

NCT EVIDENCE BASED BRIEFING

Use of the Partogram in Labour

By Dr. Tina Lavender, Reader in Midwifery, University of Central Lancashire / Liverpool Women's Hospital.

Introduction

The partogram (or partograph) is a simple, inexpensive tool to provide a continuous pictorial overview of labour. Many hospitals now use a partogram to assist them in the detection of prolonged labour. This briefing provides a short history of the development of the partogram, its introduction into practice in the UK and the rationale for its use. It reviews the evidence for use of the procedure, and provides a critique. There is a section on use midwifery care and the partogram, including its use as part of the All Wales Clinical Pathway for Normal Labour. In particular, the briefing demonstrates that the tool and its components have not been adequately evaluated.

Background

The first obstetrician to provide a tool for the assessment of individual labours was Friedman¹. He conducted a study of the cervical dilation of 100 primigravidae at term using a chart he divided on graph paper with ten divisions. The women were given frequent rectal examinations and their progress was recorded in centimetres of dilation per hour, producing a slope resembling a sigmoid curve (starting with a gentle incline and rising more steeply as time passes). This became known as the cervicograph. The partogram in general use today is based on this design (see figure 1 on page 16).

The major criticism of Friedman's curve was that it was developed from data obtained from a small sample of just 100 women and no exclusion criteria were used. For example, no exclusions were made for malpresentations, malposition or multiple pregnancies, and women in the sample included those receiving oxytocin infusions, caudal analgesia and/or operative delivery. So that instead of developing a graphic illustration of the average rate of dilatation for women in normal

labour, against which to measure deviations from normal, the model was made up of a mixture of normal labour, labour complications and labour with major medical interventions.

In 1972, Philpott developed a partogram from the original cervicograph for use in a hospital in Zimbabwe, where doctors were in short supply². His objective was to provide a practical tool with which midwives and assistants could record all intrapartum details, not just cervical dilation. Unlike Freedman's study, women were only included if the cervix was already 3cm dilated on admission, recognising that progress would be slower if women were not in established labour.

An 'alert line' was added following the results of a prospective study of 624 women³. The alert line was straight, not curved, and was a modification of the mean rate of cervical dilatation of the slowest 10% of primigravid women who were in the active phase of labour. This line represented a progress rate of 1cm per hour. Should a woman's cervical dilation progress more slowly, it would cross this alert line. Then arrangements were made to transfer her from a peripheral unit to a central unit where prolonged labour could be managed. The authors claimed that the alert line could have universal application for primigravidae, but, contradicting this claim, they also acknowledged that the rate of progress of 100 consecutive normal African primigravidae was half that of American women. This they attributed to a high prevalence of cephalopelvic disproportion among their 'normal patients' in Zimbabwe. Furthermore, the mean rate of cervical dilation of 1cm per hour was slower than Friedman's statistical limit of 1.2cm per hour. The study was not a randomised trial, a factor which further limited the utility of the findings.

On the basis of the same study, the Philpott and Castle also introduced an 'action line', four hours to the right of the alert line⁴. This line was developed on the premise that correction of primary inefficient uterine action would lead to a vaginal birth. They concluded from their prospective study that the action line allowed 50% of women whose rate of dilation crossed the alert line to avoid being given oxytocin stimulation. It also showed a lowered incidence of prolonged labour and a reduction in caesarean sections. However, the reliability of this study can be questioned as, the 624 women in the study were compared with women who had given birth some years earlier, in 1966. The improved outcomes reported might be attributable to differences in the two populations or to other changes occurring over the same period of time. Furthermore, the actual number of women in the group who crossed the action line was only 68, chance findings can therefore not be completely excluded.

John Studd became an advocate of the partogram following his visit to Zimbabwe and promoted its use in the United Kingdom⁵. By 1973, half of the teaching hospitals in the United Kingdom were using the tool. In the face of criticism that there had been no formal evaluation on British women, Studd decided to find the mean for cervical dilation during normal labour for a British population. The sample of 4000 he used in his study included women of various racial groups. Studd concluded that the partogram could aid in the early recognition of prolonged labour, and routine use of the partogram in Britain is attributed to him and his work. However, his study can be criticised for including many women before they were in established labour, having cervical dilation less than 3cm. By his own definition of labour, these women were in the latent phase and should have been excluded.

