007.

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## NEW ZEALAND RESEARCH

# Intrapartum Fetal Heart Rate Monitoring:

Using audit methodology to identify areas for research and practice improvement

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## ABSTRACT

The purpose of the study was to explore the fetal heart rate monitoring practices of midwives and doctors to determine compliance with an evidence-based guideline for fetal heart rate monitoring endorsed by one New Zealand (NZ) District Health Board (DHB). A retrospective audit of 193 randomly selected medical records was undertaken over six months (July-December 2006). The audit revealed deficiencies in choice of fetal heart rate monitoring modality, monitoring technique, documentation, communication and use of a standardised approach and language for interpreting cardiotocograph (CTG) traces especially the description and categorisation of the four main fetal heart rate features. Multidisciplinary education and a standardised template for reporting CTG's were key recommendations.

## Keywords:

Intrapartum Care, Fetal Monitoring, Midwifery, Clinical Effectiveness, Audit;

## INTRODUCTION

The assessment of fetal well-being during labour is one component of a total package of intrapartum care provided to women. Intrapartum fetal surveillance aims to improve fetal outcomes by identifying fetuses with hypoxic acidaemia and has the potential to promote fetal health and improve neonatal status at birth. However, electronic fetal monitoring (EFM) as a stand-alone tool is ineffective in avoiding preventable adverse outcomes (Alfirevic, Devane & Gyte (2006). It is effective only when used in accordance with published standards and guidelines and when appropriate timely intervention is based on that interpretation (Simpson & Knox, 2000). Since the introduction of EFM over three decades ago women's intrapartum care has been increasingly dominated by the use of technology but there continue to be concerns around the interpretation of the findings of EFM and the effects on women and babies. Over time experts have agreed on guidelines for intrapartum fetal monitoring practice based on the best available evidence and professional organisations have developed templates to assist practitioners to accurately interpret the findings of EFM and the appropriate action to take based on the interpretation.

Case reviews following unexpected obstetric outcome have identified (amongst other things) substandard practice in relation to fetal heart rate (FHR) monitoring during labour (Miller, 2005). Such practices have included not using the most appropriate method of FHR monitoring, poor quality FHR monitoring; failure to use a structured approach to assessing the four main features of FHR monitoring (baseline rate, variability, accelerations, and decelerations), failure to interpret the FHR monitoring in a timely manner that enables a diagnosis of fetal distress and appropriate interventions and failure to use a chain of command

to resolve clinical disagreements (ibid). It must also be highlighted that to assess these four main features of FHR monitoring appropriately there needs to be concurrent monitoring of uterine activity.

Interpretation and management of FHR monitoring in labour continues to be a common issue in litigation (in countries where this is possible) involving adverse outcomes in term pregnancies (ibid). The United Kingdom (UK) Confidential Enquiry into Stillbirths and Deaths in Infancy (CESDI, 2001) has highlighted that errors in interpretations of FHR monitoring are a major contributor to infant morbidity and mortality. Globally it is known that inter-observer and intra-observer consistency is poor when it comes to interpretation of the findings of FHR monitoring (Simpson & Knox, 2000).

This paper describes the findings of a retrospective audit of one DHB's compliance with its current evidence-based policy for intrapartum fetal heart rate monitoring. Audit is a quality assurance process in health care that supports practitioners to constantly seek to improve care. Audit is defined as 'deciding what should be, comparing what should be with reality, identifying the gaps and taking action' (Morrell & Harvey, 1999, p.1). The developing profile of evidence-based medicine and clinical effectiveness emphasises the importance of the role of clinical audit when it comes to getting research into practice (ibid).

## BACKGROUND TO THE STUDY

A small number of cases of unexplained perinatal asphyxia in babies requiring admission to the neonatal intensive care unit triggered senior staff of the DHB to investigate possible causes. Questions were asked about fetal surveillance in labour. The delivery unit in which these babies were born has an evidence-based policy for intrapartum EFM, which includes guidelines for intermittent auscultation (IA) and fetal blood sampling (FBS), based on the Royal College of Obstetricians and Gynaecologists (RCOG) / National Institute of Clinical Excellence (NICE) guidelines (RCOG, 2001).



A preliminary review of several maternal medical records suggested there were deficiencies around compliance with the policy including decision-making around fetal monitoring modality, interpretation and classification of the four main features of FHR monitoring, use of concurrent uterine activity monitoring, documentation and action plans. As a result of this, a group of senior midwives from the DHB were enrolled to conduct a study of intrapartum fetal heart rate monitoring practices of midwives and doctors over a period of six months at the end of 2006. An audit methodology was chosen to determine the current state of practice in relation to the DHB intrapartum fetal heart rate monitoring policy, to discover where the major gaps were in practice and inform the design of an ongoing multidisciplinary education programme.

The setting for the study included the three maternity facilities (primary, secondary and tertiary), managed by one DHB in a major city in NZ. The level three tertiary referral unit, with a Maternal Fetal Medicine unit, caters for over 3000 births per year and incorporates level O primary maternity facilities in the suburbs 30-60 minutes from the unit. Women receive primary maternity care from a named lead maternity carer (LMC) either in the community or through the hospital. Choices of birthing facilities include the secondary/tertiary delivery suite or the primary maternity units. A multidisciplinary team, including core midwifery services, provide care for women receiving secondary or tertiary care.

