COLLEGE OF MEDICINE AND HEALTH SCIENCES

SCHOOL OF HEALTH SCIENCE

TO INCREASE COMPLETION RATE OF PARTOGRAPH BY DEVELOPING GUIDELINE AND SUPPORTIVE SUPERVISION DURING LABOR MONITORING IN MUHIMA HOSPITAL

A dissertation submitted in partial fulfillment of the requirements for Master of Hospital and Healthcare Administration (MHA)

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Kigali June, 2016

DECLARATION

This capstone dissertation is submitted in partial fulfillment of the requirements for college of medicine and health sciences, University of Rwanda, Degree of Master in Hospital and Healthcare Administration.

Supervisor's Declaration:

I confirm that, to the best of my knowledge:

- The study was carried out and the dissertation was prepared under my direct supervision;
- The study was conducted in accordance with the degree regulations;
- The capstone dissertation represents the original work of the candidate;
- The contribution made to the study by me, by other members of the supervisory team, by other members of staff of the university and by others was consistent with normal supervisory practice;
- External contributions to the research are acknowledged.

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Candidate's Declaration

I confirm that:

- This capstone dissertation represents my own work;
- The contribution of any supervisors and others to the research and to the capstone dissertation was consistent with normal supervisory practice;
- External contributions to the research are acknowledged.

Candidate _____ Date _____

DEDICATION

I dedicate my dissertation work to my family and many friends. I also dedicate this dissertation to my many friends, Muhima team and church family who have supported me throughout the process. I will always appreciate all they have done, especially for helping me in my writing skills, and for the many hours of proofreading. I dedicate this work and give special thanks to my wife for being there for me throughout the entire program. Both of you have been my best cheerleaders.

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ABSTRACT

Background

Muhima hospital is maternal and child hospital with many deliveries. Qualified staff including midwives and physicians in the hospital manage and monitor patients' labor progress using partograph.

The incompleteness of the partograph during labor monitoring in the hospital has been raised by physicians in the meeting of maternity and during the baseline assessment, it was found 11% of partograph were incomplete. The project team analyzed the root causes and have found that the midwives were not assigned to any specific patients and the midwives did not conduct proper monitoring.

This capstone reports and describes the process of identifying the root cause of the problem, the creating of the intervention and the implementation of the intervention in order to improve the completeness of partograph during labor monitoring in the hospital.

Methods

We conducted pre-post intervention to examine the result of the implementation of a partograph completion guidelines during labor monitoring.

The total sample in pre and post intervention was 472 files. We audited 236 files in pre intervention chosen randomly from June to December 2014. After root causes analysis and selection of the intervention in March 2016 we conducted 236 files audit to examine the results of using guideline and supportive supervision during labor monitoring.

Results

The overall rate of completeness of partograph significantly increased from 11% to 61% with $P<0.001$ The results of each of the 7 components of partograph showed Fetal Heart Rate (FHR)

increased from 77% to 89% (P<0.001), pulse from 26% to 83% (P<0.001), Blood Pressure from 36% to 80% (P<0.001), temperature increased from 19% to 65%(P<0.001), descent improved from 63% to 81% (P<0.001), dilation increased from 63% to 81% (P<0.001), and contraction increased from 28% up to 81% (P<0.001), .

A total of 296 files were audited for the association of completeness of partograph with maternal, fetal mortality and Apgar score. The completion of partograph statistically decreased the percentage of fetal death from 12% to 0%, P<0.001. The percentage of babies born with higher Apgar score increased from 4.5% to 52.4% when partograph were completed, P<0.001. We could not find a statistically significant relationship between completeness of partograph and the maternal outcome (P=0.254).

Conclusion and recommendation

The findings showed that this hospital quality improvement project by implementing the guideline during labor monitoring including setting guideline, monitoring, and enforcing guideline significantly increased the completeness of partograph during labor monitoring at Muhima Hospital. The integrations of strategic problem solving in staff training plan in the future to build staff capacity in implementing other quality improvement projects within the hospital. Future projects may include assessing the quality of the data in partograph.

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LIST OF ACRONYMS AND ABBREVIATIONS

APGAR	Activity, Pulse, Grimace, Appearance, Respiratory
CDI	Clinical documentation improvement
CHU	Center of University Teaching Hospital
CPD	Cephalo-pelvic disproportion
FHR	Fetal heart rate
HIV	Human immunodeficiency virus
NICU	Neonatal intensive care unit
WHO	World Health Organization

CHAPTER ONE: INTRODUCTION

1.1. BACKGROUND

Muhima hospital is located in Nyarugenge District, Kigali city and was founded in 2001. Since February 2014, Muhima has become a specialized center of University Teaching Hospital (CHU) for maternal and child health care. Muhima hospital oversees 10 health centers and Kigali central prison and has an estimated catchment area of 284,860 habitants. As of 2015, Muhima has 160 beds with 230 staff, among them five are medical specialist (three gynecologist and two pediatricians) working together with 54 midwives, 62 nurses and 33 allied health science staff to provide specialized maternity and pediatric services.

The services provided by the hospital include gynecology and obstetrics; neonatology; outpatient physiotherapy; dentistry; dermatology; adult outpatient; clinical psychological; and HIV clinic with counseling, testing and treatment.

There were 7717 deliveries at Muhima in 2013. On average, there are 20 admissions per day to the maternity labor ward. Seven doctors and 21 midwives work in the maternity ward (Table 1). The routine patients monitor is mostly performed by midwives. During labor, midwives have to document labor status using partograph.

Table 1. Muhima Hospital maternity ward information (year 2013)**:**

Number of beds in maternity	113
Average admission per day in maternity labor ward	20
Number of deliveries (2013)	7717
Bed occupancy rate in maternity	78%
Labor ward staff (midwives)	21
Doctors	7

1.2. PROBLEM DEFINITION

There was a high incomplete documentation rate of partograph during labor monitoring at Muhima hospital.

In a retrospective patient file audit conducted in 2014, the completion rate of partograph in Muhima hospital was found to be 11%. Such completion rate is low comparing to other countries.[3,4,5] The magnitude of the incompletion was presented to the team in maternity unit and the team agreed to address the issue.

1.3. OBJECTIVE

Primary objective: To increase the completeness of partograph documentation from 11% to 50% from November 2014 to March 2016.

Secondary objective: To find out the association of partograph completeness with maternal and fetal outcome.

50% is set as a medium term goal. Further evaluation will be conducted after the intervention to set new objective and further intervention.

