

FISTULA CARE



Use of the Partograph: Effectiveness, Training, Modifications, and Barriers

A Literature Review

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Fistula Care is a five-year cooperative agreement funded by the U.S. Agency for International Development (USAID) and managed by EngenderHealth. The project works to address the enormous backlog of women awaiting life-altering fistula repair, ensuring that they receive timely, high-quality care from trained providers. At the same time, it works to remove barriers to emergency obstetric care that lead to fistula in the first place, so that women in labor get to the right place with the right services at the right time. The project is supporting a network of facilities offering a continuum of services, from emergency obstetric care, referrals, and family planning to complex fistula repairs and advanced surgical training.

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It is our hope that this research contributes, in some small part, to the global efforts to prevent maternal mortality and morbidity throughout the world.

Executive Summary

Improving labor monitoring to reduce obstructed labor is an important component of efforts to prevent the occurrence of obstetric fistula. The partograph is recognized as a monitoring tool that can contribute to the quality of care provided to a woman in labor. The Fistula Care project, which works to address the backlog of women awaiting fistula repair by supporting training and repair, as well as removing barriers to emergency obstetric care, carried out a literature review with the objective of identifying and summarizing the available literature in scientific and programmatic publications on:

- Use and efficacy of the partograph
- Training strategies for introducing and effectively implementing use of the partograph
- Barriers to partograph use

Utilizing public health and medical databases as well as Web-based search engines, we identified more than 80 publications for review, including articles, technical manuals, and book chapters. Based on the findings of the literature review, we suggest areas for future research.

Key findings include the following:

- Actual rates of use and levels of knowledge about the partograph among health care facility staff vary greatly from country to country and by cadre and type of facility. In general, levels of knowledge, skill, and implementation are low.
- Only a small number of controlled and quasi-controlled studies have examined the impact of partograph use on labor or cesarean section rates, and evidence of positive impact is limited. However, other noncontrolled and generally smaller studies have provided support for such an effect, as well as evidence of a positive impact on maternal and perinatal health outcomes.
- Evidence supports the need for a strong supervision and monitoring component to be included in any partograph introduction or training activities. Quality assurance is needed to ensure that training translates into ongoing practice.
- The partograph may have benefits that go beyond the evaluation of medical outcome improvements, including the potential to improve quality of care and provider attitudes and to increase knowledge about labor practices.
- Available evidence does not indicate that elimination of the latent phase of the partograph has a significant impact on labor decisions or on maternal or neonatal outcomes.

Variations in the rates of use and the cadres of staff using the partograph must be taken into account when planning to introduce the partograph or train staff in its use. Effective supervision and monitoring are a crucial component for success. Overall improvement in knowledge and skills development for labor monitoring is needed to best provide meaningful obstetric care and reduce obstructed labor and poor maternal and neonatal outcomes.

There are multiple versions of the partograph available, but regardless of which version of the partograph is used, facilities must ensure that women admitted during the latent phase of labor receive adequate care and monitoring.

Operational research addressing the actual use of the partograph as a referral tool, examining the role of the partograph in decision making, and looking more closely at different training strategies and outcomes would make a valuable contribution to the existing body of data. Fistula Care has developed and is field-testing a tool for monitoring partograph use on-site. This tool facilitates monitoring and supervision to ensure that the partograph is used correctly and appropriately at facilities at different levels.

Introduction and Methodology

Background

Pregnancy and delivery are expected to be joyful for the family, free from injury or death for the mother and her child. Though global maternal mortality rates have declined in the last 15 years, they remain unacceptably high. In 2008, nearly 350,000 women died in pregnancy and childbirth (Hogan et al, 2010). Of those who do not perish, an unknown number suffer long-term health problems. The maternal injury with perhaps the most devastating aftermath is obstetric fistula. A fistula is a hole, or abnormal opening, in the birth canal, which results in chronic leakage of urine and/or feces.

Obstetric fistula due to obstructed labor is by far the most common form of genital fistula in low-resource settings in Africa and Asia, constituting an estimated 90% of all genital fistula cases (Hilton, 2001). Obstetric fistula is usually caused by several days of obstructed labor, without timely medical intervention or cesarean section. During this time, the soft tissues of the pelvis are compressed between the fetus' head and the woman's pelvic bones. The lack of blood flow causes tissue to die, creating a hole between the woman's vagina and bladder or between the vagina and rectum, or both, and resulting in leakage. Generally, the fetus will be stillborn.

Prolonged labor can lead to postpartum hemorrhage, infection, and fetal injury or death, as well as fistula. The risk of experiencing these birth-related morbidities and mortalities increases in low-resource settings with limited health services. Lack of resources—human, medical, and technological—can contribute to missed opportunities for interventions during labor.

The partograph (also referred to as the partogram) is a simple, inexpensive preprinted form on which labor observations are recorded. It generally comprises three sections of information: maternal condition, fetal condition, and labor progress. The form provides a graphic overview of the progression of a woman's labor. Monitoring the progression of labor can assist health care workers in identifying deviations from normal labor progression, first alerting health care workers that a woman may need intervention and then calling for action, if indicated—in the form of direct intervention via labor augmentation or cesarean section, as necessary—or referral to a higher-level health facility.

Objectives

To promote quality of care during labor, Fistula Care undertook a literature review to:

- Identify and summarize the available literature on the use and efficacy of the partograph in scientific and programmatic publications
- Identify published information on the attitudes of health care providers toward the partograph
- Identify and evaluate training strategies for introduction to and effective implementation of the partograph

- Identify barriers to use of the partograph
- Propose areas for future research

The specific research questions that framed the review included the following:

- Does the literature provide evidence supporting the assumption that the partograph is a useful tool in reducing prolonged labor and/or adverse maternal and neonatal outcomes?
- What does the research show regarding frequency, quality, and types of partograph use at health facilities in low-resource settings?
- What are the barriers to the use of the partograph, particularly regarding logistical and attitudinal constraints?
- And finally, what training strategies have been documented to show particular success in introducing and sustaining effective use of the partograph in a health facility?

Methods

Our literature search used the search term “partograph” and “partogram” and utilized Web-based search engines as well as public health and medical databases, including Ovid, Information Exchange Online, PubMed, POPLINE, the British Library for Development Studies, and MEDLINE, to identify relevant articles published in the last 20 years on partograph use. We reviewed more than 80 publications, including articles, technical manuals, and book chapters. Assessment of the currently available information will lead to the development of strategies for introducing and strengthening partograph use in countries working to improve maternal health care.