## METHODS

### Policy selection

The policy against which current practice was measured is, "The Intrapartum Electronic Fetal Monitoring (EFM) and Fetal Blood Sampling (FBS) Policy", issued by the DHB in October 2003 and reviewed in October 2005. The policy, largely based on the RCOG evidenced-based clinical guideline Number 8 (2001), was developed by the Clinical Leader – Obstetrics, two midwifery policy and quality facilitators and authorised by the Women's Health Service medical Clinical Director.

### Medical record selection

193 sets of medical records from women who gave birth within the DHB's three campuses, which included primary, secondary and tertiary level care, were audited over a six month period.

### Sample size

The number of medical records needing to be audited to have 95% confidence (+/- 5% accuracy) from the whole population was estimated to be 340 based on

the DHB's 2005 birth figures (<http://www.ubht.org.uk/clinicalaudit/ClinicalAudit/>). In most audits a small snapshot sample will probably be sufficient to indicate where standards are not being met. The pragmatic guideline for selecting the audit size is to enrol enough 'patients' so that senior clinicians/managers will be willing to implement changes based on the findings. Due to circumstances outside the control of the audit team (staff shortages, increased workload) it became difficult to audit as many notes as was planned and a compromise was made to select a more pragmatic sample size. The audit was suspended temporarily after a month to check consistency of data entry and to introduce samples from the DHB's two Primary Maternity Units. Before the audit ended in December 2006, a trend was establishing and it was apparent from early analysis that continuing to collect data would be unlikely to add any further new information to the findings.

### Randomisation and chart selection

Using the Patient Information Management System (PIMS) and an Excel randomisation function, 25 medical records were randomly selected per week from a dataset of women who met the inclusion criteria (DHB birth, and not an elective caesarean section (CS)). The selected medical records were identified by their unique identifying National Health Index (NHI) numbers.

### Data collection

An audit tool was designed using an Excel spreadsheet with criteria that reflected the content of the policy. Data were entered by the auditors onto an Excel spreadsheet as they completed each set of case notes. Data were analysed at the end of each month and summarised at the end of the six months.

### Validity and reliability

The auditors met to discuss interpretation of the criteria to ensure these were understandable and unambiguous. Changes to the wording of some criteria were made and definitions were checked against the policy. To test for inter-rater reliability, a trial run of the data collection tool against 10 sets of medical records took place with all auditors together in one room. This enabled them to cross check interpretations against the policy and with fellow auditors. Definitions were validated and minor modifications were made to the audit tool. This ensured consistency and stability of the audit tool.

### Ethical considerations

The audit was conducted within an ethical framework which included, maintaining patient and staff confidentiality, anonymising information contained in the project final report, not collecting unnecessary

data, destruction of data collection forms once they had served their purpose for the audit. The proposal was approved by the DHB Women's Health Service (WHS) clinical audit committee, business manager and medical clinical director.

### Data analysis

Simple descriptive statistics (frequencies/percentages), dichotomous measures (Yes/No) and outcome measures using the categories of 'Always/Sometimes/Never' were used for data analysis. These measurements applied to situations where an assessment and the recording of it were required more than once.

## FINDINGS

For the analysis, 'caregiver at the time of booking' was used. Caregiver categories described in the DHB annual clinical reports i.e self-employed midwife LMC, medical LMC with self-employed midwife (shared care), medical LMC with hospital midwife (shared care), hospital primary team (hospital midwifery LMC) and hospital high risk team care were used. Of the 193 medical records analysed the spread of caregivers was representative of the 2006 DHB figures as revealed in Table 1. Medical records from across the DHB's three campuses were included in the audit and were representative of the percentage of births across these three settings and levels of care.

Choice of monitoring: Electronic fetal monitoring included admission CTG, intermittent EFM and continuous EFM (CEFM) The data collection around EFM was not mutually exclusive. Some women had an admission CTG and continued on with CEFM, others had intermittent auscultation (IA) and moved onto CEFM. Measured against the indications for EFM from the policy, 37.3% of women in this audit had no indications for EFM. Of women without indications for EFM 54.1% received IA. Induction or augmentation of labour and epidural were the most common indicators for use of EFM (Table 2).

Admission CTG: Nearly 45% of women in the audit had an admission CTG regardless of antenatal 'risk' status. Seventy-one percent of the women who had an admission CTG had indications for intrapartum EFM according to the policy and 57% of these women went on to have CEFM. Of the women considered 'low risk', 37.5% had an admission CTG.

Intermittent Auscultation (IA): Of the women eligible for IA (no risk factors for EFM) 54.1% had IA of the fetal heart rate during labour. Analysis of IA method was based on the documentation of frequency, timing and duration as outlined in the policy using the descriptors "Always", "Sometimes" or "Never".



In relation to frequency of IA (every 15 to 30 minutes) documentation revealed this was achieved "Always" 71% of the time in first stage, 38% of the time in second stage, but only 10% of the time in relation to duration (for one minute) and 23% for timing (after a contraction). Recording of the maternal pulse rate in first and second stage failed to reach optimal frequency as outlined in the policy (Table 3).

Of the women with no risk factors for EFM and who were monitored using IA, 79% had normal vaginal births, 4% had assisted births, and 2.7% had an emergency CS (no outcome data were provided on the audit sheets for 10 women). A majority of babies had Apgar scores of nine or 10 at one minute.

