

FISTULA CARE

REVITALIZING THE PARTOGRAPH: DOES THE EVIDENCE SUPPORT A GLOBAL CALL TO ACTION?



**Report of an Expert Meeting,
Desmond Tutu Center
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Meeting participants were strongly in favor of revitalizing the partograph as a valuable tool for labor management in low resource settings. We hope that this report contributes to a better understanding of the benefits of correct and consistent use of the partograph in improving the quality of intrapartum care as well as the contextual challenges of partograph implementation.

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Executive Summary

The partograph is an underutilized tool for the prevention and management of prolonged or obstructed labor, a significant cause of reproductive morbidity and mortality. The World Health Organization (WHO) recommends universal use of the partograph, based on findings of its multicenter trial in Southeast Asia indicating improved labor outcomes (WHO, 1994a). Yet after more than 50 years of training and investment in the partograph in low-resource settings, implementation rates and provider competencies remain low. In short, the partograph has failed to reach the potential of its original design: to provide an inexpensive and simple “early warning system” for identifying complications during childbirth.

In many respects, problems with the partograph mirror the ills of under-resourced health systems. They are a symbol of the poor quality of care offered to many women and their babies during childbirth.

In November 2011, Fistula Care and the Maternal Health Task Force convened an expert meeting in New York to review the evidence about partograph effectiveness, identify barriers to partograph use, develop strategies for overcoming those barriers, and determine future research needs. This international group of experts included midwives, physicians, researchers, clinical educators, managers of health services, and representatives of professional associations. The meeting focused primarily on the use of the partograph in low-resource settings.

Available evidence for the effectiveness of the partograph in improving maternal and fetal outcomes is limited (WHO, 1994a; Lavender, Hart, and Smyth, 2008). However, the group concluded that ineffective use of the partograph probably results more from the contextual challenges of fragile health systems than from deficiencies in the tool itself. Consequently, participants believed that further randomized controlled trials at this time were unlikely to further establish the benefits of partograph use on maternal or newborn outcomes. Moreover, participants were clearly in favor of revitalizing the partograph; they believed that correct and consistent use of the tool has benefits that go beyond effective labor monitoring to improve overall quality of care for women and their babies during childbirth. For instance, the partograph can enhance communication among providers, increase interaction between providers and the laboring women, promote continuity of care across providers, and encourage teamwork.

It was agreed that, a meta-synthesis of observational studies, supplemented by operational research, could shed more light on the quality of care benefits of the partograph, barriers to its use, and training and implementation problems.

Participants identified several major challenges. Overburdened health systems are often unable to supply the administrative and organizational support needed for correct and consistent use of the partograph. Referral systems for laboring women who experience complications are often nonexistent or inadequate. Trained personnel who are competent in

labor management are in short supply. Finally, the tool itself may present difficulties for health providers because they lack the underlying knowledge and skills that it requires.

If the partograph is to be used correctly and consistently, an enabling environment is essential. Trainers and supervisors must recognize that, while the partograph appears to be simple, it assumes a foundation of knowledge and skills in labor assessment, data gathering, and data presentation. Every facility that serves laboring women must have clearly articulated protocols of care that synchronize with the partograph. The place of delivery and the medical services available at that place determine how the partograph is used. For example, for home births, the priorities are to identify complications early and to facilitate referral for emergency care. In contrast, at emergency facilities, partograph protocols need to specify indications for intervention (e.g., labor augmentation, cesarean section) and to describe the roles and responsibilities of each member of the maternity care team. Finally, the medical team caring for the woman must work effectively together to correctly and consistently use the partograph, interpret its findings, and take appropriate action.

Participants identified training as a critical component in the effective use of the partograph and discussed at length how training needs to change. Most providers learn how to use the tool in classrooms far removed from clinical realities. Meeting participants stressed the importance of competency-based pre-service and in-service training and ongoing facilitative clinical supervision.

In 1994, after the multicenter trial, the World Health Organization identified operational research questions, guidelines, and indicators for evaluating the effect of partograph training and implementation on labor management and outcomes, such as labor augmentation, cesarean rates, and referral of women in prolonged or obstructed labor from rural health centers to facilities that provide emergency obstetric care (WHO, 1994e). Little work has been done to answer those questions or to monitor those indicators. The experts identified a range of important research issues related to training, experience, competence, management, supervision, and clinical audits.

At the conclusion of the meeting, the group described a series of next steps aimed at revitalizing the partograph and improving labor management. The matrix included in the appendix of this report describes these steps.

The key questions arising from the meeting are summarized below:

- What are the main evidence gaps in relation to partograph effectiveness? For example: evaluation of qualitative studies, particularly studies on the impact of correct and consistent use of the partograph on quality of care in labor and on the effectiveness of partograph review in clinical audit to improve quality of care in labor.
- What community-based strategies and tools could improve detection and referral of laboring women with complications, such as prolonged/obstructed labor? For example, a simplified decision-making tool for use by families, community health workers or traditional birth attendants combined with improved emergency transportation mechanisms.

