

Making childbirth risky: an unintended consequence of the normal birth agenda?

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Thank you to the Royal College of Midwives for inviting me to give this the **15th** annual Zepherina Veitch memorial lecture.

Zepherina Veitch was a nurse and a midwife in the late 19th century. She was a founder of the Midwives Institute (which ultimately became the Royal College of Midwives), and she worked to improve the training and status of midwives, at a time when maternal and infant mortality in Britain was high; infant mortality was around 150 in 1000 births (1), and approximately 3000 women died in childbirth each year (2). Although at that time it was described as being safer to have a home birth with the attendance of a skilled midwife than to give birth in a hospital under the care of a doctor (2), the high level of maternal mortality associated with childbirth had become a national scandal and through the following century, in the attempt to improve the wellbeing of mothers and babies, institutionalisation and medicalization of childbirth became the norm.

More recent history

While this level of mother and infant mortality is of mainly historical interest to us now (at least within high income countries), the consequences in the form of medicalization of birth really 'came home to roost' in our more recent past (and within the memory of some midwives still practicing). Around 40 years ago medicalization of childbirth was at its height in the UK. The induction of labour rate was around 40% in Scotland in 1976 (3). As a student midwife in Rottenrow (Glasgow Royal Maternity Hospital) in 1980 I remember the labour ward being full of women undergoing induction of labour. Technology was 'in', all of the women were strapped to monitors that were as likely to pick up police band radio as the fetal heart. There was little concept of women's choice in childbirth and hearing that a woman was 'into natural childbirth' or worse, a member of the National Childbirth Trust was more or less taken as an indication to set up theatre for an emergency caesarean section. Although women were not generally dying in labour, this was a pretty dark time for maternity care in the UK.

However, even then changes were taking place. The routine admission enema and shave were abandoned in the early 1980's and midwife antenatal clinics were introduced in Rottenrow around 1984. The Winterton Report (4) was a revelation in 1990 and in the 20 years, or so, since its publication many things have changed for the better in maternity care in the UK, in particular, the focus on improving women's experiences of childbirth and on reducing unwarranted, routine labour interventions. These changes have been achieved, and are being achieved through a long line of determined and visionary people. People like, Luke Zander, Marsden Wagner, Caroline Flint, Lesley Page, Denis Walsh, Soo Downe Tricia Anderson Cathy Warwick. Here in Scotland we also have our heroines, Barbara 'Bunty' McLennan and Mary McGinley, Margaret McGuire and of course Gillian Smith, these are just a few of the names of our modern equivalents of Zepherina Veitch.

Normal birth

We are of course now clear that it is not enough that mothers and babies survive childbirth. Midwives and in general, our medical colleagues are committed to normal birth, women's wellbeing, the concept of salutogenesis, supporting mothers to experience childbirth as a wonderful life changing and life affirming event. We now know this is important not merely eccentric. There is growing evidence of the long term health consequences for mothers and babies associated with unnecessary labour interventions, although we have not as yet understood the full extent of these.

What works for normal birth?

We do now know quite a lot about what works in supporting normal birth. A considerable amount of high quality research has produced a strong evidence base for what works in reducing medical intervention and improving outcomes for women. These include, midwife led care (5), no routine use of EFM (6), no routine use of admission EFM (7), flexibility in progress of labour (8) and continuous support in labour (9).

Over the last 10-15 years there have been numerous initiatives, government health policies and guide lines to support implementation of these practices, for example The All Wales Pathway for Normal Birth, the RCM Normal Birth Campaign, the Scottish Government KCND Programme, the Consensus statement from the Maternity Care Working Party, and more. There has been an increase in numbers of community midwife led units and midwife led units alongside consultant units.

Are we running fast just to stand still?

Although much has been achieved sometimes it feels as if we are running just to stand still. Although the rate of induction of labour is around half what it was in Scotland in 1976 (47.5% in 1976; 22.6% in 2011) the caesarean section (C/S) rate is three times as high (27.8% in 2011; 8.7% in 1976) (3), while Scottish stillbirth rate had changed little over 20 years until a drop reported for 2010 (10).