Documentation standards for use and management of fetal monitoring equipment: There were 95 episodes of CEFM. Analysis was based around the frequency of compliance with the standards for use and management of fetal monitoring equipment and CTGs i.e. correct use of the equipment, identification of the woman, date and time of the episode of monitoring and secure storage of CTGs. The responses were Yes/No expressed as percentages (Table 3). Approximately 30% of all CTG traces in this audit had incorrect date and time settings, 20% did not use the tocograph (to record contractions). The name of the woman undergoing monitoring was absent on 18% of CTG traces and 28.5% of CTGs had no NHI number (unique identifier) on them either. From a medico-legal aspect it was interesting to note 11.6% of CTGs were not held securely in the medical record (Table 3).

#### Documentation standards for CTGs

This analysis relates to a standardised approach for documentation on CTG traces in relation to events (e.g. vaginal examination, epidural top-up) that may affect the fetal heart. Annotation of maternal observations and opinions expressed by colleagues who were asked for comments on traces are required to enable a consistent approach to interpretation of CTGs. In each instance, compliance was less than optimal (Table 4).

#### Documentation of findings on CTG

The policy outlines two methods for the interpretation of the CTG. One method, the mnemonic, "DR C BRAVADO" from the Advanced Life Support in Obstetrics (ALSO) course (AAFP, 2001) provides a systematic approach to the assessment of CTGs. However, in this audit documentation revealed the mnemonic was only used in 12.6% instances of assessment. The alternative is to use an interpretation framework where all four fetal heart features (baseline rate, variability, accelerations and decelerations) are

**Table 1:** Distribution of Place of Birth and Caregiver at Booking.

Data source	Place of Birth			Caregiver at Booking				
	Level 2/3 unit	Level O unit	Level O unit	LMC MW <sup>a</sup>	Dr & SE MW <sup>a</sup>	Dr & Hosp. MW <sup>a</sup>	Hosp. Primary Team <sup>a</sup>	Hosp. Sec/Tert Team <sup>a</sup>
193 Audited casenotes	168 87%	14 7.3%	11 5.7%	135 69.9%	17 8.8%	22 11.4%	13 6.7%	6 3.1%
DHB 2006*	90.5%	6.4%	3.3%	66.3%	6.8%	12.8%	6.4%	7.7%

<sup>a</sup> Code: LMC=Lead Maternity Carer, MW=midwife, SE MW=self-employed midwife, Sec/Tert = secondary/tertiary

\*Data source: Fisher, Hawley, Hardwick and Plunkett, 2006.

**Table 2:** Indications for intrapartum EFM

AN Maternal = 22	Elevated BP	8	
	PET	2	
	Diabetes	2	
	APH	0	
	Other	10	
AN Fetal = 27	IUGR	3	
	Premature labour	3	
	Oligohydramnios	4	
	Abnormal Doppler	1	
	Abnormal CTG	1	
	Rh disease	1	
	Fetal anomaly	0	
	Twins	3	
	Breech	0	
	42 wks + gestation	1	
	Other - Large for dates, PROM, Non-reassuring CTG x 2, not stated x 6	10	
Intrapartum - Labour = 78	Previous CS	13	
	SRM >24hrs	9	
	Induction of labour	22	
	Augmentation of labour	24	
	Hyper stimulation	2	
	1st stage > 12hrs	0	
	2nd stage > 2hrs	1	
	Other - Augmented labour, Started IA then moved to CEFM, IOL became EI CS, not stated x 4	7	
	Intrapartum - maternal = 23	Vaginal bleeding	0
		Sepsis	1
Epidural		21	
Temperature > 38 degrees		0	
Other - Mitral valve prolapse, not stated x 1		2	
Intrapartum - fetal = 18	Meconium liquor	6	
	Blood in liquor	0	
	Suspicious CTG	9	
	Other - Variable decelerations quick labour, not stated x 2	3	

assessed and a standardised language to categorise the findings (reassuring, non-reassuring and abnormal) is employed to ensure consistency of understanding. The collective fetal heart rate findings are then described as normal, suspicious, or pathological. Use of these interpretation and classification guidelines in the documentation were assessed using the descriptors “Always”, “Sometimes” or “Never”.

Documentation of the baseline fetal heart rate was noted as achieved “Always” 40% of the time, 25% of the time for variability, 15% of the time for accelerations, and 20% of the time for decelerations (Table 4). As demonstrated in Table 4, evidence of categorisation and description of the findings was less than optimal.

## DISCUSSION

In this audit 37.3% of women had no indications for electronic fetal heart rate monitoring and were eligible for IA. However, only 54% of these women were actually monitored by IA. The remainder had some form of EFM. The birth environment has a part to play in the selection of fetal heart rate monitoring modality. Despite the fact that research and professional body guidelines for fetal heart rate monitoring recommend IA as the most appropriate method of fetal heart rate monitoring for women who are well and have had uncomplicated pregnancies (NICE, 2001; Liston et al, 2007; RANZCOG, 2006; MIDIRS, 2003, RCM, 2005; NZCOM, 2002; ACNM, 2007), it is apparent that the presence of technology within the hospital birth setting and the spoken or unspoken pressure from medical colleagues for the use EFM for all women influences midwife's practice and choices in monitoring modality. It is also acknowledged that intrapartum fetal heart rate monitoring often features in the reports from complainant and disciplinary bodies, which must have an impact on the choices made for intrapartum fetal heart rate monitoring. It would seem that in 2009 the quote from Boylan (1987) still holds true:

*... it must also be emphasized that the method of fetal monitoring chosen may be strongly influenced by factors other than scientific evidence... where the medico legal climate is such that failure to rigorously document absence of fetal distress/true birth asphyxia may result in a harrowing lawsuit (p 73).*

There needs to be ongoing discussion and education to support the practitioner's initial assessment of risk factors in early labour to support decision-making about the most appropriate choice of monitoring modality.

