

Partograph initiation and completion: a criteria-based audit study in Uganda

By **Ziidah Namwaya**, **Elizabeth Ayebare**, **Sarah Muwanguzi**, **Mariam Namutebi**, **Susan Birungi**, **Elizabeth Namutebi**, **Enid Mwebaza** and **Rebecca Smyth**

Abstract

Background: Although it is a cost effective tool in labour management, the partograph is not always used appropriately. The aim of this audit was to assess the initiation and completion of the partograph for women in labour at Mulago Hospital. **Methods:** A criteria-based audit was conducted, using patients' files and delivery records from February to May 2016. A checklist was used to gather data and descriptive statistics computed. **Findings:** Of 7170 files, 256 (3.57%) had the partograph initiated. The recording of maternal wellbeing was low. For example, pulse was recorded in 20% of cases and blood pressure in 35%. Recording of vaginal examination results was 90% on admission but reduced to 57% in the first stage of labour. Similarly, recording of fetal heart rate in the first stage of labour was 62%. **Conclusions:** Partograph initiation was unacceptably low. Maternal well-being documentation was generally low compared to the set standard. There is need to strengthen the use of a partograph to improve care during labour

Keywords: Partograph, initiation, completion, standard, criteria-based audit, labour

The maternal mortality ratio in Uganda has remained high: 438 maternal deaths per 100 000 women in 2012 and 336 maternal deaths per 100 000 women in 2016, according to the preliminary findings of the Uganda Demographic and Health Survey (Uganda Bureau of Statistics and ICF International, 2017). This is despite the

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combined efforts to improve standards of maternity care by training health workers nationwide in safe motherhood and emergency obstetric skills, and the use of community health workers (Pearson and Shoo, 2005; Mbonye et al, 2007; Ellis et al, 2011; Forshaw et al, 2016).

Although levels of skilled birth attendants has improved greatly from 58% in 2011 (Uganda Bureau of Statistics and ICF International, 2012) to 74% in 2016 (Uganda Bureau of Statistics and ICF International, 2017), the number of maternal deaths is still alarming. Prolonged and obstructed labour are among the major causes of maternal morbidity and mortality. Obstructed labour predisposes women to complications, such as postpartum haemorrhage, uterine rupture, obstetric fistula, puerperal sepsis and perinatal death (Fantu et al, 2010; Usharani and Bendigeri, 2017). A partograph is an important tool recommended by the World Health Organisation (WHO) (1994) for monitoring labour progress. Diligent use of a partograph assists skilled birth attendants in detecting early warning signs of both maternal and fetal complications of labour in order to determine appropriate interventions. When the correct action is taken by a competent health provider, the labour outcomes will be good (Orhue et al, 2012).

It has been noted that the partograph is not used to the required standards even in settings where a printed partograph is available (Bedwell et al, 2017; Maphasha et al, 2017). A study conducted in South Africa (Mathibe-Neke et al, 2013) showed that most of the parameters recorded on a partograph were below average, ranging between 41% and 44%. In Uganda, a study to assess use of a partograph in Rukungiri district health centre showed that, although nearly 70% of deliveries had a partograph completed, fetal heart rate monitoring was performed in only 2% of the women (Ogwang et al, 2009).

Mulago Hospital is Uganda's National Referral Hospital and receives both low- and high-risk women in labour who require proper monitoring in order to minimise complications. Mulago Hospital has one of the highest number of deliveries worldwide: approximately 30 000 deliveries per year. In 2015, hospital records showed that the maternal mortality rate of Mulago Hospital was 478 maternal deaths per 100 000, which was higher than the national average. Of the deaths, 41% were due to preventable causes such as obstructed labour, ruptured uterus, postpartum haemorrhage and sepsis.

Clinical audit is a tool used to assess clinical practice and is very helpful in improving care in clinical settings. The aim of this clinical criteria-based audit was therefore to critically and

systematically examine the use of the partograph in Mulago Hospital so as to come up with strategies for improvement.

