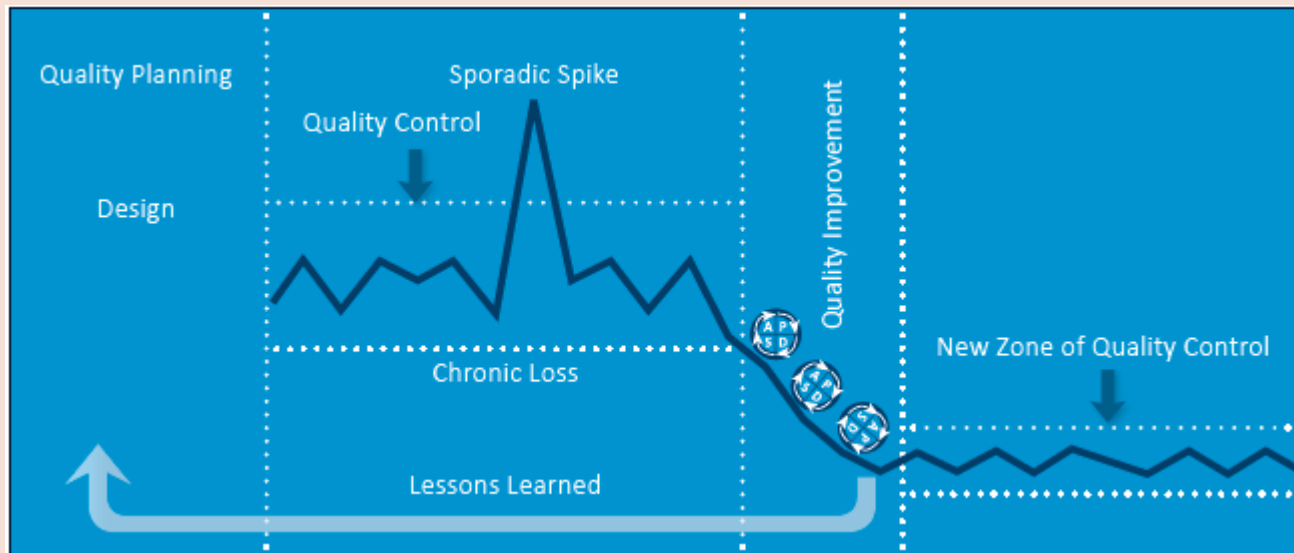Federal Democratic Republic of Ethiopia
Ministry of Health

Ethiopian Health Care Quality Bulletin

Continuous Health Care Quality Improvement
through Knowledge Management

Vol 1, May 2019

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Message from Medical Service General Director

Ethiopia has achieved significant gains in the series of HSDP, where universal health coverage given the priority to address the priority health problems of the country. Despite the gains, still a lot remain in quality of health care service. Cognizant of this, the FMOH made quality and equity one of the four priority agenda of the health sector transformation plan. Built on the plan, the National Health Care Quality Strategy was developed and launched in 2016. The strategy aims in transforming the quality of health care in the country and gives due emphasis for experience sharing across facilities and institutions.

We all know that healthcare consists of many interlinked processes that result in a very complex system. And these complexities of healthcare operations and the vast amount of challenges we are facing make the undertaking of a quality improvement initiative seem like a distant possibility. But healthcare quality improvement is achievable when every organization identify the essential problems and begin the important work of addressing those challenges one by one by using an improvement model based on scientific methodology for which the quality improvement projects included in this bulletin are good examples.

We all play a crucial role in recognizing quality deficits within our organizations, identifying potential solutions, and driving quality improvement activities. To guide these activities and make efficient use of limited improvement resources, we need to know what works and what does not within a particular topic area. We need to engage in collaborative thinking and learn from each other to deploy proactive improvement methods.

Accordingly, we believe this healthcare quality bulletin will give us information about which QI interventions are effective and in what situations for possible adaptation in to our own context. This being the start, we envision to develop and make it a journal in the near future. Thus, we look forward to more of your contribution in future publications.

Yakob Seman
Director General, Medical Service General Directorate

Foreword

In the national quality strategy, sharing best practices across facilities and institutions through which facilities and providers identify quality gap and solutions for the quality improvement has been given due emphasis. To this end, this quality bulletin is prepared and presented in two sections that includes: Major initiatives under the health service quality directorate and quality improvement projects and studies selected for learning. There are a lot of good ideas tested as presented in this bulletin and I hope it will help to further develop our collective knowledge and understanding of quality improvement in the healthcare.

This publication is made possible by the integrated effort of different individuals and organizations. Accordingly, I would like to acknowledge authors of the selected quality improvement projects and studies and their affiliated organization for sharing information and innovation. I also like to extend my appreciation to the Health Service Quality Directorate experts and the technical core group who played the crucial role in materializing this bulletin. Special thanks go to Dr Fitsume K. for coordinating and leading the core group in the review and editorial process. Lastly, I thank the World Health Organization for financially supporting the printing.

We can accomplish more when we share ideas and work together!

Dr. Hillina Tadesse
Director, Health Service Quality Directorate

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SECTION ONE: MAJOR INITIATIVES UNDER

HEALTH SERVICE QUALITY DIRECTORATE

Maternal Newborn and child health Quality of Care initiative

Following the launch of the Global strategy for women's, children and adolescent health (2016-2030), WHO developed a vision for quality of care in maternal and new born health services which sees a future in which "every mother and newborn receives quality care throughout pregnancy, childbirth and postnatal period" with a conceptual framework that encompasses **the provision as well as the experience of care** and embedded within **health system functions**.

To operationalize the vision, WHO, member states and partners have established a WHO-led Network to improve quality of care for mothers, new-born and children reinforced by the core values of quality, equity and dignity. This global Network was launched in 2017 with membership of 10 pathfinder countries, which Ethiopia is one of them. It is a country-led initiative which builds on domestic resources and national structures for quality of care and.

The Goal of the QED MNHQOC initiative is to halve institutional maternal and new-born deaths in health facilities in the learning districts and improve experience of care over a period of 5 years.

This initiative has four strategic objective named as LALA:

- **Leadership**: Build and strengthen national institutions and mechanisms for improving quality of care in the health sector.
- **Action**: Accelerate and sustain implementation of quality of care improvements for mothers and newborns.
- **Learning**: Facilitate learning, share knowledge and generate evidence on quality of care.
- **Accountability**: Develop, strengthen and sustain institutions and mechanisms for accountability for quality of care

In the last couple of years in implementing the QED MNH QoC initiative, FMOH has developed MNH QOC roadmap; adapted MNH QOC standards based on WHO guidance and conducted capacity building activities for health workers. The roadmap is being operationalized through annual FMOH and RHB plans. Technical working groups are established at national and regional levels and partners mobilized for a harmonized support to improve MNH QOC. Fourteen learning sites across the country were selected; an implementation package prepared and national and subnational stakeholders oriented on the learning site MNH QOC initiative.

Baseline assessment using the fifteen core indicators of the initiative has been conducted in the 48 learning facilities to guide quality improvement activities. Currently, prospective dataon the core indicators is being collected on monthly bases for progress tracking of the initiative.

As part of the initiative, the second global summit of the network was hosted by Ethiopia in the month of March 2019, where 250 participants from 25 counties participated. As the main purpose of the network is partnership for learning, quality improvement experiences from the the network countries along with innovations from the global community were shared. Ethiopia shared experience on MNH quality improvement through poster presentation and a bulletin that has 18 Quality improvement projects published and disseminated to participants of the summit.

Despite the overall achievements to date, a lot still remains to be done to improve use of dash board for monitoring and accountability, regularity and uniformity of the learning system, conducting regular facility level clinical audits for problem identification, regular supervision from the district to the learning facility consistency in QI coaching approaches among supporting partners.

It is believed that the QED MNH QOC initiative is a pathfinder where by other health programs can learn from and apply quality improvement in their area of work. The lesson from implementing the MNH QOC initiative has provided an opportunity for the health service quality directorate in paving the way to address existing quality gaps in the remaining priority areas of the national quality strategy.

Saving Lives through Safe Surgery (SaLTS) initiative

The Ethiopian Federal Ministry of Health (FMOH) implemented the Health Sector Development Program 1–4 successfully that helped reform the nation's health system in the last 20 years. Currently, the FMOH launched the fifth strategic plan, called the Health Sector Transformation Plan (HSTP), which aligned with country's second growth and transformation plan. The HSTP has identified quality and equity as a cornerstone of the transformation agenda focusing mainly on essential and emergency safe surgical and anesthesia care, in addition to maternal, neonatal and child health; nutrition; chronic non-communicable diseases and infectious diseases.

Following the launch of the HSTP, and in response to World Health Assembly resolution of A68/15, the FMOH designed Saving Lives Through Safe Surgery (SaLTS) flagship initiative with a goal to make emergency and essential surgical and anesthesia care accessible and affordable as part of the universal health coverage.

In implementing this initiative, the FMOH developed a strategic plan with a focus on on availing a package of essential and emergency surgical and anesthesia care at all levels of the health care delivery system. The objective of the initiative is to ensure the delivery of quality, safe, essential and emergency surgery throughout the country to alleviate the national burden of diseases, disability and death that are preventable through safe surgery. The plan places special emphasis on strengthening primary care to provide essential surgical care. The SaLTS strategic plan has eight pillars.

Figure 1: The eight pillars of the SaLTS strategic plan

To improve equitable access to high-quality and safe essential and emergency surgical and anesthesia care as part of the universal health coverage, the SaLTS strategy has the following objectives:

- To implement a nationally coordinated national plan on surgical care.

- To define and implement an essential surgery package for all levels of the Ethiopian health care delivery system.

- To create better awareness on surgical and anesthesia care with different stakeholders.

- To improve the safety of surgical care by implementing the surgical safety checklist and improving the safety culture.

- To implement a quality improvement and audit tool in surgical care.

- To proactively identify best practices and scale up rapidly through the Ethiopian Hospital Alliance for Quality (EHAQ).

The ministry of health has been implementing the SaLTS initiative since 2009 EFY, in collaboration with the SS2020 program funded by GE foundation. Since then , a lot has been done to improve the access, safety and quality of surgical service which includes producing guide lines and documents like (SaLTS strategic plan, peri op guide line, Surgical Mentorship guide line, Anesthesia Road map and Day Care Surgery Guide line), building the health center OR blocks, supporting primary Hospitals through surgical mentorship, Supporting primary Hospitals to start the surgical service, working with Hospitals towards increasing the OR efficiency, Decreasing the surgical back log in the Hospitals, Different capacity building trainings for the surgical team in the Hospitals and introducing new services like Day Care surgery are some of the major activities which has been done by through the SaLTS initiative.

Though a lot needs to be done to fill the unmet gap between the need and service availability of the surgical care, the quality of the care being provided for those who have the access should also be increased, the major challenges here are the absence and shortage of infrastructure (water and electricity), the lack of medical supplies and equipment's, the acute shortage of the surgical work force especially anesthesia providers.

Learning Health Facility initiative

In the last years, the Ethiopian FMOH has been implementing different learning mechanisms like EHAQ, EPAQ, and regular annual quality summit with the objective to learn from experience sharing and collaborative learning. The process contains assembling and analyzing data, interpreting the findings, feeding the findings back to the system, changing the practice and scaling up the best practice to other institutions in the system.

Cognizant of the real situation on the ground and learning from the past, more importantly the importance of learning system for quality improvement, Learning Health Facility initiative designed and set in Health Service Quality Directorate with a goal to create a quality culture in selected learning health facility.

Objectives of the learning facility initiative includes:

- ❖ Strengthening QI and clinical governance unit that have appropriate number of professional mix with clear roles and responsibilities.
- ❖ Strengthening the learning system that continuously produces relevant data, measures performance and outcomes, and translates those data into action.
- ❖ Making the learning facilities to be a benchmarking site for others

The initiative give emphasis on learning facilities being supported to learn from their performance, work on quality improvement projects and share to others the results they have got from their efforts. It also identifies best performers and determines the basis for their success. This set of intentional processes for actively learning and improving the health system is a goal that should be articulated and demonstrated first by the actions of senior leadership and subsequently echoed by middle management and the front-line staff. Learning health system with high quality data, energetic and engaging staff, and adequate government support is very sole ingredient in provision of high quality health care delivery. Taking these core points together, the FMOH has designed a framework for this initiative (Fig 1).

Fig1. Learning Health Facility Quality Improvement Framework.

This initiative has been launched in January 2011 EFY, and is being implemented in selected 30 Federal and Regional hospitals. The support package for the learning facilities includes: Technical support, Supportive Supervision, Need based quality improvement training, Mentorship, Financial support and Material support.

Since the launch, orientation provided to the management of the hospitals, collection and analysis of base line data on the selected quality of care measures and joint supportive supervision has been cascaded as part of major task. The encouraging start of these facilities in implementing the initiative, most have developed a quality improvement project based on the identified gaps. The ministry in collaboration with the regional health bureau and the facility l management would track each of these quality improvement projects for learning and wider dissemination.

SECTION TWO: QUALITY IMPROVEMENT PROJECTS AND STUDIES SELECTED FOR LEARNING

Quality Improvement for Better Vitamin A Uptake at Community Level, Ethiopia

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Abstract

Background: Vit-A deficiency in children 6-59 months is the major public health problem in Ethiopia. Vitamin A supplementation reduced death from measles by 50%, from diarrhea by 40% and overall child mortality by 24%. Vitamin A supplementation coverage in Growth through Nutrition activity supported health facilities was 57%, 18% and 68% in Yefereziye HP, Tede HC Gino HC, respectively. The objective of this project was to improve the uptake of Vit-A supplementation in these, Growth through Nutrition supported facilities, Ethiopia.

Methodology: The health centers applied Model for Improvement (MFI) along with Kaizen 5-S in Under five children unit and HP. HEWs and health workers were interviewed and pictures have been taken before and after applying Kaizen 5-S.

Result: After the intervention (MFI and Kaizen 5-S), Vit-A supplement increased from 54%-86% (Yefereziye HP), 18%-100% (Tede) and 68%-100% (Gino). Tested change ideas include community mobilization, HEWs and HDAs linkage, orientation on Vit-A and peer supervision.

Conclusion: Uptake of Vit-A supplementation increased significantly by applying MFI that result in reducing child morbidity and mortality through prevention of Vit-A deficiency in children aged 6–59 months. Improvement has shown that there is a need to involve HDAs in mobilizing community, strengthening linkage between HDAs and HEWs, monitoring performances on a regular basis to improve vitamin A uptake and sustain the program. In general, this QI project proves that HEWs and HWs, thereby PHCUs can apply MFI and use data for decision-making at community level to improve delivery of quality services.

Introduction

The World Health Organization (WHO) recommends that all children aged 6–59 months should receive Vitamin A supplements if they live in a community where VAD is a public health problem. Vit A deficiency in children 6-59 months is the major public health problem in Ethiopia. Vitamin A supplementation reduced death from measles by 50%, from diarrhea by 40% and overall child mortality by 24%. Growth through Nutrition Activity is a multisectoral USAID funded nutrition and WASH project (2016-2011) designed to improve the nutritional status of women and young children focusing on the first 1,000 days. It is implemented in the four agrarian regions of the country. Working through the health system, Growth through Nutrition aims to improve utilization of quality nutrition services in Ethiopia. The project supported primary health care units (PHCUs) in implementing MFI and Kaizen 5-s to develop health facility capacity to identify issues, implement changes and track progress in the effective delivery of nutrition services. These models were drawn from FMOH National Health Care Strategy, Quality Improvement training manual and Growth through Nutrition's past experience.

Vitamin A supplementation coverage in Growth through Nutrition activity supported health facilities was 57%, 18% and 68% in Yefereziye HP, Tede HC Gino HC, respectively. The objective of this QI project was to increase the uptake of Vit A supplementation from 54%-80% (Yefereziye), 18%-80% (Tede) and 68%-80% (Gino) among eligible children.

Methods

To initiate the process, health facility personnel and woreda working on nutrition were trained in the MFI, Kaizen 5-s, and tools. Staff developed the skills to identify root-causes of problems using tools including Five Whys and cause-and-effect diagrams, and how to implement the process for quality improvement in their health facility. After the training the staff formed PM & QI teams at their facilities composed of one representative from each case team including a staff member involved in records and management systems and a person designated to be the QI officer as per the national recommendation. three sub-teams are formed at ANC, under five children units and HP to closely monitor performance and be flexible enough to respond to the ongoing challenges of quality improvement. HEWs, three HDAs' representatives, Kebele coordinator and HEW's supervisor are members of QI sub-team at community or health post level.

In addition, facilities used checklists using LQAS technique to measure performance of the nutrition services and data quality in a continues manner. LQAS is a classification technique designed to identify areas of 'adequate' or 'inadequate' performance using small sample size.

Vitamin A supplementation is one of the key nutrition performance indicators. Baseline data collected before the intervention using HMIS registers and client charts, observation and HEWs and health workers were interviewed and pi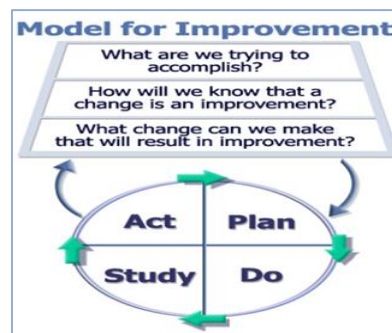ctures have been taken before and after applying Kaizen 5-s. Run chart and control charts are used to establish whether the observed outcomes were due to the intervention.

Result

Quality improvement teams identified vitamin A supplement gaps, prioritized, developed aim statement, set aim, identified the root-causes of the problems using Fishbone diagram, set indicators, selected change ideas and tested using Plan, Do, Study and Act (PDSA) cycle at both HC and HP level, (see Fig 1-3).

In Yefereziye HP, the teams decided to test community mobilization using HDAs, reorientation of QI team through review meeting, and improve HEWs and HDAs linkage. The team increased the provision of vitamin A supplement from a starting point of 54% to 86% of targeted population. The P-chart exhibits strong special causes and consistent with a rising percent of children 6-59 months who received Vit-A. The control chart revealed that there are shift and too many and few improvement signals and the process is stable starting from September 2018 (see fig 1).
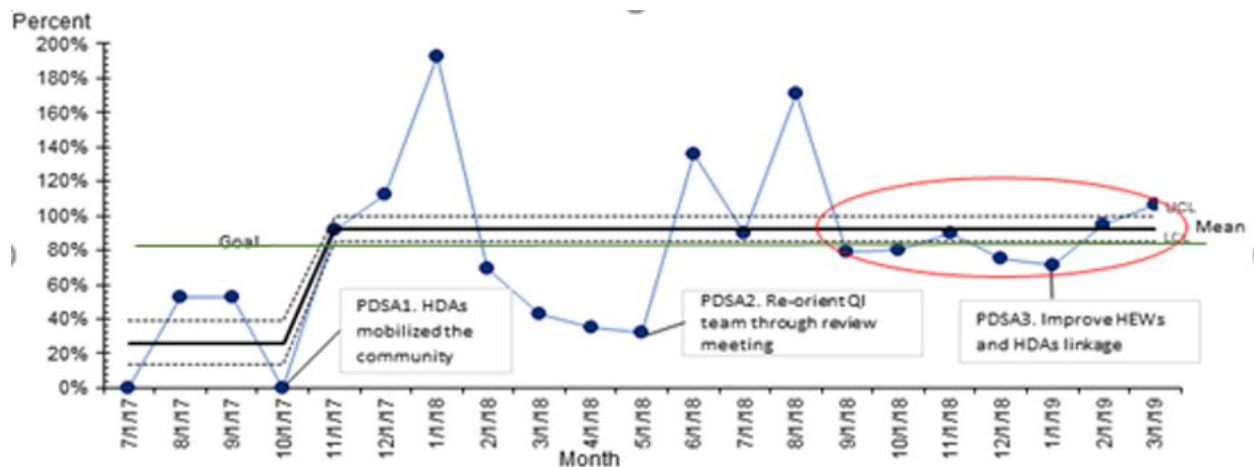
Fig 1. Vitamin A Supplementation among Children Age 6-59 months in Yefereziye HP, SNNPR

In Tede health facility, the team increased the provision of vitamin A supplement from a starting point of 18% to 100% of eligible clients. Change ideas include staff orientation on vitamin A and report and requisition form, and put a peer supervision system in place. The control chart showed significant improvement after applying change ideas and the signals are trend, shift and too many and too few (see fig 2).
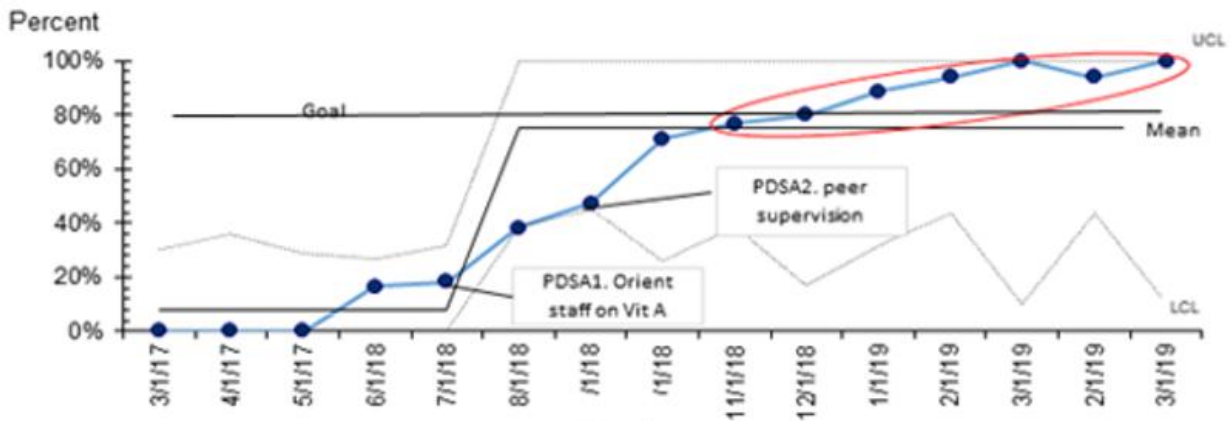
Fig2. Vitamin A Supplementation among Children Age 6-59 months in Tede HC, East Oromia Region

In Gino HC, the teams decided to test staff orientation on vitamin A and monitor data on monthly basis. The team increased the provision of vitamin A supplement from a starting point of 68% to 100% of eligible clients. The P-chart exhibits strong special causes and consistent with a rising percent of children 6-59 months who received Vit-A. The control chart revealed that there is a shift signal (see fig 3).
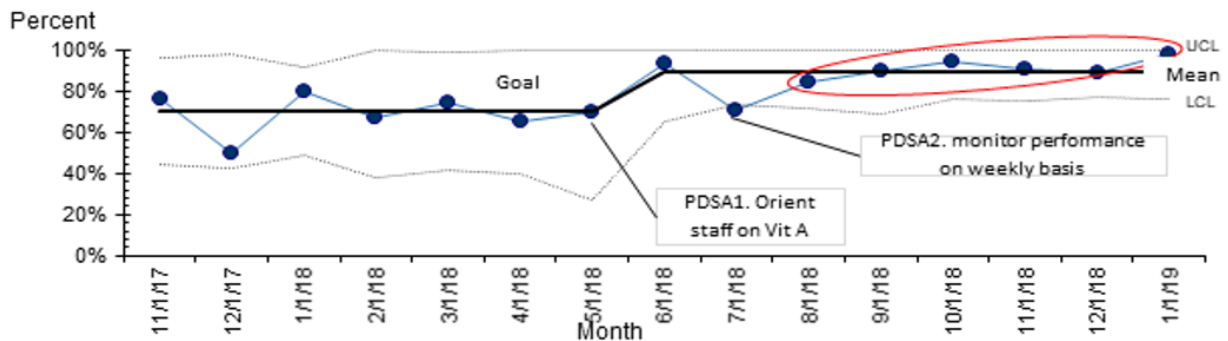
Fig3. Vitamin A Supplementation Among Children Age 6-59 month in Gino HC East Oromia

Most of facility staff involved in the QI process reported that before the intervention, they did not give due attention to nutrition service including vitamin A supplementation, monitor performance less frequently, the coaching or mentoring support was not strong and regular, less engagement of HDAs to improve nutrition services and limited data use for decision-making. After the intervention, facility staff started to give emphasis to nutrition services, monitor and utilize data for decision-making, improve HEWs and HDAs linkage result in improving vitamin A uptake sustainably.

Limitation

Particular issues identified as limitations during the QI process were high staff turnover in facilities reduced the capacity to implement the approach a few staff did not see the value in what they perceived as "extra" work and limited engagement of zonal health department.

Lessons Learned

The QI process worked best when the nutrition assessment conducted and performance monitored on a regular basis, strong and frequent coaching by trained Woreda health staff, the community QI team frequently coached by trained HEW's supervisor, HDAs actively involved in the process, involving all health facility staff in QI training or orientation, and clarifying their specific roles in the QI process and the outcomes desired also contributed to success.

Conclusion

Uptake of Vit-A supplementation increased significantly in Yefereziye HP, Tede HC and Gino HC by applying MFI that result in reducing child morbidity and mortality through prevention of Vit-A deficiency in children aged 6–59 months. Thus, there is a need for involving HDAs in mobilizing community, strengthening linkage between HDAs and HEWs, monitor performances on a regular basis to improve vitamin A uptake and sustain the program. Project showed that HEWs and HWs can apply MFI and use data for decision-making at community level to improve delivery of quality services. The QI process has put the responsibility for identifying and seeking solutions to poor quality of services in the hands of service providers and helped them to realize their ability to identify and address the gaps in service provision. The QI models need expanding to additional health facilities through training, and by offering study and learning visits across facilities to share their experiences and best practices in improving the quality of nutrition and related services. QI models will serve as an important means to achieving the 2015-2020 Health Sector Transformation Plan which emphasizes the need to improve quality of health programs.

Improving Iron and Folic Acid Supplement Uptake by Pregnant Women at Primary Health Care Unit in Ethiopia

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Affiliation: 1. Save the Children/USAID, Growth through Nutrition Project, Addis Ababa, Ethiopia
2. Federal Ministry of Health, Addis Ababa, Ethiopia

Abstract:

Background: Deficiencies in iron and folic acid (IFA) during pregnancy can potentially negatively impact the health of the mother, her pregnancy, as well as fetal development. Use of IFA supplements is associated with a reduced risk of iron deficiency and anemia in pregnant women. IFA uptake of pregnant women was 57%, 0%, 35% 54% and 42% in Emdibir, Gino, Yetmen, Walkitane Gudane and Gelamatebia health centers, respectively, so the aim of the project is to increase IFA uptake of pregnant women in these health centers in Ethiopia.

Methodology: Facilities applied Model for Improvement (MFI) along with Kaizen 5-s in ANC clinics. Quality improvement teams of each health center formed PM and QI team, identified problems, prioritized, developed aim statement, set aim, identified the root-causes of the problems using Fishbone diagram, set indicators, selected change ideas and tested using Plan, Do, Study and Act (PDSA) cycle. Qualitative data was collected using health worker interview and pictures have been taken before- and after applying Kaizen 5-S

Result: After the intervention, IFA supplementation increased from 57% to 100% (Emdibir), 0%-91% (Gino), 35%-100% (Yetmen), 54%-100% (Walkitane Gudane) and 42%-100% (Gelamatebia). The P-charts exhibit strong special causes and consistent with a rising percent of pregnant women who received iron folic acid by implementing change ideas such as monitor RRF, quantify IFA based on the caseload & timely request, borrowed from other facilities, purchase and request adequate amount using emergency order. By applying Kaizen 5-s, health workers reported that clean and well-organized work place motivated, feel confident and helped them to save time. Health workers also revealed that despite close monitoring and counseling of pregnant women, access to consistent IFA supply from PFSA and purchasing IFA from private using revolving fund are the big challenges.

Conclusion: IFA supplementation Uptake increased significantly in all health centers by applying MFI reduces child morbidity and mortality. Thus, there is a need for continuous monitoring and timely requesting of IFA supplement by health facilities. Timely procurement and distribution of the supply from federal to woreda level and increased market availability of the supply as alternative also needs to be considered to ensure sustainable availability and quality of service delivery.

Introduction

Pregnant women require additional iron and folic acid (IFA) to meet their own nutritional needs as well as those of the developing fetus. Deficiencies in iron and folic acid during pregnancy can potentially negatively impact the health of the mother, her pregnancy, as well as fetal development. Use of IFA supplements is associated with a reduced risk of iron deficiency and anemia in pregnant women. Growth through Nutrition Activity is a multisectoral USAID funded nutrition and WASH project (2016-2011) designed to improve the nutritional status of women and young children focusing on the first 1,000 days. It is implemented in the four agrarian regions of the country. Working through the health system, Growth through Nutrition aims to improve utilization of quality nutrition services in Ethiopia. The project supported primary health care units (PHCUs) in implementing MFI and Kaizen 5-s to develop health facility capacity to identify issues, implement changes and track progress in the effective delivery of nutrition services. These models were drawn from FMOH National Health Care Strategy, Quality Improvement training manual and Growth through Nutrition's past experience.

IFA uptake of pregnant women in Growth through Nutrition activity supported health facilities was 57%, 0%, 35% 54% and 42% in Emdibir, Gino, Yetmen, Walkitane Gudane and Gelamatebia health centers, respectively, so the aim of the project is to increase IFA uptake of pregnant women from 57%-80% (Emdibir), 0%-85% (Gino), 35%-100% (Yetmen), 54%-80% (Walkitane Gudane) and 42%-80% (Gelamatebia) during a given period of time.

Methods

Before applying MFI and Kaizen 5-s, health facility personnel and woreda working on nutrition were trained on quality improvement training. Staff developed the skills to identify root-causes of problems using various tools including cause-and-effect diagram, and how to implement the process for quality improvement in their health facility. After the training, the staff formed PM & QI teams at their facilities composed of one representative from each case team including a staff member involved in records and management systems and a person designated to be the QI officer as per the national recommendation. two sub-teams are formed at ANC and under five children units to closely monitor performance and be flexible enough to respond to the ongoing challenges of quality improvement.

Facilities reviewed the client charts, conducted observation and interview clients periodically using checklist. Facilities used LQAS technique to identify areas of 'adequate' or 'inadequate' performance using small sample size while reviewing the client charts.

IFA supplementation is one of the key nutrition performance indicators. Baseline data collected before the intervention using HMIS registers and client charts, observation and health workers were interviewed and pictures have been taken before and after applying Kaizen 5-s. Control chart are used to establish whether the observed outcomes were due to the intervention.