### Admission CTG

Nearly half of the women in this audit had an admission CTG. Thirty seven percent of the women

**Table 3:** Documentation standards for CTG's.

Yes	Right date on paper	Right time on paper	Right Speed 1cm/min	Toco used	Woman's name	Woman's NHI*	Date noted	Time noted	Secured in notes
%	69.4	72.6	87.3	80	82.1	71.5	66.3	58.9	88.4

\* NHI – National Health Index No. (unique identifier)

**Table 4:** Documentation standards for IA, CEFM, Interpretation and Classification of the 4 main FHR features

Documentation of IA Low Risk Women (n= 39 )	Always		Sometimes		Never		No Data	Total	Total %
	No.	%	No.	%	No.	%	No. (%)		
Frequency IA 1st stage (15-30 mins)	28	71.8	6	15.4	4	10.2	1 (2.6%)	39	100
Frequency IA 2nd stage (5 mins or after every contractions)	15	38.5	13	33.3	6	15.4	5 (12.8%) moved to EFM or 2nd stage too quickly	39	100
Duration IA (1 minute)	4	10.5	Duration and Timing seldom documented						
Timing IA (after contraction)	9	23							
Maternal Pulse 1st stage	0	0	17	43.6	21	53.8	1	39	100
Maternal Pulse 2nd stage	0	0	0	0	35	89.7	4	39	100
Documentation CEFM (n=95)	Always		Sometimes		Never		No Data	Total	Total %
	No.	%	No.	%	No.	%	No. %		
Events	34	35.7	45	47.3	7	7.3	9 (9.5%)	95	100
Movements	19	20	25	26.3	43	45.2	8 (8.4%)	95	100
Maternal Observations	17	17.8	50	52.6	21	22.1	7 (7.4%)	95	100
Opinions	5	5.2	35	36.8	45	47.3	10 (10.5%)	95	100
DR C BRAVADO	6	6.3	6	6.3	77	81.1	6 (6.3%)	95	100
Baseline Rate	40	42.1	37	38.9	9	9.5	9 (9.5%)	95	100
Variability	24	25.3	47	49.5	16	16.8	8 (8.4%)	95	100
Accelerations	14	14.7	39	41.1	31	32.6	11 (11.6%)	95	100
Decelerations	20	21.1	44	46.3	15	15.8	16 (16.8%)	95	100
Categorisation	9	9.5	29	30.5	45	47.4	12 (12.6%)	95	100
Description	5	5.3	21	22.1	59	62.1	10 (10.5%)	95	100

\*No Data means there was no documentation in the medical record.

who had an admission CTG had no indications for EFM. The current policy states, "There is no evidence to support the use of routine admission EFM in 'low-risk' women as this is poorly predictive of fetal compromise during labour (DHB policy, 2003). Over half of the women who had an admission CTG went on to have continuous electronic fetal monitoring (CEFM).

In keeping with the NICE (2001) guidelines for the use of electronic fetal monitoring, CEFM should be offered only to high-risk pregnant women. The difficulty has always been adequate identification of who is at high risk. A consequence of this difficulty is the increasing use of intrapartum admission CTG in order to identify which fetuses of low risk women are at greater risk and who therefore should have CEFM. The admission CTG, or the labour admission test (LAT) as it is sometimes referred to in the literature, was traditionally a CTG trace of 20-30 mins duration carried out on admission to the maternity ward. It is a screening test in early labour to detect compromised fetuses and to select the women in need of CEFM.

The main justification for admission CTG is that an abnormal trace might indicate a placental deficiency and hence identify potential fetal compromise at an early stage of labour in order to allow intervention (Imprey et al., 2003; Elimian et al., 2003). Gourounti and Sandall (2007) in a systematic review concluded that although the admission CTG may give an indication of fetal well-being at the time of admission it cannot predict how the fetus will cope after several hours of labour. Thus the admission CTG may represent an unnecessary intervention. A systematic review (Blix et al., 2005) revealed that women randomised to the LAT were more likely to have minor obstetric interventions like epidural analgesia, CEFM and FBS and concluded that there is no evidence supporting that the LAT is beneficial in low risk women. Whilst the admission CTG may be reassuring for the woman and her family and provide clinicians with evidence of monitoring, in the medico-legal sense, it is not recommended for low risk women as it is known to be associated with increased interventions. Women and their intrapartum caregivers should make an informed decision about using admission CTG based on knowledge of the woman's pregnancy and the initial assessment in labour.

### Intermittent Auscultation (IA)

Most recommendations for fetal heart assessment using IA during labour are based on protocols used in randomized controlled trials (RCTs) that compared IA with EFM (Thacker & Stroup, 2000), and these guidelines have become custom and common practice in many birth settings.