Within the UK the rate of caesarean section (C/S) is now around 25% with rates as high as 33% in some areas (3). This problem is not confined to the UK. A WHO report in 2010 on number and cost of C/S world-wide (11) estimated that 6.20million unnecessary C/S were performed annually most of these in high income countries. The most recent report from Euro-Peristat (12) (<http://www.europeristat.com/>) shows that 52% of women in Cyprus now give birth by C/S. However, caesarean section is merely the tip of the intervention iceberg and rates of labour interventions in the UK also remain high. This is the normal birth paradox, we have good evidence for what should work in reducing childbirth interventions, along with policy and guideline support, and generally practitioner good will, at the same time intervention rates in particular, C/S rates are rising. It seems that something isn't working

The poet Robert Burns said *'The best-laid schemes o' mice an' men, Gang aft agley,'* and it may be that our efforts to support normal birth are having the unintended consequence of *increasing* rates of childbirth interventions.

How could this be happening?

Consider the BLT, voted the UK's most popular sandwich in 2008 <http://www.dailyrecord.co.uk/news/uk-world-news/blt-is-named-nations-favourite-sandwich-995391>

The ingredients of the BLT are bacon, lettuce and tomato. Of course, you may enjoy just eating bacon, tomato and lettuce but these ingredients alone do not make a BLT. The BLT comes to you in the form of a sandwich, it has additional ingredients, bread, butter mayonnaise. These are active ingredients in the BLT, they add taste, texture and of course calories. In the same way practices known to be effective in improving outcomes for women (midwife led care etc.) are not introduced into clinical practice as isolated ingredients. In a (surprisingly) similar way, midwife led care, discontinuing routine EFM, changing the accepted norms for progress in labour are typically introduced as packages of care, integrated into care models and as elements in guidelines or pathways. For example, the Scottish Government initiated KCND programme (13) included midwife led care and low intervention labour care as part of a multi-professional package of care guidance. Community midwife led maternity units may stand alone geographically but they are generally organised as larger integrated systems of maternity care. Just as with the BLT, in order to implement many of these evidence based practices into routine maternity care an additional carrier element is required. The vehicle for implementing the evidence based elements which have been demonstrated to reduce intervention and improve women's experience of maternity care is antenatal risk assessment, the antenatal risk assessment tool.

It is important to remember that bringing together several evidence based interventions does not automatically create an evidence based package of care. While there is high quality evidence for the effectiveness of midwife led care (and other practices) is there little or no evidence for the effectiveness of prospective antenatal risk assessment tools in predicting which women will have poor outcomes. However, these tools are used to determine which women are appropriate for midwife led care and which women may be booked to give birth in community midwife units. Typically, this will only be women deemed to be low risk. Similarly, they are used to determine who gets low intervention care in labour, which women do or do not require electronic fetal monitoring, which women may be permitted slower progress in labour. The risk assessment tool is not a neutral aspect of the care package; it is a very active ingredient.

Risk assessment in pregnancy

The premise underpinning risk assessment in pregnancy is that some women are more likely than others to experience pregnancy complications and that it should be possible to prospectively identify those women and to intervene or organise care accordingly. This is not a new idea; much of the interest in the potential of formal risk scoring in pregnancy arose around forty years ago. Most of the research on the effectiveness of such systems was undertaken during the late 1980's and early

1990s, when their effectiveness was found to be poor. A Guide to Effective Care in Pregnancy and Childbirth (14) reported:-

'both positive and negative predictive values of all scoring systems are poor – only between 10-30% of women allocated to high risk groups actually experience the adverse outcome of which they were thought to be at risk' – Enkin et al, 2000.

The use of risk assessment criteria came to be associated with midwife led care in the early 1990s when they were used as trial entry criteria for some of the trials of midwife led care. We needed to define a group of 'normal healthy' pregnant women. These study entry criteria were cross referenced across several RCTs and their association with these successful trials possibly added to a sense of their validity.

Risk assessment tools may vary across centres but typically they comprise lists of criteria. Over the years the list has grown and developed. For example, in the trial of midwife led care in Glasgow in 1992 (15) there were 32 criteria; these excluded 36% of women from the trial. The antenatal risk assessment tool now used across Scotland contains around 50 individual or general criteria. What are these risk assessment criteria? A mixture of clinical diagnosis, past history, and physical and social characteristics of the women, drawn from clinical opinion, craft knowledge, case reports, some come from epidemiology and many are socially constructed. Typically, these are used early in pregnancy to discriminate between women who are considered to be high or low risk, and to channel them in different directions for their subsequent maternity care.