Results

Facilities developed or selected change ideas and tested one change idea at a time using Plan, Do, Study and Act (PDSA) cycle. In Emdibir HC, the team decided to test monitor Report and Requisition Form (RRF) and collect IFA from nearby facilities until receiving from PFSA and orient staff as well. The team increased the provision of IFA supplement from a starting point of 57% to 100% of eligible clients (see fig 1). In Gino HC, the team tested collect IFA from nearby facilities until receiving from PFSA, Quantify IFA based on the caseload and timely request. The team increased the provision of IFA supplement from 0% to 91% of eligible clients (see fig 2). In Yetmen HC, the team tested collect IFA from nearby facilities, purchase IFA from private using revolving fund and monitor RRF. The team increased the provision of IFA supplement from 35% to 100% of eligible clients (see fig 3). In Walkitane Gudane HC, the team tested collect IFA from nearby facilities until receiving from PFSA and request adequate amount using emergency order. The team increased the provision of IFA supplement from 54% to 100% of eligible clients (see fig 4). In Gelamatebia HC, the team tested collect IFA from nearby facilities until receiving from PFSA, collect IRF from woreda, monitor RRF and quantify based on caseload The team increased the provision of IFA supplement from 42% to 100% of eligible clients and control chart showed shifting and too many and too few signals (see fig 5). In all these facilities, the control chart revealed that there is too many and too few signal and the process is stable. the P-chart exhibit strong special causes and consistent with a rising percent of pregnant women who received IFA.
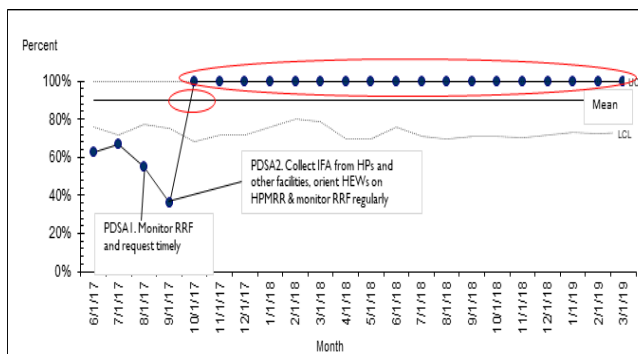
Fig 1 *Pregnant Women who received iron folic acid supplementation at least for three months at Emdibir HC SNNPR*
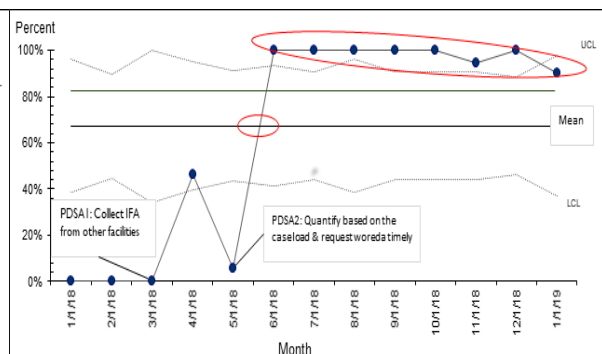

Fig2. *Pregnant Women who received iron folate supplementation at least for three months at Gino HC East Oromia Region*
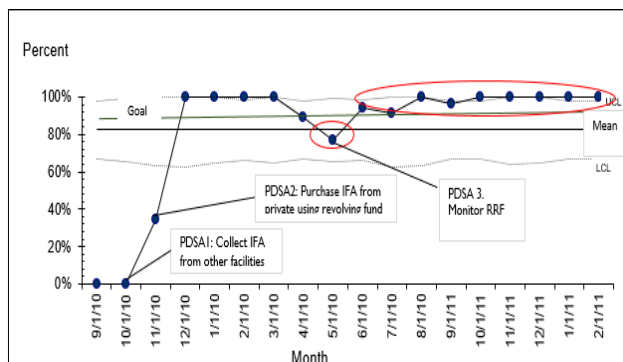

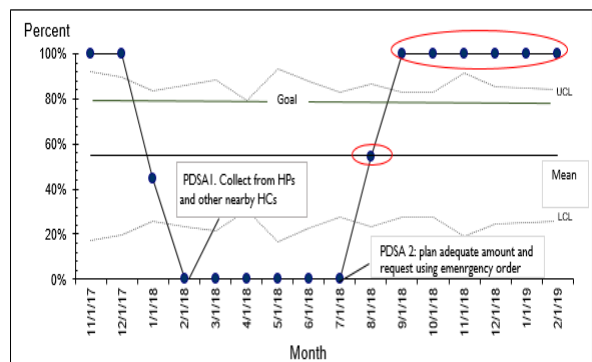Fig 3. *Pregnant Women who received iron folate supplementation at Yetmen HC East Gojam Amhara Region*

Fig4 *Pregnant Women who received iron folate supplementation at Walkitane Gudane HC West Oromia*

Fig5. Pregnant Women who received iron folate supplementation at Gelamatebia HC Amhara Region
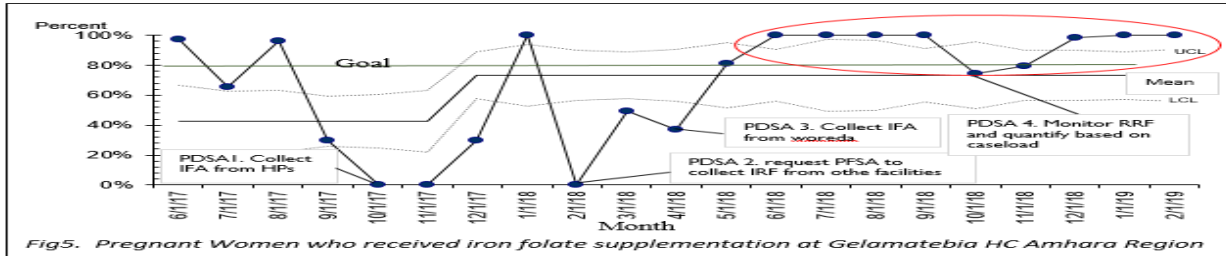
Facility staff involved in the QI process reported that before the intervention, staff did not think of other alternatives to prevent the IFA supply interruption, the performance monitoring and data use for decision-making were minimal, the coaching or mentoring support was not strong and regular and the work place was not well-organized. After the intervention, facility staff reported that they started to think out of the box to fill identified gap, monitor and utilize data for decision-making and the clean and well-organized work place motivated, feel confident and helped them to save time. Health workers also revealed that despite close monitoring and counseling of pregnant women, access to consistent IFA supply from PFSA and purchasing IFA from private using revolving fund are still the big challenges.

Limitation and Lessons Learned

The QI process is not without its challenges related to both implementing the process itself and overcoming the obstacles to providing IFA without interruption. High staff turnover in facilities reduced the capacity to implement the approach, IFA for pregnant women as a supplement is not included in the essential drug list to ensure adequate funds for procurement at each health center and the limited engagement of woreda offices. The QI process worked best when the health workers calculated facility order quantities based on caseload, monitored RRF regularly and timely request of the supply from PFSA, increased market availability of the supply, facility management and the woreda health staff were regularly involved. Involving all health facility staff in QI training or orientation, and clarifying their specific roles in the QI process and the outcomes desired also contributed to success.

Conclusion

IFA supplementation Uptake increased significantly in all health centers by applying MFI reduces child morbidity and mortality. Thus, there is a need for continuous monitoring and timely requesting of IFA supplement by health facilities. Timely procurement and distribution of the supply from federal to woreda level and increased market availability of the supply as alternative also needs to be considered to ensure sustainable availability and quality of service delivery. Project showed that health workers can apply MFI and use data for decision-making at community level to improve delivery of quality services. The QI models need expanding to additional health facilities through training, and by offering study and learning visits across facilities to share their experiences and best practices in improving the quality of nutrition and related services.

Quality improvement project to reduce ANC waiting time: the case of Woreta

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Abstract

Background: One of the main reasons that discourage mothers from completing the recommended four ANC visits is the unreasonably long time they spend in the health facility, away from their home. Pregnant mothers on average spend eight hours in Woreta health center when they come for ANC check-up.

Interventions:

Aim: To decrease waiting time for Antenatal care (ANC) mothers from eight hours to four hours from July 1, 2009 to August 30, 2010 EFY.

After identifying the work flow bottle neck points, the team came up with four change ideas which might help to reduce these delays. These were:

- To use mother support group in the registration of pregnant mothers and to withdraw their ANC cards directly from the card room;
- Assigning additional room and a midwife nurse for a second ANC check-up room;
- Giving priority in investigating pregnant mothers at the laboratory; and
- Placing the ANC drugs at the ANC room.

Result: During the initial four months of testing, we were able to reduce the waiting time from eight to less than three hours. Currently, our health facility has adapted these changes and has continued monitoring the waiting time.

Conclusion: QI tools such as process map help in visualizing redundancies and inefficiencies. We were able to improve the quality of care, as we added intentionality into what we do by eliminating unnecessary steps and by ensuring efficient work-flow.

Background

The Institute for Healthcare Improvement (IHI) Ethiopia office collaborates with the Federal Ministry of Health (FMoH) as of 2013, to demonstrate the application and incorporation of quality improvement (QI) projects into the Ethiopian health system by focusing on maternal and newborn health as a learning platform. Through QI trainings, quarterly learning sessions, and in-service coaching visits, IHI seeks to institute continuous quality improvement activities within the health facilities. In this initiative, healthcare providers are supported to implement locally designed QI projects using the model for improvement. This program began in five prototype woredas/districts in five regions which has now expanded to additional 21 Test of Scale (ToS) woredas in these regions.

Fogera woreda is one of the prototype districts which started the woreda wide collaborative as of june 2017. The initiative started with a QI team establishment, basic QI training and retrospective baseline data collection from the health facilities.

Woreta health center is one of the ten health centers of the Collaborative[1]. From the baseline data, the median for Antenatal (ANC) 4 visits was found to be low (70%) compared with First ANC though first ANC visit coverage is high (close to 100%). Dropout rate from ANC 1 to ANC 4 was 28% (administrative report). This is similar to the national pattern where the coverage of the first ANC is 62% while only 32% completed the recommended four visits[i]. The QI team listed the different factors associated with low ANC 4 visits coverage using fish bone analysis (Figure 1). One of the main reasons that discourage mothers from completing the recommended visits is the unreasonably long time they spend in the health facility, away from their home.
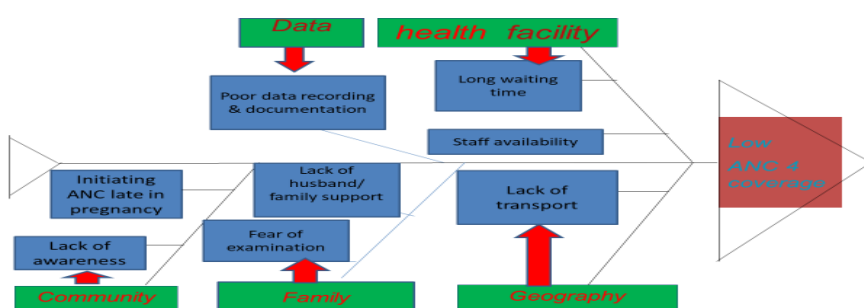
Figure 1: Factors associated with the low coverage of ANC 4

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[1] Collaborative includes Fogera woreda and Woreta town administration

The QI team prioritized the reduction of ANC waiting time. They developed a process map to track the time and the path a pregnant mother would take to get checked for ANC. It was found that the long waiting time happened mainly at the card room where pregnant mothers waited for an average of two and a half hours, alongside all other patients. At the next step, in the ANC waiting area, she would wait for another one and a half hour before she gets checked by the midwife nurse. She would then spend another two hours waiting to have a blood test and the result. Finally, to collect her iron folate or any additional drug she is prescribed with, she spends another hour. This makes the total time a pregnant mother spends in the health center, eight hours.
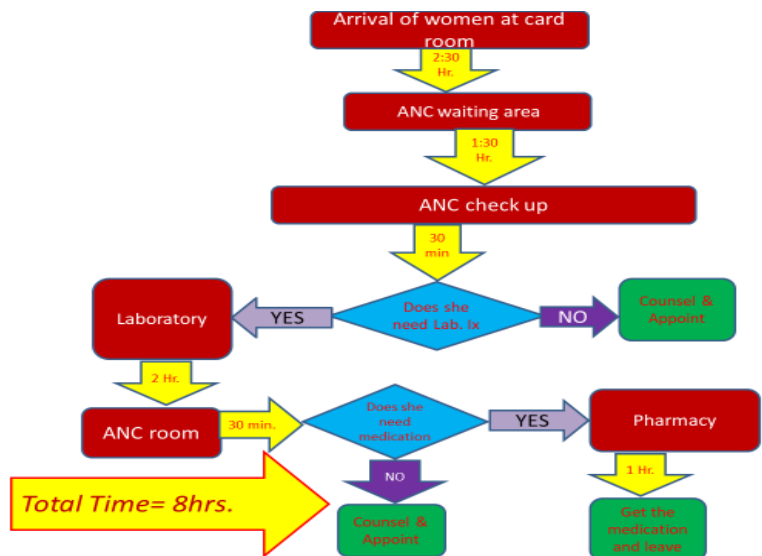
Figure 2: ANC flow chart of Woreta health center as of Hamle 15, 2009 E.C

Interventions

Using the flow chart, the team identified the work flow bottle neck points. They then came up with change ideas which might help in reducing these delays. To reduce the waiting time at the card room, the team proposed to use the mother support group (MSG[2]) in the registration of pregnant mothers and to withdraw their ANC cards directly from the card room. To reduce the waiting time at the ANC waiting area the team proposed to assign additional ANC room along with a midwife nurse for a second ANC check-up room. To reduce the time spent waiting to get laboratory investigation, the team proposed to give priority for pregnant mothers. Finally, to eliminate the need to wait at the pharmacy to get the ANC drugs, the team proposed to place the ANC drugs at the ANC room. These proposed changes were predicted to lead to a waiting time of less than three hours (Figure 3).

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[2] Mother support group are organized to counsel and support other mothers living with HIV/ADIS.
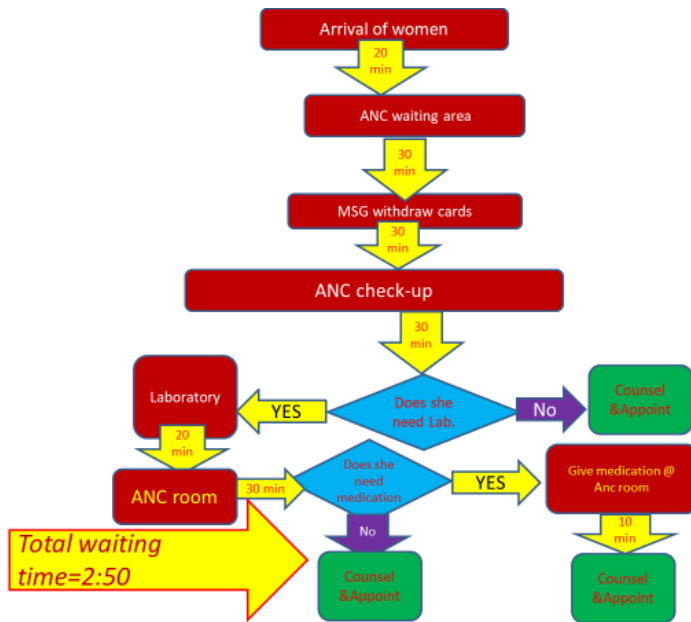
Figure 3: Proposed flow chart of ANC with the new change ideas for Wereta health center

The team started the test by collecting baseline data on the average waiting time from ten ANC clients. The health information technology staff, (Alemnesh), measured the time spent of ten randomly selected ANC clients in the health center (from arrival until they completed the visit and left the compound). The team also provided orientation for the MSG and card room staff on the new card withdrawal procedure of ANC cards. In this new procedure, the pregnant mothers would first give their identification card for the MSG who would use their ID to withdraw the ANC card from the card room to place it to one of the two ANC rooms. The team also availed all the ANC related drugs in the two ANC rooms. As process measures, we started measuring percentage of ANC cards withdrew by MSG and number of days of ANC drug availability at the ANC rooms.

Result

Baseline data collected using ten mothers showed an average waiting time of five hours. Following the deployment of the change ideas, more than 80% of the ANC cards started to be retrieved by the MSG.

As can be shown in Figure 4 below, we were able to reduce the waiting time from 8 hours to less than 4 hours during the initial four months. Currently, our health center has adapted these changes and has continued monitoring the average waiting time of ANC clients.
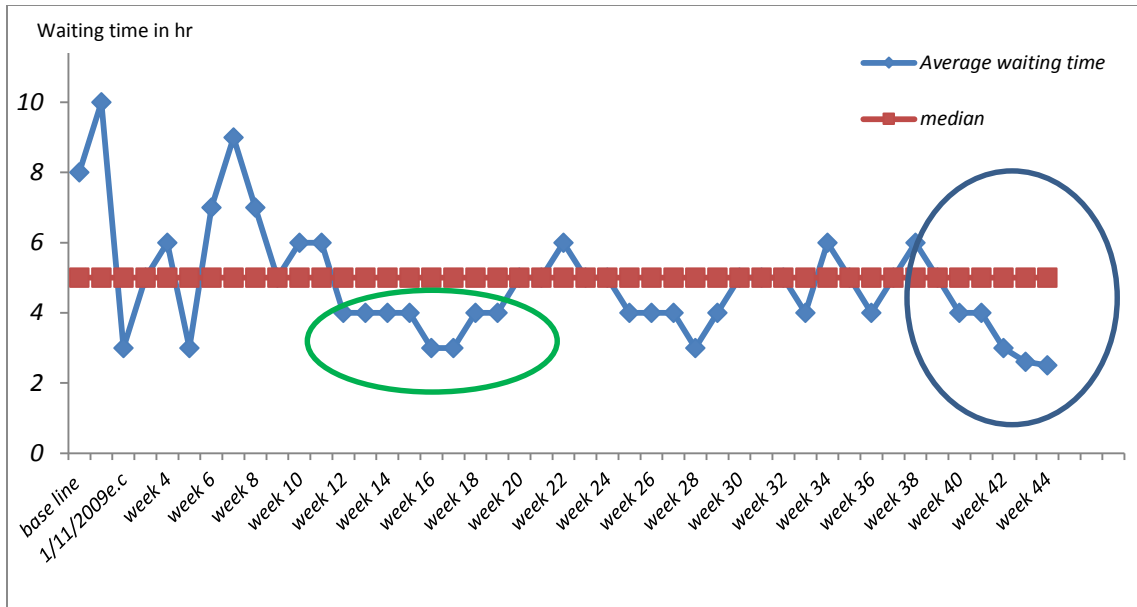
Figure 4: Run chart on average waiting time of ANC mothers in Woreta health center, from Hamle 08, 2009 EC to Miazia 30, 2010 EC.

Lessons learnt

By exploring in-depth the process of care provision using QI tools, we were able to identify the workflow bottle necks. We then proposed four change ideas that might help in reducing these delays which were applicable and appropriate to our facility context.

Conclusion

QI tools such as process map help in visualizing redundancies and inefficiencies. We were able improve the quality of care, as we added intentionality into what we do by eliminating unnecessary steps and by ensuring efficient work-flow.

Improving pediatric Emergency Care Service Quality Score at St. Peter's specialized Hospital

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Abstract

Background: Properly designed and implemented hospital based emergency medical care services will reduce patient emergency triage and treatment times, increase provider efficiency and staff and client satisfaction as well as improve overall quality of care.

Project goal: Improving Pediatric emergency service score more than 90% at Saint Peter Specialized Hospital

Methodology: Time series test design is used. Root cause analysis was done using the driver diagram and change ideas were proposed for improvement by the quality improvement team.

Results: analysis done using shewhart and run charts shows that there is a significant improvement in the pediatric ER service score by introducing prioritized change ideas.

Conclusion: Feasible and sustainable interventions like modifying the triage paper, availing guidelines and introducing scope of practice has significantly improve the pediatric ER score.

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Background information:

St. Peter's TB Specialized Hospital was established in 1953. St. Peter's has been serving the nation as the only tuberculosis hospital for more than four decades. But for the past few years, the hospital grew from a single disease hospital into multi services health institution.

Hospital based Emergency care is part of the patient flow in a hospital setting and includes the processes and procedures needed to ensure the efficient flow of patients between services. As stated in the national hospital transformation guideline, properly designed and implemented hospital based emergency medical care services will reduce patient emergency triage and treatment times, increase provider efficiency and staff and client satisfaction as well as improve overall quality of care. Pediatric age group is one of the priority health concerns nationally. Pediatric emergency care should be given a due emphasis by the hospitals due to its time sensitivity and complications.

Clinical audit done pediatric emergency department by quality improvement team reveals that the quality of care in was found to have major gaps related to the provision of an appropriate triage service, providing comprehensive clinical evaluation, outlining a correct management. Such gaps in quality of care provision had definitely contributed to the poor child health outcomes following each child health service in our hospital.

Emergency care includes a well-designed Patient triage, proper Case management, and providing basic and timely Laboratory, pharmacy and diagnostic service. The rationale of this project is improving the pediatric ER service score which is defined by

- Appropriately triaged / triage paper is filled and attached, appropriate triage classification as per standards and management of emergency condition as per the ETAT guideline
- Justifiable diagnosis following a comprehensive evaluation (pertinent history, pertinent physical examination and justifiable investigations all documented
- Appropriate management was outlined with correct good dispensing practice

Project Goals:

- Improving Pediatric emergency service score more than 90% at Saint Peter Specialized Hospital.

Specific objectives

- Improving ETAT implementation >90 %
- Provision of comprehensive clinical evaluation by the right clinician >90%
- Appropriate outlining of management plan >90%

Methodology:

Time series test design with planned grouping is used.

A multidisciplinary QI team was formed to design, implement and monitor the project. The team consisted of a pediatrician, the case leader physician, the head nurse and two quality officers. Root-cause analysis was done using the driver diagram and change ideas were proposed for improvement by the quality improvement team. Then interventions were prioritized using ease of implementation of the interventions and importance of the interventions.

Improve the pediatric emergency care service score from the baseline performance to 90%

People
- Knowledge and skill gap → Regular training program on ETAT on rotations
- Man power shortage → Regular work force analysis and actions

System/process
- Inconvenience in the triage paper → Modifying the triage paper in accordance with flow of service
- Patient flow is not well outlined → Designing and posting patient flow at the emergency room
- Treatment guideline not readily available → Availing national ETAT guideline at the ER
- → Preparing locally developed treatment guideline for common disease
- Interns manage patients without supervision → Implementing a scope based practice
- Clinical audits are not regularly done for → Availing national ETAT guideline at the ER

Infrastructure
- Both emergency and OPD served in the same area → Relocating the inpatient service of pediatrics to the permanent place
- No separate area for yellow and red patients → Separating the triage area accordingly

Supplies
- Some emergency drugs and supplies not available → Including emergency drugs in the daily shift handover of the hospital system

Ramp 1 Aim
improving patients with correct triage paper and correct classification

- **Cycle 5:** testing during night time / Jan 3- 11, 2011/
- **Cycle 4** testing the new triage paper during day time /Dec17- Jan 3, 201
- **Cycle 3:** modifying the triage paper according to sequence patient flow /Dec 8-12/2011
- **Cycle 2:** studing why these parts left unfilled / Oct. 19-22, 2011 /
- **Cycle 1:** studying whether there is a specific part of the triage paper left unfilled / sept 24-29, 2011/
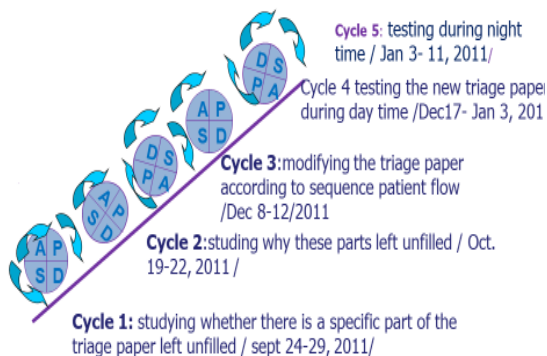
Ramp 2 Aim
improving physician evaluation and treatment of pediatric patients

- **Cycle 5:** introducing intradepartmental consultation protocol / Feb 25- 29, 2011/
- **Cycle 4** introducing scope based practice /Feb 06-15, 2011/
- **Cycle 3:** conducting a regular discussion on morning session about the guideline /Jan 29/6/2011
- **Cycle 2:** availing a flow chart for common diseases including ETAT/ Jan 22-28, 2011 /
- **Cycle 1:** avail management guideline for interns / Jan 13-20, 2011/

Data collection and analysis:

- 4 charts were selected using simple random sampling
- Chart audit checklist was used to fill the audit findings for each case; Audit findings was fed to an excel data base (1 if standards of interest are met and 0 for any missing component from a particular standard) , a hard copy of the audit finding was be also maintained for each chart
- Weekly, the outcome measures of interest was calculated and fed to a summary sheet
- Run and shewhart charts was used to display the data
- When adequate data points are there, run chart rules of interpretation was used to look for evidence of improvement

Measures

- Outcome measures
    - Proportion of patients received minimum standard pediatric emergency care
- Process measures
    - Proportion of weekly cases in the week who are triaged appropriately and correct triage classification given
    - Proportion of weekly cases with a justifiable diagnosis following a comprehensive evaluation (pertinent history, pertinent physical examination and justifiable investigations)
    - Proportion of weekly cases for whom appropriate management was outlined with correct good dispensing practice.
- Balancing measures
    - Average emergency waiting time at pediatrics ER

Results

Percent completed triage paper — P Chart

Percent of patients evaluated by physician — P Chart

Percent of patients with — P Chart

physician evaluation with correct treatement R=0.88

Limitation

The project was introduced and timely update was given to the ER team. This may lead to a Hawthorne effect on the data analysis. Planned experimentation was not conducted on the intervention which has led to inability to see the effect of combining different change intervention.

Conclusion

Improper follow-up of pediatric emergency patient's results is a gap in health care quality that contributes to increased complications and mortality. Feasible and sustainable interventions such as user friendly triage papers and training have increase our ability to successfully triage and classify patients. In addition, introducing a scope based practice, availing clinical guideline at the ER room has successfully improved pediatric emergency service quality score.

Improving Early Post Natal Care within the First 8 hours in Kebado Primary Hospital, Dara Woreda, Sidama zone, SNNP

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Affiliation: 1. USAID Transform Primary Health care project1, Addis Ababa, Ethiopia
2. Kebado Primary Hospital , Kabado, Ethiopia

Abstract

Background: Postnatal Care(PNC) within first early hours after delivery is very critical to reduce neonatal and maternal death because national standards for early PNC service for the mother, to monitors blood loss, fundal height and blood pressure should be measured every 15 minutes for the first two hours, every half hour for the third hour and hourly for subsequent three hours and PNC service for the newborn baby in this critical hours enables to identify and respond to complication as early as possible. In Kebado Primary Hospital this practice was not given attention, which was evidenced by no documentation on immediate/early postnatal care before QI initiation.

Objectives: The aim of this quality improvement project was to improve Postnatal Care within first 8 hours from 28% in March 2018 to 95% June 2019.

Method: Driver diagram used to develop different change ideas to be tested. Repeated PDSA cycles were used for testing the change ideas developed by the team using driver diagram. Progress was monitored using data collection and plotting it against over time. Facilitate learning from provision of early postnatal care for mothers and newborn. P chart was used to analyze early PNC with 24 hours in the facility March 2018 to March 2019.

Results of the project: The P chart on the outcome measure showed that, there are more than a single data point out side upper control limit that is in month of September 2018 upper control limit(ULC) is 74.93% and early PNC performance is 93.10% and starting from November 2018 to March 2019 ULC are 85.29%, 80.98%, 74.93%,81.47%,80.6% and early PNC performances are 93.33%, 100%, 89.29%,100% and 95% respectively which is in a desired direction with project aim. On process measure soon after birth bundle compliance to improve early PNC in hospital the chart complies with run chart rule 1 shift which means our project has brought an improvement.

Conclusion: Improving the Safe childbirth checklist (Soon after birth bundle) compliance is a contributing factor for early postnatal services provision for the mothers and newborn babies in the facility, So follow up and coaching/ mentoring for the midwives on safe childbirth checklist (soon after birth bundle) is critical to improve the early postnatal care provision for every women and babies on timely manner.

Background

A large proportion of maternal and neonatal deaths occur during the first 24 hours after delivery. 45 to 50 % of maternal and neonatal deaths occur during the first 24 hours after delivery. For both the mother and infant, prompt postnatal care is important for treating complications that arise from delivery and providing the mother with important information on caring for herself and her baby. The EDHS (2016) found that among women age 15-49 giving birth in the 2 years before the survey, 17% had a postnatal check during the first 2 days after birth. Four in five women (81%) did not receive a postnatal check.

USAID Transform: Primary Health Care Project supported the Kebado primary hospital to improve quality service delivery by the health service providers in the hospital, together with the hospital quality improvement team (QIT) did baseline assessment on MNH service and found that From June 2017 to Aug 2018, the hospital provided delivery service to 1021 women, with an average of 77.25 deliveries per month. During this period, it is only few mothers who delivered in the hospital did receive early postnatal care for themselves and their newborn babies based on national protocol. It is then that the QIT has developed QI project to solve their problems. The purpose of the quality improvement project was to improve Postnatal Care within first 8 hours from 28% in March 208 to 95% June 2019.

Methods

During the QI training, QIT has started to develop a QI project on early PNC and develop driver diagram to identify root cause, then they have develop different change ideas to be tested to address the gaps. Repeated PDSA cycles were used for testing the change ideas. Progress was monitored using data collection and plotting it against over time. Facilitate learning from provision of early postnatal care for mothers and newborn. P chart was used to analyze early PNC with 24 hours in the facility from March 2018 to March 2019
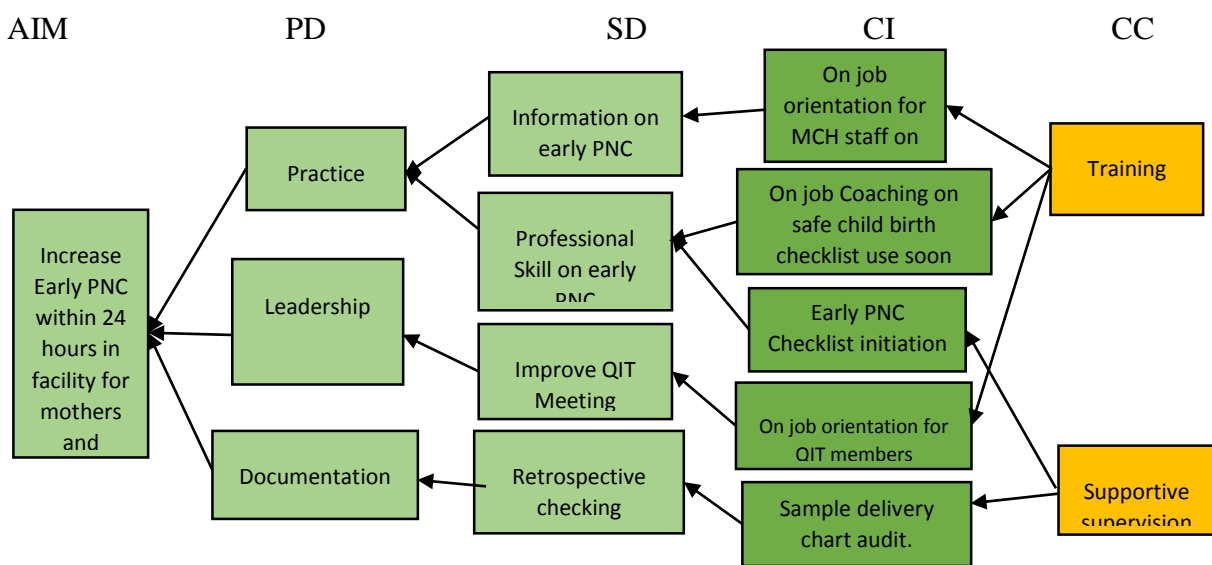
Figure 1. Driver Diagram

Measures: Outcome measure was PNC service provision and **process measure** was safe child birth checklist (SCBC) on soon after birth bindle compliance. Based on the measurement, data was tracked every week by the QIT and plotted on the run chart.