Intermittent auscultation would normally be conducted at predetermined intervals. Those predetermined intervals are described in obstetric and midwifery texts, policies and guidelines as listening to the fetal heart rate every 15-30 minutes in the first stage of labour and every five minutes or after every contraction in the second stage of labour, and should be conducted for at least one full minute from the end of the contraction (RCOG, 2001; RANZCOG, 2006; RCM, 2005; ACOG, 1995 and Lister, 2007). The RCOG (2001) guideline accords an A grading (at least one RCT as part of the literature of overall good quality and consistency addressing the specific recommendation) to the recommendations regarding frequency, timing and duration of IA, whilst RANZCOG (2006) accords a grading of C (evidence obtained from expert opinion and/or clinical experience of respected authorities - indicates an absence of directly applicable studies of good quality). The American College of Nurse-Midwives (ACNM) (2007) state that guidelines for intermittent auscultation based on evidence-based application during labour are not available. RANZCOG (2006) state that there have been no clinical studies comparing different IA frequencies to guide practice.

A recent survey researching NZ midwives' practice of taking maternal and fetal observations in normal labour (n=708) revealed that midwives are more likely (48%) to listen to the fetal heart every 30 minutes (28% every 15 minutes) in the first stage and after every contraction (40%) in the second stage (14.3% every five minutes) (Muir, 2006). In this current audit midwives are reported as ALWAYS meeting the criteria for monitoring in first stage (15 - 30 minutes) 71.8% of the time and every five minutes in second stage 38.5% of the time. Recording of the maternal pulse is poorly done in both first and second stage. During IA, the maternal heart rate should be ascertained by feeling the woman's radial pulse concurrent to auscultation the fetal heart rate with a Pinard's or Doppler device. This validates that it is the fetal heart rate, not the maternal heart rate that is being heard and counted (Goodwin, 2000).

These findings suggest that without robust evidence from research to inform frequency, timing and duration we only have the guidelines of 'custom and practice' to inform our practice. There needs to be research into the timing, frequency and duration of IA for low risk women (Feinstein, 2000). It is important for midwives to retain a broad knowledge base and clinical competence around the practice of IA and uterine activity assessment (Goodwin, 2000) as well as understanding the importance of taking the maternal pulse concurrent with IA.

### Documentation standards related to Electronic Fetal Monitoring

Miller (2005) claims that allegations regarding the interpretation and management of FHR monitoring

dominate obstetric litigation (in countries where litigation occurs) related to neurologically impaired infants. Therefore it is vitally important that the information contained on the CTG trace be accurate and that CTGs are stored securely for future reference. To this end a standardised language and consistent approach to interpretation of the findings of EFM is vital. The current policy states - "Any event that may effect the fetal heart rate should be noted on the EFM trace, signed and the date and time noted. Any staff member who is asked to provide an opinion on a trace should note their findings on both the trace and in the maternal case notes, together with the time and their signature" (DHB policy, 2003).

The study demonstrated deficiencies with documentation standards related to CTGs. Of concern was the high number of times when opinions (Never = 47%) were not documented in either the medical record or on the CTG (this relates to when it had been documented that an opinion was sought regarding the CTG). As well, a high number of CTGs did not have events (Never/ Sometimes = 64%) that may affect the fetal heart recorded on the trace. Events could be insertion or top-up of epidural or administration of narcotic, vaginal examination, artificial rupture of the membranes or syntocinon titration. The lack of documentation around opinions in particular is of concern. The guidelines for interpretation and classification provide an action plan. If clinicians are not documenting their opinions they are unlikely to be documenting their action plans either. Because CEFM is a screening tool, some form of verification of non-reassuring findings is required (Albers, 2001).

New Zealand midwives who provide expert midwifery opinion in the medico-legal context report being concerned at the large numbers of CTG traces that have the incorrect date, time and speed (personal communication, 2007). They also report that many of the CTG traces are not labelled adequately with the woman's name and unique identifying number (NHI number). Consideration of the impact of high acuity and staff shortages in our maternity units needs to be given to determine whether there any correlation with these findings.

This audit revealed that midwives and doctors are not meeting the practice standards for CTGs. There were a large number of CTGs with the incorrect date and time e.g. CTGs were automatically recording 04/04/44, 0001 hrs. This occurs when the batteries are not replaced. Once the machine is turned off, the date and time revert to factory settings. This is problematic when a review of the CTG is required at a later date. Some practitioners annotate the date and time on the CTG, however, the accuracy of this is debatable. Some medical records did not contain the





CTG traces at all. From a medico-legal perspective, it is vital that all CTG are stored securely in the notes. The audit reveals that this occurs 96% of the time. Our aim must be for 100% secure storage.

### Documentation of findings on CTG

The literature demonstrates a lack of consistency and agreement in interpretation and classification of the findings of CTGs. Experts generally agree about the definitions of the normal FHR tracing and, at the other end of the spectrum, the FHR patterns which are predictive of current or impending fetal asphyxia. However most of the controversy exists in the interpretation of FHR patterns that lie between these two extremes and their presumed condition and clinical management (Parer, 1997). Parer and King (2000) suggested that an unwritten and undemonstrated aspect of FHR monitoring was the issue of reliable and reproducible interpretations of FHR patterns by health care professionals. Studies conducted into reliability and reproducibility show that although there is general agreement on patterns, inter-observer and intra-observer consistency is poor.