- How can care protocols be more closely linked to the partograph for more effective labor management? For example, by integrating a decision-making algorithm into the partograph
- In the face of health system constraints, especially chronic shortage of skilled human resources, what approaches could be considered to fill gaps in coverage and quality of partograph implementation? For example, a ‘realist’ review (a new methodology for systematic review of complex policy interventions (Pawson et al 2005))
- How can continuity of care in labor monitoring and management be improved between first referral facilities (health centers offering basic emergency and neonatal care (BEmONC)¹ and tertiary facilities (offering comprehensive emergency obstetric and neonatal care (CEmONC)² to avoid delay in receiving timely emergency care? For example, by improving coordination and teamwork at district level.
- What partograph modifications, innovations or alternatives might improve labor monitoring and management? For example, use of the modified or simplified partograph (which exclude the latent phase of labor), the electronic partograph or the World Health Organization Safe Birth checklist.
- What changes are required to pre- and in-service training to ensure that midwifery providers and supervisors are competent and confident in partograph use for monitoring and managing labor? For example, by increasing opportunities for competency-based training, establishing ongoing facilitative supervision mechanisms, use of the partograph for clinical audit as a component of facilitative supervision.

¹ Basic (BEmONC): Peripheral health facilities with maternity services that regularly practice the seven basic signal functions: parenteral administration of antibiotics, anticonvulsants, oxytocics, manual removal of placenta, manual vacuum aspiration for retained products, assisted instrumental delivery by vacuum extractor, newborn resuscitation with mask. The functions include stabilization of mothers and newborns with complications before and during transfer to hospital (WHO 2009).

² Comprehensive (CEmONC): Health facilities with maternity services that regularly practice the seven BEmONC signal functions listed above plus two additional signal functions: emergency surgery (caesarean section) and safe blood transfusion (can also include advanced newborn resuscitation) (WHO 2009).

Introduction

In 2008, nearly 358,000 women died in pregnancy and childbirth worldwide (WHO, 2010). Of those who survived, an unknown number suffered from complications, often long-lasting. Most maternal and newborn deaths occur around the time of delivery. Complications during childbirth usually arise without warning and cannot be predicted or prevented. Thus, all women should have access to skilled birth attendance and timely emergency care.

Prolonged labor and obstructed labor are major causes of maternal and newborn morbidity and mortality; they can lead to ruptured uterus, postpartum hemorrhage, infection, obstetric fistula, and fetal injury or death. However, information about prolonged and obstructed labor is incomplete. The reported incidence of these conditions varies widely, ranging from as low as 1% in some populations to as high as 20% in others; in 2000, about 42,000 deaths, or 8% of maternal deaths, were attributed to prolonged and obstructed labor (Mathai, 2009). Because vital registration information is often lacking in settings where prolonged labor, obstructed labor, and maternal deaths are common (Mathai, 2009), the incidence of these conditions may be significantly underreported.

One of the tools used to monitor labor and prevent prolonged and obstructed labor is the partograph, a preprinted one-page form on which labor observations are recorded. The purpose of the partograph, also called the partogram, is to help health care providers record, interpret, analyze, and use data to make clinical management decisions while labor is in progress. The form (which is an early warning system) provides a graphic overview of the progress of labor and records information about maternal and fetal condition during labor. The provider must use critical thinking skills to interpret this information and then make appropriate clinical decisions based on evidence and established protocols.

The partograph provides information about deviations from the normal progress of labor and about abnormalities of maternal or fetal condition during labor. It alerts providers when a woman may need an intervention (e.g., referral to a higher-level facility, labor augmentation, and cesarean section) and facilitates ongoing evaluation of the effects of those interventions.

While several versions of the partograph have been developed, they share common elements and purposes. Since 1991, the World Health Organization has designated management of labor with the partograph as one of the essential elements of obstetric care at the first referral level (WHO, 1991).

Background

The partograph has a long history. Friedman (1954) was the first to graphically describe the progress of labor. In the 1970s, Philpott and Castle modified the original form and trained midwives to use it in clinical settings where doctors were in short supply (Philpott, 1972; Philpott and Castle, 1972). In many countries, midwives and obstetricians enthusiastically embrace and use the partograph.

In 2011, Fistula Care completed a literature review regarding the partograph (Levin and Kabagema, 2011). That review, supplemented by field experience, provided important background information for the meeting. Highlights include the following:

- The partograph, in various forms, has been used since the 1950s in both the developed and the developing world (Lavender, Hart, and Smyth, 2008; Mathai, 2009). The World Health Organization (WHO) partographs are probably the best known and most widely used in low resource countries. Since the 1990's, WHO has developed three types of partograph (see box). Many countries have developed their own versions, based on WHO partographs.
- In 1991 in Asia, the WHO examined over 35,000 births in the largest trial of the partograph ever done (WHO, 1994a; WHO Maternal Health and Safe Motherhood Programme, 1994). The study found evidence that prolonged labor, postpartum sepsis, and stillbirth were significantly reduced when the partograph was used. Augmentation rates and cesarean rates were also reduced. In the 1970s in Zimbabwe, Philpott and Castle also reported positive outcomes (Philpott, 1972; Philpott and Castle, 1972).
- Only a small number of controlled and quasi-controlled studies have examined the impact of partograph use on labor outcomes. Evidence of positive impact from such studies is limited. However, other noncontrolled and generally smaller studies have reported that the tool has had a positive impact on maternal and perinatal health outcomes, especially in low-resource settings. (Lavender, Hart, and Smyth, 2008).
- Although the partograph has been viewed as an important tool in obstetric care, current levels of knowledge and use are low in developing countries (Lavender, Hart, and Smyth, 2008; Mathai, 2009). This means that the progress of labor may not be

Three Partographs from the World Health Organization

- The composite partograph (the original design): Includes a latent phase of 8 hours: the active phase starts at 3 cm cervical dilation.
- The modified partograph (adapted in 2000, for use in hospitals): Excludes the latent phase; the active phase starts at 4 cm cervical dilation.
- The simplified partograph (further adapted): for use by skilled attendants in health centers): Excludes the latent phase and descent of the presenting part; the active phase starts at 4 cm cervical dilation. Color coded.