Methods

A retrospective criteria-based audit design was used. Criteria-based audits are the most commonly used type of clinical audits and they follow a classical cycle (Weeks et al, 2010). The initiation and completion of a partograph was assessed objectively against the previously set criteria, which were developed by a team of midwives from different institutions based on a review of the literature and the situation in the clinical practice areas. The baseline audit period was from February to May 2016, in which 7170 women were admitted to hospital in labour.

Study setting

Mulago Hospital, situated in the capital city Kampala, is the national referral hospital for Uganda. Mulago also serves as a teaching hospital for Makerere University College of Health Sciences. The maternity unit is very busy with an average of around 32000 deliveries per annum. The audit took place in the three labour wards of Mulago Hospital: the private maternity wing, the high-risk general labour ward and the midwife-led unit. The authors initially wanted to conduct the audit in the three labour wards so as to compare the use of the partograph in the different units. Unfortunately, during the audit period, Mulago Hospital saw a merger of the midwife-led unit with the high risk unit due to renovations, which affected the baseline data collection. Later, the whole maternity section was transferred to another location, making the objective of comparing the different units impossible.

Sample size

A consecutive sample of 256 of the 7170 files were reviewed during the audit. These are the files that had a fixed partograph with some form of documentation written during the audit period. Labour ward delivery books were checked for all women who delivered during that period. Case files were consecutively selected until all the files that had a filled partograph in the selected months had been identified and the data collected.

Criteria and standards

The review of previous studies on partograph completion, including studies done at Mulago Hospital, indicated that the rate of completion for several aspects of the partograph was below the required standard (Kayiga et al, 2016). It was therefore agreed that the standards be set lower than 100% as a more realistic expectation of the current state of care.

Partograph initiation (documentation of maternal and fetal wellbeing parameters on a partograph as soon as cervical dilatation is found to be 4cm or more) and completion (documentation of the maternal and fetal wellbeing parameters for subsequent observations) (Fistula Care, 2013; WHO, 2015) were assessed against previously agreed criteria. Each patient file with a partograph was further reviewed to examine the extent to which initiation and completion was done according to the set parameters. The five selected criteria for the audit included:

- Initiation of a partograph
- Fetal wellbeing
- Labour progress
- Maternal wellbeing
- Neonatal wellbeing.

Initiation of a partograph was expected for every women in active phase of labour at 4 cm or more dilation. Parameters that were recorded only once, in the first stage of labour, such as maternal age, parity and gravidity, were assessed against a standard set at 80%.

Maternal wellbeing monitoring in the first stage of labour had variations depending on the type of observation as shown in the results section. Maternal wellbeing documentation included: pulse rate (recorded 2-hourly), blood pressure (documented every two hours), and urine testing. Assessment of the fetal heart rate during the second stage of labour was set at 60%.

Data collection

A checklist was designed to collect information from the partograph according to the set criteria and standards. Before the actual data collection, the checklist was pretested on 50 case files and adjustments made to ensure that it captured all the information. Data was collected by the audit team,