Evaluation

Surprisingly, the partogram was only rigorously evaluated more than twenty years after its introduction, when an adaptation of the one formulated by Philpott and Castle was developed by The World Health Organisation⁶. To test whether the use of the WHO partogram improved labour management and reduces maternal and fetal morbidity and mortality, a prospective study of 35,484 women was carried out. The study involved four pairs of tertiary level hospitals in South East Asia. During the first five months, all the hospitals collected intrapartum data.

For the next five months the WHO partogram was introduced into one of each hospital pair and in the last five months was introduced into the remaining four hospitals. The management of labour included: no intervention in the latent phase until after eight hours, amniotomy in the active phase, augmentation, caesarean section or observation to be considered if the action line is reached. The introduction of this package was accompanied by 'several days' of intensive teaching of the midwifery and the medical staff. The outcomes, which showed significant improvement, were fewer prolonged labours (> 18 hr), fewer augmented labours and less postpartum sepsis.

The research methods used in that study have been criticised for the potential to introduce bias. To test whether the partogram was the cause of change in outcome between the hospitals studied, the introduction of the partogram should have been the only variable which was changed. In this study, the introduction of the partogram was accompanied by several days intensive teaching of staff. It was also introduced with a protocol, which specified that the women's membranes were ruptured in the active phase of labour.

Either of these changes could have led to the difference in outcomes. One could also question how applicable the results are in other settings. The authors stated that the WHO trial has shown beyond doubt that the partogram should be used for all women, yet it was applied in specific circumstances. Results might be different in a hospital with inadequate facilities or a where highly trained midwives give

care. The results of the study do not support the claim that the partogram can be recommended for use in all circumstances, as claimed by the authors.

The WHO claimed that the use of the partogram reduces the caesarean section rate; however, this finding did not reach statistical significance. The authors reported that the proportion of labours requiring augmentation was reduced by 54% but their observation that the improvements were 'most marked in normal women' suggested that the previous rate was unnecessarily high. Therefore the partogram was correcting a poor standard of care, rather than making childbirth safer per se.

The majority of trials of partography have taken place in hospital settings where most maternal deaths occur among women admitted with severe complications, many of whom have been unattended for many hours of labour⁷. No trial to date has demonstrated that the partogram reduces maternal mortality. In a culture where mortality is low, physical and psychological well-being and morbidity may be more appropriate markers of effective care.

Midwifery care

There is some evidence to suggest that although midwives find the partogram to have practical and educational benefits, the partogram's status within some obstetric units is such that it is associated for many midwives with restrictions in their clinical practice, reduced autonomy, and limited flexibility to treat each woman as an individual⁸.

Recently, however, the partogram has been incorporated into a new protocol for clinical care designed by midwives in Wales to protect and promote normal births, the All Wales Clinical Pathway for Normal Labour⁹. The rationale for advocating the tool in the context of the normal labour pathway has been to reduce the time midwives spend on note taking, while enabling them to keep detailed and accurate records, so as to free them up to provide emotional support to labouring women. As in any context, the partogram allows clinically significant observations to be recorded clearly; however, the

emphasis within the Clinical Pathway for Normal Labour is on an individual holistic approach rather than as a means of imposing strict time constraints on what is 'normal progress'. Rather than expecting dilation to occur at a rate of 1cm an hour once labour is established, the Pathway suggests that in the absence of other indicators for intervention, progress at the rate of 0.5cm per hour is within the bounds of normality and no particular action is required, apart from continuous support for the labouring woman. Observational evaluations are being carried out in Wales; however, there is no evidence at present to show how outcomes are affected by the Pathway or use of the partogram.

Summary and key points

In the current climate of evidence based practice, the need for rigorously conducted studies prior to the implementation of new treatments is recognised¹⁰. The use of the partogram has not been evaluated with sufficient attention to detail and avoidance of potential bias.

- There is an urgent need to evaluate the use of the partogram and its effect on women's experience of childbirth, both in its conventional use within a medicalised model of care and when adapted for use within a midwifery model of care which specifically aims to safeguard and promote normal births.
- The partogram currently in widespread use in the UK is based on studies carried out in other countries and several have included women who were not in established labour.
- The partogram can be used as a means of monitoring and imposing routine interventions on those women whose labour does not conform with pre-set time limits on measurable progress, with the objective of preventing prolonged labour as a result of 'inefficient uterine action'.
- Alternatively, it can be used as a tool for recording observations of clinical significance with the objective of reducing lengthy note taking, thus enabling midwives to use their time more effectively.