The adoption of a common language for FHR pattern interpretation and documentation that is agreed on and routinely used enhances communication between practitioners (Simpson & Knox, 2000). Simpson and Knox go on to say, "the chances of miscommunication between care providers, especially during telephone conversations about fetal status, are decreased when everyone is speaking the same language about EFM. Thus timely intervention during non-reassuring FHR patterns is more likely" (p.43).

Guidelines for the interpretation of CTGs are published by, amongst others, the RANZCOG (2006) and RCOG/NICE (2001). These need to be interpreted with due consideration to the clinical context. Practitioners who have trained through the Advanced Life Support in Obstetrics [ALSO] (AAFP, 2001) course may wish to utilize the "DR C BRAVADO" mnemonic (DR – describe risk, C – contractions, BRA – baseline rate, A – accelerations, VA – variability, D – decelerations, O – overall assessment) to systematically review CTGs (DHB policy, 2003).

The study revealed that clinicians in this DHB only used DR C BRAVADO as a tool for interpreting FHR features 20% of the time. However, it is not known how many midwives and doctors have completed the ALSO course. The alternative interpretation framework to use recommends an assessment of all four FH features (baseline rate, variability, accelerations and decelerations) and the use of standardised language (reassuring, non-reassuring and abnormal) to ensure consistency of understanding. All of these four features must be

assessed alongside the presence and quality of uterine activity. The significance of EFM findings is useless in the absence of concurrent uterine activity monitoring.

The most illuminating finding of the study was the lack of overall description of CTGs. In the guideline, the descriptions (Normal, Suspicious, Pathological, Acute Fetal Compromise, Uterine Tachysystole and Hyper-stimulation) all have associated action plans to guide practitioners.

### RECOMMENDATIONS

Midwives and doctors should receive annual joint education on fetal surveillance and CTG interpretation as a core competency standard for all staff involved in intrapartum care. Formal learning is complimented by annual completion of the computerised learning packages such as K2 fetal monitoring (<http://training.k2ms.com>) and the RANZCOG online fetal surveillance education programme ([http://www.ranzcog.edu.au/fse\\_program/index.shtml](http://www.ranzcog.edu.au/fse_program/index.shtml)) and weekly review of CTG strip presentations in Delivery Suite. Midwives would benefit from

education in the techniques of intermittent auscultation and uterine palpation to re-ground them in normal physiology and help to improve confidence in this technique for well women and babies. A re-audit after the introduction of the standardised template for reporting CTG and a multidisciplinary education programme is recommended.

### CONCLUSION

The policy for Intrapartum EFM employed at this DHB is based around the RCOG/NICE 2001 guideline which has been robustly assessed against the evidence. This audit demonstrates that practitioners were not using the guidelines adequately or effectively and improvements could be made.

Globally it is known that inter-observer and intra-observer consistency is poor when it comes to interpretation of the findings of CTGs. The implications of this lack of consistent use of standardised language and interpretation of the findings of EFM is that the effectiveness of FHR monitoring as a reliable screening tool is weakened

**Table 5:** A standardised template for reporting CTGs

CTG Date:	CTG Time:	Maternal Pulse:	
Determine Risk	Low	Medium	High
CTG Indication			
Contractions:	..... in 10 mins Mild / Medium / Strong		
Baseline Rate:	Reassuring • 110 - 160	Non-Reassuring • 100 – 109 or 160 -180	Abnormal • < 100 or > 180
Variability:	Reassuring • > 5 bpm	Non-Reassuring • < 5 bpm > 40 mins and < 90 mins	Abnormal • < 5 bpm > 90 mins
Accelerations: _ 15 bpm lasting > 15 secs	Reassuring • Present	Non-Reassuring • Absent	Abnormal • Absent
Decelerations:	Reassuring • No decelerations	Non-Reassuring • Early, Variable, Single prolonged < 3 mins	Abnormal • Atypical variable, Late, Single prolonged > 3 mins
Overall Assessment:	Normal • All 4 features reassuring	Suspicious • 1 non-reassuring feature • Consultation Required	Pathological • 2 or more features non- reassuring or abnormal • Urgent Consultation
Comments:			
Plan:	Continue CTG	Review in ...	
Signature:	Print Name:		

(Parer & King, 2000; Simpson & Knox, 2000). This DHB's policy used a standardised language and interpretation framework to assist and guide action, but compliance was not adequate. The authors believe that the introduction of a standardised template for CTG assessment, interpretation and action planning (based on the policy in use at the DHB) (Table 5) will contribute to improved practice and outcomes. The template is in the form of a sticky label which is filled in and placed in the woman's medical record every time the CTG is assessed. It is important that midwives and doctors are educated to use these intrapartum fetal monitoring guidelines and the reporting template. Consistency in interpretation comes from regular education sessions/updates. Greater consistency comes from having a shared understanding.