1.4. HYPOTHESIS

It is hypothesized that by enforcing guideline during labor monitoring and strengthening supervision in the labor ward the completion rate of partograph would increase.

1.5. JUSTIFICATION OF THE PROJECT

The partograph is tool used in monitoring of both mother and foetus during labor monitoring**,** once it is well completed it can save life of foetus and this can increase both patients and

healthcare providers satisfaction. The completion of patograph is an important component in providing quality of care in the labor ward.

1.6. ORGANIZATION OF THE DISSERTATION

This thesis is divided into six main chapters. Chapter one introduces the setting and background of the hospital.

Chapter two contains the literature review on detail, of definition and importance of completing partograph, as well as some findings about the completeness of partograph in different countries.

Chapter three describes the design of the project. A detailed root cause analysis and the selection of intervention is described. The method of evaluating the effectiveness of the intervention is also included in this chapter

The results of the study are presented in chapter four. A detailed discussion based on the results of the project is in chapter five. Finally conclusion and recommendations based on this study are also highlighted in chapter six.

CHAPTER TWO: LITERATURE REVIEW

Partograph as a clinical documentation

Clinical documentation is used during healthcare to explain care provided to the patient, it has role of communicating the important information between healthcare providers and to sustain a patient medical record and helps the continuum of patient care.[1]

A partograph is a graphical presentation of a woman's progress of labor. Once the woman has true signs of labor, the midwife begins using the partograph to record findings.[2, 3, 4]

The partograph has different parts to fill in assessment of women and fetal condition and progress of labor. Maternal condition is monitored to assess the well-being of the mother where blood pressure, temperature, pulse are monitored during labor. When mother's well-being is compromised, the fetal status is often compromised too. The information collected in a partograph may assist clinicians to decide if labor should be terminated in order to save life of both mother and baby.[5]

Fetal condition is monitored to assess the well-being of the foetus. If fetal condition is compromised, even if the mother is healthy, normal labor should also be discontinued by an intervention to save the life of the baby. Fetal Heart Rate (FHR) monitoring is assumed to identify babies being at risk of hypoxic.[6]

Contractions have also to be assessed for efficiency and effectiveness in order to predict a normal progression of labor. Consistent and regular monitoring of contractions can show whether progression of labor is normal or not. If not, interventions can be instituted like augmentation of labor.

Descent shows compatibility of fetal head and pelvis and failure of presenting part to descend in presence of strong contractions indicates cephalo-pelvic disproportion (CPD) which is the common cause of obstructed labour.[7]

Muhima Hospital uses a partograph (Appendix 1) that was adapted from the World Health Organization (WHO) recommendation.[2,5] The completion of partograph requires proper assessment of the cervix, uterine contraction, mother conditions and fetal presentation during labor progress in relation to time.[6,8-11]

Importance of partograph

Partograph can help health care providers to record, interpret, and analyze data and make clinical management decisions while labor is in progress.[9,12] Monitoring the fetal and maternal wellbeing during the active stage of labor is important to help the mother achieving spontaneous vaginal delivery with lower morbidity and mortality risks**.**[2,13]

Properly documented partograph is associated with less maternal blood loss, fewer assisted deliveries, fewer neonatal injuries, higher Apgar scores and fewer neonatal intensive care unit admissions (NICU).[6,9] Babies with low Apgar scores (6 or less) would need more attention from physicians and midwives whereas high Apgar scores (7-10) indicate good health of the babies.[14,15]

Comparison of ompletion of partograph at different hospitals

A study conducted in Rwamagana hospital in Rwanda showed the hospital had a partograph completion rate of 41.22%; such low completion rate had associated with both the fetal and maternal outcomes negatively, leading to higher maternal and neonatal morbidity and mortality.[16,17,18]

Low documentation rate of paragraph is not unique in Rwanda. In a study done in Ghana, the largest and busiest maternity hospital of the country had only 25.6% completed partographs out of more than 12,000 deliveries per year.[18] In Niger, the partograph completion rates ranged from 32.6% and 37.5% in different hospitals.[5] Similarly, a study in one of the busiest district maternity hospitals in Malawi showed only 3.9% of 464 partographs were correctly filled in, and the monitoring of FHR and descent were significant associated with the method of delivery and fetal outcomes. The odds of fetal deaths were reduced by 59.6% if FHR was monitored.[6]

Interventions and efforts to improve partograph completion

Clinical Documentation Improvement (CDI) is known as the process of improving healthcare records to ensure improved patient outcomes, gaining data of the best quality and correct reimbursement.[19] Using education as a form of clinical documentation improvement has shown to improve the quality and accuracy of clinical records and to increase the clinicians' awareness of the importance of good documentation.[20]

Partographs completeness in Muhima hospital

The problem of incomplete partographs in Muhima hospital was first raised by residents and physicians in maternity during morning report meetings. Many complained when the partograph is incomplete, it is difficulty to know the patient information and thus make clinical decisions.

In order to address this issue, a team including midwives, nurses, and physicians of the maternity unit was formed to collect data, analyze root causes, implement and evaluate the intervention; the results of the intervention will be communicated to the hospital as feedback and suggestions.

CHAPTER THREE: METHODOLOGY

3.1. DESIGN OF THE STUDY

We conducted a pre-post intervention study to assess the effect of our intervention on the completeness of partograph.

During the pre-intervention period from November to December 2014 a project team was formed to conduct this quality improvement project. The team includes doctors, midwives of labor ward, chief nursing. An assessment to measure the magnitude of the problem, which served as our baseline data, and root cause analysis were conducted by the project team. The intervention was selected after the root cause was identified and implemented in January 2016. A post intervention evaluation was conducted in March 2016. The planned activities were conducted according to schedule and it was planned in Gantt chart. (Appendix 2)

3.2. MAGNITUDE OF THE PROBLEM

The magnitude of this problem in Muhima was measured by a retrospective patient files audit. A total 236 files were randomly selected between June to December 2014 for auditing; translating to approximately 10% of all deliveries.