Results of the QI project: The P chart on the outcome measure showed that, there are more than a single data point out side upper control limit that is in month of September 2018 upper control limit(ULC) is 74.93% and early PNC performance is 93.10% and starting from November 2018 to March 2019 ULC are 85.29%, 80.98%, 74.93%,81.47%,80.6% and early PNC performances are 93.33%, 100%, 89.29%,100% and 95% respectively which is in a desired direction with project aim, it means that QI project show that there is special cause that contributed for improvement it is not happened due to chance.
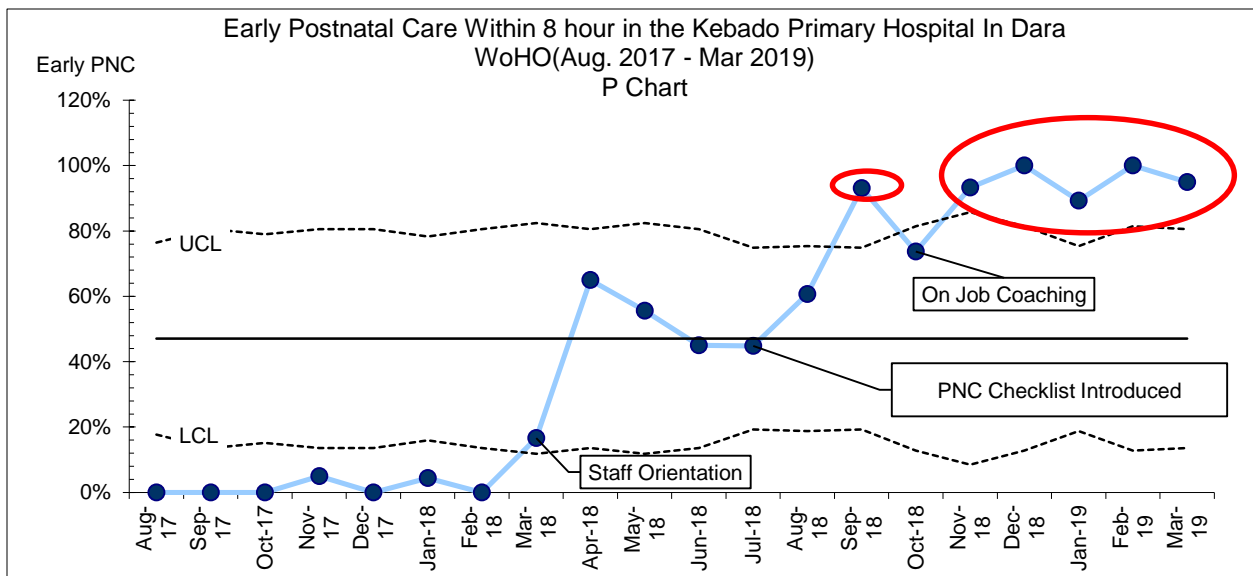
The run Chart on the process measure which is soon after birth bundle compliance to improve early PNC in hospital the chart complies with run chart rule 1 shift (Six consecutive data points above Midian line) which is with direction of our project aim that signals special cause.
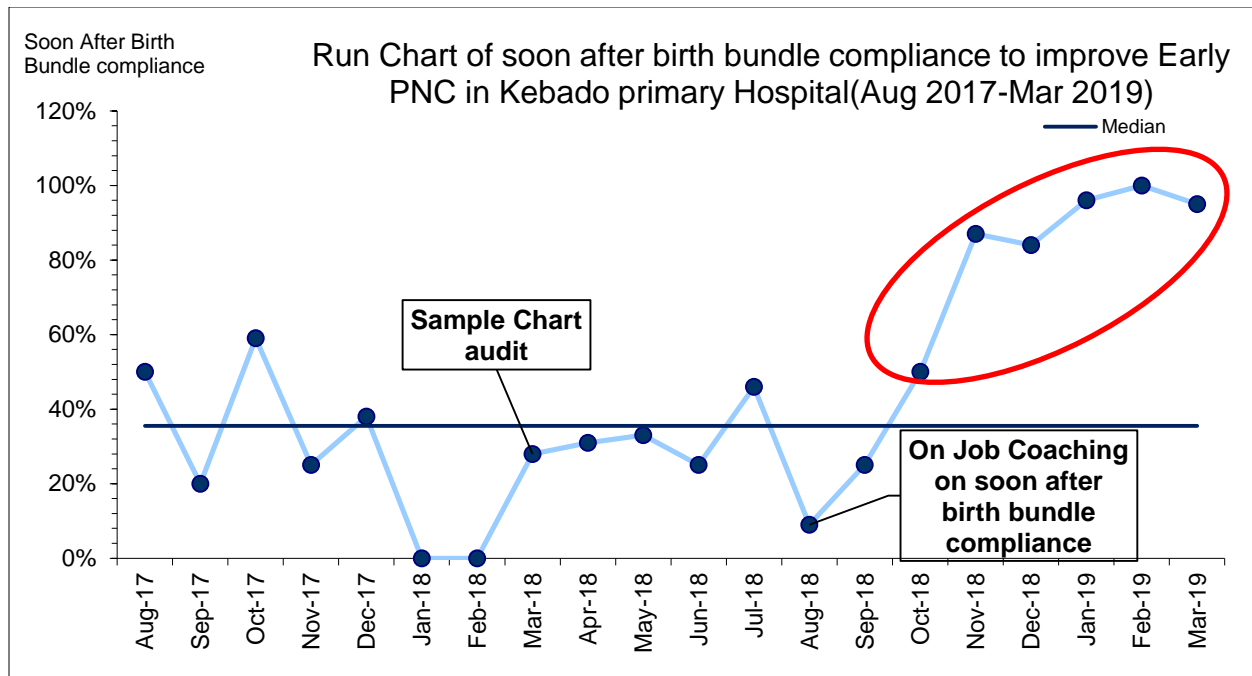
Run Chart of soon after birth bundle compliance to improve Early PNC in Kebado primary Hospital(Aug 2017-Mar 2019)

Conclusion: Improving the Safe childbirth checklist (Soon after birth bundle) compliance is a contributing factor for early postnatal services for mother and newborn baby in the facility, So close follow up/ support, and on job coaching and mentoring for the midwives in improving safe childbirth checklist (soon after birth bundle and the before pushing bundle) is critical to improve the early postnatal care provision.

Limitation: When we tested more than one change idea it is advisable to conduct planned experimentation to identify which change idea synergize each other for improvement but in this case, we did not conduct planned experimentation due to different reason.

Reference

1. *Ethiopia Demography and Health Survey, 2016*
2. *Health care data guide LLOYD P. PROVOST AND SUNDRA K. MURRAT*

Reduction of Neonatal Mortality at GebreTsadiq Shawo Hospital by Decreasing Neonatal Hypothermia

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2. Gebre Tsadiq Shawo Hospital, SNPPR,

Abstract

Introduction: According to EDHS 2016 the country has a high neonatal mortality rate at 29 per 1,000 live births. Similarly, in GebreTsadikShawo general hospital (GTSGH) the median neonatal mortality among NICU admitted neonates is 22.5%. The three major causes of neonatal mortality in GTSGH were: prematurity, infection, and perinatal asphyxia with co-morbidity of neonatal hypothermia (Median of 77.1 %).

Project Aim: To reduce the prevalence of neonatal hypothermia during NICU Admission from median of 71 % to 10 % at GTSGH by the end of June 2019.

Methodology: Based on the Model for Improvement, the QI team developed the following change ideas for testing: Maintain delivery room and NICU suite temperature between 25°C -27°C, Pre-heated clothing, Prevent heat loss during transportation, Skin to skin contact or Kangaroo mother care.

Result: After the QI project, hypothermia in NICU during admission decreased to a median of 50% starting in the week of November 2018 from the baseline median of 72.8% in October 2018, percentage of neonates delivered in labor ward showed improvement through an upward shift. Average days between neonatal death increased from a baseline of 2.9 days between death per week to 4.3 average days between neonatal deaths per week.

Conclusion: Neonatal hypothermia was a common co-morbidity for newborns in GTSGH. By implementing innovative change ideas like using plastic bag during neonatal transportation and pre-warming neonatal clothes, we were able to bring significant reduction on neonatal hypothermia and associated neonatal death.

Lessons Learnt: By introducing organized changes, it is possible to improve the quality of care which in turn helps to save lives.

Key Words: Neonate, Hypothermia, Mortality, Quality improvement and GTSGH

Background

The neonatal period is a highly vulnerable time for an infant completing many of the physiologic adjustments required for life outside the uterus. According to the World Health Organization (WHO) estimates, a significant proportion (40%) of all under-5 deaths occurs in the neonatal or perinatal period. Of the estimated 130 million infants born each year worldwide, 4 million die in the first 28 days of life (1,2). Worldwide, the most common causes of neonatal deaths are preterm birth, birth asphyxia, sepsis, and pneumonia (3). According to the 2016 Ethiopia Demographic and Health Surveys, the country is experiencing a high neonatal mortality rate at 29 per 1,000 live births (4).

Similarly, in GebreTsadiq Shawo general hospital (GTSGH) there are high rates of early neonatal morbidity and mortality. On average, per month, 35 neonates admitted in the Hospital NICU with the major Admission causes include hypothermia, sepsis, prematurity, hypoglycemia, meconium aspiration syndrome, and perinatal asphyxia. The median neonatal mortality among NICU admitted neonates accounts 8 in number (22.8 %). The three major causes of neonatal mortality in G/TsadiqShawo Hospital prematurity, infection, and perinatal asphyxia with co-morbidity of Hypothermia.

Hypothermia is defined by the World Health Organization (WHO) as a core body temperature < 36.5°C, or a skin temperature < 36°C (5). Globally, newborn hypothermia remains a challenge in both resource poor and resource-rich settings and across all climates (6). Hypothermia prevalence rates in low and middle income countries varied widely, with rates during home delivery of 32 - 85% and institutional delivery of 11 to 90%(7). In Ethiopia studied showed that prevalence of hypothermia is ranging from 53 to 69.8% (7). In G/tsadiq Shawo Hospital the prevalence of neonatal hypothermia estimated to be 72.1%.

GTSGH is a part of a woreda-led QI collaborative work intervention Chena Woreda with support from the Institute for Healthcare Improvement (IHI). Woreda and Hospital-based coaches provided support on QI activities for the Hospital for the last 1 year by conducting QI training, coaching and preparing learning sessions. As a result, GTSGH QIT prioritize reduction of neonatal hypothermia as QI project.

Problem statement

In GTSGH on month October 2018, neonatal mortality among NICU admitted neonate was median of 22.8%. The finding on neonatal outcome triggered the Quality improvement team (QIT) to make in-depth assessment on the factors and co factors that contributes for underlying neonatal mortality. We collected the last six-month data to learn whether hypothermia was a problem in babies admitted to the neonatal intensive care unit(NICU) at GTSGH and found that 72.1% median of newborn admitted in NICU were hypothermic (auxiliary body temperature <36.5°C). Every new born baby is at risk of hypothermia in the first 12 hours of life. Immediately at birth, if no

action is taken to maintain warmth and heat, the core and skin temperature of a baby can decrease by 0.1c and 0.3c respectively. This decrease in temperature can lead to problems such as hypoglycaemia, respiratory complications and metabolic acidosis. Taking the above concept into consideration, we designed a quality improvement (QI) project to eliminate reduce hypothermia by 85 % within 12 months.

Rationale of QI Project

Across all gestations, admission temperature was shown to be a strong predictor of mortality and morbidity. For every 1°C decrease in admission temperature, the odds of in-hospital mortality increased by 28% and the odds of late-onset sepsis increased by 11% (8). More recently, the study assessed the association between admission temperature and neonatal mortality and revealed that an admission temperature < 35°C was associated with increased early and late neonatal death (9). So QIT aim to reduce the rate of hypothermia in order to reduce neonatal mortality in GTSH NICU. To achieve QI project goal the team goon through different literatures to find best intervention that could reduce the rate of Hypothermia.

Ethiopia applies thermal care principle which is one of the components of essential newborn care (ENBC) recommended by WHO. Despite this intervention, the problem of hypothermia remains a challenge in Ethiopia (10). So, innovative ideas like using plastic bags during transport when KMC was not possible alongside with the routine thermal care process was introduced (11).

Specific aim of this project: To reduce the prevalence of neonatal hypothermia during NICU Admission from median of 71 % to 10 % at GTSGH by the end of June 2019.

Methods

In October 2018, we identified that a median of 72.1% of neonates were hypothermic when admitted to NICU. QIT in GTSH decided to use the model for improvement to tackle this problem. The QIT formed consisting of QI unit Head, QI unit Officer, Hospital CEO, matron, NICU head, labor ward Head, IESO and HMIS officer and was supported by external QI coach from IHI. We then used process fishbone diagrams to identify factors contributing to hypothermia.

Interventions

We select intervention listed below based on the available evidences.

1: Consistent use of the WARM bundle, including:

- Maintain delivery suite temperature at 25 °C and NICU suite temperature at 27°C.To monitor the room temperature, wall thermometers were purchased and hanged on the wall of labor ward and NICU. To maintain optimal temperature in these wards, radiant warmer and heater are switched on by midwives, before conducting delivery and admitting neonates to NICU.

- Pre-heated clothing for newborns (pre heated hat, cloths and towels): - The QI unit head and the labor ward head, negotiated with the hospital administrative and purchased towels, socks and baby hats. The towels and the hats were pre-heated using radiant warmer before a newborn is delivered.

- Prevent heat loss during transportation (use polyethylene plastic bag to cover a newborn during transportation): - The hospital administrative purchased plastic bags to cover a newborn during referral to NICU.

- Keeping the mother and the newborn baby together and applying skin to skin contact or Kangaroo mother care during the first one hour of birth.

2. Staff orientation on hypothermia prevention for NICU and labor ward staffs

Measures

Outcome measures
- Number of early neonatal death among NICU admitted newborns
- Percentage of neonatal hypothermia during NICU admission

Process measure
- Percentage of new born with pre heated hat
- Percentage of new born covered with plastic bag during transportation to NICU
- Percentage of preterm/ low birth weight new born putted on KMC
- Percentage of NICU and Labor ward health staff oriented on neonatal Hypothermia prevention

Balancing measures
- Cost incur to purchase QI materials

Result

We collected data on hypothermia and analysed these on run charts and Shewhart charts. We also collected data on neonatal mortality in the labour rooms and NICU and analysed it on statistical process T- charts. For the temperature data, we calculated the baseline median using the first 6 data points in month and recalculated the median whenever we identified a shift in the data using rules to define a shift (13). From the baseline median of 72.8% in October 2018, Hypothermia in NICU during Admission decreased to a median of 50% starting in the week of November 2018 (figure1).
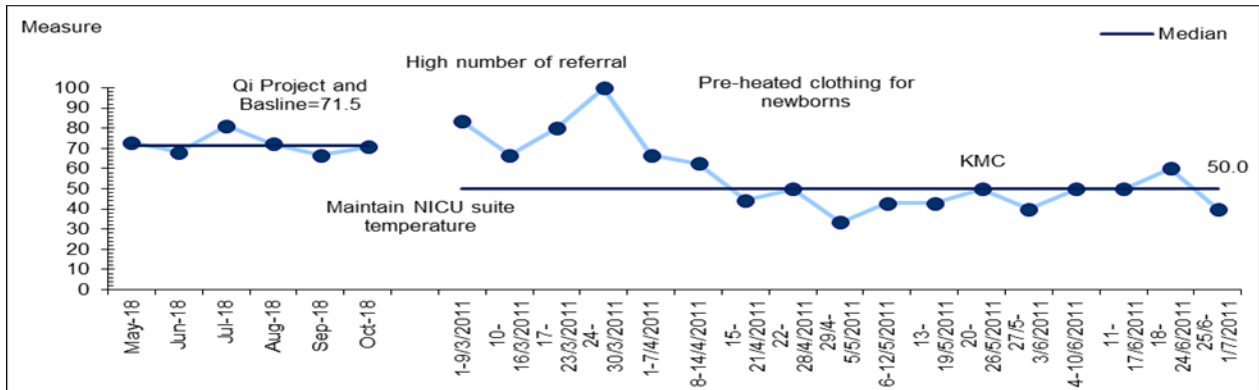
Figure 1; Percentage of neonatal Hypothermia among NICU admitted newborns at GTSGH, 2019

The percentage of neonates delivered in labor ward showed improvement by full filling run chart rule (Shift) (figure2).
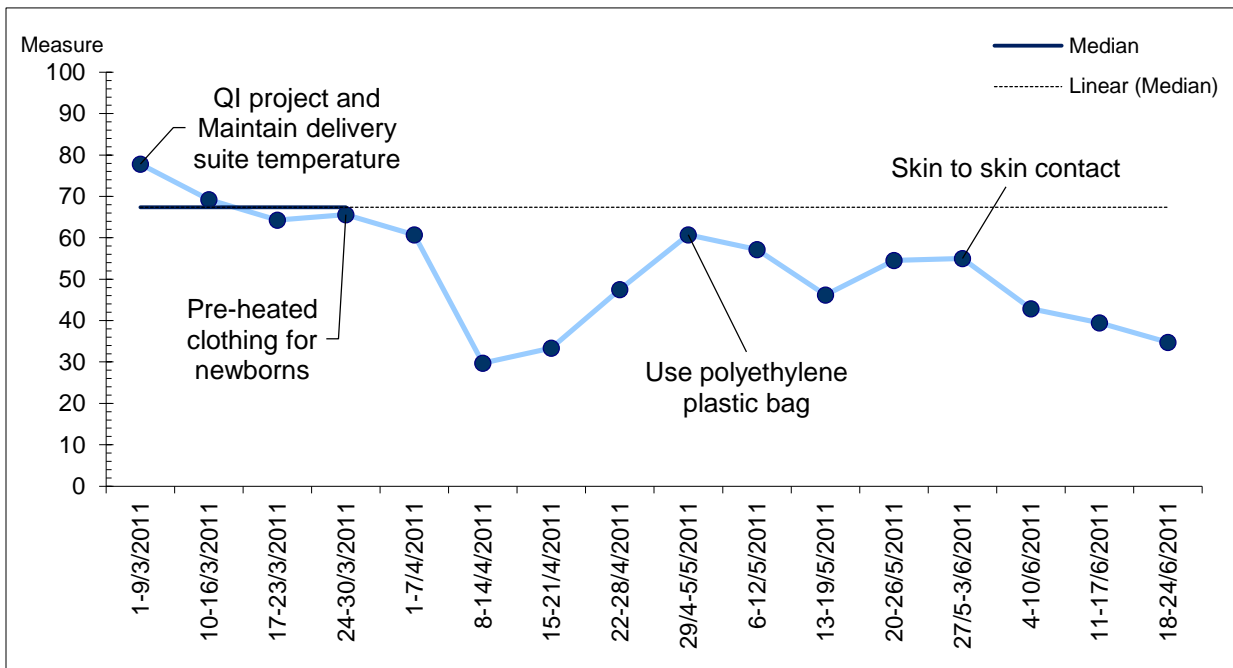
Figure 2: percentage of neonatal hypothermia among new born delivered in labor ward at GTSGH, 2019

We collected data on the number of deaths per week occurring in the NICU and plotted these on T- chart. Average days between neonatal death increased from a baseline of 2.9 days between death per week to 4.3 average days between neonatal death per week (Figure 3).
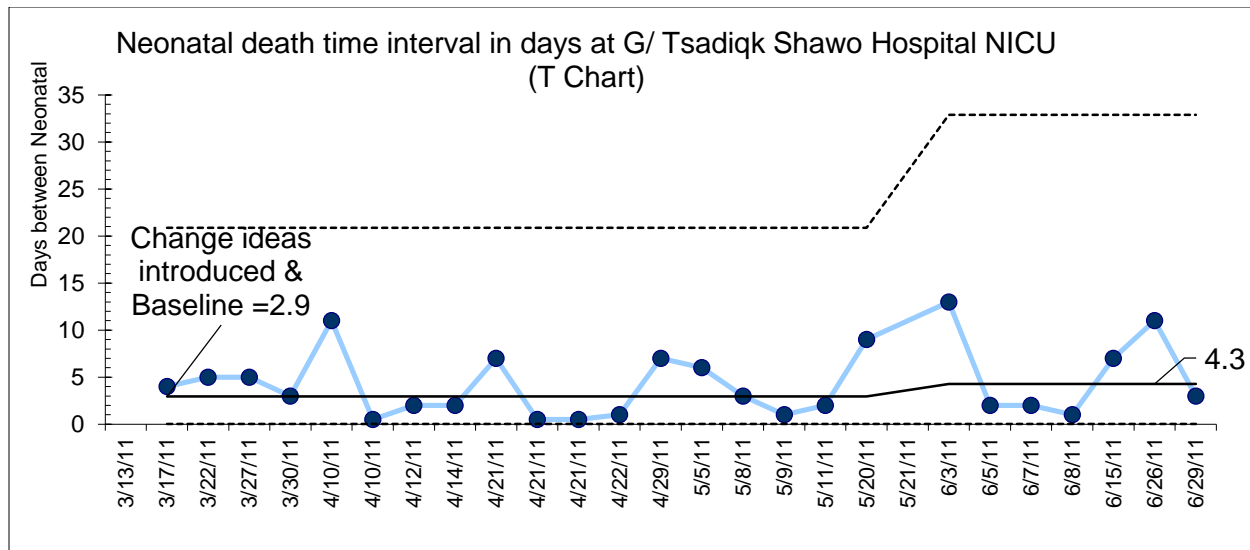
Figure 3: Average days between neonatal death at GTSGH NICU, 2019

Lessons and limitations

We were able to successfully use QI approaches to keep babies warm and increase the average dates between neonatal death from all-cause mortality. This was the first time our team had used QI methods. We started by training staff on the general importance of keeping babies warm, but we did not see any real improvement until we started to identify specific barriers to thermal care and developed practical solutions to those barriers. Using diagnostic QI tools, such as flow charts and fishbone diagrams, and reviewing the causes when babies arrived at the NICU cold helped us identify these barriers. Making iterative tests using PDSA cycles helped us to refine the solutions until they were effective and efficient. In general, we learnt that, by introducing organized changes, it is possible to improve the quality of care which in turn helps to save lives.

A limitation is that we need more time to determine if preventing hypothermia using our change ideas reduce neonatal death, as this is a relatively rare event. We believe that some aspects of this work are not generalizable to other hospitals, while other elements are likely to be very generalizable because some the problems may be specific for our setting. Moreover, our finding couldn't reveal which factors or intervention more likely contribute for reduction of neonatal hypothermia, which could benefit from additional study, including planned experiment analysis.

Conclusion

Neonatal hypothermia was a common co-morbidity for newborns in G/Tsadiq Shawo hospital. By forming a team that included staff from the labour room, staff from the NICU leadership and QI officers, we were able to identify the factors contributing to hypothermia at each location and systematically address these factors. By implementing innovative change ideas like using plastic

bag during neonatal transportation and pre-warming neonatal clothes, we were able to bring significant reduction on neonatal hypothermia and associated neonatal death.

We strongly believe that the QI project will be completely hand over by Hospital QIT team for additional and innovative implementations and sustain the gain found through the process. This finding also provides direction to conduct experimental studies on Hypothermia management and prevention contributors in resource limited areas. The project findings also presented and will be presented in QI learning collaborative sessions/review meetings, meetings and conferences.

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Quality of Maternal Screening and Counseling in Primary Health Care Units in Ethiopia

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Abstract

Background: Nutrition counselling is a widely used strategy to improve the nutritional status of women during pregnancy. Identification of undernourished pregnant women and enrolling them in nutritional programs, and providing continuous nutritional counseling on diversify food, consumption of one additional food, iron folic acid supplement, iodized salt and WASH are among the key nutrition interventions. MUAC tape measure and maternal counseling were neglected activities in Growth through Nutrition supported health facilities and the achievements were 27%, 33%, 2%, 0% and 18% in Yetmen, Tulu Bolo, Tede, Emdibir and Gelamatebia HCs, respectively. Therefore, the objective of this project was to increase nutritional screening and link to counseling service for pregnant women in these Growth through Nutrition supported facilities, Ethiopia.

Methodology: The facilities applied Model for Improvement (MFI) along with Kaizen 5-S in ANC clinic. Quality improvement teams identified problems, prioritized nutritional screening and nutrition counseling for pregnant women, developed aim statement, set aim, identified the root-causes of the problems using Fishbone diagram, set indicators, selected change ideas and tested using Plan, Do, Study and Act (PDSA) cycle. Health facilities nutrition screening and counseling performance were tracked regularly over time since implementation of the two QI models (see Fig 1-5). Health workers were interviewed about their experience in applying QI models and pictures have been taken before and after applying Kaizen 5-S

Result: After the intervention (MFI and Kaizen 5-s), maternal nutrition screening and counseling increased among pregnant women from 27%-100% (Yetmen), 33%-100% (Tulu Bolo), 2%-100%(Tede), 0%-100%(Emdibir) and 18%-100% (Gelamatebia). A few undernourished pregnant women were identified from these facilities, counseled on maternal nutrition, and linked to cooking demonstration sessions. MUAC improved among pregnant women in all HCs except Gelamatebia HC mainly due to severe food insecurity in the woreda (see fig 6). The P-chart exhibit strong special causes and consistent with a rising percentage of pregnant women who were screened and counselled. Health workers reported they did not give due attention to nutrition services before implementing MFI. Kaizen 5-s resulted in creating a conducive work environment mainly through improving cleanness and document organization. Health workers also revealed that despite continuous screening and counseling of pregnant women, access to uninterrupted Targeted Supplementary Feeding(TSF)supply for undernourished pregnant women in food insecure woredas is a challenge.

Conclusion: MUAC tape measure and maternal counseling increased significantly by applying MFI and Kaizen 5-s that result in maintaining good nutrition for pregnant women except Gelamatebia health center, there was no improvement on MUAC. This calls for uninterrupted targeted supplementary feeding and livelihood program. i.e. there is a need for linking screened and counseled undernourished pregnant women to cooking demonstration and nutrition programs like TSFP and livelihood program to maintain optimal nutrition of pregnant women in sustainable way. Project also showed that health center can apply quality improvement tools, Model for Improvement in this case to set their priority, aim, test change ideas and bring about positive change.

Introduction

Maintaining good nutrition and a healthy diet during pregnancy is critical for the health of the mother and unborn child. Low Mid-Upper Arm Circumference (MUAC <23 cm) is significantly associated with poor maternal health and birth outcomes. Nutrition counselling is a widely used strategy to improve the nutritional status of women during pregnancy. Identification of undernourished pregnant women and enrolling them in nutritional programs, and providing continuous nutritional counseling on diversify food, consumption of one additional food, iron folic acid supplement, iodized salt and WASH are among the key nutrition interventions. Growth through Nutrition Activity is a multisectoral USAID funded nutrition and WASH project (2016-2011) designed to improve the nutritional status of women and young children focusing on the first 1,000 days. It is implemented in the four agrarian regions of the country. Working through the health system, Growth through Nutrition aims to improve utilization of quality nutrition services in Ethiopia. The project supported primary health care units (PHCUs) in implementing MFI and Kaizen 5-s to develop health facility capacity to identify issues, implement changes and track progress in the effective delivery of nutrition services. These models were drawn from FMOH National Health Care Strategy, Quality Improvement training manual and Growth through Nutrition's past experience.

MUAC tape measure and maternal counseling were neglected activities in Growth through Nutrition supported health facilities and the achievements were 27%, 33%, 2%, 0% and 18% in Yetmen, Tulu Bolo, Tede, Emdibir and Gelamatebia HCs, respectively. Therefore, the objective of this project was to increase nutritional screening and link to counseling service for pregnant women from 27%-100% (Yetmen), 33%-100% (Tulu Bolo), 2%-100% (Tede), 0%-100% (Emdibir) and 18%-100% (Gela matebia) during a given period of time.

Methods

Before applying MFI and Kaizen 5-s, health facility personnel and woreda working on nutrition were trained on quality improvement training. Staff developed the skills to identify root-causes of problems using various tools including cause-and-effect diagram, and how to implement the process for quality improvement in their health facility. After the training, the staff formed PM & QI teams at their facilities composed of one representative from each case team including a staff member involved in records and management systems and a person designated to be the QI officer as per the national recommendation. A sub-team is formed at ANC unit to closely monitor performance and be flexible enough to respond to the ongoing challenges of quality improvement.

Facilities reviewed the client charts, conducted observation and interview clients periodically using checklist. Facilities used LQAS technique to identify areas of 'adequate' or 'inadequate' performance using small sample size while reviewing the client charts.

Maternal screening for acute malnutrition is one of the key nutrition performance indicators. The project teams measured proportion of pregnant women who received maternal nutrition and counseling in a given period of time. Baseline data collected before the intervention using HMIS registers and client charts, observation and health workers were interviewed and pictures have been taken before and after applying Kaizen 5-s. Control chart are used to establish whether the observed outcomes were due to the intervention.

Result

Facilities developed or selected change ideas and tested one change idea at a time using Plan, Do, Study and Act (PDSA) cycle. In Yetmen HC, the team decided to test demonstrate MUAC measure and orient HWs on how to utilize counseling card, peer supervision and monitor data regularly. The team increased the provision of quality nutritional screening and counseling services from a starting point of 27% to 100% of pregnant women visited ANC clinic (see fig 1). In Tulu Bolo HC, the team tested staff orientation on monitoring nutrition data and avail adult MUAC measuring tape and abled to increase the provision of quality nutritional screening and counseling services from 33% to 100% of pregnant women visited ANC clinic (see fig 2). In Tede HC, the team tested orient all midwives on nutrition screening, counseling and how to fill out register, orient newly assigned midwife and increased the provision of quality nutritional screening and counseling services from 2% to 100% of pregnant women visited ANC clinic (see fig 3). In Emdibir HC, the team tested avail adult MUAC measuring tape and monitor data weekly and abled to increase the provision of quality nutritional screening and counseling services from 0% to 100% of pregnant women visited ANC unit (see fig 4). In Gela matebia HC, the team tested orientation of staff working at ANC unit on the importance of screening and counseling, monitor data weekly and abled to increase the provision of quality nutritional screening and counseling services from 18% to 100% of pregnant women visited ANC unit (see fig 5). In these facilities, the control chart revealed that there are shift and too many and too few signals and the process is stable. the P-chart exhibit strong special causes and consistent with a rising percent of pregnant women who received nutritional screening and counseling services. MUAC measure did not improve among pregnant women in Garamuleta HV despite significant improvement in nutrition screening and counselling mainly due to severe food insecurity in the Woreda (see fig 6).

Fig 1. Pregnant Women who were screened and counselled on maternal nutrition at Yetmen HC, Amhara region

Fig 2. Pregnant Women who were screened and counselled on maternal nutrition at Tulu Bolo HC, W.Oromia region

Fig 3. Pregnant Women who were screened and counselled on maternal nutrition at Tede HC, E.Oromia region

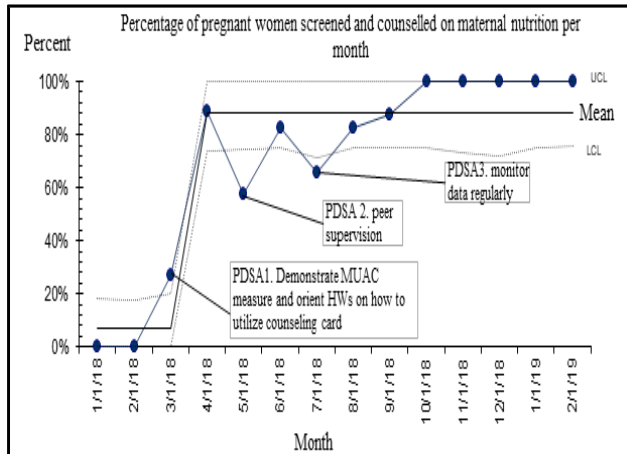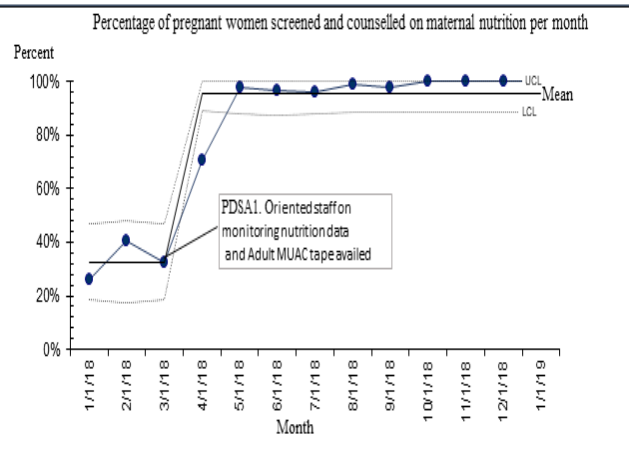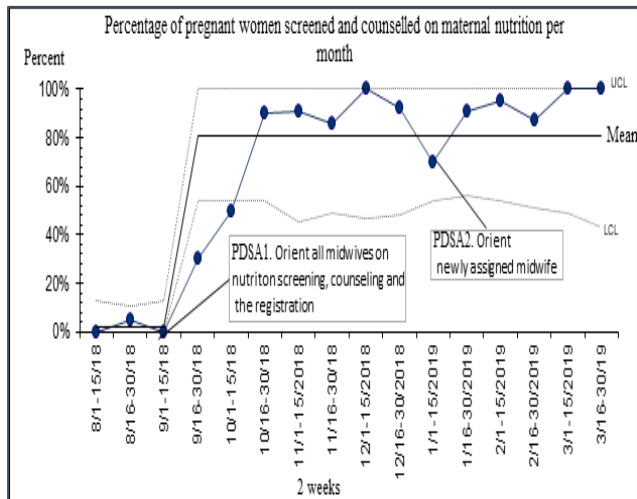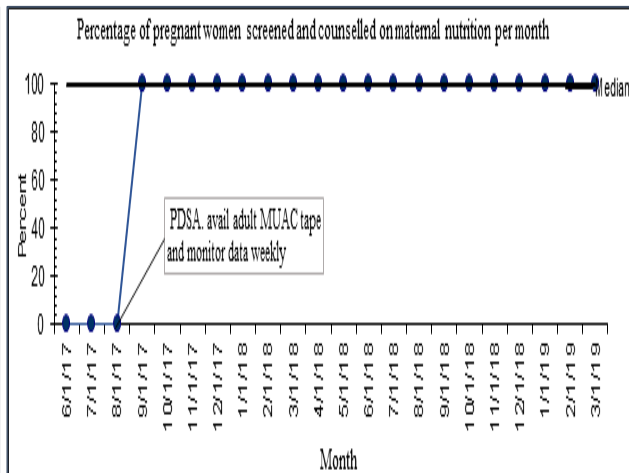

Fig 4. Pregnant Women who were screened and counselled on maternal nutrition at Emdibir HC, SNNPR
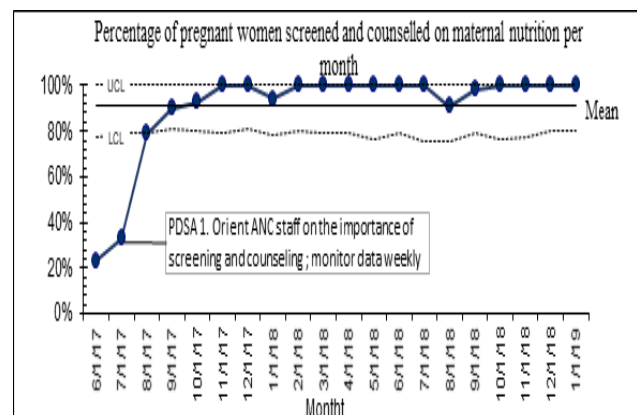

Fig 5. Pregnant Women who were screened and counselled on maternal nutrition at Gelamatebia HC, Amhara region
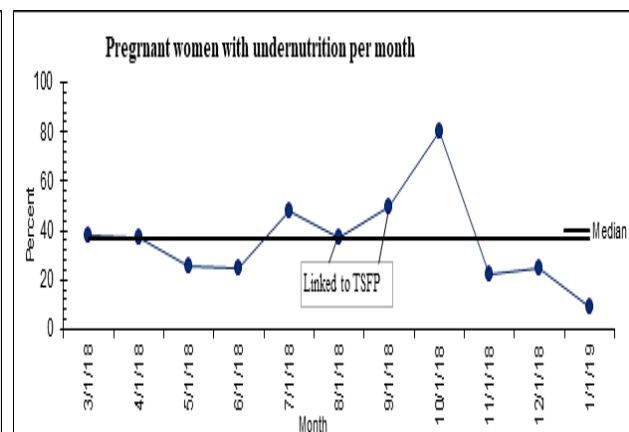
Fig 6. Pregnant women who had more than one visit and still undernutrition (MUAC <23cm) at Gelamatebia HC, Amhara region.