(continued.....)

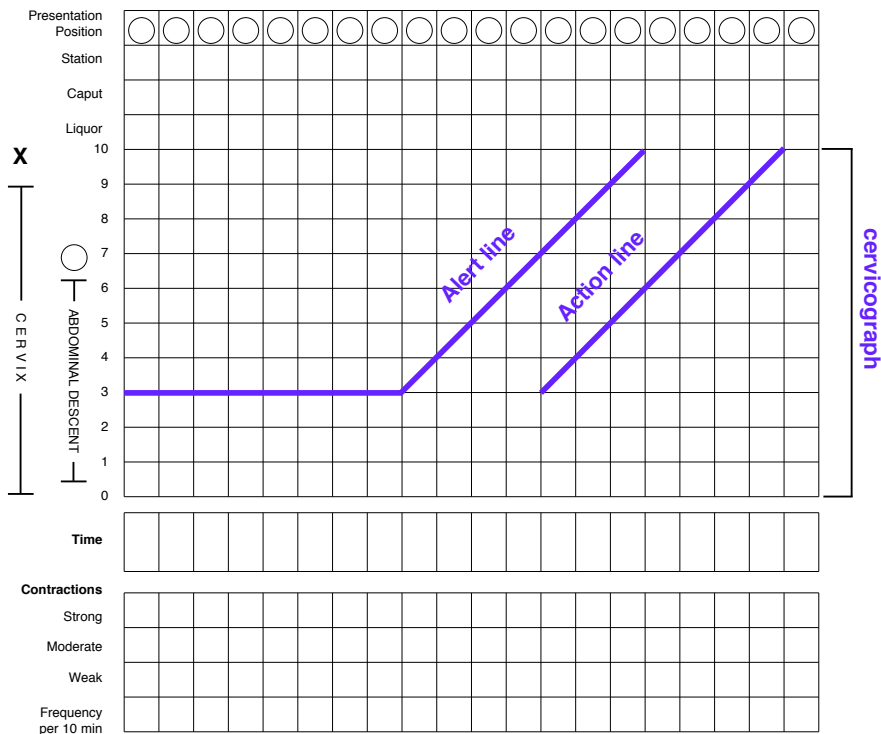


Figure 1: A section of a partogram showing places to record presentation, dilation, descent and other observations of clinical significance over time.

References:

1. Friedman EA. Graphic analysis of labor. *Am J Obstet Gynecol* 1954;68(6):1568-75.
2. Philpott RH. Graphic records in labour. *Br Med J* 1972;4(833):163-5.
3. Philpott RH, Castle WM. Cervicographs in the management of labour in primigravidae. I. The alert line for detecting abnormal labour. *J Obstet Gynaecol Br Commonw* 1972;79(7):592-8.
4. Philpott RH, Castle WM. Cervicographs in the management of labour in primigravidae. II. The action line and treatment of abnormal labour. *J Obstet Gynaecol Br Commonw* 1972;79(7):599-602.
5. Studd JW, Philpott RH. Partograms and action line of cervical dilation. *Proc R Soc Med* 1972;65(8):700-1.
6. World Health Organisation partograph in management of labour. *World Health Organisation Maternal Health and Safe Motherhood Programme. Lancet* 1994;343(8910):1399-404.
7. Lennox CE, Kwast BE. The partograph in community obstetrics. *Trop Doct* 1995;25(2):56-63.
8. Lavender T, Malcolmson L. Is the partogram a help or a hindrance? An exploratory study of midwives' views. *Pract Midwife* 1999;2(8):23-7.
9. Ferguson, P. Delivering the future in Wales. Paper presented at the Research in Midwifery & Perinatal Health Conference held at Aston University, Birmingham on 11th June 2003, 2003.
10. Olah KS, Gee H. The active mismanagement of labour. *BJOG: An international journal of obstetrics and gynaecology.* 1996;103(8):729-31.

