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MINISTRY OF HEALTH - ETHIOPIA

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HEALTHIER CITIZENS FOR PROSPEROUS NATION!

Quality improvement Training for PHCU

FACILITATORS' GUIDE FOR FACILITY TRAINERS

2021

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EXECUTIVE SUMMARY

The quality of health care delivery is one of the pillars of the Health Sector Transformation Plan for Ethiopia, which aspires to build a high performing health system. Primary health care (PHC) is central to delivering on the promise of high-quality universal health coverage. With universal health coverage, any person in the community should be able to access essential health care that is of good quality and which leads to improvement in their health, while also being affordable. But to be able to deliver on this promise, we need to embed a culture of improving the quality of care to the best extent possible. At the heart of quality improvement will be health workers based in primary health care.

The purpose of this QI training package is to equip PHC-based health workers with all the necessary Knowledge, Attitudes and Skills to be able to carry out quality improvement (QI) activities as a routine part of their work, so that they can contribute to achieving high-quality universal health coverage in Ethiopia.

The training package has been designed based on the principle of competency-based approach in which the intended outcomes (what learners must know and do) serve as a foundation for the selection of content, teaching methods and evaluation methods. The design and development of the training package focuses on practical application of new Knowledge, Skills and Attitudes on-the-job and also focuses on the performance of real-life skills to meet the job requirements.

This QI facilitators' guide is organized in seven sessions. Each session consists of essential content that the trainees must know, understand and apply. In addition, each session includes a case scenario that will help trainees to analyze and solve QI problems that they face on a regular basis in their clinical setting. This practical application will make the training more effective.

The guide also consists of essential job aids (checklists, guides) to support application of the training materials in routine settings.

Finally, this QI training facilitators' guide includes training evaluation questionnaires to monitor and evaluate the training. The information generated from the evaluation can provide valuable feedback to improve the training on an ongoing basis.

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FOREWORD

The Federal Ministry of Health has been implementing the first Health Sector Transformation Plan.

(HSTP-1), a five-year strategic plan from **2015/16-2019/20 with Improving the Quality and Equity of Health Care** as one of the key pillars of the health sector transformation agenda. The second health sector transformation plan **(HSTP-2)**, **(2020/21-2025/26)** also recognizes **Transformation in Equity and Quality of Health Services**, which refers to ensuring delivery of quality health services and creating a high performing primary health care unit, engaging the community in service delivery and consistently improving the outcome of clinical care, as one of the five key transformation agendas. In line with this, the Ethiopian ministry of health has designed national health care quality strategy and guide to implement Health Sector Transformation in Quality (HSTQ) to facilitate and sustain quality and equitable health care in health facilities and community as a whole.

The quality improvement training package is intended to be an essential part of the Ethiopian Primary Healthcare Clinical Guideline (EPHCG) as it will provide the necessary skills and tools for health care workers in identifying problems and applying the necessary measures towards providing quality care for patients while implementing the EPHCG.

The trainings will help to equip Health Center-based health workers with all the necessary Knowledge, Attitudes and Skills to be able to carry out quality improvement (QI) activities as a routine part of their work, so that they can contribute to achieving high-quality, equitable and safe universal health coverage in Ethiopia.

I would like to use this opportunity to express my heartfelt appreciation to all who participated in the development process of this training manual. Going forward, I would like to ask all partners, governmental and non-governmental organizations, and others who have any role in the improving quality of care at health centers, to use this manual as the major source for training.