Background on the Partograph

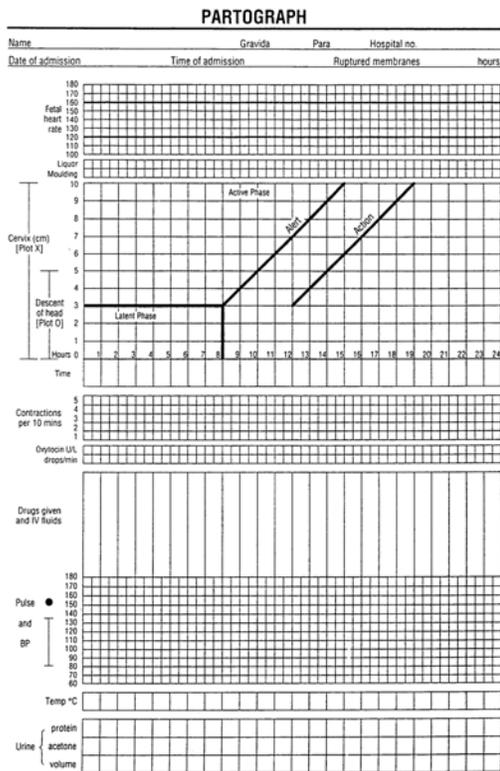
Friedman (1954) was the first obstetrician to graphically identify four phases of cervical dilation, in a study of 100 women in their first pregnancy: the latent phase, the acceleration phase, the phase of maximum slope, and the deceleration phase. His graphic recordings of labor progression became known as a cervicograph. Philpott and Castle (1972) expanded on this cervicograph by including other intrapartum information, such as the relationship to the presenting part and uterine contractions, producing the first partograph. They then introduced action and alert lines, in an effort to manage labor in the best possible way in a setting where doctors were generally unavailable.

Years later, during the 1987 Safe Motherhood Conference in Nairobi, Kenya, the World Health Organization (WHO) revised, approved, and promoted the universal use of the partograph with a view toward reducing maternal and fetal mortality. After some years of practice with the composite partograph, WHO developed a simplified version omitting the latent phase and the descent of the presenting part (see Figure 1). Currently, many health facilities use the second partograph proposed by WHO, though some continue to use the earlier composite version. Ministries of health and facilities have also adapted the partograph design to fit their needs and capacity.

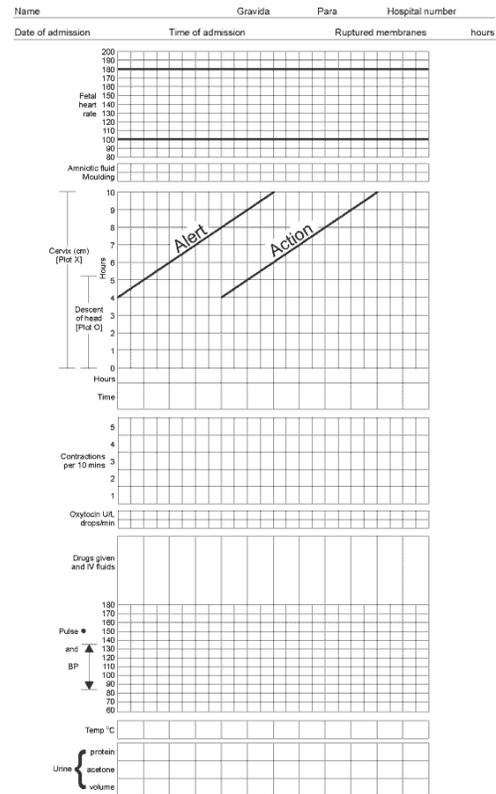
The partograph is composed of the following sections:

- *Fetal condition*, including fetal heart rate monitored using a Pinnard's stethoscope, assessment of membranes and the color of the liquor if ruptured, and assessment of the presence of molding;
- *Maternal condition*, including temperature, blood pressure, pulse, and drugs administered;
- *Progress of labor*, including cervical dilation and effacement, contractions, and descent of the presenting part (in composite version);
- *Alert line*, indicating "normal" labor progression, and *action line*, indicating crossing into the range where action should be taken.

Figure I: Original and simplified WHO partographs



Original WHO partograph
(Source: WHO, 1994c)



Simplified WHO partograph
(Source: WHO, 2008)

In 1994, WHO published a four-section manual on the use of the partograph (WHO, 1994c). Part I covers principles and strategies, Part II is a user’s manual, Part III is a facilitator’s guide, and Part IV provides guidelines for operational research. This publication was developed in 1988 and was updated in 1994 based on findings from a prospective nonrandomized study of an adapted partograph that WHO had produced.

The WHO (1994a) study testing the use of this WHO-adapted partograph with 35,484 women in Southeast Asia concluded that the partograph was a necessary tool in the management of labor and recommended that it be universally adopted. The study showed reductions in prolonged labor, in the proportion of labors requiring augmentation, and in emergency cesarean sections and stillbirths. Only a small number of studies have examined the partograph in a similar way, and only two of these in Africa, both of which took place years earlier (Philpott, 1972; Kwast & Rogerson, 1973). The findings of the two African studies are similar to the WHO results, with statistically significant results. The WHO study included a much larger sample of women and used a more rigorous methodology. Since it was not a randomized controlled clinical trial study, however, some have questioned whether it could in fact be considered “definitive” in providing evidence that the partograph

improves the outcomes and management of women in labor. Despite the lack of evidence from any large-scale randomized controlled study (Lavender, Hart and Smyth, 2008), the general consensus is that the partograph is a useful and effective tool for preventing obstructed labor in lower-resource settings. There is less consensus on the effectiveness of the use of the partograph in higher-resource settings.

One of the intended benefits of the publication of the WHO simplified partograph was to promote a more uniform model of partograph, so that all users could work with the same guidelines. Lack of conformity had been seen as a possible obstacle to partograph use. However, despite the introduction of the simplified WHO partograph in 1994, countries continue to modify the partograph to fit their particular needs, resulting in many different versions of the partograph in use throughout the world.

Use of the partograph is predicated on the existence of a functioning referral system and the ability to provide obstetric care. Additionally, the partograph can be used only in situations where health care workers have enough training in basic obstetric skills to be able to perform normal deliveries, vaginal examinations, and assessments of cervical dilation, as well as where necessary supplies are available. Therefore, it is essential that a successful introduction of the partograph be done in conjunction with: a) an assessment of the level of understanding and skills of health care staff in these areas, b) a comprehensive training program that addresses supervision and quality assurance, and c) detailed training that covers the mechanics of use of the partograph.

WHO (1994c) recommends that partograph introduction begin in teaching hospitals and referral centers and then extend outward into the peripheral health centers. Midwives and other personnel from peripheral health centers can come to central hospitals, where there are likely to be adequate caseloads and trainers, to undergo training, and they can then return to introduce the partograph in their workplaces. At the local health center level, emphasis should be on the use of the partograph as a referral tool, rather than as a tool for labor management, since obstetric interventions may not be available. Additionally, medical and midwifery schools should include the principles and use of the partograph in their curricula. According to WHO's recommendations (1994c), partograph training should consist of an intensive period of training in the use of the partograph, preferably including "tutors" who have used the partograph elsewhere. The training should begin with a theoretical approach, followed by practical examples. WHO recommends close supervision of the partograph's introduction into a labor ward, so that any difficulties can be identified and addressed.