Initiation of Breastfeeding: Evidence On What Works

The Health Development Agency (England) have published a review of the evidence of interventions to promote the initiation of breastfeeding¹. This is particularly relevant to the target to increase the proportion of women starting to breastfeed by 6% over the next three years in England² but it will also be useful and pertinent to the targets in other parts of the UK. Evidence shows that breastfeeding makes an important contribution to meeting the target to reduce infant mortality as a core element in reducing health inequalities.

The briefing presents the current evidence from selected good quality systematic reviews and meta-analyses published since 1996. There is evidence that training health professionals or written material alone were not effective in improving breastfeeding rates. Peer support and multiple interventions including media campaigns, in combination with health education programmes, training of health professionals and/or changes in government and hospital policies were more successful. Do look at the full report for the details.

You can obtain these and other summaries of the evidence from the Health Development Agency, PO Box 90, Wetherby, Yorkshire, LS23 7EX. Tel: 0870 121 4194, or see: www.hda.nhs.uk/evidence

References:

1. Protheroe L, Dyson L, Renfrew MJ, Bull J, Mulvihill C. *The effectiveness of public health interventions to promote the initiation of breastfeeding: evidence briefing.* London: Health Development Agency; 2003.
2. *Priorities and Planning Framework of the NHS Plan.* www.doh.gov.uk/planning2003-2006/appb.htm#8

(See also research summary on Baby Friendly hospital practices, on page 20 of Research Roundup in this edition of *New Digest*.)

Postnatal Health and Care: Sources of Evidence-Based Information

By Mary Newburn

There have been several recent publications which provide evidence based information about postnatal health and care. The NCT booklets, *Early Days*¹ and *Happy and Healthy after Childbirth*² are particularly suitable for new parents, as is the new MIDIRS Informed Choice leaflet number 15 for women, *Caring for yourself and feeling well after you have had your baby*³. This latter leaflet gives information about physical recovery in the early period after the birth, while the NCT booklets include more material on adjusting to life with a new baby. These are all evidence based, although the references are not included in the leaflets.

The MIDIRS leaflet points out that 'care after childbirth has been a neglected area for research and there is still a need for more studies about women's physical and psychological health after childbirth'. The companion MIDIRS leaflet for professionals, *Health and care after childbirth*⁴ is likely to be useful for NCT reps and specialist workers as it provides an accessible, referenced summary of current research evidence. Anyone needing a quick reminder of the reference for the

ineffectiveness of salt in bathwater⁵, or the emerging evidence for the use of a cool gel pad for perineal trauma⁶ will find it here. Although the recurrence of phrases such as 'results inconclusive', 'no significant difference' and 'little evidence' bear out the comment about the need for more studies, this leaflet is well worth reading and provides a useful introduction to general issues of postnatal care.

A more substantial publication for those NCT workers who have a special interest in postnatal care and support was published last year - *Postnatal care: evidence and guidelines for management* by Bick, MacArthur and Knowles.⁷

This book includes details of the IMPaCT trial (Implementing Midwifery-led Postnatal Care Trial), which tested a particular package of midwife-led postnatal care, a comprehensive overview of postnatal health needs, and the evidence-based guidelines developed for midwives as part of the trial. The treatment arm of the IMPaCT trial involved midwives delivering a new model of care using a

symptom checklist to systematically identify physical and psychological health problems in order to offer appropriate management, including support and reassurance of individual health needs⁸.

The book includes chapters on a range of important postnatal concerns, such as abnormal bleeding and perineal pain, caesarean section wound care, urinary and bowel problems, depression, fatigue, backache and headaches, several of which draw on major studies by the same authors^{9,10}. Each of these chapters provides a substantial, fully referenced review of postnatal morbidity. There is also a substantial section on breastfeeding issues, beginning with a clear statement that 'it is likely that almost all postnatal breastfeeding problems can be prevented if the baby is able to feed effectively and efficiently from the beginning'.

Many of the problems included in the book are 'under-reported' by women, which means they are not discussed with health professionals and no help is sought, either in terms of emotional support or clinical treatment. NCT specialist workers may be able to improve their support for women experiencing these common problems - or prepare them with coping strategies during pregnancy - by creating safe opportunities for discussion and experience-sharing, as well as knowing the evidence on frequency of occurrence and effective management. For example, one useful snippet of information is that 90% of the women have found bathing helpful for relieving perineal discomfort.