Facility staff involved in the QI process reported that before the intervention, staff never gave due attention to maternal screening and counseling, staff had doubt about how to screen and counsel pregnant women correctly, difficulty in accessing adult MUAC measuring tape, performance monitoring and data use for decision-making were minimal, coaching or mentoring support was not strong and regular and the work place was not well-organized. After the intervention, facility staff reported that they began to pay due attention to maternal nutrition screening and counseling, monitor and utilize data for decision-making, received regular support from woreda and partner and the clean and well-organized work place motivated, feel confident and helped them to save time. Health workers working at Gela matebia stated that even if they managed to provide continues screening, identifying undernourished pregnant women and counseling, the shortage of supplementary feeding supply is still a challenge to bring about the ultimate goal.

Limitation and Lessons Learned

High staff turnover in facilities and woreda, staff commitment to continuing provide quality nutrition and counseling and access to uninterrupted targeted supplementary feeding in case of food insecure woreda are challenges. The QI process worked best when the health workers apply Kaizen 5-s, monitor data closely, recognition mechanism in place, malnourished pregnant women have access to cooking demonstration and TSF, facility management and the woreda health staff were regularly involved. Involving all health facility staff in QI training or orientation, and clarifying their specific roles in the QI process and the outcomes desired also contributed to success.

Conclusion

MUAC tape measure and maternal counseling increased significantly in Yetmen, Tulu Bolo, Tede, Emdibir and Gelamatebia HCs by applying MFI and Kaizen 5-s that result in maintaining good nutrition for pregnant women except Gelamatebia health center, there was no improvement on MUAC. This calls for uninterrupted targeted supplementary feeding and livelihood program. i.e. there is a need for linking screened and counseled undernourished pregnant women to cooking demonstration and nutrition programs like TSFP and livelihood program to maintain optimal nutrition of pregnant women in sustainable way. Project also showed that health center can apply quality improvement tools, Model for Improvement in this case to set their priority, aim, test change ideas and bring about positive change. Project showed that health workers can apply MFI and use data for decision-making at community level to improve delivery of quality services. The QI models need expanding to additional health facilities through training, and by offering study and learning visits across facilities to share their experiences and best practices in improving the quality of nutrition and related services.

Increase Long Acting Reversible Family Planning In Manbuk Catchment Area Of Benishangul Gumz Region

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Background

Despite the promising improvements in Total fertility rate and use short term FP among reproductive women (15-49 age group), the use of LARC in this age group remains unchanged in Ethiopia. The national figure of total fertility rate (TFR) and Unmet need of FP is 4.6 and 22.3 respectively (EDHS 2016). The TFR and the unmet need of FP of the Benishangul Gumz region is 4.4% and 21.1% respectively. However, when we compare this fact with SDG target, it needs massive effort to achieve the target. USAID-supported Transform: Health in Developing Regions (Transform-HDR) project, is working with the FMOH and RHBs to drive large-scale improvements in Family Planning (FP) service uptake including quality improvement.

In Manbuk HC catchment area in the last two years LARC service coverage is too low and which has great contribution for Maternal child health problems. As consequence, low up take of FP well leads to maternal & child health complication and final to death.

To Site: Yeshitala A, Woldeyes D, Ebrahim S, Addisu T. Increase long acting reversible family planning in Manbuk catchment area of Benishangul Gumz Region, EHQB 2019; 1: Page 44-46.
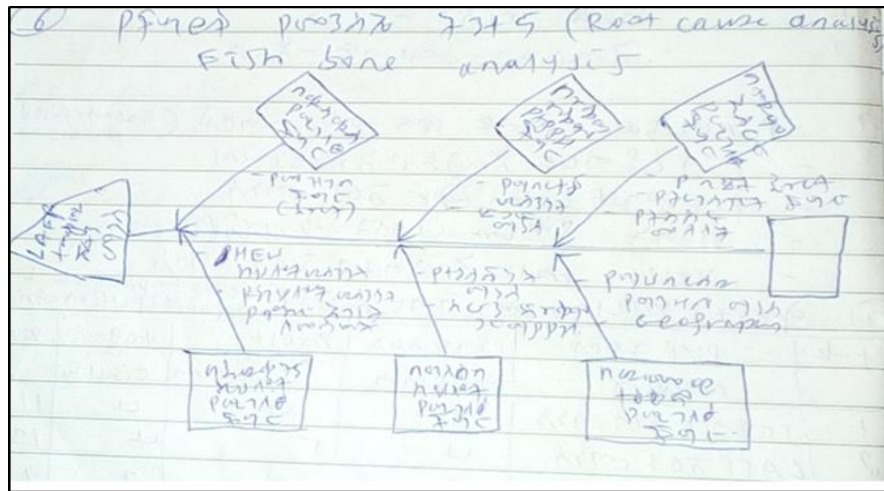
Objective

The Quality Improvement Team (QIT) of the health center was using fishbone analysis and multiple whys to identify and reach the root cause of the low long acting Reversible contraceptive (LARC) rate in their catchment area. The QIT identified category of low awareness of community on long acting family planning from fishbone for multiple whys analysis to find out the root cause

Interventions

USAID T-HDR provided Capacity building training on quality improvement approach and comprehensive FP method including LARC training. Following the QI training, the HC established QIT, assigned Trained health workers (HWs) at FP room and provided responsibility to trained HWs to play their role on catchment based onsite coaching at respective Kebeles. Through the PDSA model, onsite coaching was provided using effective counseling protocol for four months in seven kebeles. A total of 15 HEWs from respective health posts received onsite coaching and a kebele community mobilizer committee mobilize target community during FP outreach sessions. Eleven outreach sessions were conducted as backup with the support of Manbuk HC.

Measurement

The QIT was reviewing progress every month following outreach sessions (**outcome indicator**-number comprehensive family planning including long-term family planning acceptance rate, **process indicator**- number of counselled reproductive age during outreach sessions and number of outreach sessions conducted). Monthly data quality assessment done with support of HMIS officer and QI officer of the HC in collaboration with USAID T-HDR officers.

Result

A total of 772 reproductive age groups were counselled using counselling protocol and 229 of them received LAFP from Dec 2018 to Feb 2019 following the mobilization. Twenty-two percent (22%) of the target reproductive age group received LARC service by the end of Feb 2019 and the
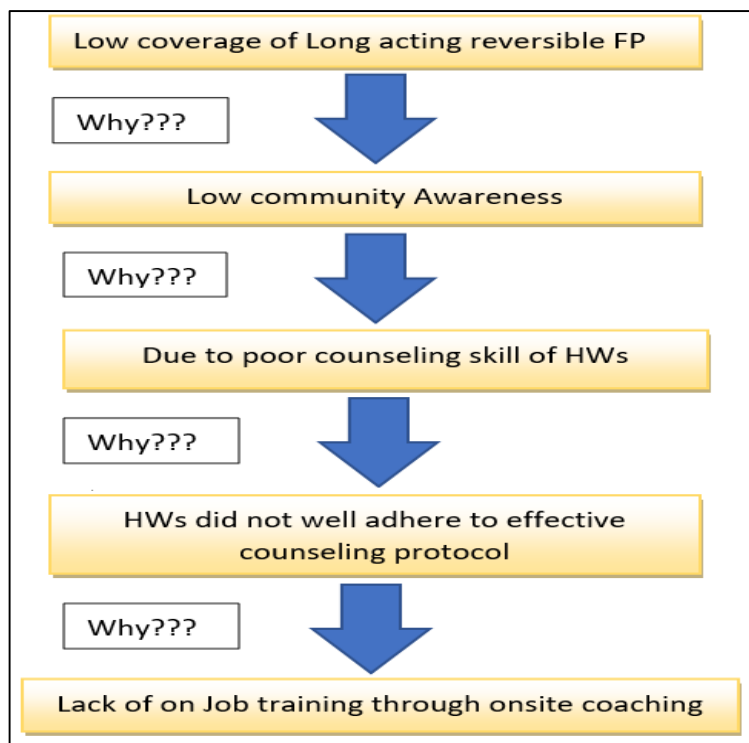
medical eligibility criteria was used by providers to minimize the complication following LARC insertion.
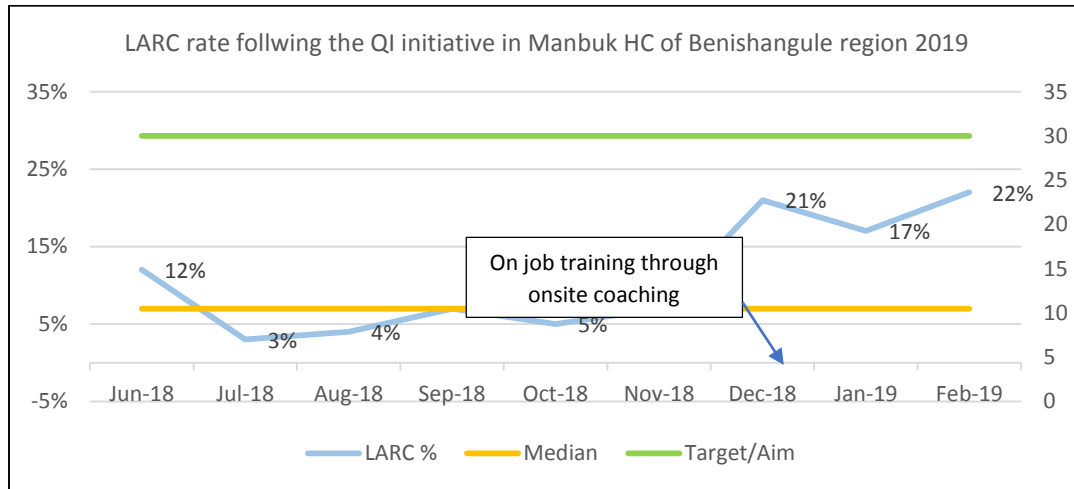
Lessons learnt

Involving Health center leaders and community representative in QI project were helped to generate local solution for improving the LARC in the catchment area. Besides, onsite coaching was handled on duty station with minimal effective expenses for improving LARC rate. Health worker motivation, QIT members' commitment and communication from HC to HPs were main contributing factors for success.

Conclusion

The QIT adopted the intervention in the health facility for sustainable improvement of LARC across all catchment HPs/Kebeles. The number of short-term acceptance rate following target population mobilization showed an increment over time in the Manbuk health center catchment area. USAID transform HDR project will replicate the intervention across four regions as change package.

Proper and Complete Use of Partograph to Improve Quality of Maternal and Neonatal Care Services at Durbetie Health Center, West Gojam zone, Amhara Region

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Affiliation: USAID Transform: Primary Health Care Project, Addis Ababa, Ethiopia

Abstract:

Background: Partograph is most commonly used as a labor monitoring tool which is recommended by World Health Organization (WHO), but its utilization is very low. According to Ethiopian Emergency Obstetric and Newborn Care (EmONC) assessment (2016), only 74% of health facilities use partographs but proper and complete usage among these facilities is very low. In the Amhara region, an assessment by Jhpiego and Bahirdar University (2013) showed that 36.2% of health facilities use partographs, of which only 10.6% applied correct and complete usage. In Durbetie health center, partograph utilization was as low as 20% leading to a high rate of stillbirths. To address this challenge, a Quality Improvement Team (QIT) with the support of the USAID Transform: Primary Health Care project have planned to improve utilization of partographs correctly and completely.

Methods: The QIT developed a quality improvement (QI) project to increase the proper and complete use of partographs for all eligible laboring mothers from 20% in March 2017 to 80% by December 2018, using selected change ideas and continuously monitoring the results. The team conducted a root cause analysis, developed and tested different change ideas, used repeated PDSA cycles to test the change ideas, during which data was collected and monitored daily and weekly.

Results: The efforts from the QIT and subsequent results were remarkable; the coverage of proper and complete partographs increased from 20% to 100% which was evidenced by more than 6 data points above the median. The team has also observed that maternal complication and stillbirth rates decreased since using correct and complete partographs for all laboring mothers.

Conclusion: Despite the good knowledge of providers on the partograph usage, the actual utilization of the tool was low which made implementation of continuous quality improvement by the facility QIT for improving system performance critical. Developing the capacity of the management team and frontline health workers in QI methods through training, coaching/mentoring, close monitoring of measurement/data were key factors for success in the center.

Introduction

Partograph is most commonly used as a labor monitoring tool which is recommended by World Health Organization (WHO), but its utilization is very low. According to Ethiopian Emergency Obstetric and Newborn Care (EmONC) assessment (2016), only 74% of health facilities use partographs but proper and complete usage among these facilities is very low. In the Amhara region, assessment done by Jhpiego and Bahirdar University (2013) showed that only 36.2% of health facilities use partographs, of which only 10.6% applied correct and complete usage. In March 2017 at the start of project, Durbetie health center QIT has done baseline assessment on MNH services using MOH clinical auditing tool and the assessment revealed that partograph utilization was as low as 20%, this low utilization contributed to stillbirths and early neonatal birth and maternal complication.

As one of the project site USAID Transform: Primary Health Care Project supported Durebet health center to improve the MNH quality of the service delivery there by decrease still birth, maternal and neonatal mortality. After identification of their gap on parthorgaph utilization the health center QIT team planned to improve parthograph utilization and the team also wanted to look not only utilization, they wanted to see proper and complete use so that the midwife detect complication as early as possible and respond to it properly. The purpose of this QI project was to increase percentage of parthograph utilization from 20% in March 2018 to 80% by December 2018 and ensuring proper and complete use of partographs for all mothers who are admitted to labour and delivery ward.

Methods

Following the gap identification, the QI team, started to work on proper and complete utilization of parthograph using repeated PDSA cycle to test different change ideas to reach to their objective. They have provided orientation to the midwives on correct & complete use of parthograph, Peer to peer review of cards, provided regular coaching and mentorship by the QIT, provide proper orientation to the midwives as they assigned to labur and delivery ward.

Measures

Input measure was availability of parthograph, process measure was the number of staffs provided orientation on correct & complete use of parthograph during labour and delivery. The outcome measure was the percentage of women whose labour and delivery followed with parthograph. Ensuring the parthograph was filled correctly and completed with all or none criteria.

Analysis

Data was collected on daily and weekly bases by the midwives at the labor and delivery and regular card auditing and peer to peer coaching and mentorship was done by the QIT. Data was analyzed

using data over time and the team has used the QI chart templet to put data on the run chart on monthly bases.

Result

The team ensured utilization of the parthograph correctly and completely for all women during labor and delivery in the facility which is evidenced by data over time (run chart), the coverage of proper and complete partographs increased from 20% to 100% which was evidenced by more than 6 data points above the median. The team has also observed that maternal complication and stillbirth rates decreased since using correct and complete partographs for all laboring mothers.
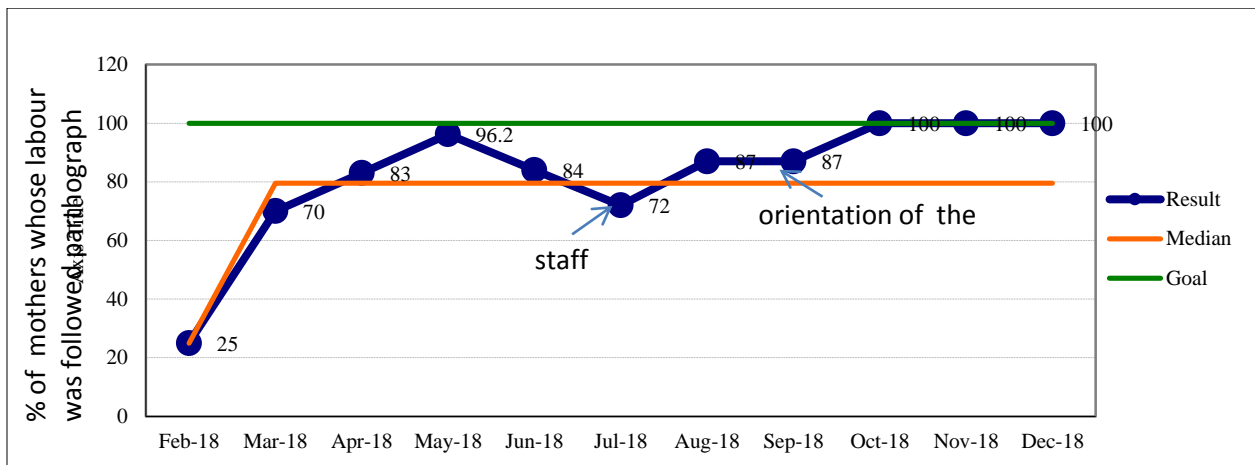
Figure: Run chart on complete and correct use of partograph Utilization, in Durbetie Health Center, West Gojjam Zone, March 1-December 31, 2018.

Conclusion

Despite the good knowledge of providers on the partograph usage, the actual utilization of the tool was low which made implementation of continuous quality improvement by the facility QIT for improving system performance critical. Developing the capacity of the management team and frontline health workers in QI methods through training, coaching/mentoring, close monitoring of measurement/data were key factors for success in the center.

The case of Durbetie health center is a good example of how the project is impacting quality of care provided by health facilities. The project used a design that was flexible enough to adapt to a local context, did not require substantial resources for scale-up and promoted sustainability

Improve Community TB detection in Wacha Primary Hospital

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Abstract

Background: Wacha primary hospital is located in Southern Nation Nationalities and Peoples' Region (SNNPR), Keffa zone, Chena woreda about 513 km south of the capital, Addis Ababa, Ethiopia.

Local problem: Keffa zone has the lowest performance in SNNPR where TB detection is at 37.4%. Our hospital detection rate is at 19% showing the need to do improvement.

Methods: By using model for improvement we started to do a fish bone analysis to isolate the main gaps, after identifying those gaps the QI team had a brainstorming session for change ideas that could be implemented to bring about the changes needed. We analyzed the data using Microsoft excel and followed the data using a run chart.

The designed interventions were: provide refresher training for HEW, Train HEW on Sputum smear preparation for suspected cases, community awareness raising using Flyers and provide Health education on Tb for patients and attendants in the waiting areas twice a week

Result: The data was collected every week, and cross checked with HEWs log book. The result was a clear rise in number of patients sent from the community to the hospital. For the first weak there was a rise from the baseline of 0 to 6 patients, which was a clear increase this then followed a trend which persisted for the next 8 weeks. The interventions were a success and the detection rate increased to 70% from the baseline of 19% surpassing our target.

Conclusion: Ethiopia remains to be among the 30 countries reported with high burden of TB, TB/HIV and DR-TB for 2015 to 2020. Wacha primary hospital had a low TB detection rate, but after the QI intervention we saw an improvement. By using locally created change ideas we can create changes that can resonate at a national level, and bring our country to the frontier of the global health system.

Key words: Quality improvement, TB detection, sputum smear, health extension workers, FMOH, Ethiopia, Keffa

Background

Worldwide, TB is one of the top 10 causes of death and the leading cause from a single infectious agent (above HIV/AIDS). Millions of people continue to fall sick with TB each year. Diagnosis and successful treatment of people with TB averts millions of deaths each year (an estimated 54 million over the period 2000–2017), but there are still large and persistent gaps in detection and treatment. [1].

Ethiopia is among the 30 High TB, HIV and MDR-TB Burden Countries, with annual estimated TB incidence of 177/100,000 populations and death rate of 25 per 100,000 populations for 2016.One of the main targets of the five-year National TB strategic plans of FMOH to End TB 90-(90)-90 by 2020 is to ensure 90% of all people with tuberculosis will be diagnosed and treated [2].

As a region the TB detection rate is at 60 % and out of these 32% are at the community level. However, Keffa zone has the lowest performance in SNNPR where detection is at 37.4%. Our hospital TB detection rate is 19% showing the need to do improvement work.

Rationale

By using model for improvement we decided to start with identifying why our TB detection was low, so we started by doing fishbone analysis to identify the major root causes. After that by using the plan, do, study and act (PDSA) cycle, we started to test the change ideas. We followed the data using a run chart divided in weeks and plotting the data points each week.Once a change has been developed, it could be further explored and refined by testing giving this model the edge to explore changes without huge resource loss.

Project Aim

Increase community TB detection from a baseline of 19% to 50% by the end of May, 2019 in Wacha primary hospital, Ethiopia

Interventions

Refresher training: HEWs (health extension workers) were given training on the signs and symptoms of TB, how to refer TB patients and how to identify extra pulmonary TB. The training was given on two different occasions.

Sputum smear preparation: The major problem identified was lack of transport and the distance between the health posts and the hospital, which made it difficult for suspected patients to come for checkups. Most people with presumptive TB didn't want to travel for two days to have a checkup for TB either because of money, no place to stay while waiting for gene xpert result, because of the distance they had to travel or mainly lack of transport because of no road infrastructure. So our change idea was to train HEWs on preparation of sputum smear slides for suspected patients, so that the HEW would be able to bring the prepared slides to the hospital. We

prepared a reference manual which provides a step by step guide to the procedure which was printed and distributed to the health posts. The training also included about safety to the workers and how to dispose the sputum cups. The training was conducted by a general practitioner and laboratory technician.

Awareness raising using Flyers: Flyers on the signs and symptoms of TB were prepared by the quality unit which was easy to understand with pictures. It was prepared by the local language and was deployed to raise awareness of the general public.

Health education: Health education about Tb was given by nurses and Health officers for patients and attendants in the waiting areas twice in a week. The dates were chosen, because of the patient flows were higher than the other days.

Study of the Interventions

The impact of the intervention was assessed by testing the change idea on small scale and later following the data with continues data display using run chart. We collected the data for the past 6 month and we used the run chart to plot the data over time and check if it fulfills the rules of run chart for improvement.

Measures

Outcome measures

According to the national TB guideline 2017, annually there are 177 TB positive patients per 100,000 populations in Ethiopia. Our catchment area has a population of 3500 which means that our hospital should diagnose 60 patients per year and 5 patients per month. To find one positive patient there must be 10 patients sent from the community, which means for a total of 5postive patient there should be 50 total referrals.

So the outcome measures were:

- Number of patient referred from the community/ number of patient expected to be referred * 100

NB: Number of patient expected to be referred = 50

Process measures

- Refresher training: Number of HEW at the refresher training / total number of HEW at the catchment * 100
- Sputum smear preparation: Total number of sputum smear slides that were brought to the hospital
- Awareness raising using Flyers: Total number of flyers distributed
- Health education: Number of health education given/ Total number of health education planned *100

N.B: Total number of health education per week is 2 and per month 8.

Data completeness and accuracy was checked by tallying the number of patients sent from health extension log books and this was cross cheeked with laboratory gene Xpert log sheet by the TB focal. The data were put in to excel and calculated the median from the past 6 month. We followed the data by using run chart to see the effect of time as a variable.

Results

All HEW in our catchment area were given the training on slide smear presentation and refreshment course which was 100%. We also gave the health education 16 times over two month. The main outcome of the project was an increase in total patient sent from the community from a baseline of 19% to 70%
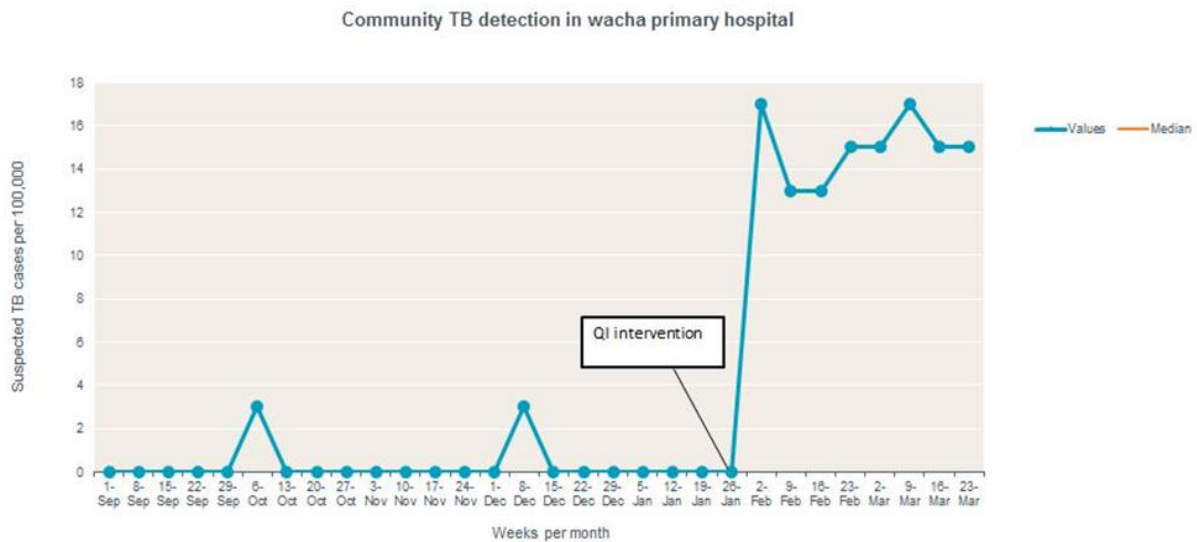
Fig: TB detection in Wacha primary hospital 2019

After the QI project was implemented, we saw improvement in the TB detection which can be seen in the run chart above, which fulfills the shift rule confirming improvement.

Limitations and Lessons Learnt

A couple of the interventions need resource, especially the sputum slide preparation. There should be an extensive training on how to prepare and store slides, on how to dispose sputum cups and transport them safely. There should be a dedicated focal which follows and assists the HEW's. The cost to make and distribute flyers is also high; we used resources set for the quality unit to achieve our goal.

Resource limitation was one key factor but by working hand in hand with the Woreda health office and the hospitals senior management we were able to move forward and achieve our target. Other limitation is loss of referral paper of patient and for those we tried to recover the referral copy from the HEWs.

Conclusions

One of the main targets of the five-year National TB strategic plans of FMOH to End TB 90-(90)-90 by 2020 is to ensure 90% of all people with tuberculosis will be diagnosed and treated, by doing so we decrease number of transmission and the fear of developing drug resistant TB. This project which is created in conjunction with a rural community will in a sense help alleviate the burden people face where the disease exploits the community's economy. By choosing a low TB detection area like us and implementing projects like this will help the country achieve its goals and become part of the system.

As long as there is a dedicated administrative setup, a strong TB focal and slide preparation training for the new HEW the change will be sustainable. But if one is missing from the three it is hard to talk about sustainability.

To take and spread this project to other sites the major ingredient is like any other projects, which is making people understand the importance of the project.

The next step for the project is promotional activities to encourage people to come for screening by using mass media and using local organized programs.

Reference

1. *Global tuberculosis report 2018. Geneva: World Health Organization; 2018. Licence: CC BY-NC-SA 3.0 IGO.*
2. *Federal democratic republic of Ethiopia ministry of health national guidelines for tb, dr-tb and leprosy in Ethiopia 2017*

Improving the quality of Nursing Care Plan at Pediatrics ward, Worabe Hospital

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Abstract

Background: Nursing care plan will support practice modalities by meeting physical, psychological, social and spiritual needs of patients. The incompleteness of nursing care plan is a significant problem that affects the quality of health care services in hospitals. It lacks completeness and comprehensiveness of data leading to poor patient outcomes, an increase in health care costs, clinical condition were worsening, occurrence of adverse events and effective nursing care plan reduces the probability of medical errors.

In our hospital base line survey were done randomly 68 selected IPD discharged patient charts in order to assess the quality of nursing care plan. Among evaluated 68 patient charts 45(66 %) quality of nursing care plan. We designed quality improving project   to improve quality of Nursing Care Plan from 66% to 100% from November 23/2018 - February 23/02/2019.

Methods: - The Plan Do Study Act (model for improvement) method of quality improvement was used for this project.

Intervention: Onsite orientation for pediatric ward staff, Case team meeting, regular mentoring and coaching was conducted, nursing care plan format was availed &patient chart audited

Results: Hundred percent pediatrics ward nursing staffs was oriented/trained on Nursing care plan ,96% of patient discharge had complete Nursing care plan, every week case based discussion was conducted for 11weeks, 95% of patient satisfied with the nursing care provision, 90% of medical record completed, decreased patient average length of stay &Increased work over lode

Conclusion: - At the end of this project the changes are implemented, NCP performance became 96% and according to run chart rule there was improvement and patient satisfaction was increased, patient length of stay decreased, good documentation, staff to staff & patient to staff communication habit was adhered and, Sustainability activities was planed

Key words: Nursing Care Plan, Problem, Rationale, Process, Systems &Intervention

Problem statement

For the past 03 months only 66% of admitted patients had quality nursing care plan in worabe comprehensive specialized hospital pediatrics ward, which leads to increased length of stay and decreased patient satisfaction. In pediatric ward after performance assessment was done, Inadequate nursing care plan, Medical record incompleteness, Prolonged length of stay (LOS) and Poor hand hygiene practice Were identified and criteria was designed based on Importance, Severity, Magnitude Feasibility to prioritize the problems since resource are limited, according to the criteria, the Inadequate nursing care plan was the 1st top problem as result this project was developed

Aim Statement

We Worabe comprehensive specialized hospital pediatrics health quality Team (QIT) aims to improve quality of nursing care plan service in Pedi wards from 66% to 100% within the next 4 months (November 23/2018 - February 23/2019).

Intervention

1. Training

Onsite orientation was provided for pediatric ward nursing staffs at November 25/2018 by senior nurse who is experienced and trained on nursing care plan.

2. Team meeting and mentoring

Every week case team meeting, regular mentoring and coaching was conducted.

3. Availing format

Adequate amount of Nursing care plan format for 6 months' consumption was availed.

4. Collecting data

Nursing care plan audit checklist was developed.

Weekly patient chart auditing (16 consecutive weeks) was conducted.

Study of the intervention

a.   The Plan Do Study Act method of quality improvement is used

PDSA Cycle 1

Plan	Change Idea	Orientation ,Case based discussion & mentorship
	What	Provide orientation, case based discussion & mentorship
	How	Onsite & patient side
	When	Orientation at once then fellow case based discussion & mentorship Every week at (Wednesday)
	Who	Pedi QIT
	Where	Pedi ward
	Data to be collected	Number of patient chart which have Completed NCP Number of trained staffs, case based cessation &mentorship

	Prediction	All pediatrics ward admitted patient which have quality of NCP
Do	Run the test	08 Staffs oriented, case based discussion cessation conducted , Attendance has been taken ,Weekly chart auditing for discharged patient
Study	Result	100 % staffs oriented on NCP, 96 % of patient discharge having complete NCP. This is a little more than expected.
Act	Adapt Adopt /Adjust Abandon/Reject	Reinforces the need to do more work in other wards (Adjust with some modification)

PDSA Cycle 2

Plan	Change Idea	Orientation, Case based discussion & mentorship
	What	Provide orientation, case based discussion & mentorship
	How	Onsite & patient side
	When	Orientation at once then fellow case based discussion & mentorship Every week at (Wednesday)
	Who	Pedi QIT
	Where	Pedi ward
	Data to be collected	Number of patient chart which have Completed NCP Number of trained staffs, case based cessation &mentorship
	Prediction	*All pediatrics ward admitted patient which have quality of NCP*
Do	Run the test	08 Staffs oriented, case based discussion cessation conducted , Attendance has been taken ,Weekly chart auditing for discharged patient
Study	Result	• 100 % staffs oriented on NCP, 82 % of patient discharge having complete NCP. This is a little more than expected.
Act	Adapt Adopt /Adjust Abandon/Reject	• Reinforces the need to do more work in other wards (Adjust with some modification)

Run chart rule is used to decide whether the observed outcomes were due to the interventions

Measure

Measures chosen for studying processes and outcomes of the intervention(s), including rationale for choosing them, their operational definitions, and their validity and reliability

- Percentage of patient chart which have Completed Nursing care plan
  Rational: - Percentage of patient charts which have Completed Nursing care plan can tell us the end results of our QI project aim

  Operational definition: - Patient charts which have completed Nursing Care Plan/ Total number of discharged patients X100

Validity: - No sampling was used because all the admitted patients chart were reviewed/surveyed and also well trained and skilled facilitator was chosen to ensure validity

Reliability: - Results were consistent over time and an accurate representation of the client's chart reviewed.