Finally, WHO (1994c) recommends operations research topics for gathering useful information on the application of the partograph, particularly as a referral tool. With the belief that their multicenter trial, supported by previous studies, had firmly established the efficacy of the partograph when used appropriately, operational research was the logical next frontier for exploration. Four major goals were presented:

- To assess whether an education program for health workers will result in correct application of the partograph
- To determine the effect of introducing the partograph in rural health centers on the rate at which women in prolonged or obstructed labor are referred for care

- To determine the effect of introducing the partograph on the incidence of prolonged labor, of augmented labor, and of operative delivery
- To determine whether appropriate interventions based on the partograph will reduce maternal and perinatal complications

The four operational research topics above helped to shape the focus of this literature review. Despite WHO's strong recommendations regarding operational research, few such studies have been carried out over the last 15 years. Little published information is available on actual programmatic use of the partograph. Nearly all studies have focused on rates of use or on the clinical significance of the partograph instead of looking at how it is actually used. The focus on outcome data—rather than on assessment of the quality of partograph use, barriers to use, strategies for training and supervision, and so on—has left many areas unexamined.

Knowledge and Use of the Partograph

Reported rates of partograph use vary from study to study. Additionally, while some studies report on general rates of use, others report on rates of “correct” usage, which differ greatly. Findings most often indicate rare or incorrect use of the partograph. Low rates of use and of correct use of the partograph are most frequently seen in health care settings where labor management practices are generally poor. Many studies had a larger scope and addressed the partograph as one of several indicators to assess overall labor monitoring or management skills and practices, and thus they report only on rates of use, with little in-depth background or qualitative data to round out these findings.

Where doctors and midwives are familiar with the partograph, recognition does not necessarily translate to usage. Umezulike, Onah, and Okaro (1999) found that although 94% of doctors and midwives in one area of Nigeria thought the partograph was useful, only 25% used it routinely. Most of the time, those entrusted with the intensive care of women in labor were relatively inexperienced and often were unsupervised by more senior and experienced personnel. While nearly all respondents had heard of the partograph, only 33% could correctly define it.

At many facilities, completion of a partograph in a client's record was the exception rather than the norm. In their retrospective study at a general hospital in Kenya, Wamwana et al. (2007) found that the partograph was used in only 11% of cases. Delvaux et al. (2007), in their study of urban maternity wards in Côte d'Ivoire, found that partographs were completed in only 5% of cases and that contractions were monitored in only 9% of cases. At two of the sites included in that study, the partograph was completed *after* delivery in more than 60% of deliveries, indicating it was being utilized only as a record-keeping procedure, not as a monitoring tool.

The quality of labor monitoring practices

When looking at use of the partograph, it is important to also examine what a facility's broader practices are regarding labor monitoring in general and what services are available to women in labor. Partograph usage alone will not ensure or even facilitate positive health outcomes if no services are available to women identified as needing intervention. Many

studies included in this review made note of the gross deficiencies of health care staff in terms of their knowledge of normal labor expectations and assessment of labor progression.

In Njoroge's (1993) study in rural Kenya, 50% of health care workers had low knowledge of the partograph. Their ability to use parameters on the partograph to make decisions was low, and 60% could not apply the findings on the partograph to make a decision on the active management of labor. Delvaux et al. (2007) reported finding that providers' assessment of women's condition at admission was poor; vital signs and labor progress were not routinely monitored in the maternity wards—or even measured at all, in most cases. As a result of their findings, the authors challenged the conventional practice of using the proportion of births with a skilled attendant as the key indicator for tracking progress in maternal health, as “skilled attendant” does not translate into skilled or appropriate care. In their efforts to assess maternal and neonatal health services in 49 developing countries, Bulatao and Ross (2002) found that health centers tended neither to use the partograph nor to have transportation available in the event of obstructed labor.

As part of a series of Safe Motherhood Studies conducted by the the Quality Assurance Project (QAP) (Boucar et al., 2004; Burkhalter et al., 2006; Gbangbade et al., 2003), the competence of skilled birth attendants was assessed in Benin, Ecuador, Jamaica, and Rwanda. With the exception of Jamaica, all of the countries had guidelines recommending use of the partograph. Despite this, incorrect use was observed in more than half of the case observations (with variation between countries). The ability to correctly use and interpret the partograph was low. Findings indicated a wide gap between current evidence-based standards and provider competence to manage selected obstetric and neonatal complications. Labor monitoring appeared to be inadequately performed. Fetal heart rate monitoring was conducted well below the recommended standard of twice hourly, and vaginal examinations and maternal blood pressure monitoring were conducted more frequently than indicated. Overall, cases were not monitored sufficiently often to detect fetal distress or maternal complications.

The Safe Motherhood Studies also looked at quality of obstetric care and the elements that contribute to “the third delay”: the delay in receiving medical attention after a woman arrives at a health care facility (Boucar et al., 2004; Burkhalter et al., 2006; Gbangbade et al., 2003). In Benin, providers used partographs about two-thirds of the time. In partograph case study competency assessments, doctors scored significantly higher than midwives—a discrepancy that the authors found to be cause for concern, as the midwives or first-line birth attendants are the ones who actually provide care to laboring women at most facilities. In Rwanda, there was no significant difference by type of provider or health facility. Competency scores in Rwanda were low, around 50% for overall knowledge and for overall skills. Knowledge and skills related to active management of the third stage of labor were noted to be particularly poor. Partographs were completed in fewer than half of all cases. The authors also found no correlation in either Rwanda or Benin between providers' self-assessments of competency and actual competency levels as measured by knowledge and skills tests.

In both Rwanda and Benin, labor monitoring appeared to be poorly performed, with inadequate monitoring of fetal heart rate as well as poor monitoring of the mother's blood pressure and contractions. In addition, vaginal examinations were being performed more often than necessary or appropriate—on average, more than twice per hour. The authors

noted significant delays in providing care and diagnosing obstructed labor and severe eclampsia or pre-eclampsia in Benin and stated that cases were not monitored sufficiently in Rwanda to detect fetal distress or maternal complications.

Rates for knowledge and use of the partograph vary depending on the type of facility (i.e., tertiary vs. primary/secondary, public vs. private) and the level of provider training (i.e., physician vs. midwife vs. community health worker). Responsibility for monitoring labor and for completing the partograph (where used) fall on different cadres of staff in different locations.

A study by Oladapo, Daniel, and Olatunji (2006), focusing on peripheral maternity centers, found that just over half of maternity care providers on site were aware of the partograph. While the vast majority of those aware of it also could correctly identify its definition and purpose, only 10% demonstrated good levels of knowledge regarding its use. Overall, only 10% of personnel routinely used the partograph to manage labor, and almost all of those had poor levels of knowledge. Fawole, Hunyinbo, and Adekanle (2008) echoed these results, finding that only just over one-third of all respondents could correctly identify at least one component of the partograph. Knowledge about the function of both the alert and action lines was generally poor: Only 17% of respondents could explain the function of the alert line, while 24% could explain the function of the action line.

Poor completion of partograph can be due to lack of knowledge

Ijadunola et al. (2007) identified lack of knowledge and lack of skills as major factors hindering the use of the partograph at the primary health care level (where most deliveries take place) in Nigeria. They found that at 96% of primary health care facilities, partographs were neither available nor being used to monitor labor progress.