A tool was developed by the head nursing and maternity unit manager to assess the completion of partograph (Appendix 3). Seven items in the partograph were audited. They are (1) the fetal heart beat ideal recorded each 30 minutes, (2) cervical dilatation recorded every 4 hours with enough contractions, (3) cervical descent recorded every 4 hours, (4) blood pressure measured every 2 hours, (5) temperature every two hours, (6) pulse every 30 minutes, and (7) contractions every ten minutes. The partograph was considered complete only if all seven components were

documented. If one or more of these items were not filled, the partograph was considered as incomplete.[6]

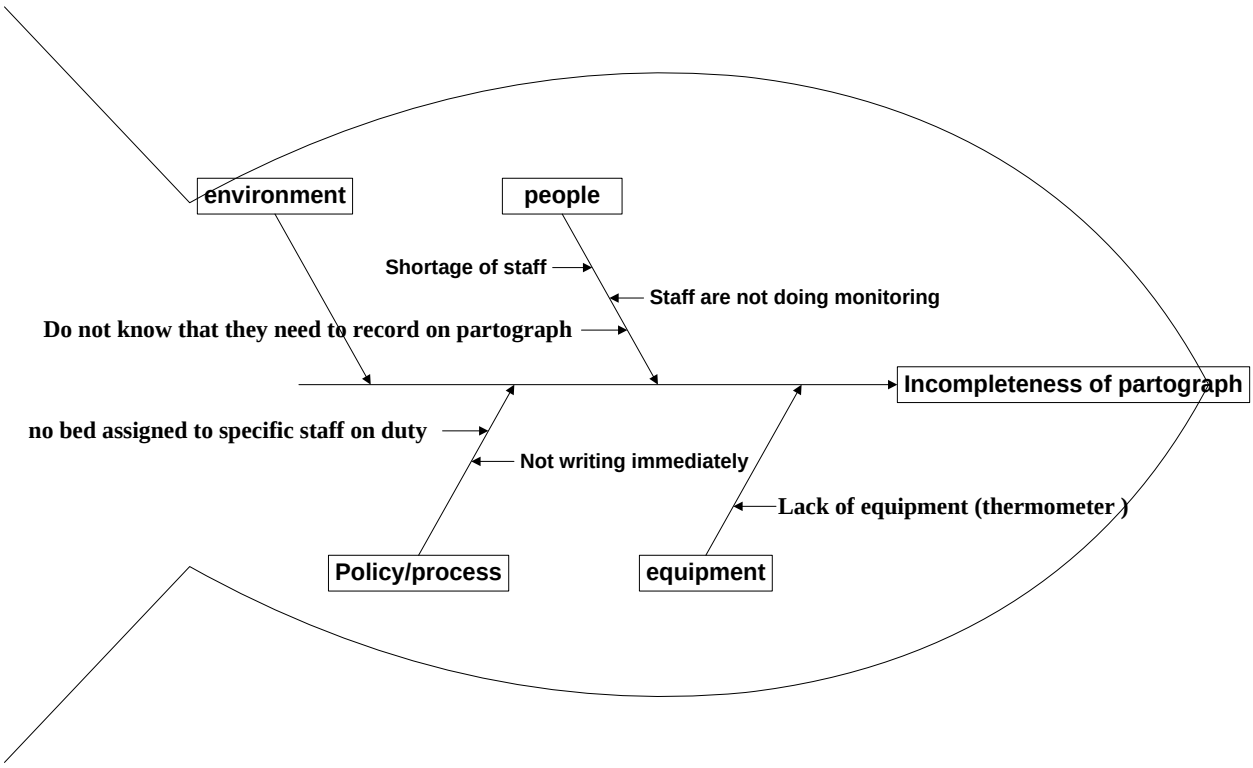
The tool, which was used by the maternity unit manager, head of nursing, and one physician to collect data on the partograph completion. The same file audit assessment was repeated in the post intervention period to evalute the outcome of the intervention.

3.3. ROOT CAUSE ANALYSIS

In March 2015, a literature review was conducted to identify published possible causes of incompleteness of partograph. We found only one literature about barriers of completeness of partograph which was conducted in Ghana. However, the study only provided perceived barriers from staff thorough interviews. The suggested root causes by the study included high workload, staff negligence, inadequate supervision and lack of motivation.[6]

The Muhima project team conducted a brainstorming session in March 2015 with two physicians and 12 midwives in the labor ward to discuss all possible causes for incomplete partograph documentation. Six main root causes were suggested of incompleteness of partograph were summarized in the fish bone diagram (Figure1).

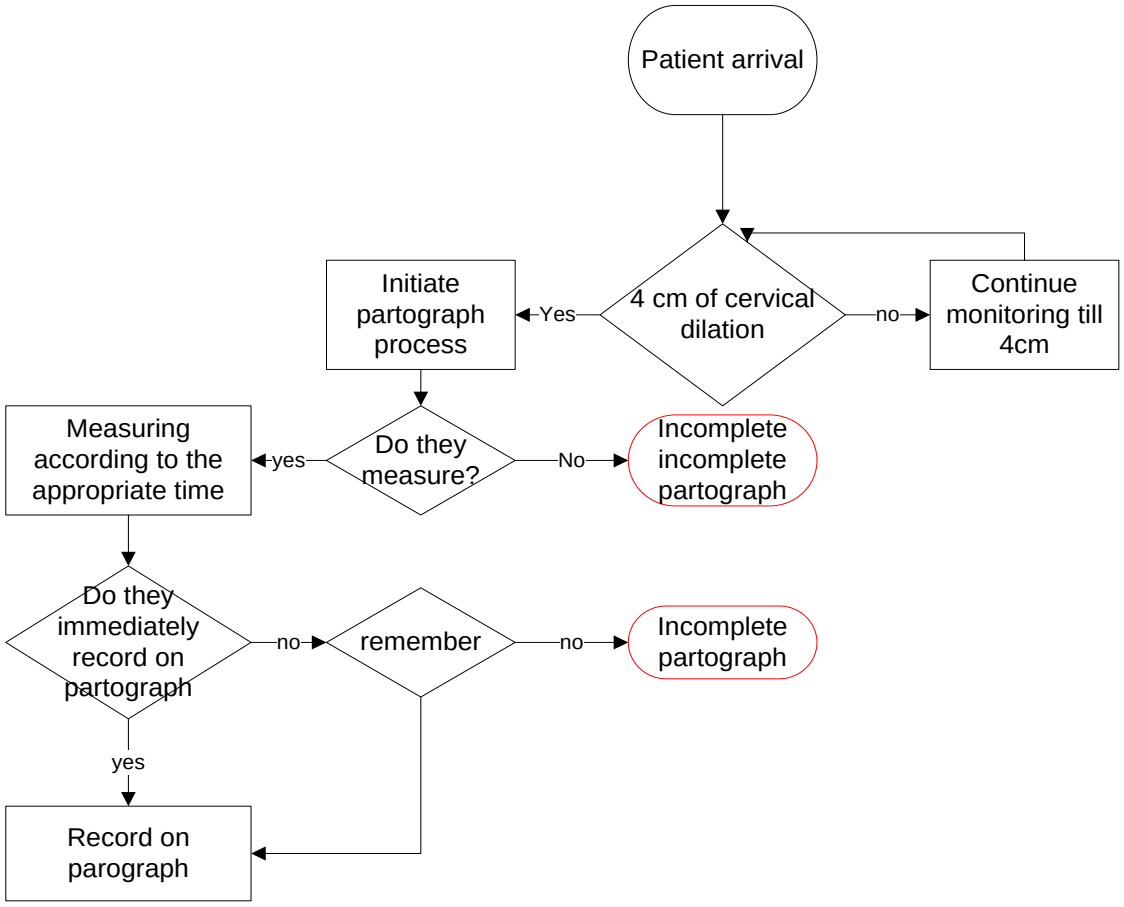
Figure 1: Fishbone summarizing the suggested possible root causes on incompleteness of partograph during labor monitoring