Accuracy and completeness of the data: -

During assessment all the nursing care plan components were reviewed for its completeness and verified by observing documentation of the data by nursing staffs at patient side and analysis was done by the team.

- Number of nursing staffs trained case based discussion cessation and mentoring and coaching cessation conducted

Rational: -Those that tell us the **changes** of our quality improvement efforts make to the inputs or steps that contribute to system outcomes. **Validity: -** All nursing staffs are trained by well-trained and skilled   senior

Approach used to ongoing assessment: -

Client Chart review**:**

- Assessment checklist was prepared and assessment was done over 16 weeks.
- Weekly NCP Data collection & monitoring tally sheet

Document review: -

- Training Attendance for nursing staffs
- Minutes of meting
- Mentoring and coaching files

Results

The run chart showing that Nursing care Plan at Pedatric ward from November 23/18 − February 23/19
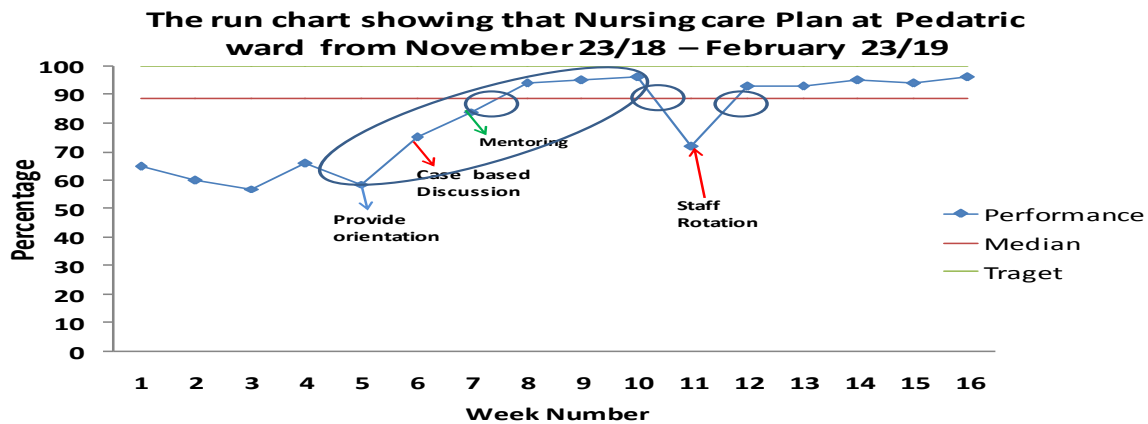
To describe whether the change idea leads to improvement or not, we used run chart rules and seen the trend more of rules of run chart: -

- o Rule2: trend is present five or more consecutive point move up
- o Rule3: - Too Few Runs is present number of runs cut the median line is 3 and add one the number of runs four and sixteen data points the probability table showing that there was statically significant and have sign of improvement.
- o 100% of pediatrics ward nursing staffs was oriented/trained on Nursing care plan
- o 96% of percent of patient discharge having complete Nursing care plan, which is almost the same to the aim
- o Case based discussion cessation was conducted for eleven weeks
- o Mentoring cessation was conducted for eleven weeks
- o Ninety-five Percent of patient satisfied with the nursing care provision
- o Ninety percent of medical record completeness
- o Decrease patient average length of stay

Limitations and Lessons Learnt

- o NCP Performance was decreased during Staff rotation
- o There was shortage of nursing staff during the project implementation

Conclusion

At the end of this project patient satisfaction was increased, patient length of stay decreased, good documentation, staff to staff & patient to staff communication habit was adhered

- o Conducting regular case based discussion, case team meeting and mentoring
- o Providing refreshment training on NCP for the nursing staff
- o Providing onsite training on NCP for newly recruited nurses
- o Availing formats constantly
- o Benefits of the change are widely communicated, immediately obvious, and supported by evidence
- o Recognizing best performers

Reducing Newborn Hypothermia at Birth in Chencha Primary Hospital, Gamo Zone, SNNPR, Ethiopia

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Background:

Newborn hypothermia occurrence is common throughout the world. Newborns regulate their body temperature unwell and lose heat more easily. As part of Institute for Healthcare Improvement's Supported Collaborative, we designed a QI Project in Chencha Primary Hospital Located 38 Km from Arbaminich town in SNNP region with a cold weather of 14^0c, which causes 30% of NICU admitted newborns to be hypothermic.

Improve the newborn babies average body temperature from 35.3^0c to normal body temperature (36.5^0c to 37.5^0c) at one hour of birth between September 2018 and April 2019. The team identified the root causes for higher rates of hypothermia and proposed the following change ideas.

- Orientation of midwives on reliable practice of skin to skin contact, initiation of breast-feeding time, preparation of delivery room readiness.
- Template prepared and used for documenting each activity (duration of skin to skin contact, initiation of breastfeeding time and score of delivery room readiness).
- Monthly discussion on each activity.
- Backup towels prepared and used.
- Radiant warmer and delivery room door maintained.
- Window sealed.

Average weekly newborn temperature shows an increase of 1.1^0c in the central line measure of the X bar S chart from the baseline of 35.3^0c to 36.4^0c. The team measured average duration of skin to skin contact which stands at 20 minutes after birth during the QI project period. Along with this, the average central line for breast-feeding initiation time is 44 minutes; the delivery room temperature increased from an average of 19^0c to 24.8^0 c in central line at birth (x bar and s chart). The average continuous skin to skin contacts at birth is maintained for 20minutes. The other interventions to raise the room temperature enabled the room temperature to raise by 2.6^0c. As a result, the temperature of newborns increased by 1.1^0c. More interventions will be required to prolong skin to skin contact and ultimately improve the newborn temperature for better survival.

Rationale

Different studies indicate preventing hypothermia in newborns increase the chance of newborn survival by preventing heat loss and maintain the body temperature with in normal range. Through conserving energy for growth and development, preventing hypoglycemia, hypoxia, cold injures and necrotising enterocolitis. Therefore, this intervention will reduce the risk of hypothermia related complications.

Specific Aim

To increase the proportion of newborns with normal temperature at one hour of birth from 7% to 100% between Sep 2018 and April 2019 in Chencha Primary Hospital.

Intervention(s)

Quality team, MCH case team and Hospital leaders were briefed on the one-week baseline assessment findings and last year's NICU admission report which; was associated with hypothermia. Based on Ethiopian Hospitals Service Transformation Guideline the quality unit already established sub quality improvement team and this team further brainstormed on the associated factors by using a fish bone analysis (Figure 1).
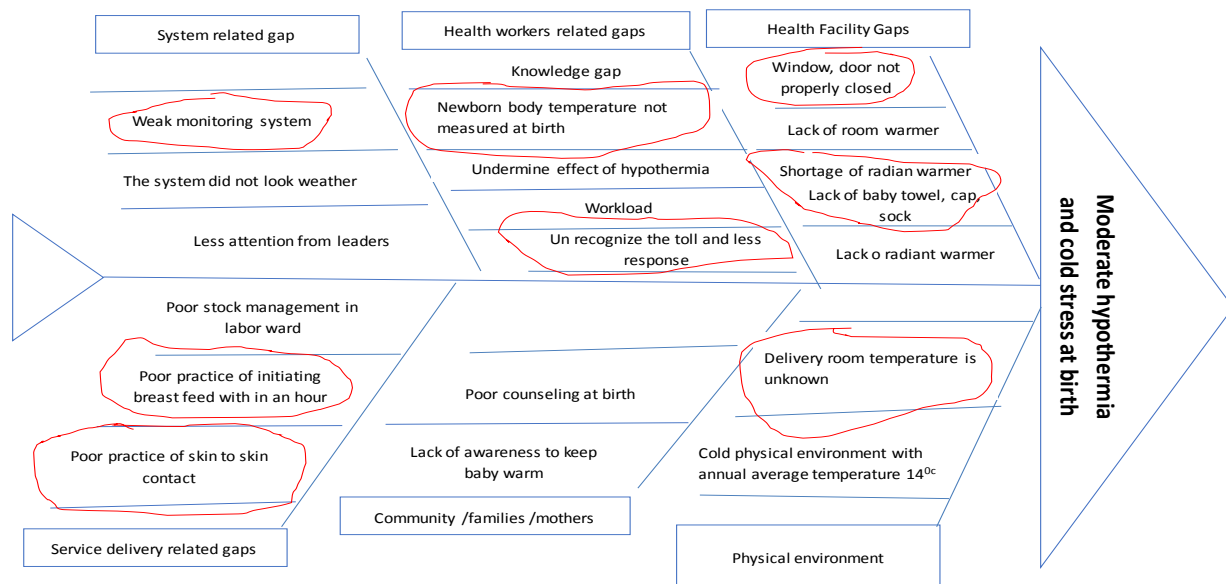
Fig 1: Root cause analysis for newborn hypothermia at birth in Chencha Primary Hospital

Methods

Model for improvement framework was used

What are we trying to accomplished?

- To increase the proportion of newborns with normal temperature at one hour of birth from 7% to 100% between Sep 2018 and April 2019 in Chencha Primary Hospital

What change can we make that will result in an improvement?

- Midwives were orientated on reliable practices of recommended standards (reliable practice of skin to skin contact, initiation of breast feeding within an hour and delivery room readiness at birth)
- Separate template was prepared and used to document duration of skin to skin contact, initiation time for breast feeding and score of delivery room readiness.
- Monthly discussion was held to study the data captured and the progress.
- Backup towels were prepared and used to fill gap (as some mothers do not bring towel it is difficult to provide care at birth without back up towel).
- Radiant warmer and delivery room door were maintained.
- Windows were sealed (the electric line passed through the window to the delivery room disabling the window closure that affected room temperature)

Measures

Outcome measure

- % of newborns with normal body temperature at 30', one hour and two hours of birth.

Process measure

- Average delivery room temperature.
- Average time in minutes of skin to skin contact after birth.
- Average time in minutes between birth and breast feeding.
- Successive delivery room score on practice of using radiant warmer, use of towel, closing window and door at birth.

Balancing measure

- Number of hypothermia admission at NICU /if practice of hypothermia at birth increase it will decrease percent of hypothermia at admission in NICU/

Analysis

PDSA template was used to plan, do, study and act on proposed change ideas. Each process was documented on data collection tool for routine QI team meeting and the corrective actions taken. Each process event over different condition was observed and ramp of PDSA cycle carried out.

Feedback given to midwives on findings of hypothermia prevention practices at birth Nov 1-15,2018

Power backup /generator Nov 1-15,2018

Process of skin to skin contact and initiation of breastfeeding time observed during day and night time Oct 16-31,18

Window sealed, and reserve baby towel purchased Oct 16-31, 2018

Duration of skin to skin contact, breast feeding initiation time identified at birth Oct 1-15,2018

Radiant warmer and door-maintained Oct 1-15,2018

Midwives oriented on practice of skin to skin contact, breast feeding and delivery room readiness between Sept 15- 31

Mini meeting conducted with hospital leaders (Medical director MCH head and CEO) to work on maintenance Sept 15-31,18

Orientation of midwives on reliable practice of skin to skin contact, breast feeding and delivery room readiness (measure delivery room temperature)

Maintenance of radiant warmer, window, door and window; backup towel at every birth

Figure 2: Ramp of PDSA Cycle

Statistical Process Control (SPC) chart software was used to understand variation on processes of each activity among all normal term newborns.

Results

Average weekly newborn temperature shows an increase of 1.10c in the central line measure of the X bar S chart from the baseline of 35.30c to 36.40c due to implementation of three separate change ideas: orient midwives on practice of skin to skin contact and document duration, early initiation of breast feeding in one hour and maintenance of radiant warmer door and window and monitor room temperature see the figurers below.
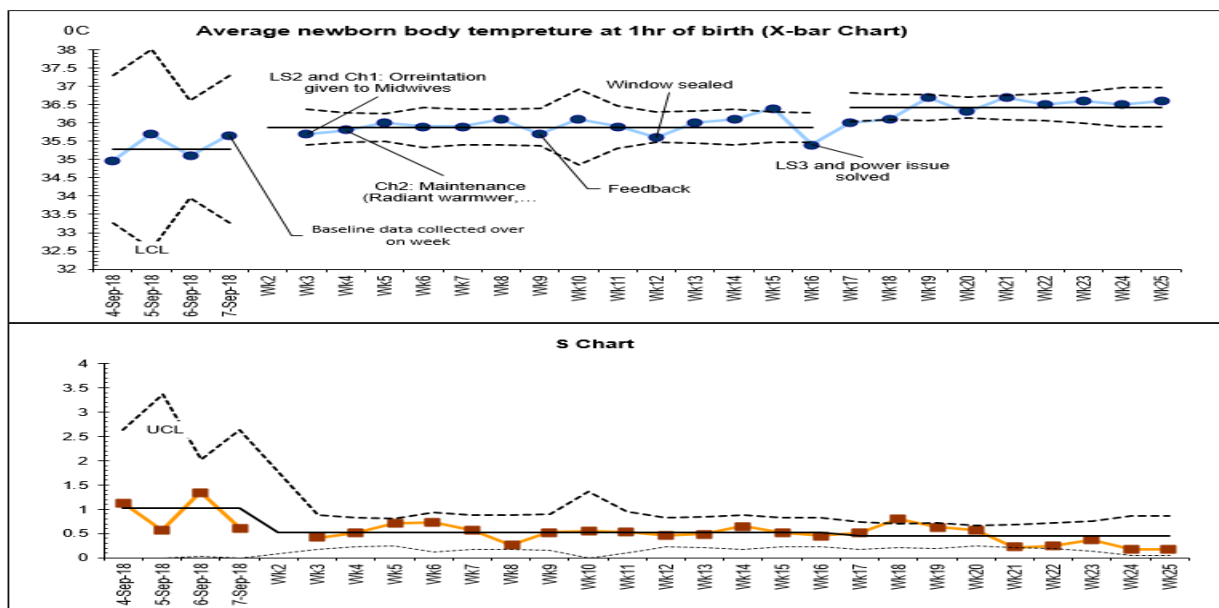
Figure 3: Newborn body temperature at one hour of birth X bar S chart
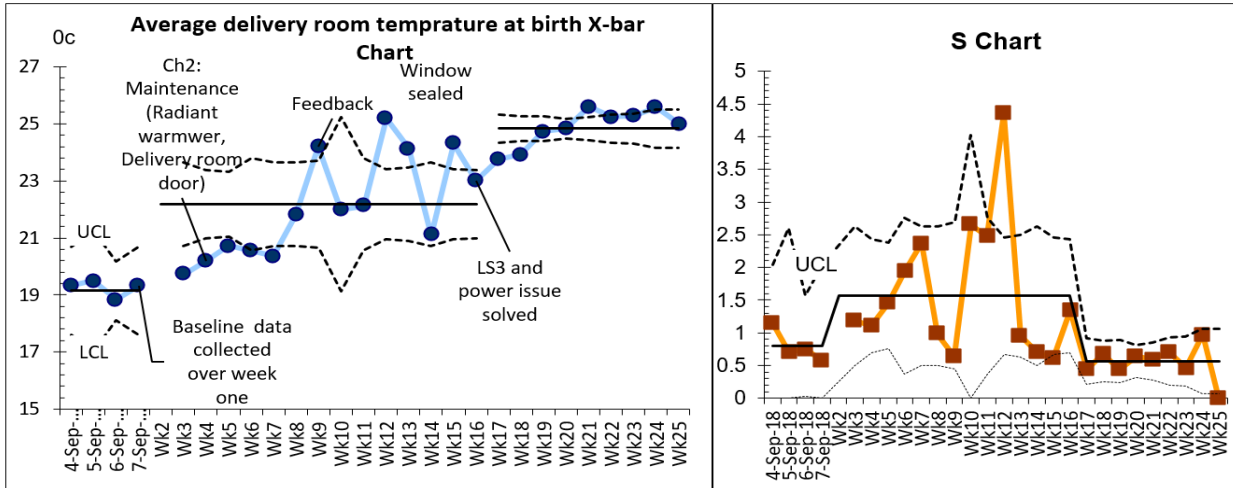
Figure 4: Delivery room temperature at birth

This work helped us to learn that reliable practice of skin to skin contact at birth is interrupted while providing an essential immediate newborn care and during transferring mothers from delivery room to postnatal room. Then after also its continuity in a postnatal room is affected by multiple factors. Our team measured duration of skin to skin contact at birth /during third stage of labor/ and the average time is 20 minutes. According to WHO 1-2hr is recommended after birth therefore our team is exploring ways of maintaining skin to skin contact in postnatal care unit as well.
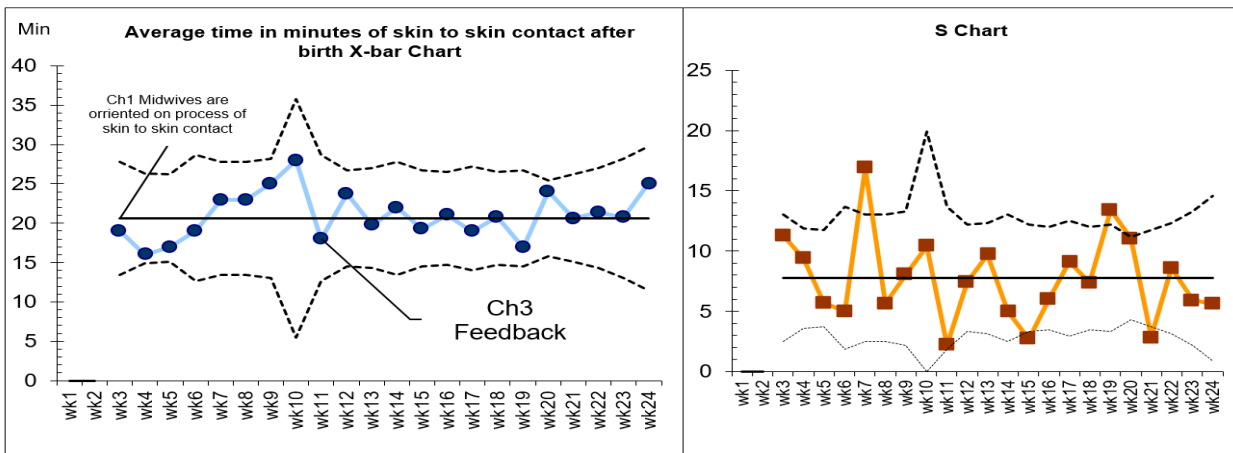
Figure 5: Duration of skin to skin contact at birth
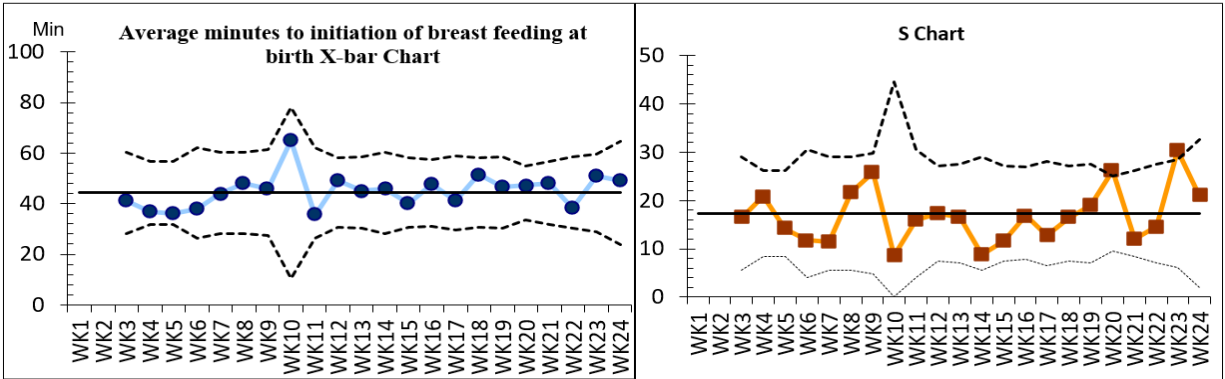
Figure 6: Breast feeding initiation time in minute at birth

The physical environment of the woreda is cold with annual average temperature of 14^0c. The improvement team worked and improved the delivery room temperature from an average of 19^0c to 24.8 ^{0}c
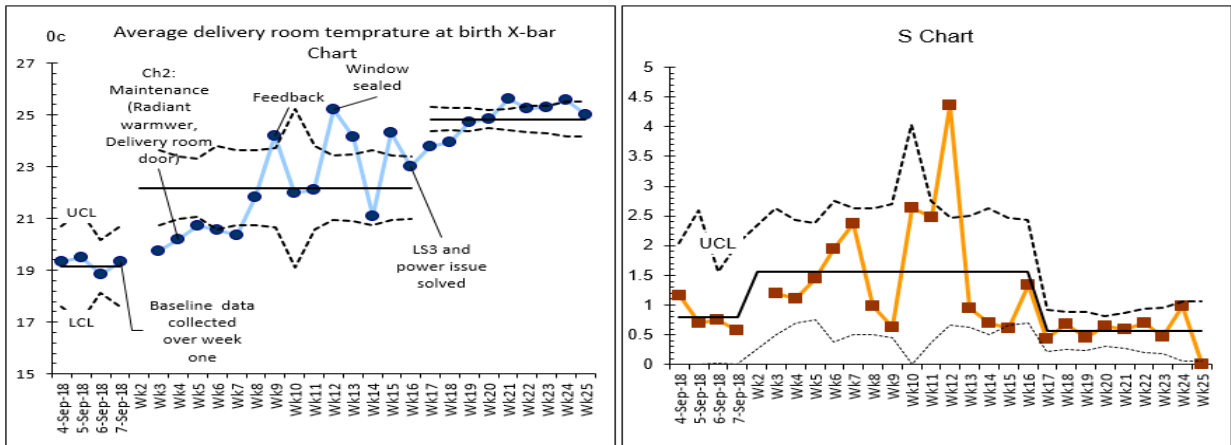
Fig 7: Average delivery room temperature at birth
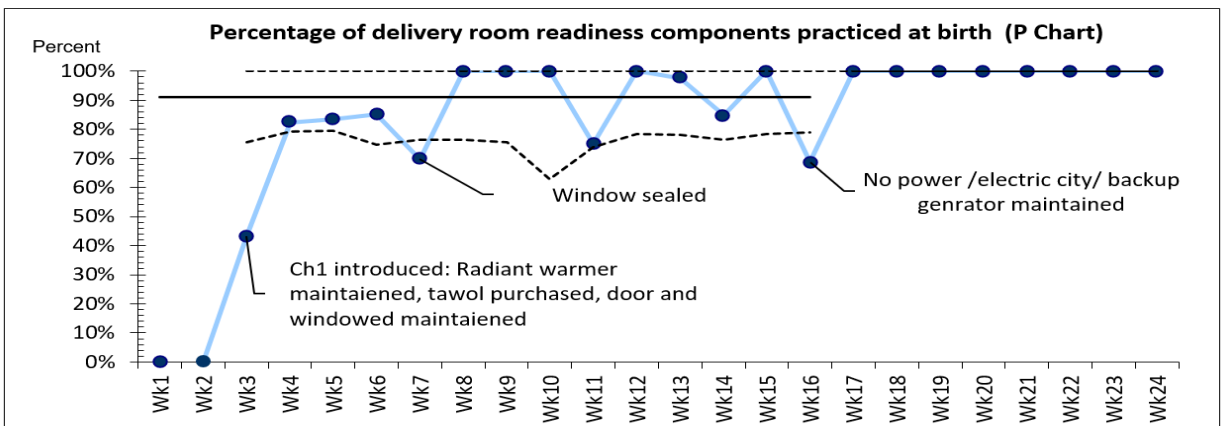
Fig. 7 Data on delivery room readiness

Score on delivery room readiness
- 0 not documented the practice
- 1 when only door and window closed at birth
- 2 when towel is present and used at birth
- 3 when radiant wormer is functional at time of delivery used at birth
- Note: way of collecting data:
    a. 1, =score 1
    b. 1,2/1,3 =score 2
    c. 1,2,3=score 3

There is slight linear correlation between delivery room temperature, initiation of breast feeding and newborn average body temperature at birth.
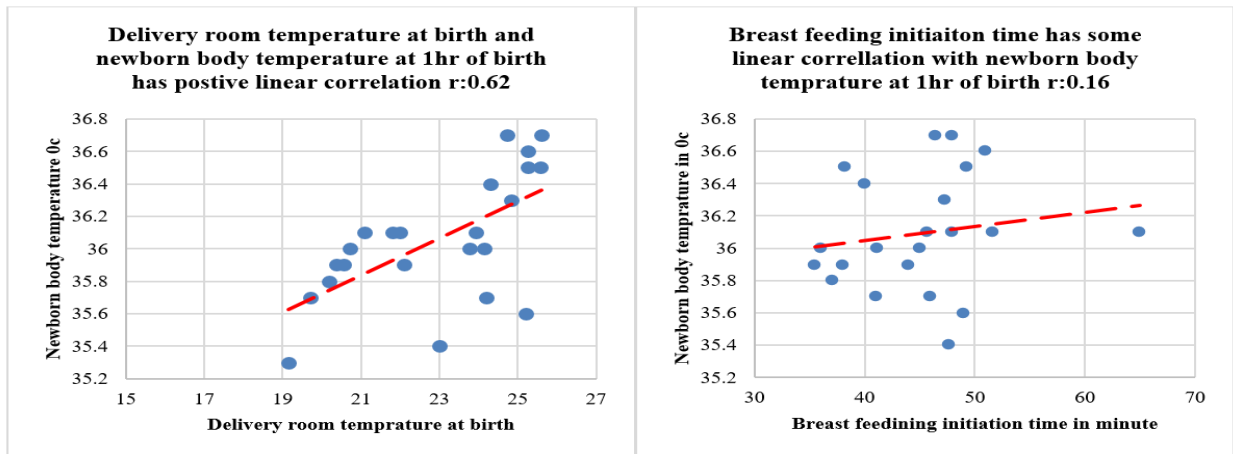
Fig 8: correlation of delivery room temperature and breast feeding with newborn body temperature at birth

Limitation

- This is specific quality improvement work and generalizability is not work.
- Confounding variables were not controlled.
- Baseline data only captured of one week and lead less confidence for compression.

Lesson learnt

Our team learnt that the higher management team/leadership of the hospital was easily convinced to respond to the evidence-based information without delay. In our setup in most health facilities measuring newborn body temperature at birth was not common. In our case measuring the newborn body temperature immediately after birth at an hour of birth helped us to diagnose the magnitude of hypothermia and this data urged the leadership to respond in addressing the delivery room readiness gap.

Conclusion

Average continuous skin to skin contact was 20 minutes at birth. Other interventions to raise the room temperature enabled the room temperature to raise by 2.6^0c. All these increased the newborn temperature by 1.1^0c. More interventions will be required to prolong skin to skin contact and ultimately improve the newborn temperature for better survival.

Utilization of Safe Childbirth Checklist to Improve Quality of Care Provided to the Mother and Newborn: A Case of Molalie Health Center, North Shoa Zone, Amhara Region

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Abstract:

Background: Safe Childbirth Checklist (SCBC) was designed by World Health Organization (WHO) as a tool to improve the quality of care provided to women giving birth. The checklist is an organized list of evidence -based essential birth practices/clinical bundles, which targets the major causes of maternal deaths, intra-partum related stillbirths and neonatal deaths that occur in health-care facilities around the world. In Ethiopia, the use of SCBC started as a new initiative in 2018 and the utilization is very low. In the Amhara region, the utilization of the checklist in the health facilities was very low. Molalie health center's team recognized that the health center was not using the SCBC during labor and delivery. Therefore, the quality improvement team (QIT) with support from the USAID Transform: Primary Health Care project planned to introduce the checklist/bundle to improve the care given to the mother and newborn during labour and delivery.

Methods: Following the gap identification, the QIT developed a QI project which aimed to introduce the SCBC/clinical bundle utilization for women during labor/delivery. Based on the root cause analysis using driver diagram, the team developed and tested change ideas. The QIT used repeated PDSA cycles to test the change ideas and while the PDSA cycles implementation the team has collected and monitored the data on daily and weekly bases on all the four bundles/poses such as on admission bundle, before pushing bundle, soon after birth bundle and, on discharge bundle. While testing the change ideas, the team has to collect data on measurements.

Result: The team managed to utilize the SCBC correctly and completely for all women during labor and delivery in the facility which is evidenced by data over time (run chart), then the team decided to make the SCBC as part of the routine system in the health center to reduce maternal and neonatal deaths. The past one-year's data shows that the delivery of evidence-based essential birth practices at each birth event increased from zero out of 522 practices prior to introduction of the checklist to 437 out of 446 practices after the checklist had been introduced.

Conclusion: To improve system performance, building the capacity of quality improvement teams, coaching/mentoring and use of data as a tool for decision making were key factors for QI project success.

Introduction

The WHO Safe Childbirth Checklist (SCBC) was designed as a tool to improve the quality of care provided to women giving birth. The Checklist is an organized list of evidence-based essential birth practices, which targets the major causes of maternal deaths, intra-partum-related stillbirths and neonatal deaths that occur in health-care facilities around the world. Each Checklist/bundle is a critical action that, if missed, can lead to severe harm for the mother, the newborn, or both. In Ethiopia, use of WHO SCBC started as a new initiative in 2018 but the utilization is very low. In the Amhara region, the utilization of the checklist in the health facilities was very low.

As one of the project site USAID Transform: Primary Health Care Project supported Molalie health center to improve the quality of the service delivery. Health center QIT team as part of their baseline assessment, they have done clinical auditing on MNH service using MOH audit tool and have identified that the health center was not using the SCBC during labor and delivery. To address this challenge the QI team planned to improve SCBC utilization. The purpose of this QI project was to improve SCBC/clinical bundle utilization for women during labor/delivery from 0% in February 2018 to 80% by December 2018.

Methods

Following the gap identification, the QI team, started to work on SCBC utilization using repeated PDSA cycle to test different change ideas to reach to their objective. They have provided orientation to the midwives on correct & complete use of SCBC, Peer to peer review, provided weekly mentorship.

Measures

Input measure was availability of safe child birth checklist, process measure was the number of staffs provided orientation on correct & complete use of SCBC during labour and delivery. The outcome measure was the percentage of women whose labour and delivery followed with SCBC/checking compliance to all the four bundles in the SCBC such as on admission bundle, before pushing bundle, soon after birth bundle and, on discharge bundle, and parthograph utilization was followed as a balancing measure. Data was collected on daily and weekly bases by the midwives at the labor and delivery and regular card auditing and peer to peer coaching and mentorship was done by the QIT. Data was analyzed using data over time and the team has used the QI chart templet to put data on the run chart on monthly bases.

Result

The team managed to utilize the SCBC correctly and completely for all women during labor and delivery in the facility which is evidenced by data over time (run chart), then the team decided to make the SCBC as part of the routine system in the health center to reduce maternal and neonatal

deaths. The past one-year's data shows that the delivery of evidence-based essential birth practices at each birth event increased from zero out of 522 practices prior to introduction of the checklist to 437 out of 446 practices after the checklist had been introduced.

Fig: Utilization of safe childbirth checklist, in Molalie HC, North Shewa, Feb. - Dec. 31, 2018.

Conclusion

The QIT has learned that the use of SCBC is very critical to monitor labour birth to detect complication as early as possible and respond to it. So the team has adopted the intervention as a standard of care in the health center and has developed protocol for labour and delivery management. To improve system performance, building the capacity of quality improvement teams, regular coaching/mentoring and use of data as a tool for decision making were key factors for QI project success.

Increase Partograph Use through Quality Improvement Intervention in Bambasi Health Center, Benishangul Gumz Region, Ethiopia

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Background

Developing regions of Ethiopia, pregnancy related mortality ratio is higher compare to national figure (412 per 100,000 live Birth). Partograph is cost effective and easily applicable health interventions, that can help prevent the majority of maternal and neonatal deaths. However, use of partograph of birth care providers vary throughout the country, and its use in pastoralist region is the worst. Therefore, this QI project is aimed to improve use of partograph and its associated factors among birth care givers in Bambasi health center in Benishangul Gumz region, Ethiopia. Model of improvement used to improve the use of partograph in the facility.

Fig 1. Root cause analysis using driver Diagram

Objective

This QI project is aiming to increase use of Partograph in obstetric service provision from 20% to 100% by the end of March 2019 in Bambasi HC of Benishangul Gumz Region.

Intervention

Training on QI approach, and BEmONC provided by USAID T-HDR. The project RMNCH officers conducted onsite coaching and close follow up on Obstetric service provision including Partograph use. The HC established Quality Improvement Team to strengthen the quality service and performance of the health facility. The team identified low partograph use, which is 20% in baseline assessment. Using QI tools, onsite orientation on Partograph completion, documenting & recording of activities done by the health facility health officer and midwifery, who are trained and experienced in delivery service. The peer to peer support continued at delivery room for linking experience health workers with less experience professionals. The QIT carried out routine follow up to delivery unit as per supportive supervision planned weekly.