Higher-level public providers are more familiar with partograph than are lower-level public- or private-sector providers

Fawole, Hunyinbo, and Adekanle (2008) looked at how the cadre of provider corresponded to their level of knowledge about the partograph: The higher the level of formal job training, the higher the level of knowledge (while still low across the board). Additionally, the more highly trained the providers were, the more they felt the partograph had value. Oladapo, Daniel, and Olatunji (2006) similarly found that junior staff members had particularly poor levels of knowledge. In the study by Fawole, Hunyinbo, and Adekanle (2008), respondents indicated that staff from tertiary facilities were significantly more knowledgeable about the value of the partograph for monitoring labor. Just fewer than half of all respondents had received training on the partograph. Health care staff from public-sector health facilities were more likely to have received prior training, and they displayed better knowledge than respondents from private-sector health facilities.

The available data on actual rates of use of and levels of knowledge about the partograph among health care facility staff vary greatly from country to country and by cadre and type of facility. In general, studies indicated low levels of implementation of and knowledge about the partograph. There is also a clearly identified need for improvement in the labor-monitoring knowledge and skills of health care workers.

Partograph Training and Monitoring/Supervision

Evaluation of training programs has been described by WHO (1994c) as perhaps the most difficult part of operational research on the use of the partograph. We did not find much literature addressing training strategies and success rates, though training was clearly involved in many of the published studies.

In their review, Lennox and Kwast (1995) cited evidence supporting the idea that trained midwives at the village or health center level can use a partograph successfully to monitor labor and refer clients to the district hospital, where cesarean sections should be available. They referred to studies from the early 1990s carried out in Ghana, Indonesia, Nigeria, and Uganda that demonstrated this, as well as studies in Malawi and Zimbabwe that demonstrated correct referral among nurse-midwives and maternity assistants.

Lennox and Kwast recommended that partograph training begin at the district level and make its way down the chain of health care facilities, so that sites receiving referral cases will definitely know how to use the partograph and will act accordingly. The authors also cited the tangential benefit of a potential increase in community understanding of prolonged labor as a danger sign, due both to the process of monitoring involved in completing the partograph and to the potential actions based upon it. They also noted increased confidence in and use of maternity services after introduction of the partograph.

Fatusi et al. (2007) evaluated a training intended to improve use of the partograph among primary health care workers in Nigeria. They found that lower cadres of primary health care workers can be effectively trained to use the partograph with satisfactory results and thus can contribute toward improved maternal outcomes in developing countries where skilled attendants are scarce. The training utilized didactic sessions and practical examples drawn from the WHO facilitator's guide (WHO, 1994c, Part III) and included close supervision for two weeks following the training, to address any initial difficulties. The training concentrated on the partograph as a tool for facilitating early identification of women at risk of prolonged labor (moving to the right of the alert line), rather than for managing prolonged labor (reaching or crossing the action line).

Key Partograph Training Issues

- Whole-site training should occur, including the lower cadres of staff who actually implement the partograph.
- Training can begin at the district level and make its way down the chain of health care facilities.
- Close supervision and monitoring are essential to ensure consistent and accurate use of the partograph after training.

Formal training may be the most effective strategy

Another Nigerian study (Oladapo, Daniel, & Olatunji, 2006) found that individuals who had received formal training in the partograph had higher levels of knowledge than those who cited their place of work as their main source of knowledge. However, the authors also found that many of those who were routinely using the partograph showed less knowledge of it than those not using it at all. This finding was surprising; one would assume that routine use would improve levels of knowledge. The authors attributed the finding to the fact that clients at the health centers are most often cared for by the lowest cadre staff, who generally have poor knowledge of the partograph. These individuals may be using the partograph

routinely as a matter of rote practice and policy in the facility rather than as a tool that is actively useful for monitoring labor. That practice, combined with a lack of quality assurance measures, would contribute to little improvement. The authors emphasized the need for continuous reinforcement and quality assurance to check improper use of the partograph and for efforts to ensure that junior staff also receive training. Though senior staff are usually the ones who are trained, the junior staff often actually work with clients, and the training does not trickle down appropriately to them. This situation highlights issues with trainee selection and availability.

A Safe Motherhood Demonstration Project (SMDP) was introduced in four districts of Western Province, Kenya. It included job training in Safe Motherhood which included collection and utilisation of maternal health care services data, and provided the opportunity to improve record keeping in the intrapartum period (Wamwana et al., 2007). Prior to the project, the partograph was used in 11% of cases, compared with 85% during implementation of the project. Improvement was also shown in utilization of data, since 100% of cases during the project period had a diagnosis and plan of management, as opposed to 86% and 84% previously. Record keeping improved, as did rates of diagnosis and plans for case management. The authors did not report what, if any, impact these improvements had on action to manage labor or on outcomes. Furthermore, this study did not look at longer-term follow-up after the demonstration project period ended. Without examining the sustainability of improvements, it is difficult to assess the effectiveness of a training approach.

Task shifting from obstetricians and physicians to midwives

Christensson et al. (2006) documented pre- and postintervention status of an effort by Maputo Central Hospital (MHC), in collaboration with the Karolinska Institute, to improve perinatal care in Mozambique. Preintervention findings identified poor quality of midwifery care and low rates of use of the partograph and led to an intervention consisting of seminars for midwives that presented and addressed pretesting results. The seminars led to a decision to transfer responsibility for the partograph away from obstetricians and physicians to the midwives. Additional seminars were then conducted to provide education on partograph documentation and interpretation and reinforcement of all areas covered. Follow-up observations found that the intervention had no significant effect on the midwives' performance. In fact, the graphic section of the partograph was completed *less* often following the intervention. In cases identified as having maternal risk, there was no increase in initiation of partographs. Overall, documentation of the partographs, when initiated, was inadequate and could therefore not serve as a guide for either monitoring or intervention, and the midwives did not take on responsibility for their completion. The authors felt that possible reasons for failure of the intervention could be high rotation of personnel, a problem with the intervention itself, and the lack of a real motivating figure to push through the changes on-site. As they aptly observed, changes in performance do not automatically follow education and awareness-raising interventions. Behavioral change is difficult to achieve.

Supervision is essential for continuous proper use of the partograph

Another evaluation of an educational intervention for midwives was carried out in a peripheral delivery unit in Angola (Petterson, Svensson, & Christensson, 2000). The WHO

partograph had been introduced years earlier as a tool for midwives working without medical support in all peripheral delivery units in Luanda. However, regular supervision of midwives revealed failures and difficulties in the operational use of the instrument. Therefore, a plan was developed to carry out additional in-service education, consisting of theoretical and practical lectures in groups; individual supervision, evaluation, and feedback using actual partographs; and practical situations. Significant improvement occurred postintervention in the majority of the variables of the partograph completed by the midwives. In general, while the midwives improved their documentation on the partograph after the educational intervention, they tended to keep clients at the peripheral units rather than transfer them when indicated. The authors noted that women may resist transfer because they know that maternal deaths frequently occur at the central hospitals. Additionally, the midwives knew the peripheral delivery unit had better stocks of certain medicines, supplies, and equipment than the central maternity hospital.