What is risk?

Risk is a term we all seem to use very frequently, but what does it actually mean, and what does it mean for a woman to be labelled high or low risk? The notion of risk is underpinned by the concept of uncertainty. There are very few situations for which a particular outcome is 100% certain and therefore we have to consider probability or likelihood. **Risk** is the **probability** that an event (usually bad) will occur given a particular situation or condition (16, 17, 18).

A risk factor is described as-

...an aspect of personal behaviour or lifestyle, an environmental exposure, or an inborn or inherited characteristic which on the basis of epidemiological evidence is known to be associated with health-related condition(s) considered important to prevent (16).

- There may be a **weak** or strong association
- The factor may or may not be **causal** of the outcome
- It may be something which is merely a **marker** for something else which is causal of the outcome
- It may or may not be possible to change or prevent the outcome.

In order to really make use of antenatal risk assessment tools we would need to be able to answer the following questions for each risk factor and for each woman:

- **what** is the outcome for which the woman is at risk?

- how **likely** it is to occur?
- can anything be done to **change** this?

Consider asthma, there is evidence that in pregnancy one third of women will experience a deterioration of her asthma, one third will experience improvement and one third will remain the same (19). In this case the outcome at risk, the likelihood and the health advice or subsequent treatment is relatively well defined.

However, for a woman who is over 40 or under 18, what is the outcome for which the woman is at risk? How likely is this to occur? Is age causal of an outcome or an association? Booking after 20 weeks? A woman who is a Jehovah's Witness? What is the outcome of which she is at risk? If she has a haemorrhage? If she refuses blood products? What is the likelihood? For many of the risk assessment criteria there are no clearly defined outcomes (they are associated with poorer pregnancy outcomes), with no specific likelihood and no causal link.

In the best of all possible worlds the risk assessment tool would be used to trigger analytical thinking about the specific care needs of the individual woman. The KCND care pathway provides a good example. The KCND programme introduced multi-professional pathways for maternity care with specific pathways determined by risk level (red and green). The risk assessment tool identified some risk criterion that channelled women directly to medical led care and some directly to midwife led care. It also specified criteria which required discussion with medical or other colleagues. The KCND tool also specifically indicated that risk assessment should be dynamic, rather than a one way process. In this way the KCND risk assessment tool explicitly aimed to trigger analytical thinking and planning.

Nevertheless, even within the KCND programme around 50% of women were considered to be high risk by end of antenatal care, and most of the flow was up the risk ladder, women were much more likely to move from the low to high risk category, than from high to low risk. (KCND tables /slides)

While ideally the use of risk assessment tools would encourage analytical thinking, in practice they are more likely to be used heuristically, as rules of thumb, if the woman is identified as having risk criteria then this is what we do. Cognitively this is difficult to avoid. There are commonly around 50 individual risk criteria in UK antenatal risk assessment tools. In the context of the antenatal booking clinic where there is time pressure and additional tasks and assessments to undertake, it is difficult to imagine how a midwife (or any clinician) would cope with thinking analytically about 50 individual outcome/probability dyads, even assuming accurate information on probability was actually available. Decision theory demonstrates that in situations of time pressure and uncertainty when presented with too many informational cues (and too many is around five) our brains are wired to operate intuitively and to use rules of thumb (20), this is cognitive energy saving. It seems that we are more or less programmed to use the risk assessment tool as a rule of thumb.

When we are using a risk assessment tool we are programmed to think heuristically; this would be fine if the risk assessment tool was proven to be effective in predicting those women who will develop complications, but we know that it is not. It would be fine if the risk assessment tool was merely a neutral facilitator to support the implementation of midwife led care, but it is not. Bringing together a package of care which involves several elements that have been demonstrated to be

effective and adding the additional ingredient- the risk assessment tool, may lead to unanticipated and undesired consequences. What are the risks of risk assessment?