Each chapter is clearly laid out with a brief introduction, followed by definitions, frequency of occurrence, risk factors and management, with a final summary and clear guidelines for midwives. The sections on 'frequency of occurrence' are useful in

bringing together the statistics to answer the questions which parents ask about the likelihood of particular problems arising, and lead into discussion on risk factors and recommended management following diagnosis.

There are interesting comparisons using major studies of postnatal experience in other countries, including Australia¹¹; France and Italy¹²; and Scotland¹³. Some of the statistics are fascinating: 12 months after the birth, 17% of Italian women report constipation, compared with 26% of French women, although Italians were more likely to suffer backache (65% compared with 47% of French women).

The book is also an invaluable resource for NCT Reps lobbying to improve postnatal care locally, identifying significant research papers on each topic and providing a critique of the studies' shortcomings or lack of research in the area.

If the book has a shortcoming, it is its focus on a biomedical perspective of postnatal morbidity. There is little discussion about normal physiological and social and emotional adjustment after childbirth. In contrast, the final page of the MIDIRS leaflet highlights the need for better information on what constitutes postpartum normality, ending, promisingly, that 'an approach that embraces the philosophy of the **Changing Childbirth** report, by encouraging the woman to be within the circle of health rather than outside it, is key to the provision of a model of pro-active care that will meet the needs of women and their babies as individuals'¹⁴.

(See also research summary on postnatal mental health, on page 24 of *Research Roundup* in this edition of **New Digest**.)

References:

- 1 National Childbirth Trust. *Early days - life with a new baby*. London, National Childbirth Trust. 2003.
- 2 National Childbirth Trust. *Happy and healthy after childbirth. What to expect; looking lively; eating well*. London, National Childbirth Trust. 2003.
- 3 *Caring for yourself and feeling well after you have had your baby*. London, MIDIRS. MIDIRS Informed Choice for Women, No 15. 2003.
- 4 *Health and care after childbirth*. London, MIDIRS. MIDIRS Informed choice for professionals No 15. 2003.
- 5 Sleep J, Grant A. *Effects of salt and Savlon bath concentrate post-partum*. *Nurs Times* 1988;84(21):55-7.
- 6 Steen M. *A randomised controlled trial to compare the effectiveness of icepacks and Epifoam with cooling maternity gel pads at alleviating postnatal perineal trauma*. *Midwifery* 2000;16(1):48-55.
- 7 Bick D, MacArthur C, Knowles H et al. *Postnatal care: evidence and guidelines for management*. Edinburgh: Churchill Livingstone; 2002.
- 8 MacArthur C, Winter HR, Bick DE et al. *Effects of redesigned community postnatal care on womens' health four months after birth: a cluster randomised controlled trial*. *Lancet* 2002;359(9304):378-85.
- 9 MacArthur C, Lewis M, Knox G. *Health after childbirth*. London: HMSO; 1991.
- 10 Bick DE, MacArthur C. *The extent, severity and effects of health problems after childbirth*. *BJM* 1995;3(1):27-31.
- 11 Brown S, Lumley J. *Maternal health after childbirth: results of an Australian population based survey*. *Br J Obstet Gynaecol* 1998;105(2):156-61.
- 12 Saurel-Cubizolles MJ, Romito P, Lelong N et al. *Women's health after childbirth: a longitudinal study in France and Italy*. *BJOG* 2000;107(10):1202-9.
- 13 Glazener CM, Abdalla M, Stroud P et al. *Postnatal maternal morbidity: extent, causes, prevention and treatment*. *Br J Obstet Gynaecol* 1995;102(4):282-7.
- 14 Department of Health. *Changing Childbirth: Part 1. Report of the expert maternity group*. London: HMSO; 1993.

RESEARCH ROUNDUP

A current awareness service which provides details of a range of new research and policy documents.