A WHO-sponsored study (Fahdhy & Chongsuvivatwong, 2005) assessing the effectiveness of an intervention to promote the use of the partograph among midwives in Indonesia found that before the intervention, despite education in the use of the partograph, none of the midwives used it regularly. The intervention consisted of a standard training providing theoretical and practical skills training, with a significant focus on supervision and monitoring of the trainees postintervention. The training team made weekly visits in the month after the intervention to ensure that the midwives were using the partograph consistently and correctly. In the following six-month period, partographs were correctly completed in 92% of the cases. Sixty-five percent of women with a graph that went beyond the alert line were referred to a hospital, which suggests that appropriate time of referral needs more emphasis in continuing education.

Bosse, Massawe, and Jahn (2002) assessed the quality of labor monitoring in routine maternity care following introduction of the partograph in Southern Tanzania. While rates of use of the partograph were quite high following introduction (95%), only 58% partographs were filled out satisfactorily.

A consistently and correctly completed partograph can provide evidence, as a component of a functioning supervision system, in reviewing any cases of maternal death or “near misses”. The information provided can be utilized to reflect on medical practices and opportunities to change or improve practices and systems. While this was not cited in any of the sources for this literature review, it is an important potential benefit of partograph use that should be noted.

Partographs have been introduced in many countries and at many facilities, with national guidelines and training workshops developed and implemented. The available evidence indicates that there is a crucial need for strong supervision and monitoring in any partograph introduction or training activities. Quality assurance is needed to ensure that training translates into ongoing practice. Training should also address decision making about actions to be taken, both for physicians managing labor and delivery and for nonphysician staff who need to be able to interact with physicians to ensure that action is taken in a timely manner.

Use of the Partograph As a Referral Tool

Few studies have specifically examined how the partograph is used as a referral tool. The critical role of the partograph in peripheral settings is to indicate when referral is appropriate. The partograph can be effective as a referral tool only if transport is available from the referring location to another, higher-level facility and if there is in fact a higher-level facility able to provide the necessary medical care. Additionally, as Christensson et al. (2006) point out, many women are admitted to facilities late in labor, which should be a point of discussion when considering how to implement the partograph—whether it should be in general use, or its use should be focused on cases in which there is an already identified maternal risk.

Fahdhy and Chongsuvivatwong (2005) evaluated the implementation of the WHO partograph in Indonesia and found that 35% of women who crossed the alert line were not referred, despite guidelines clearly saying this should happen. The reasons were that midwives tried to manage these cases themselves, women refused transfer because they felt their condition was not serious, women sometimes became fully dilated before the transfer could take place, and women were concerned about the expense of the hospital and the feeling of alienation at the hospital (in that order). While referral should have been logistically easy to accomplish, both midwives and clients resisted.

Nkyekyer's (2000) descriptive study of peripartum referrals to a teaching hospital in Ghana found that of all clients expected to arrive at the hospital with a partograph, only about 17% actually did so. The author commented that the very low percentage of referrals with partographs may result from the referring facility staff's lack of use of partographs for monitoring the progress of labor or their view that it was not necessary to send the partograph along with the client.

One study of the use of the Angolan model of the WHO partograph as a referral tool (Phillips, 1993) elaborated on the criteria required for transfer to the central maternity hospital. The conclusion was that as result of rigid criteria, unnecessary transfers were taking place, adding a burden to already congested hospitals. The author suggested that to decrease the congestion at central maternity hospitals, peripheral delivery units should attend to women classified as low risk.

Additional operational research or systematic record reviews on the actual use of the partograph as a referral tool would make a valuable contribution toward understanding current practice and identifying areas where programmatic inputs and training would be valuable. Whole-site training of facility supervisors, administrators, and staff may be an effective approach to establishing the necessary support for and facilitation of referrals.

Effect of the Partograph on Labor and Maternal and Neonatal Outcomes

As discussed earlier, the prospective nonrandomized study carried out by WHO (1994a) remains a seminal study in determining that the partograph is an effective and necessary tool in the management of labor, showing reductions in prolonged labor, proportions of labor requiring augmentation, emergency cesarean sections, and stillbirths. While often cited as

providing “proof” of the merit of the partograph, the study has also been criticized for not following a randomized controlled trial methodology. Other studies have compared different partograph models, but there is a dearth of data comparing partograph use versus no partograph use.

Quick Look: Studies on Partograph Use and Impact on Maternal and Neonatal Outcomes

- A Cochrane database review (Lavender, Hart, & Smyth, 2008) of randomized and quasi-randomized controlled trials (five studies) indicated no evidence of any difference between partograph and no-partograph groups in cesarean section, instrumental vaginal delivery, or an Apgar score less than seven at five minutes.
- A WHO prospective nonrandomized study (1994a) provided data supporting reductions in prolonged labor, labor requiring augmentation, emergency cesarean rates, and stillbirths.
- Smaller studies showed the following results:
 - Cesarean rates
 - Lowered (Pattinson et al., 2003; Fawole & Fadare, 2007)
 - Neutral impact (Lennox, Kwast, & Farley, 1998; Bosse, Massawe, & Jahn, 2002)
 - Need for labor augmentation
 - Reduced (Javed, Bhutta, & Shoaib, 2007)
 - Increased (Fawole & Fadare, 2007)
 - Perinatal outcome
 - Increased (Fahdhy & Chongsuvivatwong, 2005; Javed, Bhutta, & Shoaib, 2007; Bosse, Massawe, & Jahn, 2002; Lennox, Kwast, & Farley, 1998; Fawole & Fadare, 2007)
 - Neutral impact (Apgar scores: WHO, 1994a)
 - Maternal outcome
 - Increased (Bosse, Massawe, & Jahn, 2002; Fawole & Fadare, 2007; primigravidae only: Javed, Bhutta, & Shoaib, 2007, and Fahdhy & Chongsuvivatwong, 2005)
 - Neutral impact (multigravidae only: Javed, Bhutta, & Shoaib, 2007; maternal death and postpartum hemorrhage: WHO, 1994a)

In the following section, we summarize the existing data on the impact of the partograph on labor and on maternal and neonatal outcomes. The argument has been made that use of the partograph can also improve the quality of labor management practices in health facilities and can raise general awareness of danger signs of labor. For the partograph to be used correctly, health care staff need to check on the laboring woman multiple times, monitoring her vital signs and the progress of labor and interacting with her. Most studies reviewed referred to findings of overall poor quality of care regarding labor management practices and women’s perceived levels of care. In addition to potential improvements in medical outcomes, the use of the partograph may in fact act as a catalyst to better quality of care through the increased amount of attention paid to each laboring woman.

Partograph use and incidence of prolonged or augmented labor and/or operative delivery

The Cochrane database review (Lavender, Hart, & Smyth, 2008), in reviewing randomized and quasi-randomized controlled trials, found no evidence that using a partograph reduced or increased cesarean section rates or had any effect on other aspects of labor. Most studies included in the Cochrane review were carried out in high-resource settings. Studies that specifically focused on lower-resource settings (Pattinson et al., 2003; Walss-Rodriguez, Gudino-Ruiz, & Tapia-Rodriguez, 1987) showed some reduction in cesarean rates with partograph use and early intervention for delayed progress in labor, which the reviewers cite as an area warranting further investigation. However, the Cochrane reviewers questioned the quality of these studies.