Unanticipated consequences of early pregnancy risk assessment

1. A trigger for tests and interventions. Early pregnancy risk assessment is, at the very least, a trigger for additional tests and interventions. This concern was highlighted back in 1989 in the first edition of *Effective Care in Pregnancy in Childbirth* (21) -

'The introduction of risk scoring into clinical practice carries the danger of replacing potential risk of adverse outcome with certain risk of dubious intervention'

Further, '*diagnosing*' risk, and acting on that diagnosis, has the potential to precipitate the outcome for which the woman was considered to be at risk. For example, pregnant women who are obese are at higher risk of caesarean section, in response some UK maternity hospitals have guidance which includes elective epidural and even '*prophylactic McRobert's position*' for obese women (22).

2. Constraining women's choices. The risk assessment tool is used to channel routes for subsequent care (midwife led – consultant led), as such it is a gate keeper for place of birth, constraining women's choice, and not always to good effect.

The Birthplace study (23) found that around 22% of women who had been assessed as low risk, were transferred from free standing midwife led units to consultant units during labour. Higher risk women who gave birth in non-obstetric unit settings had less interventions and better outcomes than those who gave birth in obstetric units. Conversely, low risk women giving birth in obstetric units were more likely to have major interventions and less normal births than those giving birth in non-obstetric unit settings. How may we interpret these findings? Early pregnancy risk assessment is not a particularly effective predictor of outcome. The setting may also be affecting outcomes; the study found that low risk women did less well when giving birth in higher risk places. It seems it may not always be the woman who has the risk factor, maybe it's the place. Maybe we need risk assessment tools for maternity units.

3. Distorted incentives. The NHS in England is currently changing the way in which maternity care will be funded in England (24). Clinical Commissioning Groups will commission services from trusts. Care will be paid for up-front as 'pathway bundles' with the pathway based on levels of intensity of care (high, intermediate and standard) deemed appropriate using a risk screening tool (comprising around 50 criteria) at around 10 weeks gestation. The CCGs will pay for care in three stages (antenatal, intrapartum and postnatal) with the tariff dependent on the care pathway. If a woman requires to transfer level of care, or transfer to a different care provider, the original provider will be responsible to pay for that care. This approach could act as an incentive to maintain women on low risk pathways i.e. by not referring women unnecessarily. However, alternatively it could provide an incentive for trusts to encourage a low threshold for decision making in early pregnancy assessments. Trusts may want to be as sure as possible that women are not booked for care in a community midwifery unit if there is any chance that she will require transfer to an obstetric unit. They may be inclined to ensure all women who could be assessed as having any risk factor is placed on the highest possible intensity care pathway, thus ensuring the highest payment for service 'just in case'. Evidence from other countries suggests the latter is more likely, the US system of payment for

maternity care has driven up intervention rates without corresponding health benefit. At the recent Normal Labour and Birth Conference a disheartened New York midwife told me- *'who pays obstetricians wages if women don't have caesarean sections? Who pays the anaesthetists if women don't have an anaesthetic?'*

So, it appears that the risk assessment tool may reduce women's choices for place of birth, specifically increase the use of tests and interventions, and channel them into pathways of care and places of birth that are likely to incur higher rates interventions and poorer outcomes. There's more.

4. Risk assessments may have a directly negative impact on women.

Women are concerned about risk assessments in pregnancy. A recent project which aimed to identify women's priorities for maternity care research found that questions about the proliferation of risk screening and the impact of risk screening on women were among the top ten ranked issues for research (25). Women posed questions such as;

Are maternity professionals becoming more anxious or risk focused?

How is low or high risk defined? And has this shifted over time?

Does the presentation of risk, with emphasis on risks and dangers create a negative feedback cycle?

How do professionals communicate with women about being high or low risk?

What is the impact on women of being labelled high risk?

There may be good reasons for women to be concerned. A study of the effects of antenatal risk assessment on women found that being labelled high risk had a significantly negative impact on women's psychological state (26).

There is significant empirical and theoretical evidence for this finding. Experimental studies from other contexts have indicated that negative beliefs about the likely future experience of health care or treatment may have a significant impact on health outcomes. This negative placebo or "nocebo" effect is entrenched in the complex interplay between physiological functioning and a range of social factors. Nocebo appears significantly more common among women in particular where there is prior expectation of negative effect (27) so it is reasonable to assume that nocebo could be having a significant effect when we are communicating to women that they are high risk. More research is needed here.