(WHO, 2006; Mathai, 2009)

Sources: Mathai, 2009; WHO, 2006

monitored at all or that labor monitoring may not translate into the emergency actions required when complications arise.

- To be effective, the partograph requires a strong supervisory component (Pettersson, Svensson, and Christensson, 2000; Fahdhy and Chongsuvivatwong, 2005).
- The partograph may have quality-of-care benefits that go beyond effective labor monitoring and management, including improved continuity of care and increased interaction between health care providers and the laboring woman (World Health Organization, 1994b; Bergstrom, S., 2001; Lavender, Lugina, and Smith, 2007).
- In developing countries, most poor women and many other women give birth at home without the assistance of a skilled birth attendant or any formal monitoring of labor progress (Montagu et al., 2011).
- The partograph is only one means to improve labor and delivery outcomes; labor can be monitored using other methods and techniques. For instance, the partograph does not appear to be widely used in some countries, such as Turkey and the United States, where maternal and neonatal outcomes are relatively good; this result is probably due to the effective use of other methods of labor monitoring and ready access to high quality emergency obstetric and neonatal care (EmONC).

In light of these findings, Fistula Care and the Maternal Health Task Force³ convened a meeting of global experts on November 15–16, 2011 in New York to accomplish four objectives:

1. Review the current evidence base for partograph effectiveness
2. Identify barriers to partograph use
3. Develop feasible strategies to overcome barriers to partograph use and consider alternative intrapartum monitoring strategies
4. Determine future research needs

The experts included midwives, physicians, researchers, clinical educators, managers of health services, and representatives of professional associations from a range of countries (see Appendix A for a list of participants). The meeting focused primarily on the use of the partograph in low-resource settings. This report summarizes the discussions that occurred at the meeting.

³ Fistula Care is a five-year cooperative agreement with the U.S. Agency for International Development, managed by EngenderHealth. Its objectives are to increase access to quality treatment services and to prevent obstetric fistula. The Maternal Health Task Force, funded by the Bill and Melinda Gates Foundation, contributes to shaping collective efforts designed to improve maternal health worldwide; it serves as a catalyst to address one of the most neglected areas in global health and development.

Challenges to Correct and Consistent Use of the Partograph

Meeting participants agreed that the partograph is an essential tool for monitoring and management of labor. Yet research has found that partograph use and competency in the developing world are low. The expert group concluded that ineffective use of the tool probably results more from the contextual challenges of fragile health systems than from deficiencies in the tool itself. Participants identified five categories of challenges.

1. Support from the health system

Participants agreed that lack of support from the health system is the most important barrier to partograph use. To begin with, institutions must have the basic financial resources to support training and to ensure a dependable supply of partograph forms and other necessary supplies. Leaders and supervisors within institutions need to model correct and consistent use of the tool in labor monitoring. Furthermore, both ministries of health and professional associations play an important role internationally and nationally in setting standards for partograph use and monitoring compliance.

To be effective, partograph implementation requires champions in professional associations, at regional and national levels, and within facilities. In practice, buy-in from leaders within facilities and at the national level is frequently weak or nonexistent; thus, providers who want to use the partograph may not receive the assistance they need to implement the partograph effectively. Furthermore, management protocols for labor and delivery may not be fully articulated or clearly linked to the partograph; without clear protocols, providers may not know what actions to take when the alert or action lines on the partograph are crossed.

2. Referral

In most low-resource settings, the lack of functioning referral mechanisms presents a major challenge to effective use of the partograph. If emergency transportation from community to hospital is nonexistent or functions poorly, the health provider is often unable to act on partograph findings and to transfer a woman for timely EmONC when complications arise. The referral process is further complicated when roles are poorly defined or hierarchical tensions exist between members of the maternity care team.

The Challenges of Referral

A woman in prolonged labor for 24 hours was transferred to a district hospital at 8 cm dilation. At the hospital, a new partograph was started at 8 cm on the alert line! This story illustrates why it is important for all doctors and midwives along the continuum of care, from home to hospital, to be competent in interpreting the progress of labor or the lack thereof. If providers at the hospital had been skilled in partograph use, they would have known the following:

- After 24 hours in labor, the partograph action line had already been crossed *and*
- The woman required an emergency cesarean section

In addition, laboring women referred from health centers as emergency cases often arrive at tertiary facilities without any documentation to provide crucial information about the preceding hours or days of their labor. Even when providers have started partograph monitoring at home or in a health center, these partographs are often discarded when the woman arrives at an emergency center, and a new one is started from the time of her arrival.

3. Human resources

Shortage of human resources is a chronic challenge for health services in low-resource settings. Rarely are there enough personnel with the needed skills and knowledge, and labor wards are often dangerously understaffed. Thus, health facilities must do the best they can with the mix of providers that they have.

Staff turnover is often high. Providers are transferred often or leave the system altogether; consequently, costly training may have a limited lifespan. Frequent refresher training and retraining are required, but the necessary resources may not be available. Care protocols may not clearly articulate the roles and responsibilities of different members of the maternity care team. Such ambiguities may cause friction between personnel, make communication difficult, blur levels of responsibilities, and result in poor continuity when care is transferred from one provider to another.

4. Competence and ongoing facilitative supervision

The partograph is designed to be used in the clinical setting. It requires underlying clinical competence in labor management and resulting complications. Yet providers typically learn about the tool in abstract in the classroom, and partograph instruction is rarely competency-based. This is partly because most preservice medical and nursing education is conducted by ministries of education, rather than ministries of health. In addition, clinically competent midwifery tutors are in short supply.