Measurement

The performance of partograph use was reviewed by HC QIT in monthly basis and measurement used to monitor the progress (outcome indicator- number maternal and child death, process indicator- partograph used to assist delivery and number of deliveries happened in the facility). Bimonthly random data quality to ensure data consistency and completeness was done by QI officer and HMIS officer (registration, report and complete Partograph).

Result

Partograph use orientation and onsite coaching given to six health workers. A weekly peer to peer support made among six health workers using paired modality (experienced HW with non-experienced). A total of 298 pregnant women delivered in the HC and 297 of them are live births. Out of these deliveries, 75% of them assisted using partograph and documentation completed as required from Oct 2018 to Jan 2019. This shows 55% increment compare with previous period partograph use in Bambasi HC. During the QI project period, twelve onsite coaching and close follow up conducted to ensure partograph use and provision of care following delivery. Oxytocin administration given to 224 delivered mothers and early initiation of breast feeding started for 297 babies. Before this intervention in the health facility 3 newborn death documented but, in this intervention period the health facility experienced only one death, which caused by late referral from nearby HF. The monthly LQAS score showed above 86% during QI project implementation.
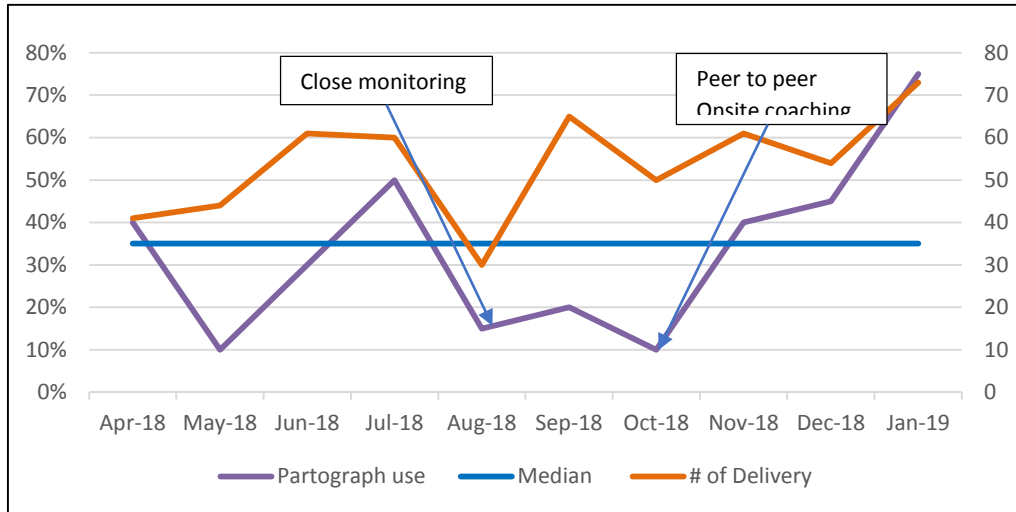
Fig 2. Delivery and Partograph use, Bambasi Health center

Lessons Learnt

Peer to peer support contribute the interaction and early adoption of partograph use. Close follow up and mentoring by supervisor were facilitated the use and documentation of provision of care on partograph. As result of partograph use in the health center, documented increment on number of deliveries, reduction of newborn death and consistent use of partograph that contributes for quality service improvement.

Conclusion

The health facility QIT adopted intervention and decided to continue the intervention in the coming period. Partograph use helped to improve the quality of service related to labor & delivery care and which contribute for improvement of facility delivery. The number of deliveries showed an increment over time following partograph use in the facility, which indicate improvement of quality service in the health facility. USAID transform HDR will scale up to 32 health centers to improve labor monitoring and take appropriate action on time using partograph.

Reducing Outpatient waiting time to consultation at outpatient department, Worabe hospital

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Abstract

Background: outpatient waiting time is important health care in hospital service, if waiting time is much long patient perceive as barriers to actually obtaining services. Improving patient's satisfaction towards healthcare services by reducing their Waiting time, attending the patient in time and sympathetic approach will create a positive image of hospital in the minds of people and will also help the hospital to build an image in the community.

In our hospital baseline taken quarter one key performance indicator (KPI) report for outpatient waiting time to consultation survey was 72 mints. This is higher from the target indicator which is 40 minute or less.so We designed quality improving project to reduce waiting time from 72 minute to 40 minute over the next three months (October 01 – December 30/ 2018)..

Methods: - The Plan Do Study Act cycle method of quality Improvement was used for this project.

Intervention: Onsite orientation Provided for all outpatient staffs, time management, additional staffs recruited, done benchmarking from other better hospitals, medical record room renovated and repeat patient card searching system well designed and Smart data base system established at central triage room and community based health insurance/ CBHI/ registration room, then direct link the repeat patient to OPD without waiting.

Results: assessment checklist was developed and used regularly, all out patient staffs well oreiented,staff number increased,easly finding repeat patient card,outpatient waiting time reduced to 39 minute, increased patient satisfaction(96%), assigned data collectors and doing survey every weeks, average waiting time in mints taken as outcome measure.

Conclusion: - At the end of this project the changes are implemented, OPD waiting time reduced to 40 minute, patient satisfaction increased (96%), staff work load decreased, good patient card arrangement/documentation/, so follow and strengthen the change ideas to be sustained.

Key words: outpatient waiting Time, quality improvement, medical record, and community base health insurance

Problem statement

For the past six Months the average outpatient waiting time to consultation in Worabe Comprehensive Specialized Hospital (WCSH) Outpatient Department (OPD) was 72 minute, this is higher from the national indicator 40 minute or less, which leads to increased length of stay and decreased patient satisfaction. Then assessment was done by OPD staffs to identify and prioritize the problems at outpatient department, The major problems were long outpatient waiting time to consultation,frequent stock out of drug and supplies, Low coverage of ANC 4th and Poor referral linkage among this list of the problem the team was used Problem identification and prioritization Matrix tool based on the criteria was designed magnitude, severity, importance and feasibility the team was selected the first rank long outpatient waiting time to consultation taken as quality improvement project. So after assessing problems which makes OPD waiting time more long was Medical record registration system no more organized, poor time management, knowledge and skill gap,MR room not well arranged and shortage of staffs.

Aim Statement we worabe comprehensive specialized hospital outpatient quality team aim to reduce outpatient waiting time to consultation from 72 mint to 40 minute within the next 3 month (October 01– December 30/ 2018).

Intervention

After identifying the detail problems, action taken like provided onsite orientation for all outpatient staffs about QI project. patient take long waiting time at medical record registration in order to solve such problem, Patient which have pervious medical record number consider as repeat patient and searching their MRN by assigned one health informatics technician and availing computer and Smart care data base at central triage room, then direct link the repeat patient to served OPD without waiting for medical record registration and the card was facilitated by assigned OPD runners. Central triage starting time shaped to start early, outpatient consultation time regularly monitored by human resource department and outpatient department coordinator. In order to improve MR management specially retrieving and shelving ,medical record Staffs was attended benchmarking activity at black lion Specialized Hospital & St, Paul's Hospital Millennium Medical Collage (SPHMMC), after benchmarking done re-filling patient chart, renovate medical record room.on CBHI service previously only one centralized Community Based Health Insurance(CBHI) unit provide the service, so one patient at maximum four times touching for CBHI unit for medical record service, Laboratory service, Imaging service and Pharmacy service as a result patient take long waiting time. to solve the problem Purchased two additional CBHI data base and provided CBHI data base usage training for cashiers and installed at Laboratory and community pharmacy service points and Recruited additional staffs (Runner (08), HIT (01) Nurse (03), Cahier (04) & Medical record staffs (07) by human resource department.

Study of the intervention

Plan, Do, Study and Act (PDSA) cycle method of quality improvement model was used and update outpatient waiting time to consultation survey tool, based on the survey checklist collect the data over the time, plot the data on run chart, a noted the intervention and decide whether the observed outcomes were due to the interventions by used Run chart rules.

By using outpatient waiting time survey checklist and the Average waiting time in minutes to measure the outcome. Regarding to validity and reliability using the sampled size of 20 patients per week at different times of working days considering high patient flow days like Monday and low patient flow day like Thursday, then taken the average waiting time of Monday and Thursday. The following data over the past 12 weeks on waiting time (at the time of patient entry at central triage and ending at the time of starting the consultation of medical staff).

Week Number	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Total waiting time (minutes)	1330	1300	1880	1040	1040	1080	1000	980	960	880	820	780
Number of patients	20	20	20	20	20	20	20	20	20	20	20	20

Average outpatient waiting time to consultation, number of CBHI data bases purchased, number of CBHI unit added, number of mentoring and coaching cessation conducted, number of additional window added, number of Benchmark cessation conducted, Percentage of patient Satisfaction, Percentage of client compliant received & number of Staff recruited.

Outpatient waiting time refers to the time a patient waits in the hospital starting from the triage and ending at the time of starting consultation by medical staff at OPD.

Measures

The data accuracy and completeness was maintained by provided training for data collectors, the team members weekly monitoring and reviewed the data.

Analysis

Quantitative data analysis: -Structured outpatient waiting time survey tool was used to measure the outcome (Average waiting time in minute) and also used percentage and number to determine the process and balance measure like percentage of patient satisfaction, Number of Benchmark session conducted, Percentage of client compliant received, Number of CBHI data bases purchased and Number of Staff recruited. Collected the data over the time and plot the data on run chart to analysis understanding of variation within the data either common cause and special cause variation. The run chart definitely tells us there was special cause variation.

Result

The run chart Showing that average outpatient waiting time to consultation at WCSH from October 1 − December 30/2018
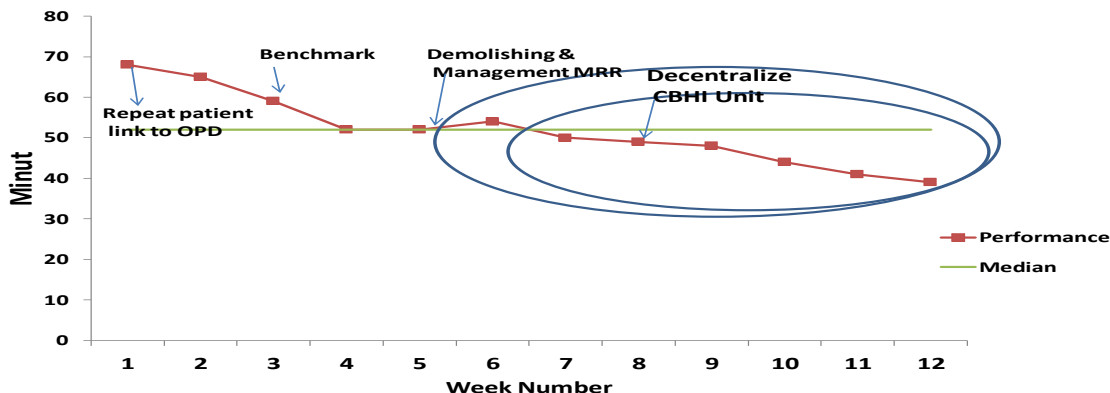
To descried whether the change idea leads to improvement or not, we used run char rules and seen the trend more of rules of run chart

Rule1: - Shift is present six consecutive points move down wards the median value

Rule 2: - Trend is present seven consecutive points move down wards on the same direction

Rule3: -Too Few Runs is present number of runs cut the median line is one and add one   the number of runs Two and Ten data points the probability table showing that there was statically significant and have sign of improvement.

Probability Table

Total no of data points that do not fall on the median	Lower limit for no. of runs (< this no of runs is "too few"	Upper limit for no. of runs (>this no. of runs is "too many"
10	3	9
11	3	10
12	3	11
13	4	11
14	4	12

Average outpatient waiting time to consultation before project implementation was 72 mints and at the end of the project intervention period average outpatient waiting time to consultation was reached to 39 minute, this result almost comparable with national target of waiting time to consultation and implementation and sustain the next   plan for the hospital.

Patient satisfaction survey tool was used to measure patient Satisfaction was ninety-six percent and measure patient compliant through registration book and complaint receiver two

Regarding to process measure we have two CBHI data bases purchased and installed, based on CBHI data base availability two additional CBHI unit added at community pharmacy and laboratory departments and trained cashier on CBHI data base usage already provide service and reduce patient waiting time and improve patient fellow path way, one times benchmark cessation conducted at Black line Hospital and St. Paul's' Millennium medical Collage based on experience sharing improve MR management specifically retrieving system shelving, re-filling, add additional window and demolishing medical record room which decrease patient waiting time at medical record registration. Recruited number of staffs Runner (08), HIT (01), Nurse (03), Cahier (04) & Medical record staffs (07).

Patient satisfaction survey tool was used to measure patient Satisfaction was ninety-six percent and measure patient compliant through registration book and complaint receiver two percent of client compliant was received.

Limitation

Staff shortage, all service not automated/networked each other, shortage of budget

Conclusion

After completion of this QI project Average outpatient waiting time to consultation was reduced to 39 minute which is comparable to national target by intervention of decentralized CBHI unit, improve management of medical record room by demolishing the room, re-filling the patient chart and add additional window, time management, repeat case directly link to OPD, benchmarking, and staff recruitment which improves quality of health care, decrease length of waiting time, reduce cost, increase patient satisfaction and reduce patient complaint.

Sustain the result by involving senior management team (SMT), all staffs working in outpatient department, create accountability, continuously measure, monitor, follow up the result, and automated/networked OPD service.

Surge plan; a Quality Improvement Booster

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Abstract

Background: The number of the services given by Mizan- tepi university teaching hospital, like every health facilities in our country, has increased since it was founded three decades ago. This specifically was since after its transformation into a teaching hospital three years back. However, the quality of care couldn't keep up with both the catchment population as well as the services provided by the hospital. This was apparent on the self assessed EHSTG performance in the 1st to 3rd quarter of 2010 EFY. An average of 53%, which was one of the lowest performances recorded among hospitals in SNNP. In addition to this, the patient satisfaction was 5/10, during that same period. Our Quality improvement unit then designed this plan in order to address the aforementioned problems.

Methodology The quality unit came up with an idea which has not been practiced elsewhere to our knowledge, which is the surge strategy. This booster strategy is constituent of interventions which intensify activities in optimum pace, as well as build the capacity of the sub quality teams (QITs). The surge plan, starting from end of third quarter, lasted for 3 months of the 4th quarter of 2011EFY. Initially what we did was to list all the unmet standards of the EHSTG. After that, we sorted each problem in order of feasibility of their intervention based on resource and time. Next, the plan focused on division of the quality unit members to mentor and work with each sub QITs (Five for each of us). Each of us, along with sub QITs, directly involved at each sub QITs level on daily basis until standards which can be met in short and intermediate term are met. Focus matrix was utilized to prioritize interventions which can be done easily the effect of the intervention was assessed by serial measurement of patient satisfaction and EHSTG.

Results: Significant improvement was seen in patient satisfaction which grew from 5.1 to 8 and then 8.5 in the last quarter of 2010EFY and first quarter of 2011EFY respectively. In addition to this, the whole process built the knowledge and skills of the sub QITs as they were the integral part of problem solving crew.

Conclusion: Working in the front line by the quality improvement unit focusing on the large number of interventions which can be achieved easily in a resource limited setting can bring dramatic change than by just passing order down the hierarchy. Besides, it will give it structure and strengthen training deficient sub QITs and hence sustain the changes.

Problem description

Mizan – Tepi university Is one of the oldest universities in Ethiopia. The hospital was transformed into a teaching institution three years back. Currently the hospital serves a catchment population reaching 2.5 million. Since its establishment in 1986 it has been increasing its number of services in order to satisfy the ever increasing demand of the community. However increasing just only the number of services comes at a cost of quality. It's for the most part due to unmet demand in medical equipment, essential medications, and human resource.

FMOH is currently focused on improving the service quality delivered at each healthcare facility. In order to achieve this, it has introduced Ethiopian health service transformation guideline (EHSTG) which has twenty chapters, 197 standards, for teaching hospitals. The guideline, if followed strictly, is important to facilitate interventions which could bring sustainable change. However, understanding the guideline and implementing all the activities requires adequate hands-on training. As it is true everywhere, only handful people are trained on EHSTG and quality improvement. This was the major cause of our problem. The hospital has only three quality trained staff, the rest were working by common sense.

After the re-structuring of all twenty chapters, the sub QIT leaders were trying their best to accomplish the goals as per the EHSTG. However, they felt short to do that in the required pace. Although unsuccessful, we tried to build the capacity of our sub QIT leaders by giving short course of quality improvement training. It was after all these trials that we started looking for other options.

Rationale

The idea of intensive coaching and mentoring on daily basis was the option that seemed appropriate in our setup. This is because for one, the sub QIT leaders are the busiest staff as they are in ample committees that they do the quality works as a side job and the other is they always do their best, within their limit, to lift the hospital quality activity up. So, it was for these two reasons that we designed the surge plan.

Specific aims

The aim of the surge plan was to increase the EHSTG performance of the hospital from 60% t0 80% and by extension increase patient satisfaction from 5.1 to 8 out of 10 in just six months.

Methodology

The quality unit came up with an idea which has not been practiced elsewhere to our knowledge, which is the surge strategy. This booster strategy is constituent of interventions which intensify activities in optimum pace, as well as build the capacity of the sub quality teams (QITs). The surge plan, starting from end of third quarter, lasted for 3 months of the 4th quarter of 2011EFY. Initially

what we did was to list all the unmet standards of the EHSTG. After that, we sorted each problem in order of feasibility of their intervention based on resource and time. Next, the plan focused on division of the quality unit members to mentor and work with each sub QITs (Five for each of us). Each of us, along with sub QITs, directly involved at each sub QITs level on daily basis until standards which can be met in short and intermediate term are met. Focus matrix was utilized to prioritize interventions which can be done easily. The effect of the intervention was assessed by serial measurement of EHSTG performance.

After we divided the tasks among ourselves each of us –the quality unit members who had taken the quality improvement training- joined the sub QITs to tackle each problem. The whole team members in each sub QITs participated in bringing change ideas using logical and lateral thinking with the guidance of the quality unit members. Then, change ideas that seemed feasible were chosen and carried out. In order to evaluate our activities we used the standards and bulletins from the EHSTG assessment book. In addition to this we also assessed patient satisfaction as one of the outcome measure.

This whole process enabled us to conduct supervision as well. What was planned yesterday? What did we accomplish yesterday? And what is our plan for today? Were the three most important questions governing our project. Using these questions we were able to efficiently accomplish each listed out activities as well as supervise and assure that the changes were being sustained.

Importance						
		1	2	3	4	5
Feasibility	1					
	2					
	3					q, r, s
	4					Y,27,28, 29,30, 31	U, v, w, x
	5					a,b,c,d,e,f,g,h,I,j,k,l,m, n,o,p,z,t,32,33,34,35

Fig 1; - Focus matrix: the letters (a-z) and numbers (27-35) represent 35 interventions that are believed to boost the EHSTG performance. Of these, 22 were found to be the most feasible and important. Accordingly, these were the interventions we tried to carry out.

Result of the surge plan
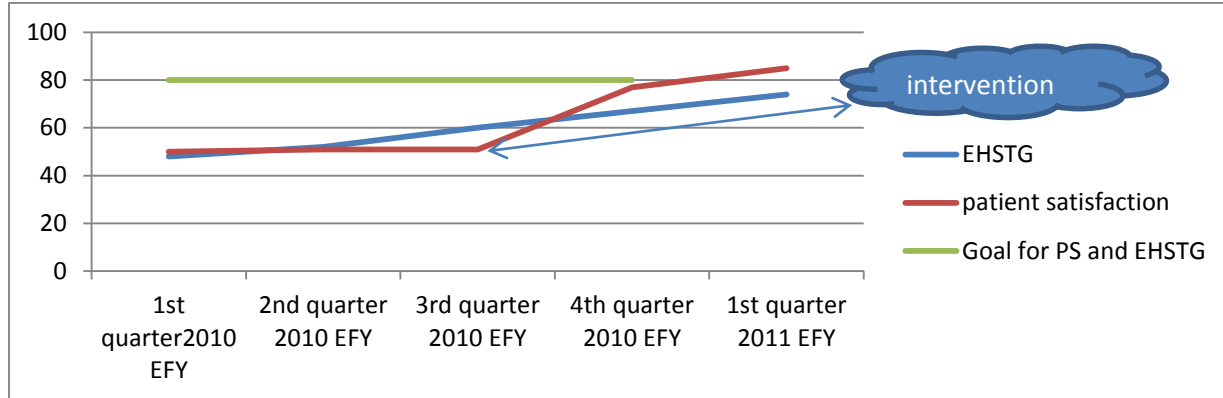
Fig 2; - This line graph shows the change in EHSTG and patient satisfaction of MTUTH in and after the intervention period.

Following the intervention, EHSTG performance grew from 60% in third quarter to 74% and patient satisfaction from 51% to 85% in first quarter of 2011. In addition to this, strong link was established between the staff working at each sub QITs, a platform suitable for knowledge and experience sharing was created. In addition, it avoided a one man show by bringing structure and system throughout the process.

Limitations

The external validity of this practice must be tested by other healthcare facilities because strict measurements were not documented. And above all, the significance of the intervention for the contribution of patient satisfaction is not evidenced with statistical measurements. I.e. p value, run chart...

Conclusion

Working in the front line by the quality improvement unit focusing on the large number of interventions which can be achieved easily in a resource limited setting can bring dramatic change than by just passing order down the hierarchy. Besides, it will give it structure and strengthen training deficient sub QITs and hence sustain the changes. Since this method is not costly we recommend other facilities to test it using measurements and either statistically prove or disprove it so that it will be disseminated in the learning sessions i.e. EHAIQ in the future.

QI project on improving elective surgical service access at Yekatit 12 Medical College

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Abstract

Objective: To improve access for elective surgical cases.

Methods: A driver diagram was used to identify the root causes with highest severity and frequency and focusing matrix was used to prioritize interventions of high impact and is easy to implement by the maternity unit. Analysis was done using time series charts including run chart and control charts.

Result: system designs to reduce cancellation rate and OR efficiency has led to improvement in overall surgical access to elective surgical conditions from 38 procedures a week to more than 90

Conclusion: bundle of interventions to reduce cancellation rate and increase procedure time are successful in improving OT efficiency with an ultimate impact on surgical morbidities, mortalities and client satisfaction.

Introduction

Y12HMC is one of the tertiary teaching hospitals in Addis Ababa. It is located in Arada Kifle Ketema. It is founded in 1915 E.C.

Y12HMC provides major surgical services to most of the clinical conditions requiring surgical interventions at specialty and sub-specialty level. In addition to the emergency surgical services being provided, the hospital college also performs an average of 38 major elective surgical procedures a week. However, such performance is far below the weekly elective surgical service demand in the hospital college. This has led to high elective surgical waiting list and forced many of our clients (>1800) to wait for the service for long periods of time, with some of them even waiting more than 2 years. In addition, it has created a significant physical, medical and psychosocial impact to our clients.

Aim of project

The aim of this QI project was, therefore, to improve the elective surgery productivity from the current 38 elective surgeries a week to more than 100 a week in the next 6 months.

Methods

A quality improvement program was initiated with the hypothesis that our elective surgical productivity is far below the expected performance we could have with the available resource and that should be improved.

At the end of September/2018, a meeting was held between the hospital college provosts and heads of various surgical departments, with an aim approving the improvement project on improving elective surgical service productivity.

Many possible root causes of low productivity have been brainstormed and agreement was reached on the severity and frequency of the problem. This has been followed by another brainstorming session (using driver diagram) to list out all the possible solutions which we can do. Lists of causes and their possible solutions are described in the following driver diagram (Fig 1.)
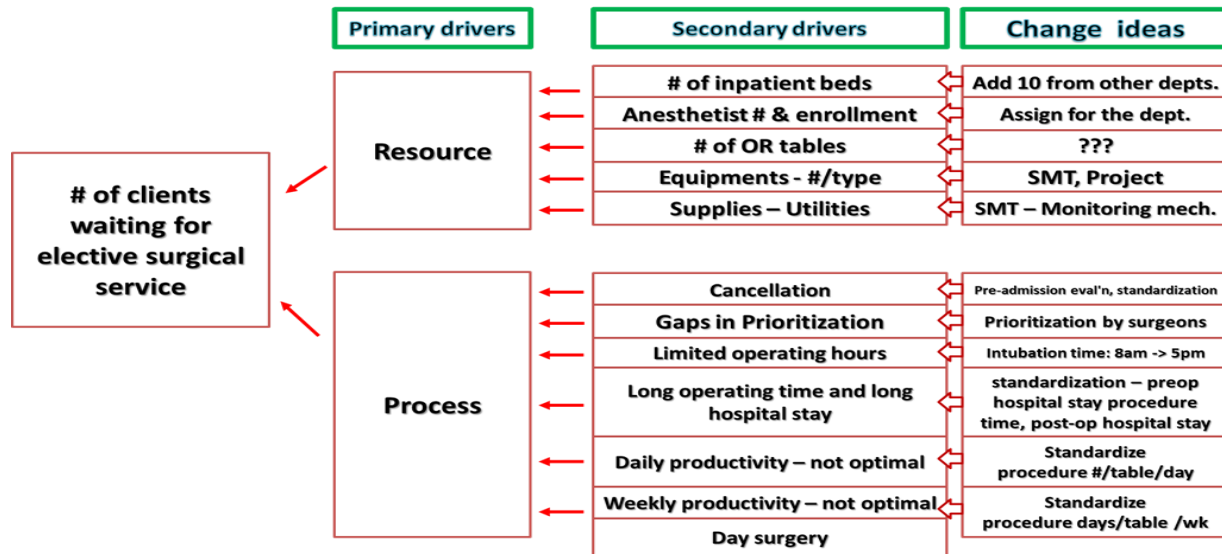
Figure 1: Driver diagram

Focusing matrix was used to prioritize the solutions suggested by the team and a change package of implementable high impact interventions were listed out.

The change package included

Organogram revision and installing a temporary and permanent leadership structure at major OR. As part of the permanent leadership, an OR director was assigned to the major OR and clear reporting relationships and roles and responsibilities were defined for all staffs working in the major OR. In addition, a temporary team leadership role is assigned to the operating surgeon while any procedure is being undertaken.

The SMT has taken all the responsibilities to closely follow the supply chain management system in ensuring all required drugs and supplies are availed, all equipment's are functioning and no interruption because of utility system failures.

A pre-admission surgical and anesthetic evaluation system was agreed so that clients called from the waiting list are evaluated, to ensure the indication for the surgical intervention is still there ; standardize preoperative work up requirements ; ensure all the minimum preparations are made – Investigations, blood etc; conduct a pre-anesthetic evaluation and ensure their fitness

Prioritization gaps related to clinical condition, geographic and economic problems are left to be managed by the admitting surgeon and a monthly audit mechanism designed to evaluate equity related issues.

Operating hours were found to be limited. It was a culture to start late in the morning, around 10:00 – 10:30AM and end at 2PM in the afternoon. After series of scientific discussions, it has been decided to make the first case incision time at 8 AM in the morning and the service continuing the whole working hours of the day.

Setting the minimum table productivity per day; it has been a culture for any department/individual surgeon to schedule 1 or 2 or more clients a day and the KPI related to delay for elective surgical admission was being monitored by only quality unit of the hospital. This is despite the long waiting list the hospital had and it was decided that the minimum table productivity should be 3 and the OR director is expected to monitor daily, weekly and monthly datas as per the plan agreed by the team.

Installing a central appointment system for all clients; this is because of the surgical appointment system to individual surgeons and equity related issues were raised based on availability and performance of individual surgeons.

Daily monitoring and feedback system – identifying root causes for all incidents on daily basis and provision of feedback

Measures

Measures were selected to follow if the change leads to an improvement. These included:

Outcome measure:

- weekly elective surgical service productivity

Process measures:

- Number of cancellations each day
- Number of OR days and tables with the first incision time is later than 8:30AM
- Number of OR days interruption due to utility problems.

The test design used was time series testing design with data collection before and after the change. The Data source is the OR register and every day performance was fed to a database.

Analysis

For analysis, initially run chart was used to display the data and nonrandom variation was looked for using the four run chart rules. After we got adequate data points, C - chart was used to look for special causes.

Result

Immediately after the introduction of the change package, the pattern of data on the run chart showed nonrandom variation (shift). (See figure 3)

All data points are above the median except week 16 where the performance was below the baseline median. Individual case study approach for week 16 revealed the performance was low because of examination and most consultants were busy with examination of students.
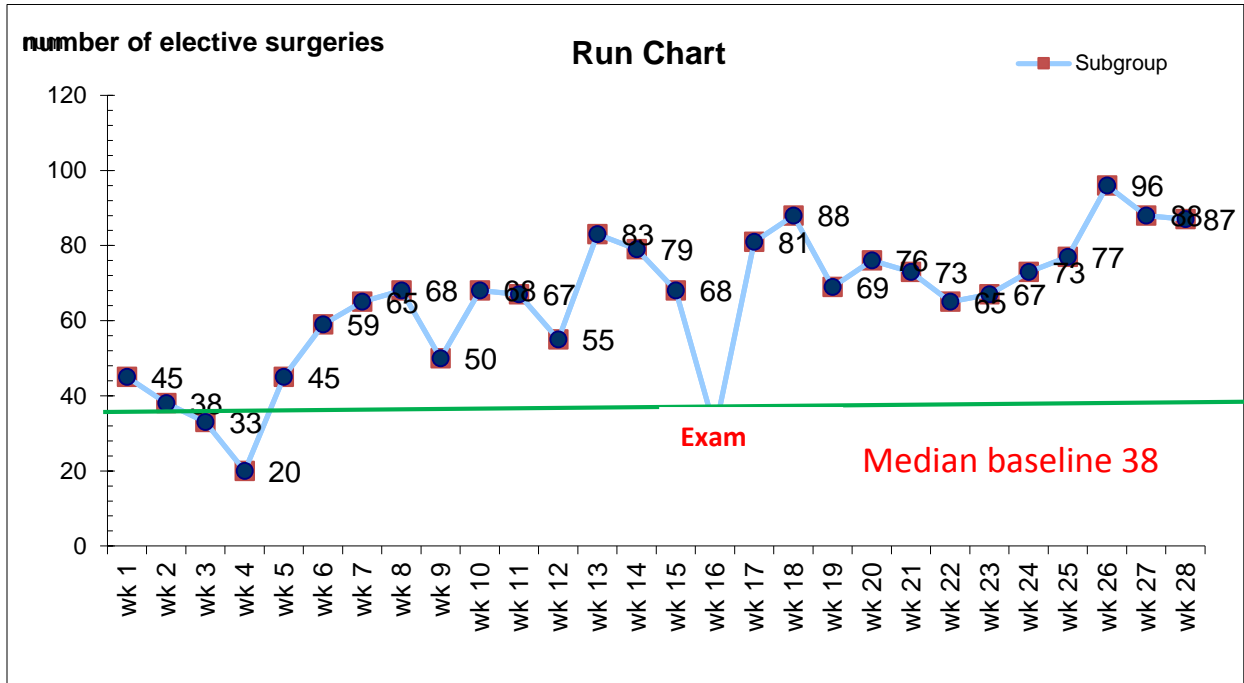
Figure 2: Run chart with data before and after change package inserted

Also, analysis with C- chart showed special cause variation (shift) immediately following the introduction of the change package. (See figure 2)
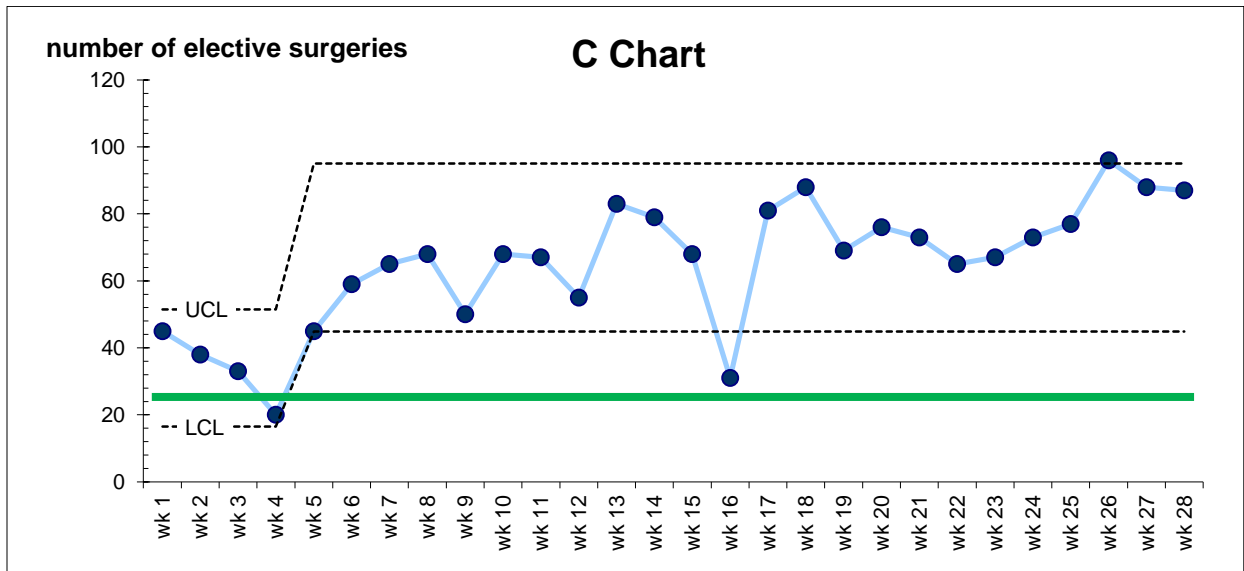
Figure 3: C - chart showing improvement in elective surgical service productivity at Y12HMC

Limitations

There were no limitations and ethical concerns in this project as there was no potential for harm, burden and cost to the clients

Conclusion

Improving the performance of operating theatres is key to achieving shorter waiting times for treatment, implementing booking of elective operations and reducing cancelled operations.