In order to understand the partograph documentation process, a 5-day observation and interview with staff were conducted in the maternity ward in March 2015. A flow chart was created to illustrate the work process (figure 2).

Upon admission to the labor ward, a partograph is put in the patient file. The process of partograph documentation begins when the patient's cervix is dilated to 4cm. The midwives will measure and document the followings: cervix dilation and descent every 4 hours, temperature and blood pressure of mother every 2 hours, fetal heart rate and pulse every 30 minutes, and contractions every 10 minutes. The findings were sometimes written on partograph immediately during labor monitoring, sometimes after delivery, depending on the staff's practice. The documentation of partograph stops once delivery is completed. The partograph stays in the patient file.

Figure 2: Flow chart to illustrate the work process of partograph documentation



3.3.1. Verification of root causes

More data were collected in order to verify the 6 suggested root causes and identify the final root cause.

3.3.1.1 Shortage of the staff

According to the patient register in the labor ward and hospital statistics reports, the unit on average had 662 deliveries monthly. The average number of patients over 24 hour period (per day) was 22. According to hospital human resources department record, 19 midwives were

assigned to delivery unit and 8 are working in the unit at any given time per day; making the staff to patient ratio 1:2.7

According to the Rwanda Ministry of Health report, the Nurse/midwives to patient ratio in labor ward should be 1:3.[21] The workload analysis indicated the shortage of staff did not seem to be a barrier to the completion of partograph at Muhima hospital.

3.3.1.2 Lack of thermometer

Observation was conducted in the unit to check the existence of thermometer. Six thermometers were available and accessible in the unit. The lack of thermometer is not a reason for staff not to measure the temperature, thus incomplete documentation on partograph during labor monitor.

3.3.1.3 There was no bed assigned to specific staff on duty

Some staff suggested since staffs were not assigned to take care of specific beds during their duty shift, it was easy to assume other staff was taking care of the patients. Since nobody is accountable to any specific patient, sometimes patients were not monitored by any one.

To gather information on if beds were assigned to specific staff on duty; observation and discussion were done. 10 midwives were asked and all reported that they usually did not have specific beds assigned to them. It was assumed that some nurses would take care of the patients.

We checked with the unit in-charges and confirmed that there was no guideline related to task assignment or hand over. No register record was found for any task assignment.

Since beds/patients were not assigned to specific staff on duty, no staff is accountable for the services rendered to the patients. When a task is due to perform, whoever is available would provide the service to the patients. At the same time, it is easy to assume some other staff would

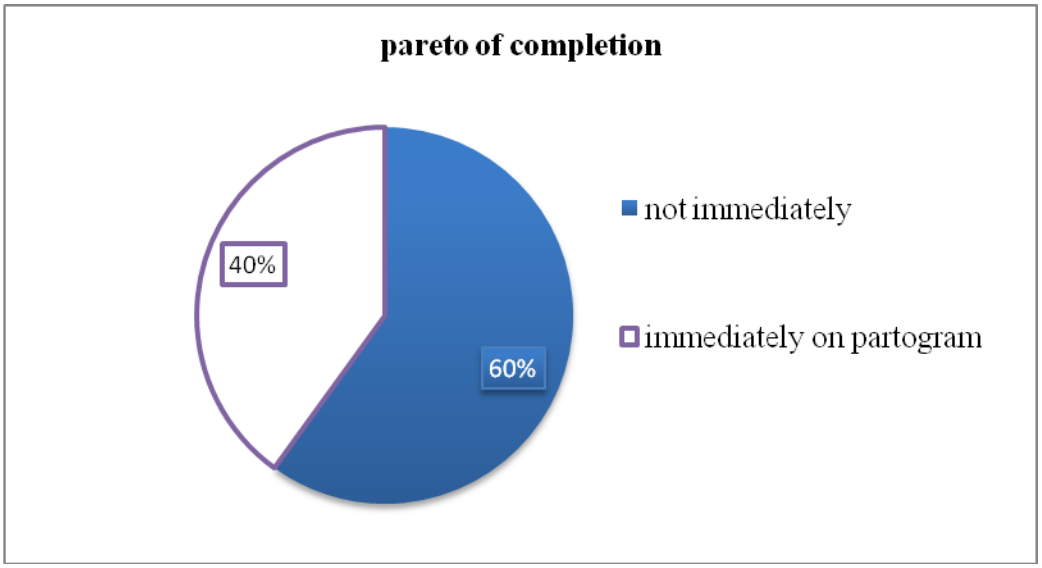
render the service, resulting in the service was not performed. There is a lack of consistent system regarding task assignment to nurses could be a root cause of incompletion of partograph.

3.3.1.4 Not documenting findings immediately

The documentation process was observed in order to understand how the partograph was filled. A flow chart was created to summarize the process. We found the partograph documentation process varies according to midwives. Some midwives take the measurements and write the information on a piece of paper and then transfer the information onto the patient's partograph form at a later time.

The team in collaboration with maternity in-charge took two weeks to observe the process from 6th to 17th July 2015. A simple tally sheet was used to record how many times data was written on a slip of paper and how many times directly to the partograph (appendix 4). We observed 40 partographs filling and found 60% of the times; data were not recorded immediately on the partograph (figure 3).

Figure 3: Frequency of information recorded immediately to partograph



The delay in writing the findings in the partograph could be a cause to the incompleteness of partograph during labor monitoring since the staff may forget to record.