ABBREVIATIONS

BP	Blood pressure
CEU	Continuing Education Unit
EFMoH	Ethiopia Federal Ministry of Health
ENHQS	Ethiopian National Health care Quality Strategy
FADE	Focus, Analyze, Develop, Execute
FMOH	Federal Ministry of Health
HC	Health Care
HC	Health Center
HMIS	Health Management Information System
HSDP	Health Sector Development Plan
HSTP	Health Sector Transformation Plan
HTN	Hypertension
KPI	Key Performance Indicators
IOM	Institute of Medicine
IHI	Institute for Healthcare Improvement
MFI	Model for Improvement
MNCH	Maternal Newborn and Child Health
NQS	National Quality Strategy
OECD	Organization for Economic Co-operation and Development
OPD	Out-Patient Department
PDSA	Plan-Do-Study-Act
PHCU	Primary Health Care Unit
PPH	Post-Partum Hemorrhage
QA	Quality Assurance
QI	Quality Improvement
QMT	Quality Management Team
QMU	Quality Management Unit
SBM-R	Standards-Based Management and Recognition
SMART	Specific, Measurable, Ambitious, Realistic, Time-Bound
SOP	Standard Operating Procedure
TOT	Training of trainers
WHO	World Health Organization

LIST OF TABLES AND FIGURES

CONTENTS

OVERVIEW OF THE QUALITY IMPROVEMENT (QI) TRAINING FOR PHCU

Rationale: A lot remains to be done towards improving the quality of care at each level of the health system. The health system, over the last two decades, has focused on improving coverage of essential health services. It is high time to pay attention to the quality of health services at all levels of the system. A substantial number of deaths, ill-health and disability can be averted if we can succeed in improving the quality of health care. This will bring benefits to our communities and increase job satisfaction for health workers. The quality of health care delivery is one of the pillars of the Health Sector Transformation Plan, which aspires to build a high performing health system in Ethiopia. Primary health care (PHC) is central to delivering on the promise of high-quality universal health coverage.

Purpose: This health care quality improvement TOT training is designed to equip PHC workers with all the necessary knowledge, attitude and skills required to carry out effective quality improvement activities. The overall goal of the training is to prepare motivated PHC workers to play a mentorship and coaching role to effectively plan and facilitate on-the-job quality improvement.

The training packages have been designed based on a competency-based approach in which the intended outcomes (what learners must know and do) serves as a foundation for the selection of content, teaching methods and evaluation methods. The design and development of the training package focuses on practical application of new knowledge, skills and attitudes on-the-job and on performance of real life skills to meet the job requirements.

The QI package consists of the following seven sessions which is intended to be delivered on-job on agreed up on schedules.

Session 1: Introduction to health care Quality management

Session 2: Readiness for change and plan for quality improvement

Session 3: Problem identification, prioritization and aim setting

Session 4: Generating change ideas

Session 5: Measurement

Session 6: Testing changes

Session 7: Sustainability spread and scale up

Session one drills down to provide details of quality in health care and its dimensions, core elements of quality in HC, knowledge for improvement and the different QI models that can be applied to improve quality in health care facilities.

Session two describe organizational readiness assessment, its purpose , characteristics and the different tools to support readiness assessment when an organization prepares to embark on a new QI project under the broader umbrella of the QI program. The session also walks through the organizational QI structure in the health care facility, QI composition, role and responsibilities of effective QI teams.

Session three to **seven** drills down to provide details of the framework for any improvement effort. It covers the design of improvement efforts, the process of testing and implementing changes and explores how to sustain and scale up improvement in a health system.

Session three describes the design phase sets the stage. It involves conducting an assessment, identifying and prioritizing problems/gaps, creating an aim, , and establishing the management structure, which may include coaches and QI teams.

Sessions four to **six** provide details on the testing and implementing phase of the improvement effort. It covers how the teams use various system analysis tools, to identify ideas for changes, setting measures of progress(indicators) and begin testing and implementing them.

Session seven covers the sustaining and scale-up phase of the improvement effort. the session provides details of Key practice needed to sustain improvement, and plan for diffusion of innovation through spread and scale of successful improvement.

GENERAL INSTRUCTION AND PREPARATION FOR FACILITATORS

A successful training course does not come about by accident, but rather through careful planning and preparation. Preparation for training requires a considerable amount of time and attention to detail should begin at least one month before the course.