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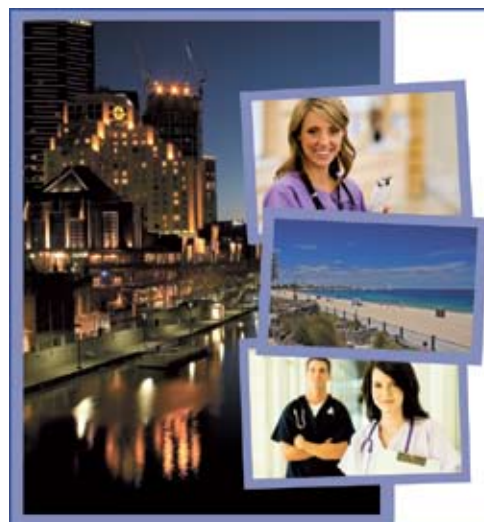
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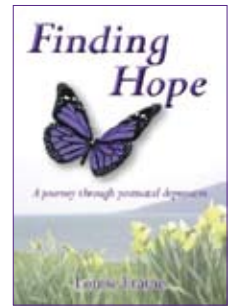
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## BOOK REVIEW

# Finding Hope

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Reviewed by Sue Holdom, Bach Midwifery, Dip CBE, RM (Ind Midwife)

This book is not an easy read. It is a frankly and sometimes uncomfortably honest personal account of one woman's journey through postnatal depression (with some valuable input from her husband). The pain and confusion of her roller coaster ride through illness onset, diagnosis, treatment options, acceptance and improvement, are apparent throughout, and her story provides much understanding both for health professionals and significant others who have never experienced depression.

At times I found myself experiencing some similar emotions to the writer, in that her distress was so

profound I just wanted it to go away, and for her to be better. That this level of empathy developed simply through reading a stranger's account reflects the quality of her descriptive writing skills, as well as the severity of her condition.

While one personal account cannot cover the whole range of individual symptoms and experiences, a brief but thorough final chapter with information about types of postnatal depression and treatment options, along with contacts, references and further reading options provides a very useful addition to this valuable book.

## 4th Biennial Joan Donley Midwifery Research Forum

The Rutherford Hotel, Nelson • 17th & 18th September 2009

Call for abstracts by 1st of May 2009



### THE EVIDENCE PARADIGM: HOW DO RESEARCH AND AUDITS INFORM MIDWIFERY PRACTICE?

The purpose of this forum is to provide an opportunity for midwives and others engaged in research or projects relating to maternity and for those participating in postgraduate study to present their work, share their ideas, experiences and knowledge relating to midwifery and maternity.

### ABSTRACT BRIEF: PAPERS FOR ORAL PRESENTATION ARE INVITED.

Abstracts must be informative and descriptive; less than 250 words and contain the following information:

- Author(s) Surname & Given names
- Postal Address
- Title of presentation
- Telephone and fax number
- Key Words (max 5)
- Name of presenting author

- Email address
- Institutional affiliation (if applicable)

Authors will be notified of acceptance or non-acceptance of their abstract/s by 29 May 2009. The organisers retain the right to allocate successful submissions to meet the theme of the forum.

Abstracts must be received by 1 May 2009 and may be submitted on compact disc or hard copy to:

- JDMRC Secretariat, NZCOM National Office, PO Box 21 -106, Edgeware, Christchurch 8143, Or
- By email attachment as a Word document to JDMRC Secretariat at [JDMRC@nzcom.org.nz](mailto:JDMRC@nzcom.org.nz)

### JOAN DONLEY MEMORIAL GRANT

NZCOM National Committee would like to continue the Joan Donley Memorial Grant in Joan's memory. \$2500 will be donated to the Joan Donley Midwifery Research Collaboration to assist five presenters with their research.

### Eligibility

The award will be allocated to two NZCOM members engaged in postgraduate study who have an abstract accepted for presentation at the Joan Donley Midwifery Research Forum in September 2009. Abstract submitters must state that they wish to be considered for the Joan Donley Memorial Grant.

### Criteria

Abstracts will be selected for presentation based on the criteria matrix set by the abstract committee. Preference for the financial award will be given to midwives submitting an abstract that best reflects the conference theme.

### Conditions

Successful applicants will be notified by the JDMRC Secretariat. The financial award will be presented at the 4th biennial Joan Donley Midwifery Research Forum 17-18th September 2009.





NEW ZEALAND COLLEGE OF  
MIDWIVES (INC) JOURNAL

# Guidelines for Contributors to the New Zealand College of Midwives Journal

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

Articles should be written with double spacing and a left margin of 3 cm. Authors should use section headings and label any diagrams or tables which are included. Diagrams, tables or photographs should be supplied as computer generated items. The word count for the article should be stated. Articles should be supplied as an electronic copy in a WORD document or RTF file. All articles should have an abstract of 100 words maximum.

In addition, authors are requested to provide the following details on a separate file which is not sent to the reviewers. Name, occupation (current area of practice/expertise), qualifications, address for correspondence during the review process including day time phone number, contact details such as email address which can be published if the journal accepts the article. Where the article is co-authored, these details should be provided for all authors. ALL authors of the article should state in an accompanying letter that they wish to submit it for publication.