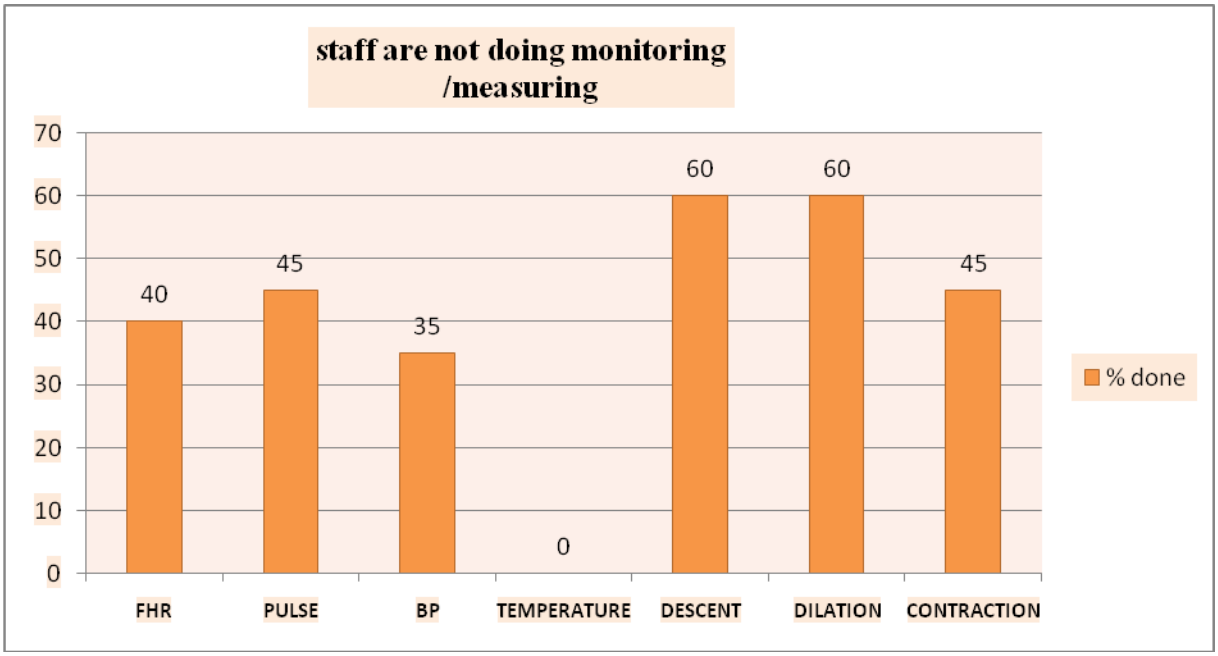
3.3.1.5 Staff (midwives) are not doing monitoring

In order to find out if measurements for partograph were actually taken by midwives when it was due, the nurse in charge and night coordinator conducted another 2-week observation study. Observations on 20 patients were made to assess if the midwives actually took measurements when the data were supposed to be taken; if measurement was not taken, the reasons were also recorded. The observation findings were recorded in a tally sheet. The study found only 40.7% of time the measurement were actually taken (figure 4 and Table 2)

Table 2: Summary table of reasons of not doing monitoring

possible causes	**Frequency**	**%**
no one is taking care of that patient/responsible	14	16%
no one in the unit	2	2%
staff was in delivery room with another patient	5	6%
sitting on chair in the ward	20	23%
staff was in the bed for sleeping	15	17%
taking laboratory specimen	2	2%
time not recognized	30	34%

Figure 4: Pareto diagram showing if measurement were actually conducted



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The reasons midwives did not take the measurements (table2). The top three reasons of not taking measurements were 1) staff did not realize the time to take measurement (34%); 2) staff sitting around (23%); and 3) staff sleeping (17%). The results strongly suggested staff were not conducting proper monitoring.

3.3.1.6 Do not know that they need to record on partograph

Some staff suggested the midwives do not know how to use the partograph. However, this was quickly dismissed as a root cause as partograph is a key component in basic midwifery study. Besides, when a midwife is assigned to the labor ward, an orientation is provided; the documentation requirements in the labor ward, including partograph, is part of the orientaiton.

3.3.2. Results of Root Cause Analysis

After the root cause analysis, the results strongly indicating since the midwives were not assigned to any specific patients, they are not accountable to any particular patient events,

resulting many did not conduct the necessary clinical patient care duties, thus resulting in incomplete documentation.

3.4. INTERVENTION

Based on the root cause analysis, the project team generated a few strategies to address the root cause. A detail comparative analysis was conducted (appendix 5). Based on the comparative analysis, the project team decided to establish the labor monitoring guidelines and to provide supportive supervision to ensure midwives are following the guideline as the final implementation strategy.

The intervention includes the following:

a. Development of guideline during labor monitoring, including setting the guideline, monitoring and enforcing the guideline was used during labor monitoring (appendix 6).

Within December 2015 the team formed developed the guideline and submitted the guideline for approval from Director of the hospital

b. Training on guideline

After development of guideline, the training was prepared then we conducted the piloting training to the three midwives then after the remaining midwives of labor ward were trained on guideline.

c. Availability of guideline in the service

After approval of guideline, by 15th January2016 it was printed and started to be used in the service.

d. Monitoring

The implementation of the guideline officially began on 15th January 2016. In February 2016 we conducted the evaluation.

3.5. MEASURES

The partograph overall completion rate was measured to evaluate the outcome of the intervention. The completion rates of each of the seven components of the partograph were also measured. We have also measured the fetal mortality rate, maternal mortality rate, and Apgar score (high or low) of babies to look at the association with the completion of partograph.(Appendix 8)

3.6. DATA ANALYSIS

The pre and post intervention partograph overall completion rate as well as each of the partograph component completion rates were analyzed using Chi Square tests. The maternal mortality, fetal mortality and Apgar score related to completion of partograph were also analyzed using Chi Square tests. All statistical tests were conducted using SPSS software v.21, with P-value set at 0.05.

3.7. ETHICAL CONSIDERATION

The study did not involve patient contact, treatment were not affected, we did chart audit where we got approval from hospital ethic committee for conducting the chart audit and be able to access the file (appendix 7).

CHAPTER FOUR: RESULTS

A total of 236 partographs were audited in each of the pre and post intervention period. The overall completion rates of partograph statistically increased from 11% to 61% from the pre to post intervention, with P<0.001 (table 3). The results of each of the 7 components showed FHR increased from 77% to 89% (P<0.001), pulse from 26% to 83% (P<0.001), BP from 36% to 80% (P<0.001), temperature increased from 19% to 65% (P<0.001), descent improved from 63% to 81% (P<0.001), dilation increased from 63% to 81% (P<0.001), and contraction increased from 28% up to 81% (P<0.001).