Lennox, Kwast, and Farley (1998) looked at breech presentation in a hospital-based study in Southeast Asia to examine use of the WHO partograph in labor management. There was a small (nonsignificant) reduction in cesarean sections in multigravida women after the partograph was introduced and no impact on primigravida women. Prolonged labor (longer than 18 hours) was reduced significantly among all women, despite reduced use of oxytocin.

The QAP's series of Safe Motherhood Studies (Burkhalter et al., 2006) found that increased partograph use was associated with more frequent labor monitoring. However, even when increases were achieved in partograph use, the quality of the completed partographs, as well as the general quality of labor monitoring, remained poor. Fewer than half of the alert and action lines were performed to standard, with a wide range between countries. Benin showed the highest rates of performance and Ecuador the lowest. Maternal pulse was never checked in 40% of the cases (more than 60% of the cases in Benin and Rwanda), and 50% of women never had their contractions checked.

In the QAP studies, when the investigators looked for a possible association between *correct* partograph use and *better* labor monitoring, the results varied depending on how the analysis was performed. Correct partograph completion did not seem to have a consistent and substantial effect on the percentage of indicators monitored at least once within the hospital, except in Ecuador, where correct partograph use correlated with a higher percentage of maternal indicators monitored at least once. The investigators noted that a substantial number of cases with correct partograph use had poor monitoring. This finding may relate to the variety of partograph forms in use in the different countries and the different interpretations of how observers were to carry out their observations during the study. Partograph use may have been judged to be correct if a single indicator was graphed at a few points, even if other key indicators—pulse, blood pressure, and intervals between contractions—were never checked. Such an interpretation highlights the potential difference between rates of “correct” or “complete” use of the partograph.

The QAP studies also found that the average duration of observed labor was substantially longer in cases with correct partograph use than in those with incorrect partograph use. Given that the partograph is often not used during short labors, this finding was expected.

There is some concern that introduction of the partograph may increase the rate of obstetric interventions (Walraven, 1994; Lavender & Malcolmson, 1999). Available evidence on this is

mixed. Bosse, Massawe, and Jahn (2002) found that following introduction of the partograph in southern Tanzania, there was no significant increase in cesarean sections. In their audit of partograph use at a tertiary hospital in Nigeria, Fawole and Fadare (2007) found that use of the partograph was associated with an increased rate of labor augmentation, earlier decision to augment labor, and reduced rates of cesarean section. An increase in cesarean rates may occur and may in fact be a positive outcome if they are being carried out appropriately, but it can be a negative if the result is an increase in unnecessary surgeries. When the partograph is being used properly, the alert function prompts staff's attention to a laboring woman's situation prior to the need for cesarean section.

The WHO study (1994a) indicated that use of the partograph seemed to bring about improvements over the previous pattern of care, with reductions in the percentage of women given oxytocin to speed up labor and also a reduction in the average duration of labor. Postpartum infection was reduced by two-thirds, and a slight decrease in cesarean rates was reported. The study indicated that women in Southeast Asia had been having their labors artificially sped up with oxytocin, to an extent that was not beneficial to them or their babies. As Robinson (1995) writes, the introduction of the partograph appears to have replaced this intervention with another: It reduced the number of women getting oxytocin but led to recommendations for universal artificial rupture of membranes. Studies have shown that artificial rupture of membranes may shorten labor but does not improve outcome. Robinson questions why WHO included artificial rupture of membranes as part of their protocol.

Javed, Bhutta, and Shoaib (2007) found that following introduction of the partograph at a public tertiary care facility in Pakistan, the duration of labor, labor augmentation, and vaginal exams for both primigravidae and multigravidae were all reduced. (A reduction in vaginal exams can lessen the potential for infection.) For primigravidae, the number of augmented labors and vaginal examinations also fell significantly. In Fahdhy and Chongsuvivatwong's (2005) study, the referral rate of cases was significantly increased, and there were fewer instances of vaginal examination, oxytocin use, and obstructed labor.

The Cochrane review of controlled and quasi-controlled studies did not support the commonly held belief that use of the partograph has an impact on any aspect of labor or cesarean section rates. However, the WHO study and other smaller-scale, noncontrolled studies have provided support for those contentions.

Impact of partograph use on maternal and perinatal complications

In their paper on use of the partograph in community obstetrics, Lennox and Kwast (1995) stated that no study has demonstrated that the partograph reduces maternal mortality. The WHO (1994a) study found no reductions in maternal deaths (but most women had severe complications on admission) or in rates of ruptured uterus or postpartum hemorrhage. Stillbirths fell slightly, but in most cases the baby had already died before the woman was admitted to the health care facility. There was no significant change in Apgar scores.

In Fahdhy and Chongsuvivatwong's (2005) study of an intervention to reintroduce the WHO partograph in Indonesia, the proportion of cases with correctly completed partographs went from virtually none to more than 90%. Initial Apgar scores improved, but

fetal death and early neonatal death rates were too low to compare. Bosse, Massawe, and Jahn (2002) found that in Tanzania, fetal and maternal outcomes improved following introduction of the partograph.

In Lennox, Kwast, and Farley's (1998) study of breech presentations in hospitals in Southeast Asia, intrapartum stillbirths fell (nonsignificantly) from 1.9% to 1.1% following introduction of the partograph. Fetal outcome (by intrapartum deaths and Apgar scores) was significantly better for cesarean delivery than for vaginal delivery, regardless of use of the partograph. In their audit of partograph use in a tertiary hospital in Nigeria, Fawole and Fadare (2007) found that partograph introduction was followed by a reduction in maternal and perinatal morbidity, improved Apgar scores, reduced admissions to special care baby units, and reduced postpartum hospital stay for mothers.

Javed, Bhutta, and Shoaib's (2007) study in a tertiary care facility in Pakistan found that introduction of the partograph had a significant impact on neonatal outcome for primigravidae, with perinatal mortality decreasing from 3.6% to 0.8%. There was also a reduction in the number of babies needing resuscitation with Apgar scores lower than 6. For primigravidae, there was a significant reduction in obstructed labor, uterine rupture, and postpartum hemorrhage. For multigravidae, there was no significant impact on mode of delivery, complications of labor, or neonatal outcome.

Seffah (2003) documented research on whether the introduction of the WHO partograph in labor wards in Accra, Ghana, in 1990 was followed by a reduction in the incidence of ruptured uterus and an improvement in maternal and perinatal mortalities. While the findings indicated a steep reduction in the incidence of ruptured uterus, the methodology of this study calls its validity into question. It compares a five-year period of recent data (1996–2001) with only one year of much earlier data (1971), without any documentation of any other meaningful changes that may have occurred during the intervening period. There was a slight, nonsignificant reduction in maternal deaths in the postintroduction period.

The WHO study (1994a) found that postpartum infection was reduced by two-thirds and that a slight decrease in cesarean rates was reported as a result of partograph introduction. The Cochrane review found no impact on the proportion of neonates with low Apgar scores (taken at five minutes).

In summary, while few randomized controlled study data are available that support partograph use, the 1994 WHO study and many smaller studies suggest that partograph use leads to improvements in both maternal and perinatal outcomes.