In this QI project, poor preoperative preparation and OT management system was identified as the main cause of low elective surgical productivity at Y12HMC.

Effective planning and management is essential to improve services for patients, ensure optimum use of existing theatre capacity, maximize operating theatre performance and avoid cancelled operations. Quality improvement projects focusing upon OT management has shown significant efficiency gain in terms of higher surgical productivity, reducing surgical morbidities and mortalities and improving client satisfaction

In our hospital medical college, we successfully increase elective surgical productivity by implementing a package of interventions addressing the preoperative preparation and OT management.

In conclusion, bundle of interventions to reduce cancellation rate and increase procedure time are successful in improving OT efficiency with an ultimate impact on surgical morbidities, mortalities and client satisfaction.

Expanding Access to Safe Surgery through A Multidisciplinary Mentorship Approach

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Abstract

Background: To meet the Universal Health Coverage goal by 2030, countries must reach a minimum of 80% coverage of emergency and essential surgical and anesthesia services per country. The GE foundation-funded Jhpiego Safe Surgery 2020 project (SS2020) set out to increase volume of surgical procedures and contribute towards reduction in morbidity and mortality associated with surgery. In collaboration with the Ethiopia Federal Ministry of Health (FMOH), Jhpiego supported sixteen primary-level hospitals in three regions, Amhara, Tigray and SNNP, to increase volume of surgical procedures and safety.

Methods: The program interventions focused on strengthening surgical care systems and build clinical skill of surgical team to improve team performance and increase the number of surgical procedures performed in intervention facilities or catchment primary-level health care facilities. Capability to perform the Bellwether Procedures is proved to increased access to essential surgical interventions and, thereby, reducing morbidity and mortality. Specific interventions implemented under this project were: 1) leadership training that is designed to build autonomous problem-solving skills and strengthen surgical care system, 2) clinical skill building and on-site mentorship to surgical teams, 3) supportive supervision to monitor project outcome, and 4) support to improve use of quality data for decision-making. The skill building efforts mainly focused on the Bellwether surgical procedures- Cesarean delivery, laparotomy, and management of open fracture.

Result: A total of 150 surgical leaders and 24 mentors completed a standardized a short-term training leadership curriculum. As a result, the performance of surgical team in the sixteen facilities improved and over 14, 000 surgeries were performed during the project lifetime, June 2016 to January 2019. Documentation of surgical services improved by introducing surgical registries and data quality monitoring. health facilities received support to improve patient safety monitoring practices including documentation and reporting of key safety indicators; during the project period, the number of Surgical Site Infection reported were 66 (0.46%) while the reported Peri-Operative Mortality were 24(0.17%).

Conclusions and Recommendations: Leadership and mentorship were instrumental in building problem solving and clinical skills among the surgical teams. Surgical leaders and mentors empowered surgical teams to play catalytic roles to strengthen surgical systems and processes that has contributed to increased volume of surgeries performed and improved patient safety monitoring practices. The leadership intervention and follow up coaching could be scaled up locally and globally.

Key word: Safe Surgery, Mentorship, leadership, volume

Background

The Lancet commission on Global Surgery set a goal for a minimum of 80% coverage of essential surgical and anesthesia services in LMICs by 2030. That is a minimum of 5000 surgeries per 100,000 populations. Currently, five billion people lack access to safe, timely and affordable surgical and anesthesia care; in low-resource settings, nine of ten people cannot access basic surgical services. Globally, 33 million individuals incur catastrophic expenditures resulting from surgical and anesthesia care, and this number climbs to 81 million if indirect costs are included [1]. The 2030 Agenda for Sustainable Development, approved by the United Nations (UN) in 2015, includes the key health-related target (Sustainable Development Goal 3.8) of universal health coverage (UHC); surgical, anesthesia and obstetric care are fundamental components to its achievement [2].

In 2016, the Federal Ministry of Health (FMoH) report showed less than 250,000 major surgeries per year i.e. (250 surgeries/100,000 population) Unmet need of five million surgeries/year (only 5 % reached); patients wait years for essential surgeries. In response to the significant unmet need for surgical and anesthesia care in Ethiopia, the FMOH developed the national flagship program- Saving Lives through Safe Surgery (SaLTS). The program started implementation by developing a five-year strategic plan document. GE Foundation-funded Safe Surgery 2020 project (SS2020), supports the FMoH to operationalize the SaLTS Initiative in three regions of Ethiopia. SS2020 partners, Jhpiego, Assist International, Harvard's Program for Global Surgery and Social Change, and Dalberg Advisors, build the capacity of the surgical workforce to increase surgical volume and reduce referrals out. Jhpiego leads the SS2020 leadership program, which empowers district-level surgical teams to be agents of change at their health facility and in their community.

Program description: SS2020 project is a multi-stakeholder initiative funded by GE Foundation and implemented in the three regions, namely, Amhara, Tigray and SNNP, of 16 primary hospitals. The facilities were doing on average volume of surgeries per months 10 to 15 and with high referral cases before the implementation of SS2020 Project. Too many patients were experiencing surgery service delaines and post-surgery infections.

Rational: In the past three years, Jhpiego has been implementing a leadership development training and clinical skill building with follow up onsite mentorship support. SS2020 training focuses on building leadership capacity of the entire surgical staff, from nurses and anesthetists to surgeons and hospital management. Its focus: to strengthen performance across surgical practice as opposed to addressing each specific procedure separately. They learned how to best identify and tackle administrative and system problems related to performing surgery, and also developed an action plan to reduce infections and make surgeries safer at their hospitals. Additionally, through the help of senior surgical care teams from led hospitals or mentors get on site clinical skill transfer and case consultation to surgical services providers at primary level hospitals to boost their confidence.

Project aims: The project aims to increase access to safe emergency and essential surgical care and contribute to reduction in surgical morbidity and mortality. The project mainly focuses on procedures the "bellwether" surgical procedures. i.e., Cesarean Birth, Laparotomy and Open fractures) and provide essential safe/ quality surgical service.

Methods: The Jhpiego arm of the SS2020 program focuses on supporting and strengthening access to safe essential and emergency surgical procedures:

Program interventions include:

- **Leadership and mentorship** training to support and strengthen problem-solving among surgical teams at the district level,
- **Monthly mentorship** visits to the mentee hospitals, along with quarterly supportive supervision to maintain knowledge and skills and promote sustainable impact,
- **Quality data** collection and **use** for informed decision-making

Implementation approach

- **Mentorship is team-based:** a multi-disciplinary mentor team from the lead/referral hospital composed of a senior surgeon/specialist, anesthetist and senior OR nurse travels together to the district hospital to provide targeted feedback
- **Mentorship modality is blended:** Mentorship visits occur monthly onsite and are supplemented by off-site mentoring
- **Mentor visits are tailored to the needs of each hospital:** mentees select topics of importance to them based on challenging cases that month and mentors' direct observation

Measures:

- **Discussions on patient safety**: - infection prevention, instrument processing, hand scrubbing, proper utilization of WHO safe surgery checklist
- Senior OR nurse (Mentor) will **observe** the proper implementation of infection prevention techniques by the mentee hospital surgical team members
- **Demonstrations** on scrubbing techniques and OR procedures
- **Review data recording**, care process and **provide feedback**

Analysis:

Most of the time cases were referred to the referral hospitals, which can be managed in the primary level hospitals. The community lacks trust on their nearby primary level hospitals and had exposed to other catastrophic costs. After the leadership training given to the surgical care workers by the SS2020 project, Jhpiego; the surgical care workers started identifying their problems and designing quality improvement projects and implement according to their action plan. Rather than waiting someone outside or the management or Regional Health Bauer (RHBs) to solve their problem, the surgical care workers started to resolve the problem by themselves. And hence, the community developed trust by the hospital service. As a result, the community buy in the program and started community mobilization and bought ultrasound, etc…In terms of the sustainability of the project

the government already scaled up in other hospitals like in Amhara region and FMOH already developed national mentorship guidelines with the support of Jhpiego and started budget allocation to the hospitals. Which is very positive sign of the project result sustainability.

Results:

The project achieved through leadership and mentorship training, after trained 170 surgical care workers of the sixteen hospitals, more than 14,000 surgeries were performed over the project period to date (Jun 2016 to Jan 2019). The surgical care worker teams are empowered to expand the surgical services to reach out the unmet need of the community and hence the community trust and confidence in the hospital increased. Additionally, the surgical team members viewed as exemplary for teamwork and problem solving achievement in their hospitals. In the area of patient safety improvement, the hospitals started monitoring and data use of Surgical Site Infection (SSI) and Peri-Operative Mortality (POM) using data tracking and recording system, in addition to implementation of WHO surgical safety checklist.

Limitations: Given the fact that different intervention components were executed by different implementing partners and interventions were introduced at different time intervals, the impacts of other possibly complementary intervention could not be presented here.

Conclusion and recommendation:

Leadership and mentorship are important skills for surgical care teams, enabling the teams as change agents. Strong leadership and mentorship skills can empower surgical care teams to make transformative and catalytic changes that, in turn, improve surgical access, safety, and quality and this skill should be scaled globally to all surgical care teams

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Building Local Manufacturing Capacity to Improve Access to Critical MNCH Medicines

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Abstract

Introduction: Ensuring optimal cord care at birth and during the first week of life is a crucial strategy to prevent life-threatening sepsis and cord infections and avert preventable neonatal deaths. Chlorhexidine is a broad-spectrum antiseptic that is available in a range of concentrations and has been used for over 40 years; but its specific use for umbilical cord care was uniquely tested in three clinical trials in the form of 7.1% chlorhexidine gluconate (CHX). CHX has been shown to reduce severe infection by 68 percent and mortality by 23 percent, potentially saving over 300,000 lives globally each year. In 2013, WHO added chlorhexidine (CHX) to the List of Essential Medicines for umbilical cord care. But, In Ethiopia, there was no local manufacturer and no foreign supplier of CHX registered by the Ethiopian Food Medicine and Healthcare Administration and Control Authority (EFMHACA).

Implementation: As part of the effort to improve availability of CHX, PQM partnered with Addis Pharmaceutical Factory, a local manufacturer, to enable the factory produce CHX for supplying to health facilities in Ethiopia. Accordingly, PQM provided multifaceted technical assistance including onsite and offsite training and conducting GMP compliance audit followed by development and implementation CAPA (Corrective and Preventive Action). PQM also supported development of dossier for CHX. On the other hand, PQM in collaboration with DKT-Ethiopia also advocated to EFMHACA to include CHX to be considered as a fast-track and get priority for registration. PQM has continued this support and is planning to improve the formulation through technology transfer in collaboration with GSK with funding from USAID.

Results: The local manufacturer improved its GMP compliance and ultimately started producing CHX, for the first time in Ethiopia. Moreover, product samples passed tests conducted by an independent accredited laboratory following which the CHX dossier submission was accepted and registered by EFMHACA in April 2015. Since then, APF served as the only source of CHX supplies in Ethiopia covering all the needs of the country. Initially, APF started production with a volume of 144,990 tubes of chlorhexidine gel in 2014/15 and increased its production capacity over the years. So far, APF was able to supply a total of 5, 067,167 tubes of chlorhexidine gel. Available evidence indicate that overall infant mortality has been reduced in Ethiopia progressively between 2011 and 2017with the largest reduction happening after 2014. Although direct correlation may not be possible, the presence of CHX might have contributed to this reduction.

Conclusion: Albeit the benefit of chlorhexidine in the reduction of neonatal motility, the product was not easily accessible in Ethiopia as there were neither registered suppliers nor is it produced locally. Thus, supply and use of chlorhexidine was erratic. The effort made to build capacity of a local manufacturer has ultimately enabled production of chlorhexidine in Ethiopia. This has resulted in continuous supply of this product from the local sources thereby contributing towards reduction of morbidity and mortality of infants in Ethiopia.

Problem Description

Although the benefit of chlorhexidine digluconate in reduction of neonate motility has been well evidenced, there was challenge in making chlorhexidine accessible for clients in Ethiopia. Because, there were neither registered suppliers that can import the product nor local manufacturers producing chlorhexidine in Ethiopia. Thus, the supply and use of chlorhexidine digluconate was erratic. The challenge on access was also aggravated by inadequate utilization of the product due to limited awareness of health care professionals on use of chlorhexidine.

Rationale

The recently-cut umbilical cord is an entry point for bacteria that can cause newborn sepsis and death. Bacteria rapidly colonize the moist cord stump and have direct access to the bloodstream through umbilical vessels that remain patent for the first few days after birth. In addition, bacterial colonization may lead to cord infection (omphalitis) with potential spread to the surrounding tissues and blood stream. Ensuring optimal cord care at birth and in the first week of life using effective anti-infective like chlorhexidine, especially in settings with poor hygiene, is a crucial strategy to prevent life-threatening sepsis and cord infections and avert preventable neonatal deaths

Specific aims

The purpose of the project was to increase the local supply of chlorhexidine gel to health care facilities for topical application on umbilical cord by increasing quality assured local production of Chlormethine gel

Intervention

In general, product quality assurance requires a multi-layered and multi-disciplinary effort including manufacturers, procurement agents, the regulator and health care providers. The manufacturer has to secure its raw materials form the right source and produce it in compliance with cGMP. Moreover, the manufacturer is required to release the final product after conducting proper quality control and quality assurance processes and finally the product has to be registered by the EFMHACA as per local regulation. On the other hand, the procurement agency has to conduct pre-purchase/procurement quality assurance or inspection before actual procurement. The health care providers are required to ensure its proper use at the service delivery points. The regulator (EFMHACA) has to control both the manufacturer and procurement agency as well as providers for compliance to good practice in all stages

USP/PQM had employed multiple approaches including technical assistance and advocacy to increase the supply of quality assured chlorhexidine digluconate 7.1% from local sources. Technical support to Addis pharmaceutical factory (APF), which is one of the largest local pharmaceutical manufacturers. Thus, USP/PQM provided training and capacity building support in the areas of GMP, dossier preparation in CTD format, the identification and sourcing

comparator product, supportive and Mock audit followed by preparation and implementation of CAPA. USP/PQM as also provided reference standard to EFMHACA for testing of Chlorhexidine as part of market authorization requirements.

In addition, USP/PQM has done advocacy on the importance of chlorhexidine gluconate 7.1% in umbilical cord care and its contributions in reducing child mortality to EFMAHCA) so that chlorhexidine can be considered as fast track medicine. This has helped in achieving expedited quality assurance processes of EFMHACA followed by granting of market authorization. USP/PQM technical assistance has continued as part of the effort for continual improvement of chlorhexidine formulation and its manufacturing processes through technology transfer from the parent company (GSK) in collaboration USAID.

Results

The local manufacturer improved its GMP compliance and ultimately started producing CHX, for the first time in Ethiopia. Moreover, product samples passed tests conducted by an independent accredited laboratory following which the CHX dossier submission was accepted and registered by EFMHACA in April 2015. Since then, APF served as the only source of CHX supplies in Ethiopia covering all the needs of the country. Initially, APF started production with a volume of 144,990 tubes of chlorhexidine gel in 2014/15 and increased its production capacity over the years. So far, APF was able to supply a total of 5,067,167 tubes of chlorhexidine gel. Available evidences indicate that overall infant mortality has been reduced in Ethiopia progressively between 2011 and 2017with the largest reduction happening after 2014. Although direct correlation may not be possible, the presence of CHX might have contributed to this reduction.

Lessons Learnt

Local production of priority medicines in developing countries environment is still feasible provided that the right mix of support and technical assistance is provided to industries having foundational capabilities on which to build and have the willingness to improve existing practices so as to meet international quality standards

Limitations

The data included in this article is taken directly from the manufacturer and does not show actual consumption and use of chlorhexidine.

Conclusion

Albeit the benefit of chlorhexidine in the reduction of neonatal motility, the product was not easily accessible in Ethiopia as there were neither registered suppliers nor is it produced locally. Thus, supply and use of chlorhexidine was erratic. The effort made to build capacity of a local manufacturer has ultimately enabled production of chlorhexidine in Ethiopia. This has resulted in continuous supply of this product from the local sources thereby contributing towards reduction of morbidity and mortality of infants in Ethiopia

Enhancing Healthcare Workers' Infection Prevention and Patient Safety Awareness: In-service Training at Goba Referral Hospital

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Abstract

Background: The promotion of infection prevention and patient safety in health care settings is a nationwide initiative that involves the regular implementation of recommended infection prevention practices in every aspect of patient care. Such practices include hand hygiene, personal protective equipment utilization, injection safety and medication safety, health care waste management, and others. In this regard, adequate knowledge among healthcare workers is key to implementation of safe practice and improved compliance to recommended infection prevention principles. This in-service training is aimed to enhance healthcare workers' infection prevention and patient safety awareness across all hospital-based services in Goba Referral Hospital, Southeast Ethiopia.

Methods: In-service infection prevention and patient safety training was provided from March 21-28, 2019 at Goba Referral Hospital. We presented the 22 modules of the Ministry of Health's Infection Prevention and Patient Safety Training Resource Package in two identical 4 day sessions. Participants were selected from across all hospital-based services including those that impact maternal heath, labor and delivery, surgical services, neonatal care and child health. In order to determine trainees', change in awareness we compared pre-test and post-test scores using a paired t-test to estimate the mean difference.

Results: A total of 56 healthcare workers (physicians, nurses, midwives, and laboratory technicians) and other staff were involved in this in-service training. For these, pre-test and pos-test score data, the training conditions yield a fairly large correlation coefficient (Pearson's correlation coefficient value (ρ) = 0.653) and a statistically significant correlation was observed ($p < 0.05$). On average, healthcare workers who participated in the infection prevention and patient safety training and took the post-test demonstrated improved awareness of infection prevention (Mean = 6.16, SE (Standard Error Mean) = 0.28) as compared to their pre-test score (M = 5.25, SE =0.265), t (55) = 3.964, p <0.001, Effect size (r) =0.471).

Conclusion: The results support the idea that providing in-service infection prevention training appears to be useful in enhancing healthcare workers' awareness level and potentially, by extension, their practice. Hence, health authorities should encourage in-service trainings to strengthen healthcare workers' compliance with infection prevention measures, which are the only ways to reduce and protect healthcare staff, patients and clients from the occurrence of unnecessary infections and occupational injury

Introduction

Hospitals provide the opportunity for transmission of infection between patients and failure to follow proper infection prevention practices puts healthcare workers, patients and communities at risk. A study conducted in Bihar Dar City Administration, Ethiopia, showed that health care workers (HCWs) practice scores on infection prevention were not good and safe enough to meet the expected standard of the national guideline (*Kelemua G. et al, 2014*). Another study conducted in Mizan Aman General Hospital, in south west Ethiopia, also indicated that health care workers disposed of sharp materials such as used needles in open bins, in sharp- and liquid-proof containers after separating the needle from syringe, and mixed with other wastes/rubbish. To prevent accidental injury 60.7% of HCWs believe that contaminated needles should be recapped immediately after use. Among some of the reasons for not wearing stated personal protective equipment (PPE) were stock depletion of desired PPE; PPE were not comfortable/convenient; and it was difficult to work while wearing PPE (*Yakob E, et al, 2015*). A study conducted in Addis Ababa's Black Lion Hospital reported that the practice of hand hygiene among physicians was low before patient contact, before caring for a wound and after patient contact. Nurses wash their hands more frequently than physicians (*Admasu T. et al, 2013*). Similarly, recent studies conducted in the area of infection prevention and patient safety reveled that sub-optimal infection prevention practice among healthcare workers seems to be a common problem (*Sahiledengle B. et al, 2018; Gebremariyam BS, 2019*).

In Bale Zone, the unpublished thesis 'Knowledge and Practice of Healthcare Workers towards Infection Prevention and Its Associated Factors in Bale Zone Hospitals' (Zenbaba D, 2018) and a preliminary survey done in Goba Referral Hospital in July 2018 (Zenbaba D and Allison D, 2018) provided the basis for identification of the following gaps:

- 72.1% of healthcare workers have knowledge about infection prevention, however only 52.3% of healthcare workers report actively practicing infection prevention measures.
- 57.2 % of healthcare workers use a safety box for disposable sharp materials collection but 64 % of safety boxes observed were overfilled above the label or the 75% full levels.
- 62.3% and 37.7% of health care workers report a history of sharp materials injuries within their lifetime and within the last one year respectively. Re-capped used needles and syringes were observed on patient's bed sides or window sills in pediatrics, medical and surgical wards, and MCH and laboratory rooms. Needles left with vials of anesthetic bottles were observed in minor operation rooms, eye and dental clinics.
- 55% and 45% of healthcare workers had a history of blood and/or body fluid splash to their nose, mouth or eyes within their lifetime or the previous one year respectively.
- Contaminated medical equipment were kept for long periods of time (30 minutes and above) in the 0.5% chlorine solution.

Despite the availability of low-cost interventions for infection prevention and control like hand washing or transmission-based precautions, compliance with standard infection prevention and control practices remains very low. Strong infection prevention and control programs are needed to fight infections of public health importance such as HIV, malaria, tuberculosis, and emerging infectious diseases such as Ebola virus disease and Middle East Respiratory Syndrome (*WHO, 2017*). Most healthcare acquired infections can be prevented effectively by implementing readily available, practical and scientifically proven infection prevention practices (*Allegranzi B. et al, 2007; Allegranzi B. et al, 2011; Bouallègue O. et al, 2013*) Infection prevention and control measures like standard precautions are simple and low-cost, but require healthcare worker accountability and behavioral change to protect patients and themselves (*WHO, 2010*).

Studies conducted in New Delhi, India indicate that training in infection prevention can influence health care worker's infection prevention knowledge. Health care workers who receive training are more likely to act in accordance with infection prevention guidelines than those who are untrained. Training can help health care workers to realize the importance of basic infection prevention practices such as standard precautions, post-exposure prophylaxis and cleaning of the hospital environment (Jain M. *et al*, 2012). We planned to perform training on infection prevention for healthcare workers in Goba referral hospital to address some of the identified gaps. Therefore, the purpose of this project was to improve the infection prevention knowledge and practice of healthcare workers to reduce the transmission of healthcare acquired infections between patients and from healthcare workers to patients and vice versa.

Methods

Two four-day training sessions were designed to provide selected health care workers of Goba Referral Hospital an opportunity to improve knowledge and skills they need to use recommended IPPS principles and practices in a hospital setting with limited resources. The Infection Prevention and Patient Safety Training Resource Package prepared by the Federal Ministry of Health in April 2012 (Federal Ministry of Health, 2012) was used as the foundation for twenty-two modules of training materials and Power Point slides. The authors of this report prepared and reviewed the slides to ensure content applicability and presented the information in local languages to participants.

Approximately 30 participants were selected for each of the two training sessions. Participants came from across all hospital-based services at Goba Referral Hospital including those that impact maternal heath, labor and delivery, surgical services, neonatal care, child health, linen processing and housekeeping activities. The majority of participants were involved in direct patient care or waste management. Two experience trainers previously trained as trainers in Infection Control and Patient Safety presented the modules. To influence HCWs attitudes in a positive way, a participatory approach was used as much as possible. We used different methods such as brainstorming; group discussions and videotapes to stimulate discussion, in addition to illustrative

lectures. Participants were encouraged to reflect on their own observations from day to day practice and clinical experience, and in selected opportunities, shown parts of the hospital with which they may not have been familiar.

Trainers emphasized the magnitude of infection and risky areas for infection in health care settings and stressed the importance of infection prevention and patient safety. Group discussions enabled the sharing of experiences and measures that can be taken as best remedies to various situations and the use of videos demonstrated the appropriate handling of equipment in health care settings.

Analysis/ methods of evaluation

Components of the monitoring and evaluation of the training included pre- and post-tests as well as a daily recap of the previous day's key learning points every morning by participants. Additionally, observations by participants in selected hospital environments were presented to the group as a whole. The pre- and post-training questionnaires used 15 multiple choice questions. Feedback on group results was provided to the trainees. In order to determine trainees', change in awareness we compared pre-test and post-test scores using a paired t-test to estimate the mean difference. All data were analyzed using SPSS version 20 (IBM Corporation, 2012).

Results

A total of 56 healthcare workers (physicians, nurses, midwives, and laboratory technicians) and other staff were involved in this in-service training. For these trainees, pre-test and pos-test score data, the training conditions, yielded a fairly large correlation coefficient. When repeated measures are used it is possible that the training pre- and post-test conditions will correlate because the data in each condition come from the same people, reflecting some constancy in their responses. SPSS provides the value of Pearson's r and the two-tailed significance value. For our data, the pre- and post-test results yielded a correlation coefficient, $\rho = 0.653$, with a statistically significantly correlation ($p < 0.05$). On average, healthcare workers who participated in the infection prevention and patient safety training and took the post-test demonstrated improved awareness of infection prevention (Mean = 6.16, SE (Standard Error Mean) = 0.28) as compared to their pre-test score (M = 5.25, SE =0.265), t (55) = 3.964, p <0.001, Effect size (r) =0.471).

At the end of the training, an open discussion was conducted and comments were received from the participants regarding the overall objectives and suitability of the training. In brief, all participants agreed that "*the training on infection prevention is timely and basic for all healthcare professionals*". In addition, healthcare workers stressed that such in-service training should be conducted on a regular basis.

Conclusions

The results support the idea that providing in-service infection prevention training appears to be useful in enhancing healthcare workers' awareness level and potentially, by extension, their practice. Hence, health authorities should encourage in-service trainings to strengthen healthcare workers' compliance with infection prevention measures, which are the only ways to reduce and protect healthcare staff, patients and clients from the occurrence of unnecessary infections and injuries.

A substantial number of training modules have been developed which can be used again with similar or different audiences. Consideration could be given to providing single modules to specific audiences to avoid the necessity of removing workers from their day-to day responsibilities, or building modules into other routine activities.

Limitations

Based on the available evidence, the awareness of healthcare workers is significantly improved as a result of the present in-service training. However, we did not use a validated questionnaire for the pre- and post-test assessment of healthcare workers' awareness. Moreover, the current training modules were prepared in English and are in need of translation into local languages particularly for those trainees who had lower levels of education (e.g; waste handlers, laundry workers and administrative staff). In this short term in-service training we were not able to measure the impact of the training on healthcare workers' day to day activity. We also were unable to find video segments suitable for local language demonstration.

Lessons learned from the training

- Effective implementation of infection prevention practices in healthcare facilities leads to a significant increment on healthcare worker's awareness.
- Regular in-service training on infection prevention practices and patient safety issues is very important to improve quality of care.

The way forward: The Ministry of Health (MOH) and other stakeholders who work in the area of infection prevention and patient safety should work collaboratively to schedule and deliver regular in-service training in a cost-effective way. As demonstrated here, healthcare workers have better awareness and practice if they receive infection prevention training and have infection prevention guidelines in their workplaces.

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Quality of Care in Patient-Physician Communications at Yekatit 12 Hospital: Cases and Medical Encounters

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Abstract

Effective communication and interaction are indispensable to enable healthcare organizations to find their way around their environment, exchange ideas, understand and be understood with the clients. Patient-centered communication is usually respectful and responsive to patients' preferences, needs, values and social milieu. Health communication in hospitals apparently constitutes the largest part of the health system's information space to patients about their health. This qualitative article aimed at exploring the power relations between patients and physicians communication during medical encounters at Yekatit 12 Hospital. After having permission from the School of Journalism and Communication, Addis Ababa University and an ethical clearance from the hospital administration, we generated qualitative data via in-depth interviews and observations. With this regard, the study employed 10 in-depth interviews—five patients stayed in the hospital a month and above in different wards and five physicians. The sampled physicians were hired from different departments comprising two senior nurses and three medical doctors. We used snowball sampling method to scout information-rich respondents for tick descriptions. In addition, overt onset observation was our supplemental method to obtain data.

After analysis of patients' responses, physicians' reports and our own observations, we had drawn four themes that guided our findings: expectations of parties involved; equilibrium of power between patients and the physicians; the care, respectful and compassionate approach; and the circadian rhythm. *Expectations*: in the Hospital, almost all participant medical doctors and care providers admitted that most often the traditional approach gives the upper-hand to the physician. However, following the health-care service reform, recently the process has turned to patient-centered services though still complaints exist on proportional time allocation for patients to share information freely. *Power balance*: In Yekatit 12 Hospital, the data obtained from patients and physicians reveal that there is a transactional and symmetric relation between patients and their counterpart doctors. Hence, the hospital is convinced that the patients' active involvement is helpful; the relation and interaction is more balanced, the patients' feel that they are equally negotiating their health cases. During our observations in Yekatit 12 Hospital at the OPDs, we had seen physicians respectfully treating patients, following up their cases and sometimes we saw nurses sat beside and exchange information. *Care and compassion*: physicians are progressive in implementing the Care, Respectful and Compassionate, Ministry of Health National Health Promotion and Communication Strategies (2016-2020) which is potentially advancing the health communication process. Hence, we observed that though still there are some journey to walk, the health workers are more respectful and on good progress to harness the caregiving environment in the hospital. *Circadian Rhythm*: all physicians and participant patients reported that there is high workload though 129 medical doctors and 382 nurses are deployed on duty.

Since Yekatit 12 Hospital is a public hospital, every medical doctor handles 25-40+ patients a day on average. This is a huge figure and pushes physician to rush to the next patient skipping some narratives from the patient. We furthermore observed the emergency ward, the pediatrics, the inpatient and the outpatient departments. In the observation, we noticed that physicians restlessly running, talking, interviewing while too many patients were waiting for their turn to see the doctors. Even it makes the situation worse that we interviewed one of the nurse in the corridor while she and the other two medical doctors onset. They were eventful but also helpful to our queries. We stand firm that such illogical burden leads physicians to fatigue and lowers patient satisfaction. So, especially the most experienced medic pertain the theory of circadian rhythm in order to invigorate their tempo. This physiological solution is a self-initiated one during stress and workload. The aim is to maintaining the rhythm when more patients visit.

In conclusion, the hospital is in a promising position to implement the Ethiopian Ministry of Health National Health Promotion and Communication Strategies (2016-2020) platforms that intends to create friendly and inviting healthcare system through improved relationship and effective health communication

Introduction

Effective communication and interaction are indispensable to enable healthcare organizations to find their way around their environment, exchange ideas, understand and be understood with the clients. Health communication, as an area of theory, research, and practice, therefore focuses on "the relationships between communication and health, health attitudes and beliefs, and health behavior" (Rebecca J. Welch Cline, 2003, p.209). Health communication in hospitals is apparently the largest part of the health system's information space to patients about their health condition.

Problem statement

Patient-centered communication is vital for health care organizations to provide ethical, high-quality care. Patient-centered communication is communication that is respectful and responsive to patients' preferences, needs, values and social milieu. "Any communication that affects patients can be patient-centered, including oral, written and nonverbal communications between patients and practitioners, patients and health care organizations, and between and among health care practitioners and health care organizations" (AMA, 2006, p.5). Thus, it contains a substantial proportion of the health system information channel, but is still usually ignored in many places when the practitioners focus on the clinical duty. This 'clinical' inclination then haphazardly affects the encounters and the interaction—most importantly the negotiation power of the patient.

Rationale

The National Health Promotion and Communication Strategy (2016-2020) of Ethiopian Ministry of Health speaks of enhancing the capacity of health service providers in interpersonal communication and counseling skills (FMoH, 2016, P.35); however, the strategy did not identify the patient-provider interpersonal level communication symmetry, successes, gaps and future directions either in the gap analysis or in the critical retrospection of the last series of Health Sector Transformation Plans (HSTP). Therefore, in this research article, we dedicate to explore and understand the power relation of patients negotiating health in formal medical encounters at Yekatit 12 hospital.

Objective

Explore the power relations between patients and physician's communication during medical encounters.