If risk is the problem, what is the solution?

I like this quote from a current TV comedy series about risk assessment (Wright Way, BBC)

We are paid to minimise risk even if no such risk exists.

I am not suggesting that no such risk exists. Clearly some women enter pregnancy with pre-existing medical, psychological or social conditions which mean they either have increased care needs or may develop pregnancy complications. It is also the case that we live in societies that are increasingly intolerant of bad outcomes, and the consequences of bad outcomes in childbirth may

attract considerable attention. So it is understandable that the response is to try to predict every possible outcome – to know the unknowns. However, using ineffective risk assessment tools merely gives an illusion of certainty that actually does not exist. At the same time these tools may be actively contributing to a rise in intervention and C/S.

What is the way forward, at an individual and at a systems level? At maternity services planning and commissioning level we need to ensure that we are not introducing an institutionalised disincentive to normal birth. Using current criteria we know that already almost half of women are considered high risk by the end of pregnancy. Vigilance will be required to ensure that payments for services based on early pregnancy risk assessment do not lead to spiralling numbers of pregnant women labelled high risk. We need to understand the variation in outcomes experienced by high and low risk women in different maternity units, why do low risk women have poorer outcomes in obstetric settings? Do we need to risk assess the place not just the person? This is an important recommendation of the Birth place study.

For individual midwives I think opportunities for change are currently limited. Risk assessment is deeply embedded in our maternity care systems and it will not be easy to dislodge. While we may need a complete re-think of our understanding and approach to risk in pregnancy I believe that the Scottish Government KCND guidelines offer an opportunity for an improved way of thinking about risk assessment meantime. The notion of the amber category of assessment with the potential of triggering analytical thinking, discussion, and reflection; stimulating that powerful ability of experienced midwives to synthesise complex information and exercise clinical judgement offers a way forward yet to be maximised. This needs to be preserved and it needs to be developed if we are going to truly support normal birth.

Meanwhile, we all need to remember that risk is not a diagnosis, it's a prediction. A diagnosis of 'high risk' in itself carries a risk of poorer outcomes for mothers and babies. Women and babies have care needs, current or those that could be anticipated, we need to think how we can best prepare for anticipated needs without actually bringing them about. We need to think about how we communicate with each other and with women. Telling women (or letting them believe) that they are high risk is likely to have a negative impact psychologically and also physically through the nocebo effect. Are we able to do the reverse and create a positive space where can women believe in their own ability to give birth?

Disclaimer

The views expressed are those of the author and not those of the NMAHP Research Unit or the Scottish Government

References

1. Dunn PM. Perinatal Lessons from the past. Sir George Newman, MD (1870–1948) and the prevention of perinatal disease. Arch Dis Child Fetal Neonatal Ed. 2005;90:F278-FF280 doi:10.1136/adc.2004.061184
2. Loudon I. Maternal Mortality: 1880-1950. Some Regional and International Comparisons. 1988 The Society for the Social History of Medicine.
3. ISD Scotland. Births in Scottish hospitals. <http://www.isdscotland.org/Health-Topics/Maternity-and-Births/Births/>
4. House of Commons Health Committee Second report on maternity services (Winterton Report) 1992. London Department of Health.
5. Hatem M, Sandall J, Devane D, Soltani H, Gates S. Midwife-led versus other models of care for childbearing women. Cochrane Database of Systematic Reviews 2008, Issue 4. Art. No.: CD004667. DOI: 10.1002/14651858.CD004667.pub2.
6. Alfirevic Z, Devane D, Gyte GML. Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour. Cochrane Database of Systematic Reviews 2006, Issue 3. Art. No.: CD006066. DOI: 10.1002/14651858.CD006066.
7. Devane D, Lalor JG, Daly S, McGuire W, Smith V. Cardiotocography versus intermittent auscultation of fetal heart on admission to labour ward for assessment of fetal wellbeing. Cochrane Database of Systematic Reviews 2012, Issue 2. Art. No.: CD005122. DOI: 10.1002/14651858.CD005122.pub4.
8. Lavender, T., Alfirevic, Z. & Walkinshaw, S. (2006) Effect of Different Partogram Action Lines on Birth Outcomes. Obstetrics & Gynaecology, Vol. 108(2), 295-302.
9. Hodnett ED, Gates S, Hofmeyr GJ, Sakala C. Continuous support for women during childbirth. Cochrane Database of Systematic Reviews 2012, Issue 10. Art. No.: CD003766. DOI: 10.1002/14651858.CD003766.pub4
10. ISD Scotland. Trends in Perinatal Mortality in Scotland. A review over 30 years. http://www.isdscotland.org/Health-Topics/Maternity-and-Births/Stillbirth-and-Infant-Deaths/mat_spimr_30yr_report_300609.pdf
11. Gibbons, L, Belizán JM, Lauer JA, Betrán AP, Merialdi, Althabe M The Global Numbers and Costs of Additionally Needed and Unnecessary Caesarean Sections Performed per Year: Overuse as a Barrier to Universal Coverage. World Health Report, Background Paper, No 30. 2010. World Health Organisation.
12. EURO-PERISTAT Project with SCPE and EUROCAT. European Perinatal Health Report. The health and care of pregnant women and babies in Europe in 2010. May 2013. Available: www.europeristat.com
13. Healthcare Improvement Scotland. Keeping Childbirth Natural and Dynamic (KCND) Available: http://www.healthcareimprovementscotland.org/our_work/reproductive_maternal_child/programme_resources/keeping_childbirth_natural.aspx