Compiled by Linda Griffiths, Information Officer & Librarian and Cynthia Clarkson, UK Trustee

Email: Library@national-childbirth-trust.co.uk

The full version of the Current Awareness Bulletin (on which Research Roundup is based) is available on-line from: http://groups.yahoo.com/group/nct_research AND http://groups.yahoo.com/group/nct_reps

Please read abstracts critically in the context of your wider knowledge and experience. Do read the publication in full if it is relevant to your work. You may be able to obtain these through your local public library or your nearest NCT tutor may be able to help. The NCT library may be able to supply photocopies (within the terms of current copyright regulations) but this will be subject to staff availability and there may therefore be a delay in our ability to supply. Where photocopies are provided we would appreciate a donation towards the costs of providing the Library and Information Service (LIS). The LIS will try to prioritise support for NCT tutors, registered reps and specialist workers. Photocopies can be obtained from other, larger libraries: MIDIRS (0800 581 009) or the Royal College of Midwives library (020 7291 9220/9221). There are charges for these services.

✦ Child

Low Birth Weight

Conde-Agudelo A, Diaz-Rossello JL, Belizan JM. *Kangaroo mother care to reduce morbidity and mortality in low birthweight infants (Cochrane Review)* The Cochrane Library, Issue 2 2003. Oxford: Update Software. Available from: <http://www.update-software.com/clubng/clublogon.htm> Ref ID: 2563

Background: Kangaroo mother care (KMC), defined as skin-to-skin contact between a mother and her newborn, frequent and exclusive or nearly exclusive breastfeeding, and early discharge from hospital, has been proposed as an alternative to conventional neonatal care for low birthweight (LBW) infants. Objectives: To determine whether there is evidence to support the use of KMC in LBW infants as an alternative to conventional care after the initial period of stabilisation with conventional care. Search strategy: We used the standard search strategy of the Neonatal Review Group of the Cochrane Collaboration. MEDLINE, EMBASE, LILACS, POPLINE and CINAHL databases (to December 2002), and the Cochrane Controlled Trials Register (The Cochrane Library), were searched using the key words terms 'kangaroo mother care' or 'kangaroo care' or 'kangaroo mother method' or 'skin-to-skin contact and infants' or 'low birthweight infants'. Selection criteria: Randomised trials comparing KMC and conventional neonatal care in LBW infants. Data collection and analysis: Trial quality was assessed and data were extracted independently by two reviewers. Statistical analysis was conducted using

the standard Cochrane Collaboration methods.

Main results: Three studies, involving 1362 infants, were included. All the trials were conducted in developing countries. The studies were of moderate to poor methodological quality. The most common shortcomings were in the areas of blinding procedures for those who collected the outcomes measures, handling of dropouts, and completeness of follow-up. The great majority of results consist of results of a single trial. KMC was associated with the following reduced risks: nosocomial infection at 41 weeks' corrected gestational age (relative risk 0.49, 95% confidence interval 0.25 to 0.93), severe illness (relative risk 0.30, 95% confidence interval 0.14 to 0.67), lower respiratory tract disease at six months follow-up (relative risk 0.37, 95% confidence interval 0.15 to 0.89), not exclusively breastfeeding at discharge (relative risk 0.41, 95% confidence interval 0.25 to 0.68), and maternal dissatisfaction with method of care (relative risk 0.41, 95% confidence interval 0.22 to 0.75).

KMC infants had gained more weight per day by discharge (weighted mean difference 3.6 g/day, 95% confidence interval 0.8 to 6.4). Scores on mother's sense of competence according to infant stay in hospital and admission to NICU were better in KMC than in control group (weighted mean differences 0.31 [95% confidence interval 0.13 to 0.50] and 0.28 [95% confidence interval 0.11 to 0.46], respectively). Scores on mother's perception of social support according to infant stay in NICU were worse in KMC group than in control group (weighted mean difference -0.18, 95% confidence interval -0.35 to -0.01). Psychomotor development at 12 months' corrected age was similar in the two groups. There was no evidence of a difference in infant mortality. However, serious concerns about the methodological quality of the included trials weaken credibility in these findings.

Reviewers' conclusions: Although KMC appears to reduce severe infant morbidity without any serious deleterious effect reported, there is still insufficient evidence to recommend its routine use in LBW infants. Well-designed randomised controlled trials of this intervention are needed. [Author]

Premature

Confidential Enquiry into Stillbirths and Deaths in Infancy (CESDI). Project 27/28: an enquiry into equality of care and its effects on the survival at 27-28 weeks. London; Confidential Enquiry into Stillbirths and Deaths in Infancy: 2003. ISBN: 0117030899. Available from: <http://www.cesdi.org.uk/publications/P2728/mainreport.pdf> Ref ID: 2277