## SUBMISSION

Articles should be submitted electronically via email to [joan.skinner@vuw.ac.nz](mailto:joan.skinner@vuw.ac.nz)

## CONTENT

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 5th edition of the APA Publication Manual was published in 2001. In the text, 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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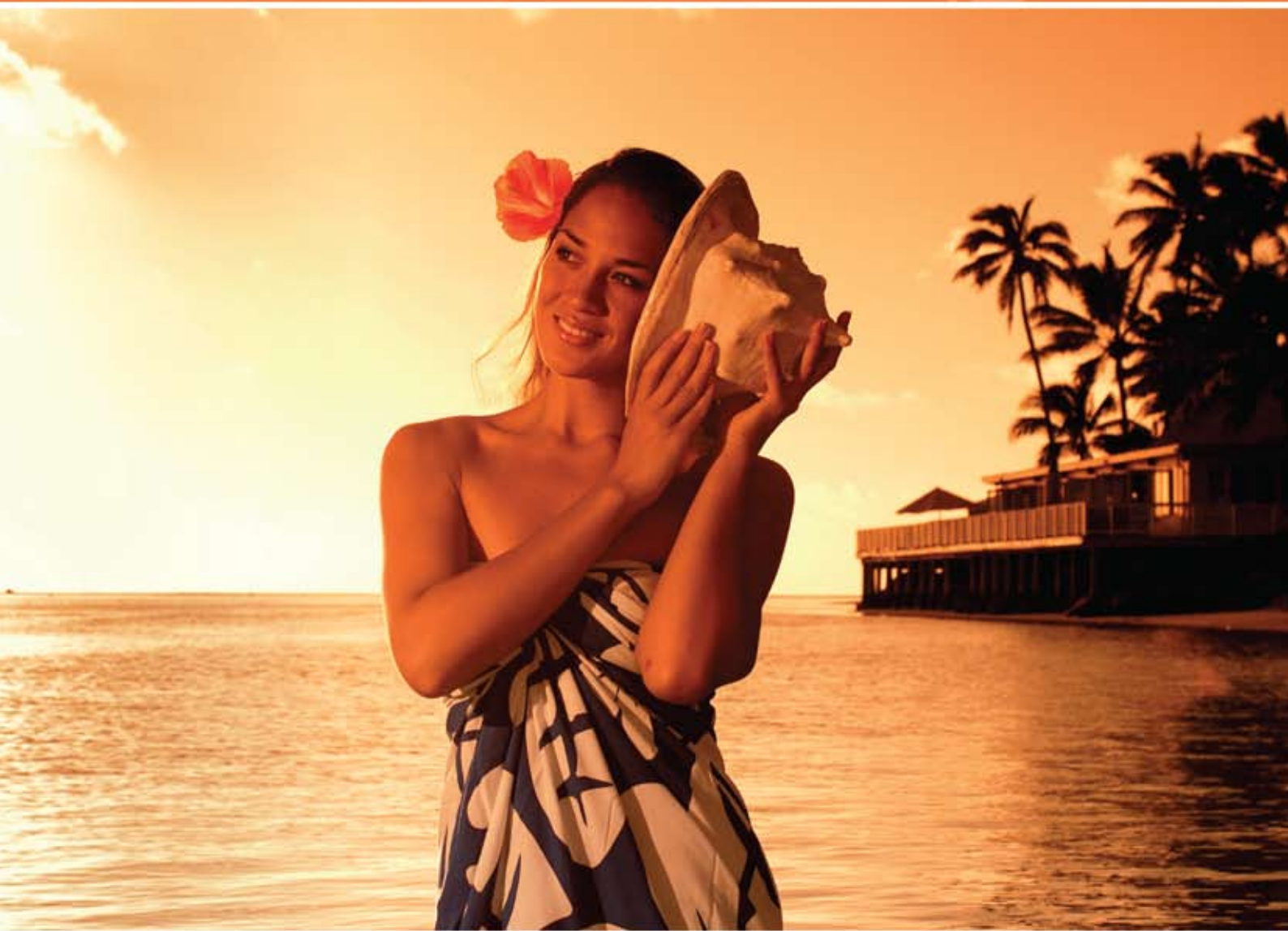
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## REVIEW PROCESS

All articles are sent out for external review by two reviewers who have expertise relevant to the article content. In addition, the Editor acts as a reviewer and collates feedback from the two external reviewers.



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If you would like further information about this position itself please contact our Midwife Manager email: [dianne.herbert@tdhb.org.nz](mailto:dianne.herbert@tdhb.org.nz)



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**Canterbury**  
District Health Board  
Te Pahi Hauora o Waitaha

### Applicant Information

Visit [www.healthfirst.govt.nz/hr](http://www.healthfirst.govt.nz/hr) for full details.

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1. Mandel IG, Doggy BP, Brodie DA et al. Review article: alginate-raft formulations in the treatment of heartburn and acid reflux. *Aliment Pharmacol Ther* 2000 ;14: 669-690. 2. Utan M et al. Heartburn and regurgitation during pregnancy. Efficacy and safety of treatment with Gaviscon Liquid. *Rev Fr Gynecol Obstet*. 1988; 83(7-8): 569-572. 3. Chevrel B (1980). A comparative crossover study on the treatment of heartburn and epigastric pain: Liquid Gaviscon and a magnesium-aluminium antacid gel. *J Int Med Res*; 8(4): 380-392. Liquid contains Sodium alginate 500mg, Sodium bicarbonate 267mg and Calcium carbonate 160mg per 100ml dose. Tablets contain Sodium alginate 250mg, Sodium bicarbonate 133.5mg and Calcium carbonate 80mg per tablet. Medicines have benefits and some may have risks. Always read the label carefully and use only as directed. If symptoms persist contact your health professional, Beckitts Benckiser, Auckland. 0508 731 234, TAPS PPS964.

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