Most pre-service training sites are based in urban teaching hospitals and institutes of education, far removed from the settings in which most graduating midwifery providers are likely to eventually practice... Nursing, midwifery, and medical students often have few opportunities to hone their partograph skills in real-world environments or to receive feedback on their performance from experienced preceptors. Furthermore, if providers have not acquired competency in partograph use during preservice training, it is unlikely that they will become proficient as a result of short, one-off inservice training programs.

Supervisors in the workplace may not be competent in partograph use. In addition, they may not be convinced of the value of the partograph and, therefore, fail to promote its use. When auditing and supervisory systems are poor, there are no ongoing mechanisms to assess and improve staff competency and the quality of labor management. Accountability for patient care is not clearly articulated or enforced.

Finally, in some countries, midwives and other providers are unable to practice to the full scope of their competencies because they lack legislative and regulatory support or

because their supervisors do not support them to use all their skills in which they are competent. For example, in some places, midwives are not authorized to begin labor augmentation or to perform vacuum extraction. Such restrictions limit their ability to act on partograph findings and carry out necessary interventions.

5. Acceptability of the tool

In many health systems where paper records are available, the customary way of capturing patient information is the written narrative. Such documentation tends to be subjective in nature and to lack standardization; it is less detailed, specific, and objective than the partograph.

For health care providers accustomed to conventional medical records, the graphic format of the partograph and the plotting skills it requires may be difficult both to understand and to use. While the tool appears simple, providers may lack the underlying skills and knowledge that it requires. Also, health care providers may be reluctant to record medical events in detail, for fear that their performance will later be found wanting.

In many cases, the partograph is yet another piece of paper among many pieces of paper that the health care provider is expected to complete. Often, the provider feels obliged to enter the same information on several different documents, wasting valuable time.

Relieving the Burden of Record Keeping

One facility in Bangladesh faced challenges with record keeping in general and with the partograph in particular. When the staff analyzed the situation, they found that providers were required to complete 11 pieces of paper per patient; thus, the facility decided to consolidate some records. As a consequence of this streamlining, completion and use of the partograph improved.

An Essential Enabling Environment for the Partograph

To address the challenges facing partograph implementation and the health care providers who use the tool, health systems must establish an environment that supports its correct and consistent use. Participants stressed the need to “care for the caregivers”: in other words, it is unrealistic to expect providers to use the partograph and to perform effective labor monitoring and management unless they have the resources and support they need to do so.

Four concepts about the environment are key:

- ***The partograph is not as inexpensive or as simple it seems.*** Because the partograph is printed on a single sheet of paper and requires only a pencil to be completed, much of the literature about the tool stresses its simplicity and cheapness. In fact, correct use of the tool requires specific competencies: accurate assessment of cervical dilation, precise graphic plotting, analytical and interpretative skills, and sound decision making about when and how to take action. Such skills and abilities are not developed in short-term theoretical training, but rather are acquired over many months of practice under the guidance of a preceptor. One participant stressed that she achieved competency in partograph use through individual supervision, mentoring, and rigorous assessment over the course of her 18-month midwifery training in the United Kingdom. In low-resource settings, such programs are rare and may be unaffordable.
- ***Protocols for care are critical.*** Many countries have documented clinical standards to guide care. In addition, every nation and every facility should have clearly articulated protocols for care during labor and delivery. These protocols should specify the functions provided by different types of personnel and the competencies and tools needed to perform those functions. Also, the protocols should detail the systems support needed to ensure that the standards of care are met; for instance, they should describe how supervision and referral are to be done.
- ***Context matters.*** Women give birth at home, at health centers, and in hospitals. Along the continuum of care, from home to hospital, the availability of skilled birth attendance and emergency obstetric and neonatal care varies widely. In low-resource settings, even secondary and tertiary facilities may be ill equipped to provide emergency care. The “safety net” available to women differs substantially, depending upon where they fall along the continuum, where they reside, and their socioeconomic status.

Where labor occurs has a bearing on how the partograph is used, which type of partograph is used, and the necessary support systems. When providing partograph training and supervision, the health system must consider the context in which personnel work. Management protocols must be tailored to the capacity of specific contexts. For home births, the priorities are to detect complications early and to facilitate referral for emergency care. In contrast, at tertiary facilities, partograph protocols need to specify the indications for intervention (see guidelines for

management of pregnancy and childbirth; WHO, 2009b) and to describe the roles and responsibilities of each member of the maternity care team.

- ***Teamwork and supervision are fundamental.*** Meeting participants emphasized the importance of good communication and mutual respect among all members of the maternity care team for effective implementation of labor management protocols. Not only must providers be able to interpret and act on partograph findings, but they also need to be confident that their team will help and support them to carry out necessary actions when the alert and action lines are crossed. Hand-offs between staff must be grounded in accurate observation and standardized recording of labor progress and maternal and fetal condition. Each person on the team must be competent and clearly understand his or her responsibilities and scope of care. Competent clinical supervisors must support the correct and consistent use of the partograph and provide ongoing mentoring to improve staff skills.

Training

Meeting participants identified training as a critical component to the effective use of the partograph and discussed at length how training needs to change⁴. After many years of partograph training in the developing world, the tool is used to varying degrees, but in many cases not correctly or consistently. Providers often lack the underlying knowledge and skills required to manage labor and delivery; they may participate in repeated partograph trainings without ever achieving competence.

As described above, providers typically learn about the partograph in a classroom environment removed from real-world clinical experience; given limited funds and facilities, the training model has customarily stressed the theoretical rather than the practical. Competency-based training and real-world practice are rare. These training shortcomings have probably contributed to the low level of use of the tool.