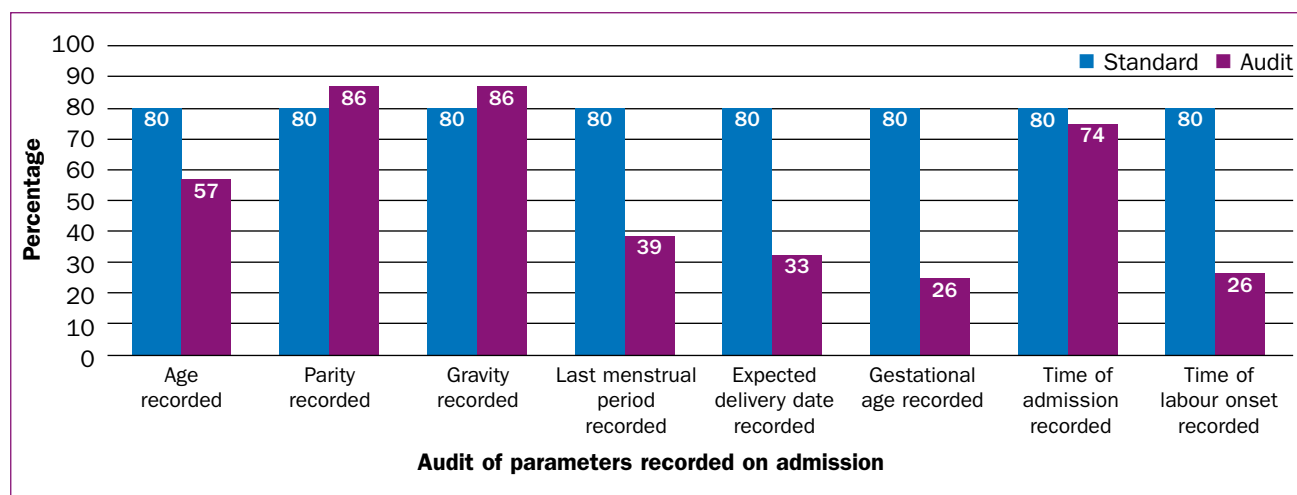


Figure 1. Parameters that are recorded only once on a partograph for every woman in active phase of labour set at 80%

which consisted of midwives from different institutions. The main data source was the case files, although the birth registers were also used to verify information and ascertain the number of women that had delivered each day.

The data collected were entered into the computer using STATA version 11.0 software, cleaned, and then exported to Microsoft Excel for analysis.

Results

Parameters recorded on admission

These are baseline findings of the criteria-based audit to assess partograph initiation and completion. During the four-month study period, 256 files (3.57%) out of the total sample of 7170 files had the partograph initiated. *Figure 1* shows the rate of documentation for the parameters that are recorded only once, at initial admission to hospital. The majority of partographs had parity (86%), gravidity (86%) and time of admission (74%) recorded, but the time of labour onset and gestational age were only recorded in 26% of the patient files.

Monitoring of fetal wellbeing

The parameters for monitoring fetal wellbeing were examined in the first and second stages of labour. The standard for fetal heart rate assessment was set at 80% at admission; at 75% during the first stage of labour (documentation of the fetal heart rate every half hour) and at 60% in the second stage (documentation of the fetal heart rate every rate every five minutes). As is shown in *Figure 2*, at admission, fetal heart rate was recorded in 81% of the patient files, exceeding the set standard. The rest of the fetal wellbeing parameters were below the set standard, with monitoring of fetal heart rate during second stage of labour scoring only 21%.

Monitoring of labour progress

Figure 3 shows the frequency with which labour progress parameters were recorded during labour. Cervical dilatation at admission was well recorded at 88%, exceeding the set standard, although the recording of cervical dilation during the later stages of labour fell to 56%. Documentation of fetal descent was at 55%, compared to a set standard of 75%.

Record of newborn parameters

Recording of newborn parameters (*Figure 4*) was below the set standard (80%) except the time of birth, which was above the set standard (81%). Documentation of the mode of delivery, birth weight, sex of the baby and Apgar score ranged between 57% and 59%.

Monitoring of maternal wellbeing

Maternal wellbeing (*Figure 5*) emerged as the poorest recorded criteria generally, with very low percentages for urine output (16%), urine testing (10%) and four-hourly temperatures (16%) during the first stage of labour. None of the parameters scored above the set standard.

Discussion

The aim of the audit was to critically and systematically assess the initiation and completion of a partograph for every woman in active phase of labour at the referral hospital. Audit findings in this study showed that partograph use was below the set standard. During the study period, only 3.57% of partographs had been initiated. This low initiation percentage could have been due to the fact that some of the patient records had no inserted partographs, while others, such as those awaiting emergency caesarean section and those who arrived in second stage or post-delivery, did not qualify for labour monitoring on the partograph. A study conducted in four facilities in Ghana and another study done in western Uganda found the partograph use to be higher than in this study at around 55% and 70% respectively (Ogwang et al, 2009; Opoku and Nguah, 2015).