Providers' Attitudes about the Partograph and Barriers to Use

Providers' attitudes have the potential to greatly impact both the introduction of the partograph and the ability to sustain high-quality, effective use of it at a health facility. Some studies have looked at providers' opinions of the utility of the partograph and have tried to identify barriers to effective implementation.

Several factors are frequently cited as contributing to poor use of the partograph. These include lack of adequate staffing levels and time pressures (staff are too busy looking after

too many women to chart the partograph); supply issues (difficulty keeping adequate numbers of partographs on hand); inadequate monitoring of the indicators (both maternal and fetal) recorded on the partograph; and, even when information is collected, lack of understanding or use of the partograph as a tool for action when necessary (Lawn & Kerber, 2006).

The Cochrane database review found some evidence to suggest that midwives felt the partograph is a useful tool, citing benefits such as ease of use, time efficiency, and assistance with continuity of care (Lavender & Malcolmson, 1999). However, in higher-resource settings, midwives also offered criticism that the partograph can actually impede clinical practice, reducing their autonomy to act based on their own clinical judgment and limiting their ability to make case-by-case decisions. Walraven (1994) also raised the concern that partograph use can increase the number of interventions, which can result in a more negative experience for the laboring woman.

Fahdhy and Chongsuvivatwong (2005) found that the main reason Indonesian midwives did not complete the partograph was that they felt doing so required too many details. Lennox and Kwast (1995) outlined several problems they encountered when examining partograph use in community obstetrics. One major barrier was that providers found it difficult to identify the onset of labor, though it is very important that the partograph not be used until true labor begins. Clear definitions regarding cervical dilation and contraction patterns are necessary for accurate partograph use. The problem of a “prolonged latent phase” shrinks when these definitions are properly delineated and employed.

Mathews et al. (2007) also identified several aspects of the partograph that health care staff found difficult to implement. Like Lennox and Kwast (1995), they found that completing data for the latent phase of labor and transferring the cervical dilation value from the latent to the active phase by means of a broken line on the form were challenging. The transfer was difficult for staff to understand and led to mistakes when they filled out partographs. The usefulness of recording the latent phase in the partograph has been questioned (Dujardin et al., 1995), since a prolonged latent phase is relatively infrequent and not usually associated with poor perinatal outcome. In 2000, in an attempt to reduce the number of details that need to be charted, WHO introduced a simplified partograph that eliminated the need to record the latent phase. This adaptation, among others, is discussed later in this review.

Complementing the barriers cited regarding defining and recording the latent phase, Delvaux et al. (2007) also noted that midwives may perceive use of the partograph to be redundant, given that a substantial number of women are admitted very late in labor when birth is imminent. They advocated for investigating the barriers to early admission.

Lennox and Kwast (1995) remarked on the difficulty of accurately performing cervical assessment by vaginal examination, a skill that is essential for use of the partograph. Lack of skill in this assessment may limit partograph use (along with vaginal examinations) in the community setting, where there may be no trained midwives. Literacy is also an essential skill, as drawing lines on the partograph may present problems even for the literate.

Lack of access to partograph forms

Umezulike, Onah, and Okaro's (1999) study of doctors and midwives in Nigeria indicated that despite acknowledging the usefulness of the partograph, only about one-quarter used it routinely. More than half indicated they did not use it because it was not available. One-quarter of midwives said they did not use it because they lacked adequate knowledge. The authors of this study felt that the partograph's lack of availability in maternity units reflects a lack of commitment to its use—and, in effect, a lack of commitment to reducing maternal mortality and morbidity. Oladapo, Daniel, and Olatunji's (2006) Nigerian study found that among those who were aware of the partograph but never used it to monitor labor, reasons for not routinely using it included little or no knowledge of the partograph, nonavailability of the partograph (most frequently cited), and lack of adequate number of personnel (cited by nearly half of the respondents). Nearly all of those aware of the partograph desired training in its use.

Partograph improves quality

In contrast to several other studies, Lavender, Lugina, and Smith (2007) found very positive opinions of the partograph when they surveyed African midwives attending a regional midwifery conference. This was, however, not a representative sample, in that midwives attending such a conference were likely to have higher levels of engagement, motivation, and (possibly) education than the average midwife. Results indicated that the midwives' views were consistent with those of midwives in the United Kingdom. Most respondents described the partograph as a practical management tool that helps ensure standardized quality of care for women in labor and as a tool that saves lives. The midwives described it as a “watchdog” that “attracts attention.”

Partograph is well used for referral, but transport can be inadequate

Despite the low levels of use reported in many other studies, the African midwives who responded to the survey (Lavender, Lugina, & Smith (2007) stated that resource-poor facilities do use the partograph to ensure standard practice and as a timely intervention to save lives. Many reported, in particular, that the partograph is indispensable at government facilities, where most women present late and with complications. For these reasons, respondents indicated that most midwives act before the alert or action lines are reached. They also stated that transport is frequently not available. As mentioned earlier, essential obstetric functions, such as transportation and access to appropriately equipped centers, must in fact be available if the partograph's potential to act as a referral tool is to be fully met. Given that appropriate use of the partograph will very likely result in increases in referral rates, one must make sure that those needs *will* be met.

Lack of emotional consideration

One additional area that emerged in the midwife survey (Lavender, Lugina, & Smith (2007) is that the emotional needs of women were not adequately addressed by the partograph. Midwives suggested adapting charts to record women's appearance, anxiety level, opinions, and cultural needs, echoing others who have been critical of the WHO partograph for lacking a “consumer” focus. However, this viewpoint needs to be balanced with criticisms that the tool already has too much detail, making it unnecessarily difficult to utilize.

Introduction of the partograph as a labor-monitoring tool can have benefits that go beyond the evaluation of medical outcome improvements. It can affect the perception of the birthing process and of labor monitoring by increasing the frequency of contact between the health provider and the laboring woman (Bergström, 2001). Provider attitudes and concerns need to be addressed through the training process, as well as through implementation of effective supervision and monitoring systems that ensure that the correct individuals are being trained and are implementing the skills they have learned in their workplace. Provider concerns about low skill levels, lack of resources, and repetitive paperwork need to be assessed and addressed in any attempt to introduce or strengthen use of the partograph on-site.

Adaptations to the WHO Partograph

The WHO's 1994 version of the partograph included both the latent and active phases of labor; its 2000 modification of that partograph omitted the latent phase of labor and commenced with the active phase, at 4 cm cervical dilation (see Figure 1). Several articles, both pre- and postintroduction of this modified version, have examined whether the latent phase of the partograph is useful or necessary.

The Cochrane database review aimed to provide an overview of all data on the effect of partograph design on maternal and neonatal outcomes (Lavender, Hart, & Smyth, 2008). In a summary of studies comparing partographs using a two-hour action line versus a four-hour action line, both conducted in high-resource settings (Lavender, Alfirevic, & Walkinshaw, 1998; Lavender, Alfirevic, & Walkinshaw, 2006), no significant differences in cesarean section rates were found. In comparing the two-hour action line with the three-hour action line, one trial in a high-resource setting found no difference in cesarean section or other clinical maternal or neonatal outcomes (Lavender, Alfirevic, & Walkinshaw, 1998). In a comparison of three-hour versus four-hour action lines in a high-resource setting, statistically significant findings indicated cesarean rates were lowest in the four-hour action line group (Lavender, Alfirevic, & Walkinshaw, 1998). There were, however, no differences in other clinical outcomes, maternal or neonatal.