Inadequate training may also play a role in misuse of the tool. Meeting participants reported that providers often use the partograph primarily for record keeping, rather than for its intended purpose: monitoring and management of labor. Some attendees have found that the partograph is completed after labor, rather than during it. In results-based financing for some maternal-newborn programs, partograph completion is used as an indicator of skilled birth attendance; this practice may promote retrospective completion of the partograph.

Training should address competency within the facility, not just among individual providers. Within health facilities, laboring women are often cared for by a wide range of providers (nurses, nurse-midwives, midwives, non-physician clinicians⁵, obstetricians, family physicians, other doctors, and other providers with varying levels of midwifery skills. For the partograph to be used correctly, all key members of the maternity care team must be trained and clinically competent to assess cervical dilation, to accurately plot dilation on the partograph, and to analyze and use the data to make decisions about referral and action.

As mentioned earlier, competency in partograph use requires ongoing learning and practice in the workplace over a period of months, not days. The trainee must have access to a clinically competent preceptor who can reinforce learning, assess performance, and

⁴ To help address partograph training issues, the World Health Organization has published *WHO Partograph: E-Learning Tool* (2010). This CD-ROM is designed to be used for self-learning or as an aid in classroom learning in preservice and inservice midwifery and medical training. It also includes the four manuals from the 1994 series *Preventing Prolonged Labour*.

⁵ Non-physician clinician: A professional health worker who is not trained as a physician or as a midwife but who is capable of many of the diagnostic and clinical functions of a medical doctor. These health workers are now known variously as health officers, clinical officers, assistant medical officers, *técnicos de cirugía*, physician assistants, nurse practitioners, nurse clinicians, or more generally as mid-level providers. They are present both in high-income and low-income countries. (adapted from WHO 2008)

promote improvement without casting blame. Such preceptors are currently rare in low-resource settings; this gap contributes to incorrect and inconsistent use of the partograph. Preceptors are essential; professionals who assume this role must be properly trained and have dedicated time to devote to it. Preceptorship should not be added to an already heavy slate of job responsibilities.

The Role of the Partograph in Quality of Care

The partograph may have quality-of-care benefits that go beyond effective labor monitoring and management. The partograph on its own does not address all aspects of quality of care, but it can play an important role. For instance, the partograph can enhance communication among providers, increase interaction between providers and the laboring women, promote continuity of care across providers, and encourage teamwork.

To assess labor management and to identify areas that need improvement, it may be easier for staff to conduct weekly or monthly reviews of partographs instead of other labor records.⁶ The tool can also be used for on-site training; staff can review case histories and the corresponding partographs, determine if appropriate care was given, and share lessons learned. While the partograph itself does not specifically address psychosocial issues, one participant noted that it can promote provider-client bonding; to use the tool correctly and consistently, providers must spend more time with clients than they otherwise might.

⁶ The Fistula Care has developed a partograph monitoring tool; for information, contact the project at fistulacare@engenderhealth.org.

The Tool Itself

Participants discussed variations in existing partographs, asking themselves “Is one version superior to others? Should any of the versions be modified? Does a health system need to use a single version across facilities in order to ensure continuity of care? Does the exclusion of the latent phase on the partograph adversely affect labor outcomes (Kwast et al., 2008)?” The group did not provide definitive answers to these questions. They did conclude that while some modifications may be appropriate, health systems should continue to use the existing versions, rather than wait for revisions. If a system uses more than one version, it is important that the versions be harmonious with each other, so that if a woman is transferred to another facility, continuity of care is protected. In all cases, the version or versions used should be appropriate for the level of provider, consistent with the established standard of care, and supported by clinical protocols.

The group proposed additional resources that might enhance both training efforts and correct, consistent use of the partograph:

- A simple decision-making algorithm, printed on the back of the form, might make it easier for providers to determine when watchful waiting is appropriate and when action is required.
- A new and improved, very brief training manual would be an asset. Such a “skinny” manual would help to “rebrand” the partograph and call attention to its value in clinical care.
- Posters⁷ about the partograph displayed within clinics could reinforce training and remind providers of key components of the tool and how to use it. Participants discussed different poster options. One poster could display the partograph itself. Another could serve as a job aid; displayed next to the poster of the partograph, this poster would describe what to do if labor does not progress normally. Or a well-designed single poster could link charting guidelines to a protocol algorithm.

Participants presented three innovations in partography:

- JHPIEGO is developing an electronic partograph (e-partograph) presented on a handheld device (Dekel, 2011). Accompanying the device is a sensor that attaches to the woman’s abdomen to monitor contractions. The device reminds health care providers when monitoring or decisions are needed. One significant advantage of the e-partograph is that data is entered in ‘real time’, thus preventing the problem of retrospective partograph completion. Data from partographs can be transmitted across cell phone networks and shared across facilities. The device is being field tested. Researchers are also studying client acceptability.

⁷ The Fistula Care has developed a partograph ‘job aid’ poster for use in delivery units at the request of its supported sites in Guinea. This has been replicated at the request of supported sites in Niger as well (see Appendix C).