Among the files with initiated partographs, for parameters that are recorded only once, the majority had parity, gravidity and time of admission recorded. Importantly, however, the time of labour onset and gestational age were the least documented. This could be due to the different designs of partographs, something that was discovered during the audit period. The wards had two partograph designs in circulation; the modified WHO partograph and a Mulago Hospital Department of Obstetrics design that was printed by the records department and was in all the files for patients that had attended antenatal care at the hospital. The

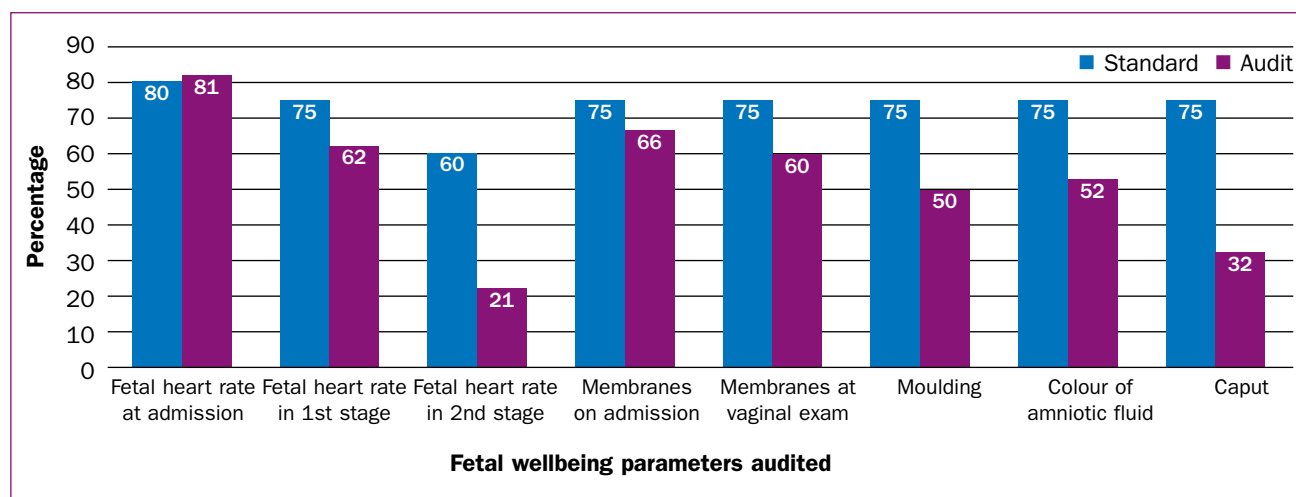


Figure 2. Fetal wellbeing

Mulago hospital design lacked space for documentation of some information such as age and date of the last normal menstrual period, while the modified WHO version had all of the parameters. Studies looking at partograph use from the health care providers' perspective have also reported low rates of partograph use, ranging from 32% in Nigeria to 67% in Ethiopia (Fawole et al, 2008; Yisma et al, 2013b; Asibong et al, 2014).

Fetal wellbeing was one of the poorly recorded parameter especially in regard to moulding and colour of the amniotic fluid. In Ghana, similar trends were observed, with fetal heart rate better recorded at 51% (Opoku and Nguah, 2015). In Nepal, the colour of amniotic fluid and the instances of moulding being recorded were even lower than findings in this study at approximately 33% and 25% (Opoku and Nguah, 2015; Kc et al, 2016). In western Uganda, fetal heart rate monitoring was found to be only 2%, showing an even a greater need to improve care since that study was conducted in a rural setting where emergency obstetric care facilities are limited (Ogwang et al, 2009). The importance of assessing moulding and the colour of the amniotic fluid needs to be emphasised, as it gives additional information about the fetal wellbeing—especially in low resource settings where electronic fetal monitoring is not available.

Labour progress was the best recorded of all criteria. Similar to the study in Ghana (Opoku and Nguah, 2015), descent of the fetal head was recorded to standard on 55% of partographs in this audit. Similar results were also obtained for the documentation of vaginal examination (56%) in the first stage and for uterine contractions every half hour (76%). This may show that health workers focus on monitoring the labour progress instead of the holistic care of the woman.