General preparation for facilitators before the training

- Discuss with the organizer of the training that at least basic logistic and admin issues are in place for the smooth conduct of the training program
- Review the module syllabus and schedule (if possible, send copies of the syllabus and schedule to learners and other trainers).
- Review content materials in the training packages and prepare for each session to be delivered.
- Prepare and arrange all the necessary audiovisuals and training materials and check their functionality/availability
- Visit training sites, confirm arrangements and prepare all the necessary facility
- Prepare all the needed learning aid, instruments and supplies
- Finalize administrative arrangements.

General tips for delivering your training

While delivering the training, consider the following to ease the learning process

- Arrive at the training venue early for the course every day (but especially on the first day)
- Greet the learners individually and as a group (especially on the first day)
- Learn the names of the learners quickly
- Describe the design of the training course clearly and thoroughly
- Encourage the learners to ask questions
- Refer to your own experience and credentials modestly and in ways that are appropriate for the group.
- Model positive behavior and attitudes that support the course goal and learning objectives
- Explain roles, responsibilities, learning objectives, expectations, and group norms clearly
- Provide opportunities for learners to share their expectations

- Respect and build on the knowledge and skills of learners

Conduct training in a responsive and collaborative way

In your training delivery role, you should:

- Be sensitive to cultural and social diversity
- Balance the training plan with the more immediate interests of the learners
- Collaborate and build relationships with learners and their supervisors, as well as other trainers
- Adjust your training and communication style to meet the needs of the learners based on your observation of how they work as individuals and in groups
- Exhibit energy by interacting with learners, asking effective questions, presenting with intensity, and using humor appropriately
- Handle problems and challenges effectively and courteously
- Dress consistently with local norms
- Always be on time

Create a positive learning environment where participants feel comfortable and safe

In your training delivery role, you should:

- Treat the participants with respect and make sure that the participants also treat each other with respect and equality.
- Respond politely to naive questions
- Respect answers and viewpoints different from yours, do not belittle learners or other trainers, and offer feedback in ways that are socially appropriate for the ethnic or cultural groups represented in the training
- Encourage learners to try out new behaviors and skills, and provide encouragement and positive reinforcement when they do it carefully manage any negative individual or group behaviors
- Help learners to feel comfortable to fully participate in the training and learn from one another as well as from the trainer
- Provide opportunities for learners to answer questions raised by their peers
- Encourage learners to explain training messages to their peers
- Celebrate “small wins” and positive progress with the whole group
- Create a climate of fun by doing things the learners enjoy and find humorous or engaging
- Help and encourage the learners to look at situations from different perspectives

- Spend time with the participants during breaks and meals, so that you can have informal time with them.
- Learn and call participants with their preferred names.

Provide supportive feedback

In your training delivery role, you should:

- Motivate each learner and to reinforce key messages in the training sessions.
- Provide positive, timely feedback to learners when they have performed well
- Follow the progress of the learners during activities, and provide direct, specific feedback to reinforce accurate responses and correct inaccurate responses
- Validate learners' questions, feedback, and concerns, while preserving their individual dignity and self-esteem
- Listen carefully for learners' feedback about their learning needs and respond accordingly
- Add your own suggestions /reflections to feedback from the learners about what should be changed to improve the quality of the training experience and meet training requirements, and how those changes should be made

Use effective communication and presentation skills

In your training delivery role, you should:

- Use a variety of communication and presentation skills, even during a single session, to engage learners, keep their energy level high, maintain interest, and avoid a repetitive presentation style
- Tailor verbal and non-verbal communication to the learners' culture and needs
- Give clear and concise directions
- Use a variety of instructional media (e.g., flipcharts, transparencies, models, printed materials, and appropriate technology-based methods) appropriately to enhance instruction and involvement
- Use icebreaker activities at the beginning of the training and warm up exercises in between sessions.
- Explain concepts and procedures clearly „
- Use memorable or vivid examples to illustrate key points
- Reinforce essential or critical messages
- Use voice, gestures, silence, movement, posture, space, and appropriate equipment, supplies, and other objects to support and enhance learning
- Ask questions and encourage interaction
- Acknowledge and praise ideas that the participants contribute.