Methods

Ten respondents were participating in the data generation stage. Using snowball technique, five participant patients with different health cases and five physicians from divers departments were purposively selected for they were scouted to be information-rich. Regarding the patients, we

decided to include who had admitted for a month and longer period. Likewise, the physicians, three medics and two nurses were participating from various specializations and service years. We did this for the reasons that the nature of the working environment varies; then, the complex the medical case the great the complex the communication process.

Instruments: In-depth Interview and Onsite observation

Interventions

We passed through a series of ethical grooves. After having permission from the School of Journalism at Addis Ababa University, we approached and obtained ethical clearance from the hospital administration. The respondent's informed consent was also collected to conduct the interviews.

Measures

This article had involved 10 respondents for in-depth interview: five patients and five physicians, considering their specialization, illness type and sex composition proportionally. Regarding to the physicians, we hired young (30 years old) female gynecologist with six months' work experience, another female nurse who has 27 years of work experience, female nurse with six years of experience, male special surgeon, 27 years of experience and another male medical Doctor having three and half years of experience. To their counter parts, the patients were sampled from various departments and medical wards. A 33 years old male cardiac patient, who admitted on 24th August, 2009 E.C., old woman (75 years old), admitted on 02/13/2009 E.C, a peptic ulcer patient, a miscarriage patient, 31, with seven months of follow-up in the hospital, hepatitis patient, female, 45, and, one male inpatient, 58, were interviewed onset. The physicians and patient's diversity in work experience, specialization, disease type is deliberately done to capture multiple viewpoints.

Analysis

a. Qualitative and quantitative methods used to draw inferences from the data
b. Methods for understanding variation within the data, including the effects of time as a variable

Results

Fair expectations: In the Hospital, almost all participant doctors and care providers admitted that most often the traditional approach gives the upper-hand to the physician. However, following the health-care service reform, recently they turned, replied the study participants, to patient-centered services though they still complaint on proportional patient's reluctance to share information freely. This means, the physicians' perceptions and expectations are more of mutually fair and open for negotiation. *Care, Respectful and Compassionate mind-set:* The essence of CRC is providing responsible and compassionate care and service to the visiting patients from the start to the end of their stay at that hospital. During our observations in Yekatit 12 Hospital at the OPDs,

we had seen physicians respectfully treating patients, following up their cases and sometimes we saw nurses sat beside and exchange information. Hence, we draw a thesis of argument that though the degree varies between nurses and medical doctors, in Yekatit 12 Hospital physicians are progressive in implementing the CRC strategy which potentially advances the health communication process. ***Circadian Rhythm*: P**hysicians and participant patients reported that there is high workload. Since Yekatit 12 Hospital is a public hospital, every medical doctor handles 25-40+ patients a day on average. This is a huge figure and pushes physician to rush to the next patient skipping some narratives from the patient. So, especially the most experienced medic pertains the theory of *circadian rhythm* in order to invigorate their tempo. This physiological solution is a self-initiated one during stress and workload. The aim is to maintaining the rhythm when more patients visit. These times, they prioritize the most suitable diagnosis time to avoid stress which is known as circadian rhythm as a way out to handle the fatigue and the intrapersonal communication barriers. In a long term basis, the hospital management should strategically maintain the patient-physician ratio, so that the staff enjoys the luxury of talking with patients steadily.

Limitations and Lessons learnt

Only observation and in-depth interview were employed since the physicians are busy. The outpatients were difficult to manage for one leaves the hospital while the other comes in for the service; and it was intricate to bring inpatients together (usually in IPDs) for focus group discussion. It would be undoubtedly viable if discussions and prolonged observations were made to abduct more issues that we did not incite with the above instruments.

Conclusion

In patient-physician communication is vital to harness effective caregiving and treatment in health organizations. More importantly, symmetry of power to negotiate health cases and patients' involvement in decisions potentially influences the medical process. In Yekatit 12 Hospital, physicians are in a good progress to depart from the traditional patient-physician communication where the physician takes the upper-hand. The medic and the nurses are aware of the role of good communication, balanced relations in medical encounters and respect to the success of diagnosis and medication. Almost all respondents firm enough that the communication among physicians and with patients is client-centered and open for negotiation. Despite the huge workload, the physicians have fair expectations to the patients' preoccupations and opt to listen to the patients as well. The hospital physicians are in a promising position to implement the Ethiopian Ministry of Health National Health Promotion and Communication Strategies (2016-2020) platforms that claims in creating friendly and inviting health facility environment through improved relationships and effective health communication.

Level of Quality of Immediate Newborn Care Practices and Associated Factors among Newborns who have been delivered in public hospitals of Wolayta zone, South Ethiopia

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Background

Essential newborn care (ENC) is a set of basic care given to all newborns to optimize their survival within first month of life [1]. Immediate newborn care practices are part of essential newborn care practices used to protect newborns morbidity and mortality that happened immediately after birth within first hour [2]. It is simple, technology free and cost effective practices to save the lives of newborns while reducing preventable neonatal mortality [3].

Globally, 2.6 million newborns died in 2016. Southern Asia and Sub-Saharan Africa accounted for 80% of the world newborn mortality. Ethiopia ranked 5th in the world and 3rd in Africa next to Nigeria and Democratic Republic of Congo. There was a wide regional variation in newborn mortality ranging 20/1000 in Addis Ababa to 64/1000 in Benishangul-Gumuz. Southern Nation, Nationalities and Peoples Regional State (SNNRP) is 5th by neonatal mortality in Ethiopia and Wolayta zone reported highest neonatal mortality 31/1000 in the region in 2016 [4-6].

The main causes were birth complication, asphyxia and sepsis accounted for almost 60% of all neonatal mortality. Effective quality newborn care can reduce around 75% of preventable newborn mortality [7-9]. Quality newborn care is pivotal point for improving coverage, adherence to newborn care services and its survival [10].

Measuring quality level of newborn care is indicator for how far distance we can go to achieve targeted goals [11, 12]. Evidence of measurement is strong when measured by observing the procedure in delivery ward during care provision. However, it is not well evaluated in the health facility while care provided to every baby routinely and its factors are not well studied in previous literature in Ethiopia as well as in study area. Therefore, we aimed to measure the level of quality of immediate newborn care practices and assessed its associated factors among newborns have been delivered in the public hospitals of Wolayta zone, southern Ethiopia, 2018.

Methodology

Study area and period: The study was carried out in the public hospitals of Wolayta zone, Southern Ethiopia, from March 10 to April 10, 2018. There are 5 public and 2 private hospitals, 71 health centers and 408 health posts in the Wolayta zone.

Study design: Facility based cross sectional study was conducted

Study population: All newborns, their mothers and health care workers who were providing delivery services in public hospitals of Wolayta zone during study period.

Sample size determination: We used 50% as prevalence, 95% confidence interval (CI), 5% error, sample size was 384 and adding 10% non-response rate, the final sample size become 422.

Sampling technique: We included all five public hospitals in the zone purposely. We received quarter client flow from hospitals. We distributed sample size to each hospital by using PPS. All health workers providing delivery service were included in study by purposive sampling method.

Level of quality of immediate newborn care practices: Refers to leveling of immediate newborn care practices in delivery rooms as "good" or "poor" by using observational checklist. It is "**Good**" if baby received at least 75% of the component or performed 9-13 components in the checklists and "P**oor**" if received below 75% or performed 1-8 components [13].

Availability of drugs, equipment and materials: Presence of supply needed to provide newborn care mentioned in national newborn care manual. Its "good" if 75% of listed materials are available and "poor" if < 75% by observatory checklist.

Data collection instruments and procedures: We used observational checklists to assess level of immediate newborn care practices and availability of drugs and materials needed to provide newborn care. Structured questionnaires were used to assess the factor of outcome variable.

Data processing and analysis: The data was entered in to Epi-info and then transferred to SPSS for analysis. Independent variable at p-value <0.25 by bivariate logistic regression was included in to the multivariate logistic regression to determine predictor variable and variables at p<0.05 considered as significant

Ethical consideration: Ethical clearance was obtained from Mekelle University Ethical Review committee. The permission letter was written from Wolayta zone health department. Written informed consent was obtained from each health worker and verbal consent from each mother to follow the care provided to their baby and to interview them. If there was a case of miss practice of newborn care during observation time, then the data collector corrected.

Results

A total of 59 health workers, 422 newborns and mothers were included in the study with response rate of 100%. The majority 384 of (91%) of the mothers were between age group between 20-35 years with the median age of 25 years and Interquartile Range 5 (see table 1).

Health service and obstetric related characteristics of mothers

The majority of the mothers, 298 (70.6%) were multiparous. Of the total 422 newborns observed, 260 (61.5%) were males. Concerning ANC visits, 266 (63%) of mothers had attended antenatal clinic at least once during their pregnancy period (see table 2).

Table 1 Health service and obstetric related characteristics of mothers, 2018 (n=422)

Variables		Level of quality of immediate newborn care		
		Good (%)	Good (%)	Total (%)
Parity	Primiparous	91(21.6%)	34(8%)	125 (29.6%)
	Multiparous	229(54.3%)	68(16.1%)	297 (70.4%)
Birth preparedness of mothers	Prepared	293(69.4%)	91(21.6%)	384 (91%)
	Not prepared	26(6.4%)	11(2.6%)	38 (9%)
History of ANC visit	Yes	216(51.2%)	50(11.8%)	266 (63%)
	No	104(24.6%)	52(12.3%)	156 (36.9%)
Number of ANC visits	No ANC visit	103(24.4%)	52(12.3%)	155 (36.7%)
	One ANC visit	34(8%)	12(2.9%)	46 (10.9%)
	Two ANC visit	99(23.5%)	20(4.9%)	119 (28.2%)
	Three and above ANC visit	84(20%)	18(4.2%)	102 (24.2%)
Counseled on ENC during ANC visits	Yes	191(45.3%)	39(9.2%)	230 (54.5%)
	No	129(30.6%)	63(14.9%)	192 (45.5%)
Counseled on ENC during delivery	Yes	245(58.1%)	6014.2(%)	305 (72.3%)
	No	75(17.7%)	42(10%)	117 (27.7%)

Newborns care service provision by health workers

We interviewed totally 59 health workers during study period. Concerning profession, majority of health workers 31 (52.5%) were midwives.

Table 2 Newborn care service provision of health workers, 2018 (n=59)

Variables		Frequency	Percentage
Sex of health workers	Male	24	40.7
	Female	35	59.3
Types of profession	Midwife	31	52.5
	Nurse	19	32.2
	Emergency surgery	5	8.5
	Others	4	6.8
Level of education	Degree	50	84.7
	Master	5	8.5
	Specialty	4	6.8
Work experience	Less than two years	17	28.8
	Two years and above	42	71.2
Training	Yes	44	74.6
	No	15	25.4
Newborns received care by trained health worker on ENC	Yes	281	66.6
	No	141	33.4
Newborns received care by health worker who had knowledge on the component of ENC	Good	335	79.4
	Poor	87	20.6

Availability of drugs, materials and supply

Among total newborns observed, 340 (80.6%) newborns were received immediate newborn care with good supply of drugs, materials and medical equipment (Figure 1).
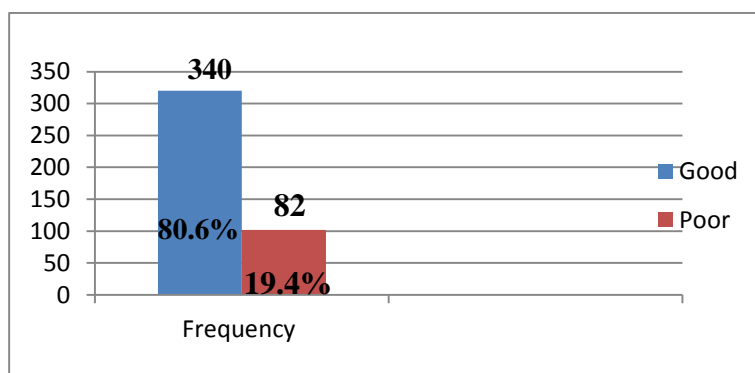

Figure 1 Availability of drugs and equipment in the public hospitals of Wolayta zone, 2018

Level of quality of immediate newborn care practices

From the total of 422 newborns observed, 320 (75.8%) with 95%CI of 71.6%-79.9% newborns were received good quality of immediate newborn care practice (Figure 4)
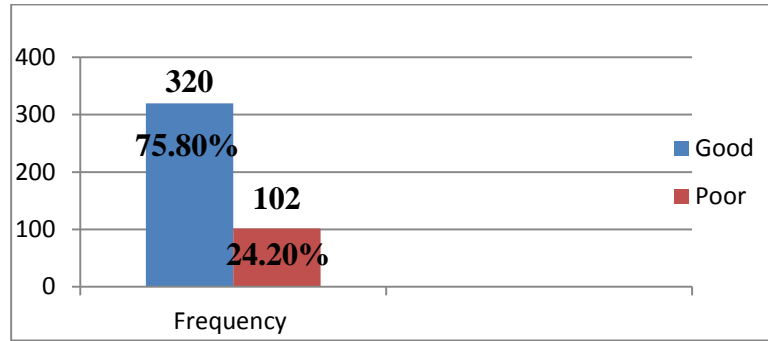
Figure 2 Level of quality of immediate newborn care practices in the public hospitals of Wolayta zone, South Ethiopia, 2018 (n=422)

Factors that affect the level of quality of immediate newborn care practices

A total of 9 predictor variables such as, residency, average monthly income, history of ANC visits, number of ANC visit, advice of ENC during ANC visit, advice of ENC during postnatal period, newborns delivered by trained health workers, maternal knowledge on the component newborn care and availability of materials were showed association at p-value of 0.25.

Three predictor variables like newborn received care by trained HWs on ENC [AOR=0.53 (0.32-0.86)], lack of mother's knowledge on ENC [AOR=2.7(1.56-4.65)] and lack of supply drugs, equipment and materials [AOR=1.8(1.02-3.2) were found to be significantly associated to level of quality of immediate newborn care practices at p-value of 0.05.

Those newborns received care by health workers trained on the component of essential newborn care were 47% more likely to receive good quality of immediate newborn than those who cared by health worker not trained on essential newborn care. Those newborn who had mother with lack of knowledge on essential newborn care component were 2.7 times less likely to receive good quality of immediate newborn care practices as compared with newborns whose mother had good knowledge on the components of essential newborn care. The odds of newborn received care with poor supply in drugs, equipment and materials was 1.8 times less likely to receive good quality of immediate newborn care than those newborns cared with good supply of drugs, equipment and materials (see table 4 below).

Table 3 Multivariate logistic regression analysis of factors associated with level of quality of immediate newborn care practices in public hospitals of Wolayta zone, 2018 (n=422)

Variables	Good	Poor	COR(CI)	AOR(CI)
Residence				
Urban	154	42	0.75(0.48-1.19)	1.64(0.914-2.94)
Rural	166	60	1	1
Average monthly income				
Less than 1000 ETB	63	33	1	1
1000-2000ETB	91	29	0.61(0.34-1.1)	0.98(0.5-1.9)
>2000ETB	166	40	0.46(0.27-0.79)	0.93(0.45-1.94)
History of ANC follow				
Yes	216	50	0.46(0.29-0.73)	1.36(0.57-3.22)
No	104	52	1	1
Number of ANC visit				
No ANC	104	54	1	1
1-2 ANC	33	12	0.73(0.35-1.52)	1.15(0.43-3.07)
3 & above	183	38	0.41(0.25-0.67)	0.46(0.34-2.12)
Counseled during ANC visit on ENC				
Yes	191	39	0.42(0.27-0.66)	0.58(0.3-1.02)
No	129	63	1	1
Counseled during postnatal period on ENC				
Yes	245	60	0.44(0.27-0.7)	0.6(0.35-1.04)
No	75	42	1	1
Babies received cared by HW trained on ENC				
Yes	**224**	**56**	**0.52(0.33-0.82)**	**0.53(0.32-0.86)***
No	**96**	**46**	**1**	**1**
Maternal knowledge to newborn care				
Yes	**235**	**46**	**1**	**1**
No	**85**	**56**	**3.37(2.12-5.34)**	**2.7(1.56-4.65)****
Availability of materials				
Good	**267**	**73**	**1**	**1**
Poor	**53**	**29**	**2(1.19-3.37)**	**1.8(1.02-3.2)***

NB, HW=health worker, ENC=essential newborn care, **=p-value<0.01 & *=p-value<0.05

Discussions

In our study, majority of newborns 320 (75.8%) received good quality of immediate newborn care practices but lower than the national target which is 95% of newborn should receive newborn care components in 2020 [11]. This due to in national target it recommended all baby should be cared by trained HWs but in our study only 66.6% babies cared by trained HWs. This study in lined with

study in Tigray that 72.8% of newborns received good newborn care practice [14] but higher than studies in Addis Ababa 30% [15] and Khartoum Sudan 41.1% [16] The study Khartoum observed only 40 samples while study in Addis Ababa more concentrated on maternal BEMONC care and assessed only three components of essential newborn.

This study showed that newborns received care by trained HWs on ENC were 55% more likely to receive good care as compared to those newborns cared by non-trained HWs on ENC. This is similar with study in Tigray showed that the newborns received care by HWs were 0.24 times received more good practice than those cared by not trained HWs. This contrast with study done in India showed no significant association between training of HWs and essential newborn care practice [17]. This is due to only self-administered questionnaires to HWs in Indian study not conducted observational simulation during data collection.

In our study, those newborns cared with inadequate supply of material needed for essential newborn care practices [AOR=1.8(1.01-3.2)] were 2 times less likely to receive good quality of INC as compared to newborns cared adequate materials. This finding is consistent with the study done in Addis Ababa [15, 18] and Eastern Tigray [14].

Conclusions

Majority of newborns received good quality of immediate newborn care practices but still there is gap to reach national set target. In our study, receiving care by trained HWs on ENC, maternal knowledge on the components of ENC and receiving care with good supply of drugs and materials needed for care were predictors of outcome variables. We recommended Wolayta zone health department and hospitals to assign training on ENC and supply drugs, materials and equipment needed for newborns care. We also recommended health workers to counsel mothers during ANC visits and delivery about newborn care to develop maternal knowledge.

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Quality of Neonatal Resuscitation in Ethiopia: Implications for Policy and Practice

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Abstract

Background: Birth asphyxia accounts for one quarter newborn deaths. Providing quality care during neonatal resuscitation reduces neonatal mortality due to birth asphyxia by 30 percent. However, the challenges of health system's capacity to provide quality neonatal resuscitation service are not well investigated in Ethiopia. Hence, this study is conducted to assess the quality provision of neonatal resuscitation in Ethiopia.

Method: We used data from the 2016 national Emergency Obstetric and Newborn Care (EmONC) assessment which contains data on all health facilities providing delivery care services in Ethiopia (N=3,804). We described the quality of neonatal resuscitation (NR) services provided to asphyxiated babies in terms of structural quality, processes of care and outcomes (survival status at discharge). We also explored the factors associated with survival of neonates after undergoing neonatal resuscitation using multivariable logistic regressions.

Results: Two third, 364(65.6%) of the asphyxiated babies resuscitated by bag and mask type of neonatal resuscitation. Of the babies who had got neonatal resuscitation 463 (83.4%) survived, and 92(16.6%) died at the time of discharge. Gestational age of greater than 37 weeks and above had 1.82 times increased chances of survival than those unknown gestational age (AOR) =1.82; 95% CI (1.09-3.04)),one unit increase in availability of priority equipment in health facilities for neonatal resuscitation increases by 1.24 times the survival of the neonates (AOR=1.24,95% CI(1.09,1.54)) and women who had 12 hours and less duration of labour were 1.76 times more likely to survive their newborn than their counterparts (AOR=1.76; 95% CI (1.23, 3.13)).

Conclusion : Only half of the health facilities were ready for NR in terms of priority equipment's. However, eight out of ten babies survived after NR received in Ethiopia. Gestational age, priority equipment for NR and duration of labor were determinants of survival of resuscitated neonates in Ethiopia. Therefore, the availability of priority equipment's and attentive care and follow-up for premature neonates and those face prolonged labour need to be improved in Ethiopia.

Key words: Neonatal resuscitation, Quality of care, Emergency Obstetrics and Newborn Care, Birth asphyxia and Ethiopia

Introduction

Birth asphyxia is defined by the World Health Organization (WHO) as "the failure to initiate and sustain breathing at birth" and accounts for one fourth of neonatal mortality [WHO, 2012]. Five to ten percent of babies born in facilities need an urgent need for neonatal resuscitation in low-resource settings, where access to intrapartum obstetric care is poor and the incidence, mortality, and burden of long term impairment from intrapartum-related events is very high. Delays in initiating resuscitation to non-breathing babies may exacerbate hypoxia, increase the need for ventilation and lead to neonatal morbidity and mortality [WHO, 1997; Haftom et'al, 2015].

In low income countries ineffective resuscitation practices are linked to the insistently high neonatal deaths from birth asphyxia in the first 1–24 hours [Opiyo et'al, 2015]. In addition, poor record–keeping and inconsistent quality of care is a major impediment to efforts aimed at improving the health of neonates. It is suspected that while coverage of institutional delivery services has been increased, the quality of care provided is substandard [Filippi V, et'al, 2006; Gram Wj et'al, 2012]. Therefore, this 2016 national Emergency Obstetrics and Newborn Care (EmONC) survey [EPHI, EmONC,2017] provides a unique opportunity to address the information gap of the capacity of quality of neonatal resuscitation to treat and manage asphyxiated babies. In this analysis, we aimed to explore the factors associated with the neonate's survival after undergoing neonatal resuscitation.

Methods

Data source

We used data from the 2016 Ethiopian Emergency Obstetrics and Newborn care (EmONC) assessment. The EmONC assessment was a national cross-sectional census of all public hospitals, health centers and all private facilities (higher –clinic and above) that provided maternal and newborn health services and reported having attended births in the last 12 months. The EmONC assessment did not include health posts or medium and small clinics because these facilities are not supposed to attend deliveries.

Of the eligible 4,385 facilities in all nine regions and two city administrations in the country, 3,804 facilities were assessed including 293 hospitals, 3,459 health centers and 52 clinics, both government-owned and private. A total of 11 facilities were not accessible due to political unrest or because the staff refused to allow the team to conduct the survey. In each facility, charts from the last three asphyxiated babies born in the past 12 months were reviewed. However, most facilities had data on only one eligible charts of resuscitated neonates chart (N=555) were assessed with regard to the process of NR, provider, facility and resuscitated asphyxiated babies' characteristics and neonate's outcome [EmONC, 2016; Donabedian A,1988].

Data analysis and measurement

We measured quality of NR using the Donabedian triads of quality which includes structure, processes and outcomes (survived or dead after undergoing NR). Logistic regression analyses were used. A bi-variable logistic regression analysis was conducted and those independent variables with p value of ≤ 0.25 were considered for inclusion in the multivariable logistic regression model with the forward likelihood ratio method. Finally, variables with $p<0.05$ in the multivariable analysis were considered to declare statistically significant associations between covariates and neonate's survival after NR. All analyzes were performed using SPSS version 21^{TM} software.

Results

Structural quality: Neonatal Resuscitation service-specific readiness

The overall availability of infrastructural readiness was 64.2%, availability of essential medicine and commodities 69.4%, priority equipment's 51.5% and national helping baby breath guidelines 82.5% of the health facilities in Ethiopia. Index specific calculations are described in appendix 1.

Health care providers' background characteristics

A total of 555 health care providers (HCPs) with a mean age of 26.1years (SD±5.9) participated in the study. Almost more than half of HCPs (n=334; 60.2%) was aged less than 25 years. Midwives accounts the majority of professional cadre (n=504; 90.8%) to provide newborn resuscitation. Regarding work experiences, four out of ten (n=243; 43.8%) participants indicated having less than 2 years' experience. Over three fourth of the HCPs 471(84.9%) reported having received the NR training within the past two years prior to this study.

Health facility characteristics

Four of the ten health facilities reported having a separate newborn corner and majority (n= 472; 85%) of health facilities reported that they didn't have separate Neonatal Intensive Care Unit (NICU). Less than half (n= 249; 49.9%) of the facilities reported that frequent staff rotation for newborn care within the neonatal care service. Regarding the facility type, a high proportion of health centers (n=408; 80.7%) was included in this study and described in appendix 2.

Neonatal Resuscitation process quality and outcomes

Around two third, (n=364; 65.6%) of the asphyxiated babies were resuscitated using bag and mask, whereas, only 9(1.6 percent) was done by stimulation. Overall, regarding outcome of the neonates after resuscitation, majority of the neonates (n = 463, 83.4%) were survived **[Table 1].**

Table 1: NR process quality and outcomes in Ethiopia, EmONC survey 2016 (N=555)

Characteristics	Frequency	%
Neonatal resuscitation steps		
Stimulation	9	1.6
Bag and mask	364	65.6
Both stimulation and bag and mask	171	30.8
Intubation	11	2.0
Outcome of neonatal resuscitation for the asphyxiated babies at time of discharge		
Survived	463	83.4
Not survived	92	16.6

Factors associated with outcome of Neonatal Resuscitation

After adjusting in the multi variable analysis, duration of labour, gestational age and availability of priority equipment for NR were found to have significant statistical association with neonate's survival at time of discharge. Resuscitated newborns delivered below and 12 hours of labour were 1.76 times (AOR=1.76; 95% CI (1.23, 3.13) more likely to survive than those delivered after duration of greater than 12 hours. In addition, neonate's gestational age is significantly associated with the neonate's survival status after resuscitation. As the gestational age increase the chances of getting survive would also increase. Resuscitated newborns delivered at gestational age of greater than 37 weeks and above had 1.82 times increased chances of survival when compared to newborns with unknown gestational age (AOR=1.82; 95% CI (1.09-3.04). Facilities with one-unit increase in availability of priority equipment increases by 1.24 times the survival of the neonate after NR (AOR=1.24; 95% CI: 1.09, 1.54; p =0.05) [**Table-2**].

Table 2: Association between explanatory variables and survival of neonates in Ethiopia, EmONC Survey (N=555)

Characteristics	Survival of neonate's at time of discharge, n (%)		OR(95%CI)	
	Survive	**Not survive**	**Crude**	**Adjusted**
Professional Cadre				
MD/HO	12(75.0)	4(25.0)	0.39(0.081.80)	
Midwives	420(83.3)	84(16.7)	0.65(.22-1.88)	
Nurses	31(88.6)	4(11.4)		NS
Provider work experience in years				
<2	202(83.1)	41(16.9)	0.75(0.35-1.57)	
2-5	195(82.6)	41(17.4)	0.72(.34-1.52)	
>5	66(86.8)	10(13.2)		NS
Type of resuscitation				
Stimulation	7(77.8)	2(22.2)	0.35(0.26-4.65)	
Bag and mask	306(84.1)	58(15.9)	0.53(0.07-4.20)	
Stimulation with bag & mask	140(81.9)	31(18.1)	0.45(0.06-3.66)	

Intubation (Ref)	10(90.9)	1(9.1)		NS
Mode of delivery				
Spontaneous Vaginal	420(83.2)	85(16.8)	1.45(0.52-4.05)	
Instrumental	26(92.9)	2(7.1)	3.82(0.66-22.0)	
Caesarian section (Ref)	17(77.3)	5(22.7)		NS
Duration of labor				
≤ 12 hours	161(89.9)	18(10.1)	2.2(1.26-3.81)	**1.76(1.23-3.13)**
>12 hours (Ref)	302(80.3)	74(19.7)		
Gestational age(weeks)				
< 37	47(79.7)	12(20.3)	1.3(0.60-2.63)	**1.37(0.61-3.10)**
≥ 37	304(87.4)	44(12.6)	2.2(1.36-3.63)	**1.82(1.09-3.04)**
Unknown (Ref)	112(75.7)	36(24.3)		
Mother/baby referred from another facility				
Yes	24(82.8)	5(17.2)	1.1(0.39-2.83)	
No (Ref)	439(83.5)	87(16.5)		NS
Meconium present				
Yes	85(90.4)	9(9.6)	0.48(0.23-0.98)	
No (Ref)	378(82.0)	83(18.0)		NS
Facility has separate newborn corner room				
Yes	197(84.9)	35(15.1)	1.21(.76-1.91)	
No (Ref)	266(82.4)	57(17.6)		NS
Facility has staff rotation policy for newborn care				
Yes	207(83.1)	42(16.9)	0.96(0.61-1.51)	
No (Ref)	256(83.7)	50(16.3)		NS
Facility type				
Hospitals	91(85.0)	16(15.0)	1.2(0.65-2.09)	
Health centers (Ref)	372(83.0)	76(17.0)		NS
Facility location				
Urban	238(84.1)	45(15.9)	1.1(0.71-1.73)	
Rural (Ref)	225(82.7)	47(17.3)		NS
Operating agency				
Government	446(83.5)	88(16.5)	1.19(0.39-3.63)	
Private (Ref)	17(81.0)	4(19.0)		NS
Facility has care providers trained on NR				
Yes	393(83.4)	78(16.6)	1.01(0.54-1.88)	
No (Ref)	70(83.3)	14(16.7)		NS
Availability of essential medicine	463(83.4)	92(16.6)	0.96(0.81-1.14)	NS
Availability of priority equipment's	463(83.4)	92(16.6)	0.79(0.64-0.98)	**1.24(1.09-1.54)**
Infrastructure components	136(85.5)	23(14.5)	1.1(0.82-1.50)	NS
Availability of neonatal resuscitation guideline				
Yes	384(83.8)	74(16.2)	1.2(0.67-2.09)	
No (Ref)	79(81.4)	18(18.6)		NS

Ref*: Reference category NS***:** Not statistically significant variable

Discussion

More than two third of the resuscitated babies were survived after NR undergoing in health facilities of Ethiopia and gestational age, priority equipment for NR and duration of labor were independently associated factors of survival of resuscitated neonates. Thus, this finding has implications both at the health facility level and the health care provider's level for the fight against neonatal mortality due to birth asphyxia. Appropriate caring for premature newborns and use of partograph to monitor each woman continuously throughout the duration of labour is very important intervention in low-resource settings as prolonged labour and delay in decision making are important causes of adverse obstetric outcomes. Besides, health facilities should invest more in ensuring that the availability of priority equipment's for NR to perfectly perform the procedure within the golden minute.

Our study shows that, availability of priority equipment in facilities increases the survival of neonates after neonatal resuscitation. One-unit increase in availability of priority equipment in a health facility increases by 1.24 times for the survival of the neonate (95% CI: 0.99, 1.54; p =0.05). This implies the benefits of the preparation of priority equipment, and sometimes staff for unforeseeable and foreseeable resuscitations, helps them to start ventilation on time, and increases the chances of a baby surviving after resuscitation in Ethiopia. By improving availability and readiness of NR equipment's, Ethiopia can reduce barriers to the proper neonatal resuscitation practice and improve their performance that impact to decrease high neonatal mortality in the country [R.moshiro H, et'al, 2018]. This is supported by evidence from an effective intervention to decrease global neonatal mortality; effective NR could prevent neonatal deaths by 30 percent as well as improve the outcomes of newborns delivered with birth asphyxia [G A. little, et'al, 2011]. Prematurity is among the top three causes of neonatal mortality in Ethiopia [Staff MU,2016/2017] and the leading cause globally [Lawan JE, et'al,2014]. Resuscitated newborns with gestational age ≥ 37 weeks had 1.82 times increased chances of survival in our findings. This is in line with the study conducted in Tanzania [Mashiro R, et'al,2018] which shows newborns who died as compared to those who survived had significantly associated with gestational age and Kenya, indicated that gestation age ≥ 37 weeks was significantly associated with increased survival at one-hour post NR (OR = 1.38, p = 0.007, CI = 1.10–1.75). This can be explained by the fact that a preterm baby who is failing to establish regular respiration needs more swift support and those babies who are extremely bruised at delivery during resuscitation generally have an extremely poor outcome [Sims DG, et'al, 1994]. Resuscitated newborns delivered 12 hours and less duration of labour were 1.76 times more likely to survive than those delivered greater than 12 hours (AOR=1.76; 95% CI (0.99, 3.13)). This might be because of prolonged duration of labor puts children at risk for developing brain damage that leads to cerebral palsy as a result of prolonged oxygen deprivation to the fetus or newborn, and the longer the baby is deprived of oxygen, the more severe the damage may be and getting die [Fernades CJ, et'al, 2013].

Conclusion

Overall, availability of priority equipment's for NR service as structural quality indicator is low in Ethiopia. However, more than two third of the resuscitated babies were survived at time of discharge. Regarding the predictors; gestational age, priority of equipment's for NR and duration of labour were the main correlates of neonatal outcome after NR service received. Thus, we recommend that, efforts to avail of the priority equipment's and supplies and strong follow up should be given for premature and for those neonates had more than 12 hours' duration of labour to improve their quality of life. Further observational research also warranted to measure quality of NR and its effect on resuscitated newborns.