The Cochrane review also included information on studies investigating the impact of use of a partograph with an alert line only (2000 modification) versus a partograph with alert and action lines (1994 original version). One study in a low-resource setting found cesarean section rates to be lower in the alert line-only group, with no difference in other maternal or neonatal outcomes. When the review looked overall at the studies to determine the effects of earlier or later intervention, three studies were pooled together (Lavender, Alfirevic, & Walkinshaw, 1998; Lavender, Alfirevic, & Walkinshaw, 2006; Pattinson et al., 2003), and there were no differences among cesarean rates based on early or late intervention (two-hour vs. four-hour or alert vs. action/alert). However, in the low-resource setting, the early intervention correlated with lower cesarean rates.

Mathews et al. (2007) compared two versions of the WHO partograph in India: a composite partograph including the latent phase, and a simplified partograph without the latent phase. While most maternal and perinatal outcomes were similar, labor values crossed the action line significantly more often when the composite partograph was used, and the women were

more likely to undergo cesarean deliveries. The simplified partograph was more user-friendly, was more likely to be completed, and was associated with better labor outcomes.

Kwast et al. (2008) carried out a descriptive retrospective study in Ethiopia, looking at the mode of delivery of women admitted in the latent and active phases of labor. Women admitted in the latent phase had more operative deliveries as labor progressed to the right of the alert line in the active phase, compared with women admitted in the active phase of labor. The authors were concerned that omission of the latent phase from the modified partograph may result in higher rates of operative delivery because women admitted in the latent phase may not get the attention they require or could be shunted off to an area outside the labor ward, where they may not be closely observed.

This concern echoes one shared by participants at a workshop preceding the 2005 International Confederation of Midwives Congress. In discussions about the introduction of the modified partograph, some participants indicated that in such countries, women were being left alone and not monitored appropriately because “they are not yet in the active phase of labor.” They felt this carried risks, because a prolonged latent phase could then go undiagnosed. Participants agreed that if this partograph were introduced, caregivers would need to be encouraged to continue to monitor the woman’s condition and progress of labor, as they had done before (ICM, 2005).

Research by Groeschel and Glover (2001) and Lavender and Malcolmson (1999) looked at attitudes about the partograph among midwives in Australia and England, respectively. In contrast to low rates of use elsewhere, the partograph is an official document of labor used universally in these countries and is included in health records. The authors found mixed opinions regarding the value of the latent phase and the action line in the partograph. While many felt that action lines help to “manage labor” and “diagnose prolonged labor at a glance,” the majority of midwives surveyed believed that documentation of the latent phase was unnecessary and of little clinical value. Groeschel and Glover (2001) found that in Australia, alert and action lines are not used; instead, clinical judgment is used to decide when to intervene. Additionally, the point was made that action lines focus only on dilation, whereas significant progress can be made with effacement and descent of the head without dilation. Both studies were relatively small and were not able to be generalized to other settings.

Fahdhy and Chongsuvivatwong’s (2005) evaluation of the newer WHO partograph, with no latent phase, in Indonesia found that removal of data from the latent phase caused some important incompleteness in the partograph. Lacking the starting time of attendance made it difficult to judge whether the latent phase was prolonged. They also found that a lack of information on amniotic fluid might mean missing early membrane leakage or rupture.

Kwast et al. (2008) stressed the importance of developing a protocol for the care and assessment of women in the latent phase, but they did not discuss their own protocol or the issues associated with its implementation. The authors acknowledged that the validity of their study is limited by its small size, and only half of the women in the in-depth analysis had assessable partographs (though this speaks to the low rate of quality completion of the partograph). Discussion within this article elaborates that the issue of exclusion or inclusion of the latent phase is a question that needs to be explored further, remarking that it would be

“a cruel irony” if the main aim of modifying the original partograph—to avoid confusion and improve clinical decision making—should result in serious detriment to those women who came to the hospital earlier on in labor.

While not looking specifically at modifications to the WHO partograph, Letić (2008) reports that variation in the formatting of the cervicograph can impact rate of intervention. The cervicograph is the visual graph of cervical dilation versus time and can be formatted with different time-to-dilation ratios. The steeper formats were associated with fewer interventions, while the tendency to intervene was increased with shallow formats (Cartmill & Thornton, 1992; Tay & Yong, 1996). The explanation is that the shallower format gives the impression that the progress of labor is too slow and therefore attempts are made to try to accelerate it.

Despite the concerns noted in several articles, the available evidence does not seem to indicate that eliminating the latent phase from the partograph had a significant impact on labor decisions or on maternal or neonatal outcomes. It is worth noting that several sources emphasized the need to have support for women admitted during the latent phase, to ensure that those women are not forgotten within the health facility, even when the partograph record begins with the active stage of labor. A prolonged latent phase is cause for concern, and any woman’s condition needs to be monitored.

Conclusions

This literature review indicates that there are few controlled or quasi-controlled studies examining the impact of partograph use on labor or on cesarean section rates and that evidence of positive impact from these studies is limited. Other, noncontrolled studies, however, provide supporting evidence of a positive impact on maternal and perinatal outcomes.

Actual rates of partograph use vary greatly from region to region and from facility to facility. In addition, the cadre of staff actually utilizing the partograph appears to vary greatly. Those planning training for the partograph must take this variability into account to ensure that the appropriate staff are receiving the information and developing the skills needed for implementation. An effective supervision and monitoring component to any partograph introduction and training is crucial.

In general, the low rates of use and of provider knowledge of the partograph are situated within a larger context of poor labor-monitoring skills and practice. Partograph use is but one component of this larger picture, and it is clear that overall skills development is needed in this area to best provide meaningful obstetric care and reduce obstructed labor and poor maternal and neonatal outcomes.

Despite the lack of consistent, high-quality data on the partograph's impact on medical outcomes, its introduction and implementation may in fact have other benefits that go beyond the evaluation of medical outcome improvements. It has the potential to increase quality of care, improve attitudes of providers and the general public, and expand knowledge about labor practices. An additional potential benefit of consistent and correct partograph use is the evidence it can provide, as a component of a functioning supervision system, in reviewing any cases of maternal death or "near misses".

Finally, while the available evidence does not indicate that eliminating the latent phase from the partograph has a significant impact on labor decisions or on maternal or neonatal outcomes, it would be helpful if researchers could examine more closely whether those utilizing the partograph find the simplified version significantly easier to implement. Regardless of which version is used, facilities must ensure that women admitted during the latent phase receive adequate care and monitoring.

Fistula Care has developed and is field-testing a protocol and tool for monitoring partograph use on-site on an annual basis. This tool can facilitate monitoring and supervision to ensure that the partograph is being used correctly and appropriately at facilities of different levels.

Operational research addressing actual use of the partograph as a referral tool, examining the partograph's role in decision making, looking more closely at different training strategies and outcomes, and strengthening labor monitoring skills and practice would make a valuable contribution to the existing body of data.

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