A total of 296 files were audited for the association of completeness of partograph with maternal, fetal mortality and Apgar score. The completion of partograph was statistically associated with a decrease in the percentage of fetal death with P<0.001, as well as associated with the increase in the percentage of babies born with higher Apgar score with P<0.001. However, we could not find a statistically significant relationship between completeness of partograph and the maternal outcome (P=0.254).

Table 3: A table summarizes the results after the implementation.

	Pre intervention		Post intervention		Change	P-value
	N	%	N	%	%	
Sample	236		236		-	-
FHR (completed)	181	76.7	209	88.6	11.9	<0.001**
Pulse (completed)	61	25.8	195	82.6	56.8	<0.001**
Bp(completed)	84	35.6	188	79.9	44.3	<0.001**
Temperature(completed)	46	19.5	154	65.3	45.8	<0.001**
Descent(completed)	148	62.7	191	80.9	18.2	<0.001**
Dilation(completed)	159	67.4	190	80.5	13.1	<0.001**
Contraction(completed)	66	28	191	80.9	52.9	<0.001**
Partograph completeness	**26**	**11**	**145**	**61**	**50**	**<0.001****

	Complete partograph	%	Incomplete partograph	%	P value
N	167		129		
Maternal alive	167	100	128	99.2	0.254
Fetal alive	167	100	113	87.6	<0.001**
High APGAR score	160	95.9	62	48	<0.001**

CHAPTER FIVE: DISCUSSION

This study aimed at increasing the completion rate of partograph documentation during labor monitoring. There are seven sections of the partograph that have to be completed during different stage of labor monitoring; it was found that midwives were not assigned to specific patients, thus were not accountable in conducting proper monitoring, resulting in incompleteness of partograph.

To ensure the completeness of partograph during labor monitoring, we developed the guideline for labor ward midwives specifically related to partograph documentation. The guideline included the procedures for the assignments of midwives to specific patients, the protocol in filling out the partograph, reporting process, responsibilities of everyone in labor ward and contents of hand over report.

The intervention significantly increased the level of overall completeness from to 11% up to 61% from pre-intervention to post-intervention, surpassed our objective of 50%. We also found that the completion rate of the 7 components was also increased.

Our study showed the completeness of partograph related to the survival of babies as well as higher Apgar scores; and the results are consistent to other published results.[18] In a study at a hospital in Ghana, 1845 files were reviewed; the results showed that when the WHO partographs were completed, time to made delivery decision was reduced by 48.7% compared to those without completed partograph; there were also less babies admitted to NICU and fewer babies with low Apgar scores were found.[18]

The success of this project relied on a few key factors. Team work is crucial to the success of the project. Since the completion of the partograph requires more than one staff to participate,

engaging a team of people in the project helps to create buy in and to generate proper guidelines. From beginning of the project the team composed by chief nursing, labor ward in-charge, midwives, doctor were involved in different steps of strategic problem solving to the pre-post intervention such as identification of the problem, data collection for measuring magnitude of the problem, route cause analysis, selection of intervention, implementation of intervention, monitoring and evaluation.

Conducting proper root cause analysis is important in the success of an implementation: Acquiring evidence and data to understand the situation facilitated the generation of appropriate and effective intervention.

The implementation of a new guideline requires holding the staff accountable for their actions and performance. Applying proper leadership and governance principles in managing internal workforce was essential. By assigning midwives to take care of specific patients, we are giving them specific responsibilities and making them accountable for the patients assigned to them.

Apart from providing trainings before the execution of the guideline, providing individual midwife proper coaching was also important to help them improve their performance. Applying the strategic problem solving approach helped us to systematically solve hospital issues and improve the system by integrating effective solutions. The project did not require additional cost to the hospital. The project used available human and material resources. Monitoring and evaluation to show progress is important and can also be used to motivate staff to continue to sustain their achievements.

During the implementation of the new guideline, we faced some challenges. Despite the commitment of the project team and the staff, there were many competing activities at the

hospital. Many end-of-year plans and reports were due in December in the Nursing department. When there are competing interests, proper time management is very important. For proper management of time we set the timetable of different activities that daily were supposed to be done, and each one had specific time, thus the project itself had its time in daily timetable.

The collaboration between the team members was very helpful in the creation of the guideline; we had a common goal and helped each other to write the guidelines. When some team members were busy, the others assisted to ensure the task was completed. In the future, when creating an implementation plan, more time should be allocated and other major activities should be put into consideration. The approval of the guideline took longer than initially anticipated due to the busy workload of the Director office. For future projects, more realistic time should be allocated for the approval process.

After the guidelines were developed, we conducted trainings for the midwives. We first conducted a pilot training and collected the feedback from the participants. The pilot training was important as some participants indicated the materials were not understandable. We modified the guidelines accordingly to make it more understandable. Without the pilot training, we could have had given ineffective training programs, which could have resulted in wasting valuable resources.

One key component of our intervention is the hand over report between midwives when they change shifts. During the implementation, some midwives showed resistance concerning the hand over report meeting. Some midwives did not want to do the hand over meeting since that would require them to come to work on time. The nursing leadership organized meetings to meet

and discuss with them about punctuality and to show them how their tardiness can handicap both patient management and the hand over process.

However, this project has limitations. The sustainability of the project needs to be assessed in long term, the project did not assess the quality of data in the partograph. Another limitation of this project was the relatively small sample size due to time constraint. A larger sample size with longer follow up period may show slightly different results.

CHAPTER SIX. CONCLUSION AND RECOMMENDATION

6.1. CONCLUSION

Partograph is an important tool to use during labor monitoring; it helps to improve both maternal and fetal health condition.

In Muhima hospital, the completion rate was 11% due to the midwives were not assigned to any specific patients, they were not accountable to any particular patient events, resulting many did not conduct the necessary clinical patient care duties, thus resulting in incomplete documentation. By applying the strategic problem solving principles, we created a quality improvement project.

The intervention included development of guideline during labor monitoring, including setting the guideline, monitoring and enforcing the guideline to make midwives accountable during labor monitoring. The results of the project showed the intervention successfully increased the completeness level of partograph during labor monitoring from11% to 61%. By increasing the completeness of paragraph, the outcome of babies also improved.