- Avoid being judgmental about the participants and their comments
- Use culturally appropriate anecdotes, illustrations, analogies, and humor to enhance learners' understanding and involvement
- Check learners' understanding by asking questions, assessing responses, conducting informal conversations, and observing practice sessions
- Use a variety of facilitation techniques
- Summarize or conclude learning experiences by asking questions about the experience, comparing and contrasting learners' responses, and helping them to draw conclusions about the objectives of these experiences

Provide opportunities for practical application of knowledge and skills

In your training delivery role, you should:

- Ensure application of knowledge and skills by providing appropriate learning opportunities drawn from real-life experiences, such as simulations, role plays, games, and case studies
- Demonstrate skills using models, role plays, and commonly available equipment
- Have learners practice these techniques before you give them feedback
- Link conceptual approaches to real-world applications by providing guided practice at clinical sites
- Show in a variety of ways the on-the-job benefits of meeting the learning objectives
- Assist learners with planning how they will apply their new knowledge and skills on the job

Monitor the process of training and make adjustments as needed

In your training delivery role, you should:

- Manage the physical environment to be sure it supports learners in mastering the learning objectives
- Observe individual and group behaviors
- Ask for feedback on content and delivery and encourage learners to share new ideas to improve the learning experience
- Make appropriate adjustments during the current training day, as well as adjustments to the next day's schedule
- Make changes in the original design, based on learners' feedback gathered directly through questions, or through observation of their progress

Evaluating training

In your training evaluator role, you should:

- Use a learner satisfaction instrument to gather information on what the learners think about the training materials and activities, the trainer, and training environment(determine learners' satisfaction with training)
- Determine whether learners have met the learning objectives by giving and scoring knowledge evaluations
- Determine whether learners have met the learning objectives by giving and scoring skill evaluations

Improve training using information from the knowledge and skill evaluations

In your training evaluator role, you should:

- Collect evaluation information using a standard and systematic approach
- Use the evaluation information to make decisions about *what part(s)* of a course to revise, *when* to revise them, and *what specific changes* to make

Monitor and evaluate performance on the job

In your training evaluator role, you should:

- Develop and implement a monitoring and evaluation plan for follow up visits after training
- Conduct follow up visits to observe learners on the job performance progress
- Collect performance information on the job after training
- Collect information from the worker's supervisor
- Use information about learners' performance to determine the impact of training (i.e., the extent to which performance has changed due to training)

QI TRAINING MODULE SYLLABUS

Module name: Quality Improvement Training for PHCU (facility trainees)

Module Duration (total hours): 88

CEU= 15

Target audience:

- Primary health care unit(especially health centers) management team members, health care providers(medical doctors, health officers, nurses, public health specialists, pharmacists and other health cadres) , health care data and record personnel, , health care quality experts working at the various levels of PHCU.

Suggested Course Composition

- Number of learners:
- Number of trainers/facilitators: 1-2

Learning approach

- Classroom-based with face-to-face interaction with groups;
- Guided practice and at work place (coaching and mentoring)

Module Description:

- This health care quality improvement training is designed for PHC workers to equip with all the necessary basic Knowledge, Attitude and Skills on PHC quality improvement activities to enable them effectively plan, implement, monitor and evaluate QI activities.