- The Lamb Hospital in Bangladesh has created a graphical “community partograph” or “pictorial partograph” for labor and birth at home (Day, 2011). Designed for use by family members and informally trained community health workers, such as traditional birth attendants the tool presents the familiar metaphor of the traffic light (red, yellow, green) to monitor labor and identify situations when a woman needs to go to a health facility. Preliminary research has found that the tool was acceptable to users in this context; studies about the impact of the partograph on birth outcomes have not yet been conducted.
- The World Health Organization has developed the Safe Birth Checklist, which highlights the use of the partograph as a key intervention (Mathai, 2011). The checklist, which is being tested in India, appears to increase use of the partograph. A large trial will examine the effect of the checklist on maternal mortality and morbidity and birth outcomes. While the checklist was designed as a stand-alone tool and does not necessarily coincide with improved system support, early evidence suggests that the checklist may serve as a catalyst to system improvement (e.g., additional training, improved drug supplies).

Participants recognized that other partograph innovations are also being developed. One attendee suggested that the group solicit ideas and periodically monitor emerging innovations using existing electronic networks.

Research: What Is Needed?

In 1994, the World Health Organization identified operational research questions, guidelines, and indicators for evaluating the effectiveness of the partograph (WHO, 1994e). Yet, little work has been done to answer those questions or to monitor those indicators. This suggests that the partograph has not been a priority for the international reproductive health community. Important questions persist, “How do we improve the quality of labor and delivery services through evidence? How do we leverage data to influence health policy? How do we advance more quickly?”

Participants agreed that health professionals need to know more about partograph training, experience, competence, management, and supervision. They did not believe additional randomized, controlled trials (RCTs) about the effectiveness of the partograph are required at this time. The group concluded that ineffective use of the partograph probably results more from the contextual challenges of fragile health systems than from deficiencies in the tool itself. While RCTs are considered the gold standard of clinical research, they, like other research methods, have limitations and will not answer all questions about the partograph. For instance, RCTs are not the best method to use when examining the health context of an intervention. RCTs are also costly to conduct. Participants acknowledged the importance of evidence-based medicine, but they stressed that RCTs provide only one type of evidence (Vandenbroucke, 2011). Researchers need to adopt methodologies appropriate to the questions being asked. As in all health research, standardized definitions are needed so that partograph researchers can compare findings. Because the partograph has the potential to have major impact in geographical areas with high rates of maternal mortality and morbidity, priority should be given to research in those regions.

Numerous observational studies on the partograph have been conducted. The participants recommended that a meta-synthesis of this research be done as soon as possible; this work would complement existing randomized, controlled trials about effectiveness (Lavender, Hart, and Smyth, 2008) and help to paint a broad picture of partograph use. Because the partograph has a long history, the meta-synthesis should review all research done since the 1970s.

A neglected area of research has been women’s perspectives on their experiences and the care they receive during labor and birth. What does quality mean to women? What role does the partograph play in women’s perception of quality of care? The participants urged researchers to undertake such work.

Harvard University School of Public Health (through the Women and Health Initiative) is currently conducting several studies on the Safe Birth Checklist. The participants recommended that researchers take advantage of those opportunities to study partograph use and the client perspective.

Participants identified several research questions that merit attention:

- What difference does the partograph make in labor and delivery services and quality of care?
- How does the partograph compare to other techniques of labor monitoring and management?
- What partograph modifications, innovations or alternatives might improve labor monitoring and management?
- How can care protocols be more closely linked to the partograph for more effective labor management?
- What are the advantages and disadvantages of including the latent phase of labor on the partograph?
- Can partograph data be effectively used in clinical audits for labor and cesarean section?
- What community-based strategies and tools could improve detection and referral of laboring women with complications, such as prolonged/obstructed labor? For example, a simplified decision-making tool for use by families, community health workers or traditional birth attendants combined with improved emergency transportation mechanisms.
- In settings where the partograph is used, what referral mechanisms are in place and what characterizes an effective referral system?
- How can continuity of care in labor monitoring and management be improved between first referral facilities (health centers offering basic emergency and neonatal care (BEmONC) and tertiary facilities (offering comprehensive emergency obstetric and neonatal care (CEmONC) to avoid delay in receiving timely emergency care?
- What changes are required to pre- and in-service training to ensure that midwifery providers and supervisors are competent and competent in partograph use for monitoring and managing labor? For example, by increasing opportunities for competency-based training, establishing ongoing facilitative supervision mechanisms, use of the partograph for clinical audit as a component of facilitative supervision
- In the face of health system constraints, especially chronic shortage of skilled human resources, what approaches could be considered to fill gaps in coverage and quality of partograph implementation? (For example: a ‘realist’ review was suggested (a new methodology for systematic review of complex policy interventions (Pawson et al 2005))

Next Steps

The Millennium Development Goals (United Nations, 2011) have focused renewed attention on infant and maternal mortality. Revitalization of the partograph can play an important role in helping to achieve those goals. Many organizations will need to collaborate to conduct the necessary partograph research and to advance labor monitoring techniques and emergency obstetric care. Professional associations; bilateral and multilateral institutions; governmental and nongovernmental organizations; medical, nursing, and midwifery schools; and health facilities all have a role to play in improving labor and delivery practices around the world.

The participants identified a series of next steps outlined in the matrix in Appendix D. The purpose of the matrix is to set out priority follow-up actions. It is not a full list of the many excellent follow-up suggestions made at the meeting. These have been noted, and the meeting organizers anticipate that they will be addressed in detail by the proposed technical working group.