14. Enkin MW et al. A guide to effective care in pregnancy and childbirth. Oxford. Oxford University Press. 2000, 2005
15. Turnbull D, Holmes A, Shields N, Cheyne H, Twaddle S, Gilmour W H, McGinley M, Reid M, Johnstone I, Greer I, McIlwaine G, Lunan C B. (1996) Randomised, controlled trial of efficacy of midwife-managed care. *Lancet*, 348: 213-218.
16. Burt BA. Definitions of risk. http://www.nidcr.nih.gov/NR/rdonlyres/59E8463F-469F-4D06-95C3-CB877673DC98/0/Brian_Burt_Risk.pdf
17. Walker, G., Simmons, P. et al (1998) *Public Perceptions of Risks Associated with Major Accident Hazards* HSE Books, Sudbury
18. Petts, J., Horlick-Jones, T. and Murdock, G. (2001) *Social Amplification of Risk: the Media and the Public Contract* Research Report 329/2001 HSE Books, Sudbury.
19. The British Thoracic Society Scottish Intercollegiate Guidelines Network. (2011) British Guideline on the Management of Asthma. <http://www.sign.ac.uk/pdf/qrg101.pdf>
20. Hamm RM. Clinical intuition and clinical analysis: expertise and the cognitive continuum. Professional judgement: a reader in clinical decision making. 1988 pp78-105.
21. Chalmers I, M Enkin, MJNC Keirse. Effective care in pregnancy and childbirth. Vol 1. Oxford. Oxford University Press. 1989
22. Pascall A et al Maternal Obesity and Normal Birth. 2013 Normal Labour and Birth Conference. Grange over Sands.
- 23 Hollowell J, Puddicombe D, Rowe R, Linsell L, Hardy P, Stewart, M, et al. The Birthplace national prospective cohort study: perinatal and maternal outcomes by planned place of birth. Birthplace in England research programme. Final report part 4. NIHR Service Delivery and Organisation programme; 2011.
24. The NHS Commissioning Board Resource pack for commissioning maternity services (NHS 2012) <http://www.england.nhs.uk/wp-content/uploads/2012/07/comm-maternity-services.pdf>
25. Cheyne H, McCourt C, Semple K. Mother knows best: Developing a consumer led, evidence informed, research agenda for maternity care. *Midwifery* 29 (6) 705-12. DOI: 10.1016/j.midw.2012.06.015
26. Stahl K, Hundley V, 2003. Risk assessment in pregnancy – do we scare because we care? *Midwifery*. 19, 298-309
27. Olshansky B. Placebo and nocebo in cardiovascular health: implications for healthcare, research, and the doctor-patient relationship. *J Am Coll Cardiol*. 2007 Jan 30;49(4):415-21. Epub 2007 Jan 16