Learning Outcomes

At the end of the training, participants will be able to:

- Describe quality and quality management in health care system
- Assess organizational readiness for change and plan for quality improvement activities in health care facility.
- Identify and prioritize performance gaps/problem using different tools
- Develop problem and aim statement based on identified gaps.
- Develop change ideas using different tools and methods.
- Develop performance indicators to monitor and evaluate changes.
- Plan, and test change ideas for quality improvement to address identified and analyzed health care quality gaps
- Sustain improvement results, spread and scale up successful change

Teaching-Learning Methods and Activities

- Interactive lecture and discussion

- Facilitated group discussion
- Small group/individual project work
- Plenary presentation and discussions;
- Independent study
- Case study
- Guided practice
- Reflection and feedback

Training equipment and materials

- Computer with projector and screen (If available)
- A white/black board or flipchart with marker pens
- **Training documents**
- Each participant should have:

√ Agenda of the workshop

√ Learner Manual

- Each facilitator should have

√ Agenda

√ Facilitator guide and notes

√ Learner manual

Learning Assessment methods (both formative and summative)

- Oral Questioning
- Direct observation of performance (DOP) throughout the course period
- Written cognitive knowledge test
- Review of quality of work completed by participants (example -group learning activities)
- Attendance
- Participation and contribution

Summative performance assessment (class room –based learning)

- Written cognitive knowledge test (Post–test)
- Participation and contribution

Summative assessment (on-job performance)

- Review of support provided for PHCU QI teams during the design and implementation of QI activities (review of report, testimony from leaders, supervisor and other stakeholders)

Module evaluation methods and tools

- Participants daily reaction using daily evaluation form

- End of training evaluation (content, Teaching Learning Methods and Activities, trainers' competencies etc.)
- Participants learning using pre-and post-written cognitive knowledge test
- Direct observation of performance at the work place using on-the job observation checklist

QI TRAINING FOR PHCU SCHEDULE

General recommendation for on-site QI training schedule

- Schedule basically based on an agreed time at the facility
- Each training session should be Short (1 to 1 ½ hrs. to 2 hrs. at time)
- Targeting all staff working across clinical areas within a facility
- Onsite training should occur preferably weekly.

General Format for onsite training session

The table below explains the structure for each onsite training session. Your training sessions should always comprise a welcome, a recap and problem solving from the previous session, training the new case/topic and closure.

STEP	Follow steps	Time	What to do
STEP 1	• Welcome	5-10min	• Ask how the participants are doing since you last met. • Remind about the ground rules • Introduce topic for the session using an ice-breaker/relevant piece of information, etc..

STEP 2	• Recap
	• Problem-solve
		10-15 min	• Give opportunity to the group to reflect on:
			  • Key points/lessons learned previous sessions
			  • What's working/not working?
			  • Accomplishment and challenge
			  • Any questions/problems
			• Record problems on training record, address them where possible and escalate where needed

STEP 3	• Train new topic	90-130 min	• Interactive presentation and discussion • Facilitating case scenarios
STEP 4	• Prepare for next steps /sessions • Closure • Fill in onsite training record	10-15min	• Session summary • Planning next session (date and time) • next session deliverables • session evaluations • Thank the participants and close the session

Week	Key activities	Time allocated
Week 1	Welcoming session	30 min
	Session 1: Introduction to health care Quality management	65 min
Week 2	Session 2: Readiness for change and plan for quality improvement	90 min
Week 3	Session 3: Step 1: Identifying a problem, forming a team and writing an aim statement	95 min
Week 4	Session 4: Step 2: Analyzing problems and generating changes	130 min
Week 5	Session 5: Step 3: Measurement	115 min
Week 6	Session 6: Step 4: Testing changes	120 min
Week 7	Session 7: Step 5: Sustainability	60 min
	Wrap up session	30 min

Schedule of onsite training

	Key activities	**Time allocated**
1	Welcoming and opening speech	**30 minutes**
2	Introduction of facilitators and participants	
3	Role and responsibilities of facilitators and participants	
4	Participants expectations	
5	Goal and objectives of QI training for PHCU	
6	Training approach	
7	Training schedule (agree up on schedule)	
8	Training materials and resources	
9	Establishing group norms	

Duration: 60 minutes

ACTIVITY 1

- Welcoming and introduce the topic: 30 minutes
- Establish ground rules (Group norms)
- Explain the role and responsibilities of Trainers and trainees
- Ask participants expectation , write down in the flipchart and post