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Appendix A: Participants

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32 Appendix B: Meeting Agenda

DAY I: Tuesday, November 15, 2011 Facilitator: Karen Beattie		
Time	Activity	Presenter
8:30–9:00	Registration	Celia Pett Dana Swanson
9:00–9:20	Opening Remarks <ul style="list-style-type: none"> • EngenderHealth • U.S. Agency for International Development • The Bill & Melinda Gates Foundation 	Pamela W. Barnes Mary Ellen Stanton France Donnay
9:20–9:45	Introductions <ul style="list-style-type: none"> • Meeting rationale, objectives, and agenda review • Audience response to initial questions 	Karen Beattie
REVIEWING THE EVIDENCE		
9:45–10:05	The Partograph for Prevention of Obstructed Labor: An Overview <i>Presentation</i>	Matthews Mathai
10:05–10:25	Summary of Research Findings <i>Presentation</i>	Tina Lavender
10:25–10:30	Logistics	Dana Swanson
10:30–10:45	Coffee Break	
10:45–11:05	The Partograph in Context <i>Presentation</i>	Celia Pett
11:05–12:00	Facilitated Discussion; Q&A	Karen Beattie
12:00–1:00	Lunch	
LABOR MONITORING IN LOW-RESOURCE SETTINGS: Challenges and Opportunities Now and in the Future		
1:00–2:00	Country Experience <i>Panel presentation and discussion</i> Each panel member will present one positive and one negative implementation experience. What solutions were identified to address the negative experiences? Did they work?	<i>Panel chair:</i> Tina Lavender <i>Panelists:</i> Grace Omoni Peter Mukasa Bilkis Begum Suzanne Stalls
2:00–3:00	Partograph Alternatives <i>Panel demonstrations</i> <ul style="list-style-type: none"> • Innovation: E-Partogram • Innovation: Community Partograph • Innovation: Safe Birth Checklist 	Shoval Dekel Louise Tina Day Matthews Mathai
3:00–3:15	Coffee Break	
3:15–4:30	Facilitated Discussion <ul style="list-style-type: none"> • What have been the major challenges to realizing the potential of the partograph? • Is there still a role for the partograph as a labor management tool? • Is there a role for other tools in labor management? If so, what other tools are required or are in use? 	Karen Beattie
4:45–5:45	Reception	

DAY 2: Wednesday, November 16, 2011		
Facilitator: Ana Langer		
Time	Activity	Presenter
9:00–9:05	Housekeeping	Dana Swanson
9:05–9:15	Recap, Day 1	Joseph Ruminjo
OVERCOMING THE CHALLENGES		
9:15–10:00	How do we overcome the challenges to realizing the potential of the partograph identified on Day 1? <i>Table discussions</i> Tables will discuss two challenges and develop specific recommendations.	
10:00–10:30	Feedback from Table Discussions	
10:30–10:45	Coffee Break	
10:45–11:30	What are the evidence gaps and how do we fill them? <i>Panel discussion, followed by Q&A</i>	Panel chair: Catharine Taylor Panellists: Barbara Kwast Grace Omoni Florence Gans-Lartey James Litch
11:30–12:00	What do we prioritize? <i>Facilitated discussion</i>	Ana Langer
12:00–1:00	Lunch	
WHAT ACTION ARE WE CALLING FOR?		
2:00–3:00	Consensus Review <ul style="list-style-type: none"> • Context • Evidence currently available • Challenges/Barriers • Opportunities <ul style="list-style-type: none"> ○ Expanding and improving partograph utilization and potential ○ Innovation to extend partograph utilization and potential • Research requirements • Advocacy 	Ana Langer
3:00–3:15	Coffee Break	
3:15–3:45	Next Steps Roles and Responsibilities: <ul style="list-style-type: none"> • Multilateral institutions • Nongovernment organizations • Professional associations • Training institutions • Program managers • Researchers 	Pius Okong Kerri Schuiling Suzanne Stalls
3:45–4:15	Wrap-Up, Thanks, and Meeting Closure	Karen Beattie and Ana Langer

Appendix C: Partograph Poster from the Fistula Care

UTILISATION DU PARTOGRAMME

Renseignement concernant la patiente: nom, geste, pare, numéro du dossier/hôpital, date et heure d'admission, rupture des membranes

Rythme cardiaque fœtal: noter toutes les demi-heures

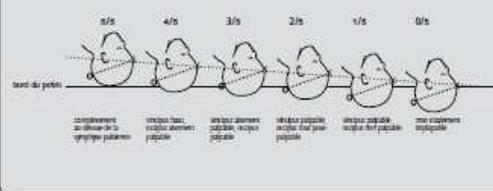
Liquide amniotique: noter la couleur lors de chaque examen vaginal:
 I: membranes intactes
 C: rupture des membranes, liquide clair
 M: liquide teinté de méconium
 S: liquide teinté de sang

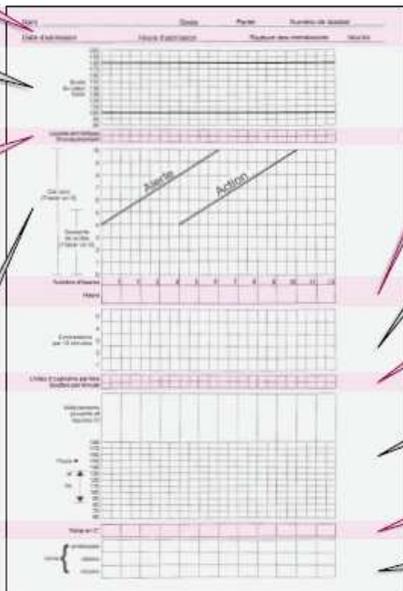
Modelage:
 1: sutures apposées
 2: sutures qui se chevauchent mais chevauchement réductible
 3: sutures qui se chevauchent mais chevauchement irréductible

Dilatation du col: évaluer à chaque toucher vaginal, marquer d'une croix (X). commencer le tracer de la courbe à 4 cm

Ligne d'alerte: segment prenant son origine à 4 cm se terminant au point où la dilatation est complète / 1 cm par heure

Ligne d'action: parallèle à la ligne d'alerte, 4 h à droite. Descente évaluée à la palpation abdominale: concerne la partie de la tête (divisée en 5 parties) palpable au-dessus de la symphyse pubienne; la marquer d'un cercle (O) à chaque toucher vaginal.