The lowest percentages of recorded information were for maternal wellbeing. Urine output and testing were recorded for only 16% and 10% of the case files respectively. Other important parameters that saw low recordings were maternal blood pressure in first stage of labour (36%) and maternal pulse (20%). These findings are similar to a study in Ethiopia, where maternal blood pressure was recorded in 19% of the files (Yisma et al, 2013a). Contrary to these findings, in Ghana, the maternal blood pressure and pulse were

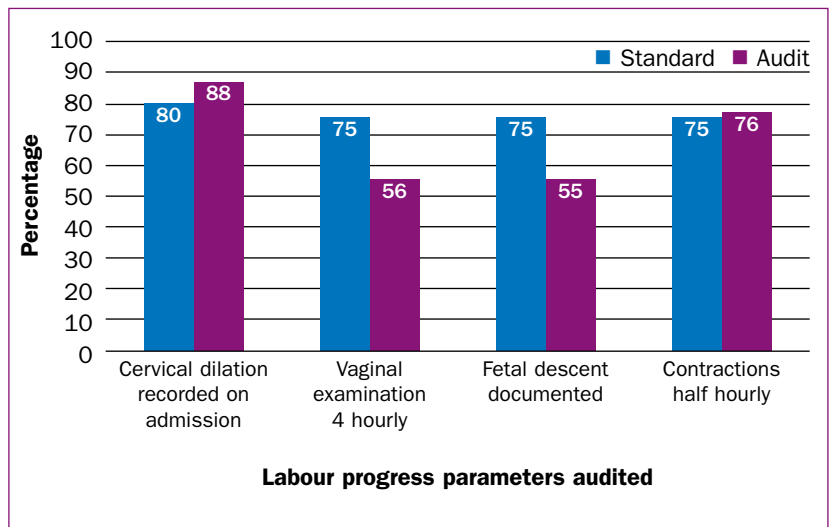


Figure 3. Record of labour progress parameters at admission and during in first stage of labour

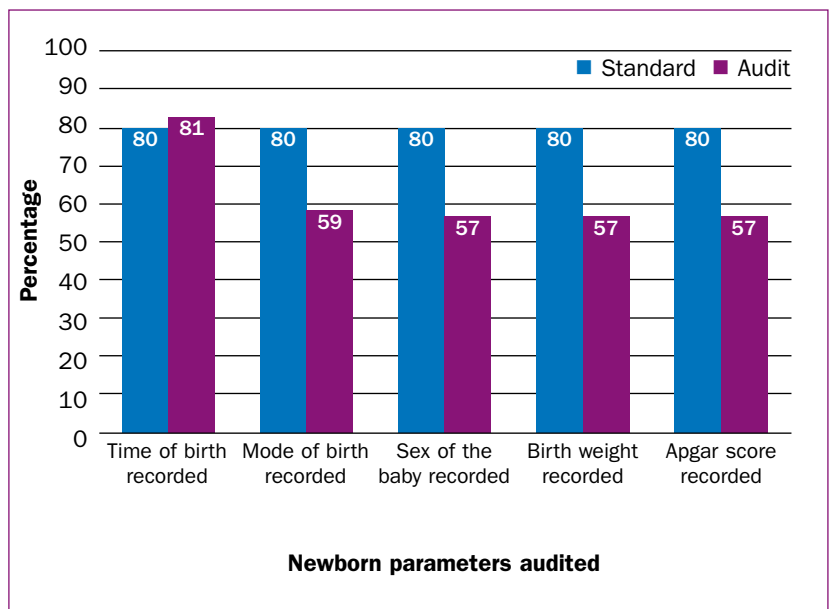


Figure 4. Newborn parameters audited. The time of delivery was the best recorded parameter under this criteria