The project also applied some key management principles, included time management and communication. The project did not cost the hospital financial investment. This showed that a well-designed quality improvement project can be cost effective in improving documentation as well as clinical outcomes.

6.2. RECOMMENDATION

Longer term follows up is need to see the sustainability of the project. We also recommend the senior management committee of the hospital to integrate strategic problem solving in staff training plan in the future to build staff capacity in implementing other quality improvement

projects within the hospital. Future projects may include assessing the quality of the data in partograph. In order to ensure sustainability, the chief nursing and unit manager will continue to evaluate quarterly the completion rate of partograph and the compliance to the guideline; and discuss the findings with the involved staff as well as to the hospital management team to encourage feedback and ownership. The result of this capstone project will also be shared with the hospital. We plan to publish this report.

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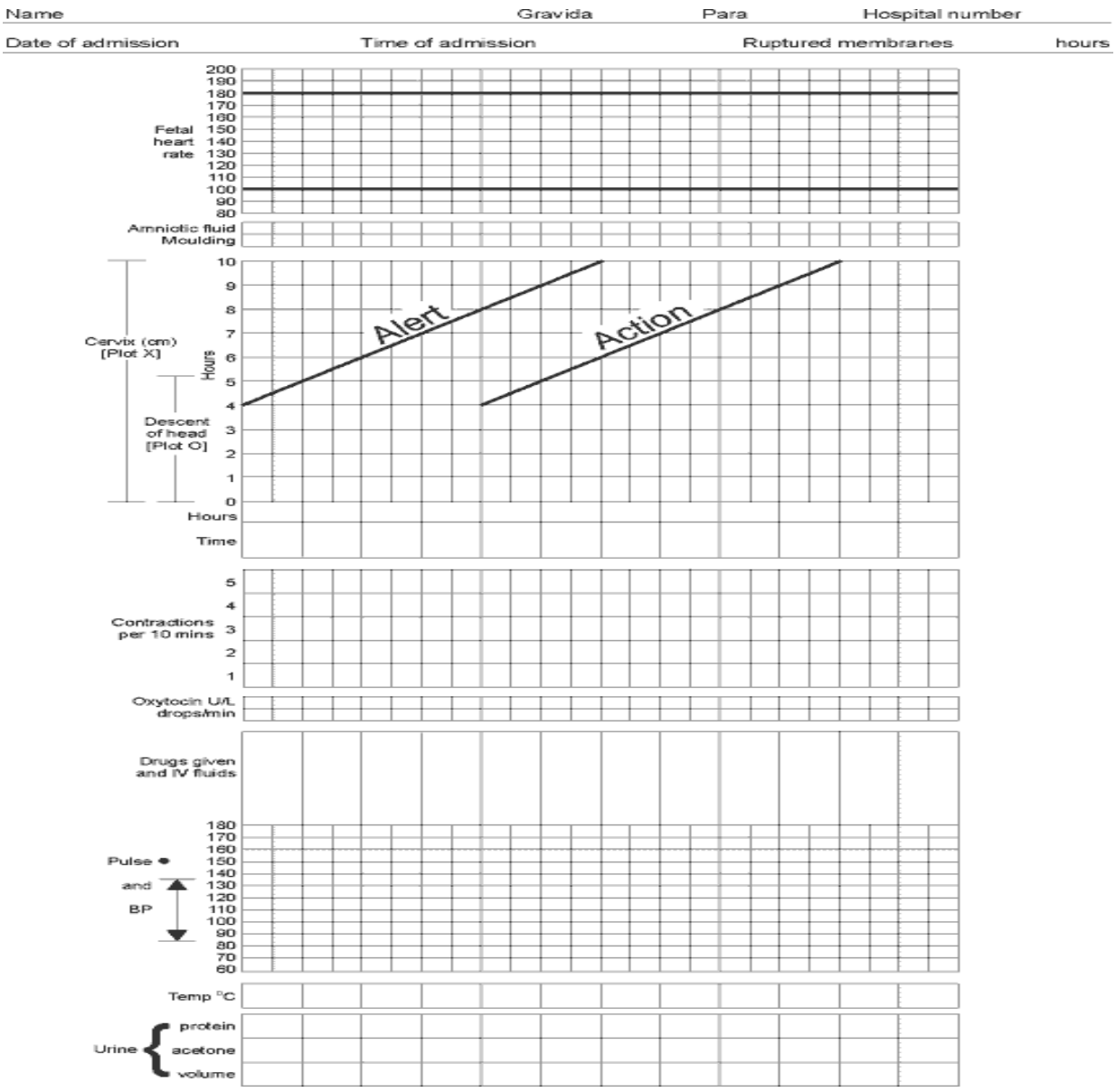
APPENDICES

Appendix 1. Partograph



Appendix 2 implementation Gantt chart

To develop a guidelines for labor ward midwife hand over meeting																
task/activities	**Responsible**	**Status**	**Dec**				**Jan**				**Feb**					
Form a team to develop a guideline for labor ward midwives hand over meeting	DON	completed														
develop a guideline during labor monitoring including setting of the team leader, the handover process, shift task assignment and discussion of the contents of the hand-over	DON, labor ward in-charge, labor ward doctor	completed														
discussion on the guideline drafts and approval	DON, labor ward in charge& doctor	completed														
request the register for hand-over among the shifts, paper and pens	labor ward incharge	completed														
Training on guideline																
to prepare the training of the guideline	DON and in-charge	completed														
training of the guideline to the staff/trainings	DON, labor ward in-charge	completed														
Availing the guideline, implementation and																
printing the guideline	DON	completed														
availability of the guideline in the service	labor ward in charge	completed														
application of the guideline during labor monitoring including completion of partograph	DON & labor ward incharge	completed														
Monitoring																
Conduct monitoring and evaluation after application of the guideline	DoN& labor ward in-charge	completed														

Appendix3. Data collection tool on magnitude of partograph completeness

Date	SN	Fetal heart rate(FHR)every 30 min	Contraction	Descent	cervical dilation	blood pressure	pulse	temperature	Completed file

Appendix 4. Tool to observe the partograph are completed immediately

SN	Yes (completed immediately)	No (not completed immediately)

Appendix 5. Comparative Analysis of Alternative Solutions

Based on the root cause, the following alternative solutions were proposed:

Solution one: A trained staff will be assigned to the maternity ward to supervision the other midwives and ensure they are doing measuring.