Nombre d'heures: durée écoulée depuis le début de la phase active du travail (observée ou extrapolée)
Heure: L'heure qu'il est

Nombre de contractions: toutes les demi-heures; déterminer à la palpation le nombre de contractions en 10 minutes et noter leur durée en secondes
 Moins de 20 secondes: □
 Entre 20 et 40 secondes: ▨
 Plus de 40 secondes: ■

Ocytocine: noter la quantité administrée par volume et gouttes/ml toutes les 30 minutes

Médicaments: noter tout apport médicamenteux
Pouls: noter toutes les 30 minutes et marquer d'un point (•)
Tension artérielle (TA): mesurer toutes les 4 heures et indiquer avec des flèches

Température: noter toutes les 2 heures

Urine: quantité de protéine, d'acétone et volume: noter à chaque miction





Modifié de : L'OMS, FNUAP, UNICEF, et Banque mondiale. 2004. Prise en charge des complications de la grossesse et de l'accouchement : Guide destiné à la sage-femme et au médecin. Genève.

Appendix D: Revitalizing the Partograph: A Matrix of Tasks

Abbreviations

ACNM	American College of Nurse-Midwives
FIGO	International Federation of Gynecology and Obstetrics
GAPPS	Global Alliance to Prevent Prematurity and Stillbirth
ICM	International Confederation of Midwives
IMPAC	Integrated management of pregnancy and childbirth
WHO	World Health Organization

Consensus	Tasks	Potential Resources
PARTOGRAPH COLLABORATION		
Develop on action plan to revitalize the partograph to improve the quality of labor monitoring and management	Complete and disseminate the meeting report	
	Prepare commentary for submission to peer-reviewed journal	Lancet WHO Bulletin African Journal of Reproductive Health African Journal of Midwifery and Women's Health Reproductive Health Matters
	Create network or technical working group	
PARTOGRAPH TOOL		
Identify and link care protocols to the partograph to improve labor monitoring and management	Develop an integrated care algorithm for the partograph ("forced decision- making tool"), including a job-aid poster for clinical settings	WHO documents in reference list, including IMPAC manuals ACNM Life Saving Skills: Manual for Midwives <i>Note: GAPPS is working on care algorithms for management of obstructed labor.</i>
	Develop a "skinny manual" for training to help rebrand the partograph	Preventing Prolonged Labour: A Practical Guide, Parts I, II, III (WHO, 1994) (included on WHO e-learning CD-ROM about the partograph)

Consensus	Tasks	Potential Resources
	Develop tools, protocols, and strategies for different settings and different birth attendants along the home-to-hospital continuum of care to improve continuity of care	
Evaluate current partograph innovations and periodically obtain information on emerging partograph/labor monitoring innovations via electronic networks		LAMB pictorial partograph, Bangladesh JHPIEGO e-partogram WHO Safe Birth Checklist
PARTOGRAPH TRAINING		
Review and update definitions of partograph competency for midwives to reflect the full range of knowledge, skills, and behavior required for effective labor monitoring and management		ICM Global Standards, Competencies, and Tools FIGO standards
Review existing partograph training approaches to identify gaps and changes required to achieve effective use of the partograph; consider curricula, methodologies, human resources, management, and necessary financial and other resources		WHO IMPAC manuals ACNM Life Saving Skills: Manual for Midwives Preventing Prolonged Labour: A Practical Guide, Parts I, II, III (WHO, 1994) (included on WHO e-learning CD-ROM about the partograph) ICM Global Standards, Competencies, and Tools Realist review (Pawson et al., 2005) FIGO standards
PARTOGRAPH IMPLEMENTATION		
Review current partograph implementation approaches to identify gaps and changes required to achieve effective use of the partograph		Realist review (Pawson et al., 2005)
RESEARCH		
Review WHO's research questions from 1994 <i>Guidelines for Operations Research</i> ; prepare comprehensive list of questions, drawing on meeting discussions		Preventing Prolonged Labour: A Practical Guide, Part IV: Guidelines for Operations Research (WHO, 1994) (included on WHO e-learning CD-ROM about the partograph)

Consensus	Tasks	Potential Resources
Produce a meta-synthesis of observational study data on partograph use and effectiveness (from 1970 to present)		Fistula Care review of partograph literature
Review acceptability/usability of the partograph, addressing standardization, potential modifications, and recommendations to improve patient records overall		
Conduct a study comparing WHO partograph variations and/or other labor monitoring tools/techniques: What is the effect of various tools/techniques on labor management and labor outcomes?		
Evaluate existing partograph training and implementation strategies (curricula, methods, competence, supervision, management)		Realist review (Pawson et al., 2005)
Evaluate effectiveness of community-based labor monitoring tools and referral mechanisms		LAMB pictorial partograph, Bangladesh
Conduct a gap analysis of the continuum of care from home to hospital, including referral mechanisms		
Conduct a qualitative review of partograph use in clinical settings		Nested study in WHO Safe Birth Checklist trial?
Evaluate women's perceptions of the quality of facility-based care and support during childbirth		Nested study in WHO Safe Birth Checklist trial? Fistula Care literature review Respectful Maternity Care Campaign TRAction research findings
Evaluate the effectiveness of a partograph audit in improving labor management, outcomes, provider performance, and quality of care		