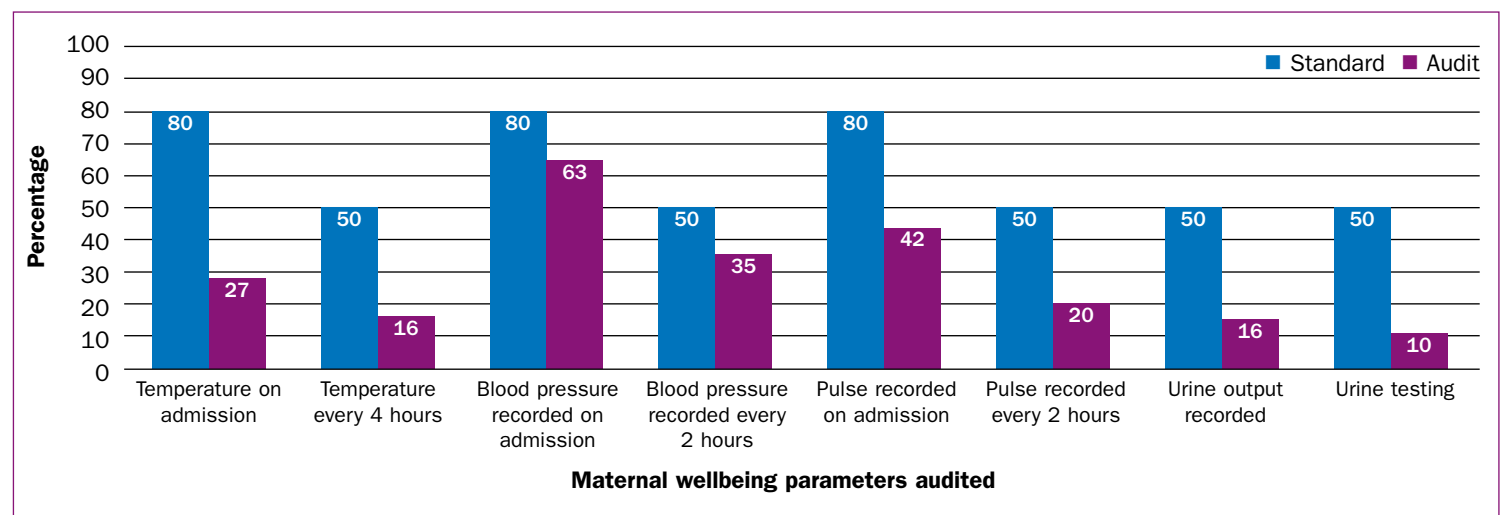


Figure 5. Maternal wellbeing parameters audited. All the parameters for this criteria were found to be below the set standard

Key Points

- This was a criteria-based clinical audit conducted to assess the level of partograph initiation and completion for women in labour at cervical dilatation $\geq 4\text{cm}$ at Mulago Hospital, Uganda
- The level of partograph initiation and completion at Mulago Hospital was very low
- The parameters that were recorded at admission were better recorded than subsequent findings
- The documentation of labour progress was better than that of maternal wellbeing, fetal wellbeing and newborn parameters

recorded at 40%, and the same value applied for the urine output and testing (Opoku and Nguah, 2015). The findings generally showed low levels of maternal wellbeing monitoring compared to other parameters on the partograph.

The question that remains is whether the way in which the partograph is used provides the necessary guidance for clinical decision-making during labour. If labour monitoring is not comprehensively documented, the appropriate interventions to save the fetus and mother may not be instigated in a timely manner. For example, in cases of fetal distress, it is necessary to ascertain the maternal wellbeing as well as the state of labour progress in order to make an appropriate decision. It is impossible to depend on labour progress parameters alone. This audit identified that midwives may need to fully understand the importance of correctly recording all the parameters on the partograph in order to ensure better maternal and fetal outcomes.

Conclusion

Partograph initiation in this study was unacceptably low, especially in the case of maternal wellbeing parameters. The results also showed variations in the way partographs were designed, with some lacking certain parameters, leading to low ratings during the audit period. This therefore calls for the need to harmonise the partographs used on the unit and to strengthen the documentation of maternal and fetal observations in labour for timely interventions to reduce maternal and fetal morbidities. **AJM**

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