Solution two: Enforcing guideline during labor monitoring, including setting the guideline, monitoring and enforcing the guideline

Solution three: introduction of computerized monitoring system to monitor all patients centrally on one monitor.

Comparative analysis

The following four criteria were used: impact, cost, feasibility, time

Scoring rationale

After developing possible solution together with in-charge and coordinator we both score the solution according to the criteria.

Impact

Solution two scored five on impact because it will have more impact on resolution of measuring during labor.

Solution one will have lesser impact than the solution 2, thus scored 3; solution three will have the least impact as the monitoring system only serves as a tool to monitor, it would not encourage the staff to follow the monitoring procedures.

Cost

The annual salary of an A1 midwife in supervisory position cost 2 760 000 frws ($3680). Solution three is more expensive as a new computer monitoring system cost more than $50285

Feasibility

We gave one for feasibility on the solution three which is least feasible which will have more process of purchasing and shipping, installation, training, solution two was given five due to that is more feasible, it will only need enforcing guideline during labor monitoring, including setting the guideline, monitoring and enforcing the guideline, solution one was given 2.5 due to that its feasibility is in middle it will have less process than solution three.

Time

Solution three which was given 1 is related to install new monitoring system is more timely, to buy the monitor from abroad it will take the time for tender which is more than 60 days for analysis and having contract signed for bringing the new monitor, to install in the room also it will take another time for tender, preparation of the room and it will take more than 60 days tender included, approximately solution one will take 3 months. Solution one to hire a grade two person to supervise; to hire a new person may take more than 60 days. Solution two is least timely which will be related to enforcing guideline during labor monitoring, including setting the guideline, monitoring and enforcing the guideline. (table4)

Table4. Comparative analysis matrix

	Impact	**Cost**	**Feasibility**	**Time**	**Total**
Solution one	3	2	2.5	2	9.5
Solution two	5	5	5	5	20
Solution three	2	1	1	1	5

Appendix6. Guidelines for labor ward midwife hand over meeting

A. Objective:

- To ensure mothers and babies in the labor ward are continuously monitored and documented by midwives by conducting proper hand over meeting between each shift.

B. Definitions:

1. Active phase of labor: begins at 3-4 cm cervical dilation and is subdivided into the acceleration, maximum slope, and deceleration phases.
2. Monitoring labor: Monitoring both the mother and baby by regularly checking FHR, Vital Signs, Labor Progression, and Cervix Dilation from the beginning of labor to delivery.

C. Procedures:

1. Responsibilities of ward in-charge
    a. Each month when roster is announced, ward In-charge specifies the team leaders of each shift.
    b. Each staff will be selected as team leader on rotational basis.
    c. In-charge avail the Hand over report book
    d. In-charge should do random checking whether the assignment, monitoring, and documentation were done.
2. Responsibilities of team leader
    a. Each shift team leader assigns staff to specific beds during his/her shift
    b. The staff-bed assignment will be posted on the notice board within the unit
    c. Team leader should check whether monitoring is done and partograph is documented during labor monitoring

d. During morning, night team leader should report to the day team leader and the information must be documented in the hand over report book.

e. Day team leader should share the information of the previous night shift to the midwives of her team

3. Responsibilities of midwives

a. Hand over reporting must be conducted during shift change during evening. The discussion, clinical information, follow up items for the patient during the hand over meeting must be documented in the hand over report book. (see section D. hand over Report Contents).

b. Midwives assigned to the specific beds should monitor and documented the findings

c. All findings during monitoring of labor must be documented in the partograph by the registered midwives assigned to the beds.

4. Responsibilities of chief nursing

Chief nursing should check if in-charge was specified the team leaders, and supervise the hand over process.

D. Hand over Report contents:

Date: _____

Shift: □Day to night □Night to day

Total Census: _____ total deliveries_____ current patients under monitoring_____

Health status information to the current patients

Objective Data: Vital signs: BP_____ Pulse_____ Respiratory Rate_____ Temp _____ taken at (date and time of last monitoring)_____,

Physical Exam:

Fundal height: _____

Vaginal Exam :_____(cervical dilatation, effacement, station, presenting part and status of membranes) done at _____ (time of last exam).

Starting partograph: yes ☐ no ☐

Contractions: _____ (frequency, duration and intensity)

Fetal Status: _____ (fetal heart rate baseline and any previous bradycardia, decelerations or abnormalities)

Hand over any other critical information

Nursing Plan ---

Medical Plan: ---

Name of reporting midwife and signature

Name of receiving midwife and signature

E. Equipment/form:

1. notice board, CTG machine if not available Fetal Doppler
2. Vital signs equipment (BP machine, thermometer)
3. Partograph
4. Hand over report book

Prepared by chief nursing

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Chief Nursing
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RN:8998720
Muhima Hospital

Approved by

Director of the Hospital

Appendix7. Hospital ethic committee approval

REPUBLIQUE DU RWANDA

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HOPITAL DE MUHIMA
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Tél. /Fax : +252 50 37 7
E-mail : muhimahospital1@gmail.com

ETHICS COMMITTEE/ COMMITTEE D'ETHIQUE

Ref: MDH/EC/...../2016

.....

Review Approval Notice

Dear Byukusenge Jean Bosco

Re: Your request for chart audit in maternity hospital.

After evaluation your demand for conducting chart audit in order to fulfill the requirement of your thesis named *"increase the completion rate of partograph during labor monitoring in muhima hospital"*

We are please to inform you that the Muhima Hospital Ethic Committee has approved your request to conduct chart audit as it will not involve the patient, and change patient treatment

You are required to submit progress report(s) of completion of partograph during labor monitoring. Furthermore, you must notify the committee of any change(s)

Yours sincerely,

Dr BUTERA Yvan

Chair Person, Ethics Committee

MUHIMA HOSPITAL - ETHIC COMMITTEE -

Approved

Dr Yvan Butera

Appendix8. Evaluation Plan

Outcome indicator	1. % of the completeness of partograph documentation
Process indicator	2. Guideline available 3. Number of staff aware/ trained

Indicator	Definition	Who will collect the data	Where to get info	when
% of the completeness of partograph documentation	Partograph completed / total partographs audited	Director of nursing and labor ward in-charge	chart auditing	will be collected once after implementation of the guideline
Guideline available	The existing of guideline on norms and regulation on completion of partograph	Director of nursing	check labor ward in-charge office	After Feb 2016
% Staff trained on guideline	= # staff trained in guideline/ # staff in maternity unit	Director of nursing	Training record	Jan 16