ACTIVITY 2: EXPLAIN THE SESSION OBJECTIVES (BELOW): 5 MINUTES

1. Explain how a health system improve the health of a population
2. Describe quality in health care and its dimensions
3. Distinguish the Core elements of quality in health care

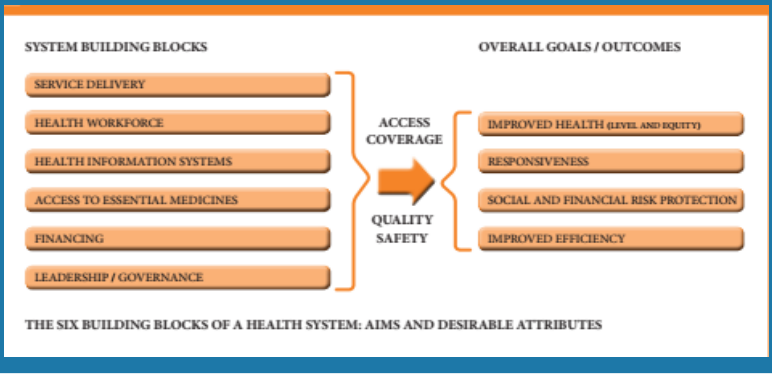
ACTIVITY 3: INTERACTIVE PRESENTATION (SLIDE 1 TO 17): 25 MINUTES

Present the slides 1-15 using the talking points provided with each slide. Inform the participants that these slides are available in the learner manual along with space to take notes.

1 HEALTH SYSTEM

- Health system consists of all the organizations, institutions, resources and people whose primary purpose is to improve health.
- The health system delivers preventive, promotive, curative and rehabilitative interventions through a combination of public health actions.

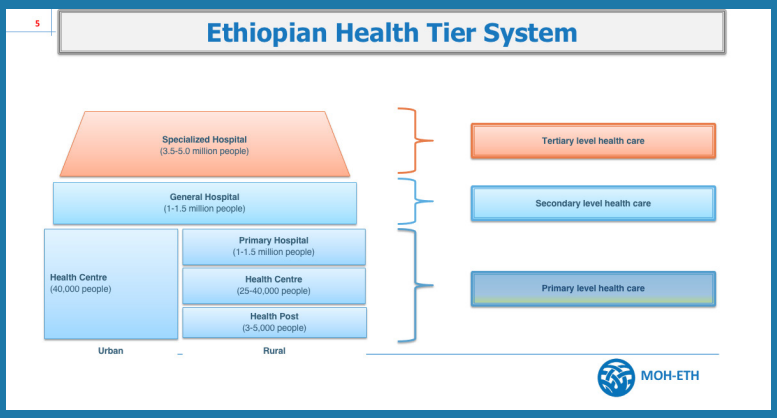
HEALTH SYSTEMS BUILDING BLOCKS



Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

- There are six building blocks that contribute to the strengthening of health systems in different ways.
- Some cross-cutting components, such as leadership/governance and health information systems, provide the basis for the overall policy and regulation of all the other health system blocks , including financing and the health workforce.
- A third group, namely medical products and technologies and service delivery, reflects the immediate outputs of the health system, i.e. the availability and distribution of care.

2



Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

- The Primary Health Care Unit which is composed of a health center (HC) and five satellite health posts (HPs). These provide services to approximately 25,000 people altogether.
- A primary hospital provides inpatient and ambulatory services to an average population of 100,000.
- A general hospital provides inpatient and ambulatory services to an average of 1,000,000 people.
- It serves as a referral center for primary hospitals. It serves as a training center for health officers, nurses and emergency surgeon categories of health workers.
- A specialized hospital serves an average of five million people. It serves as a referral for general hospitals bigger problems subsequently.

"The extent to which health care services provided to individuals and patient populations improve desired health outcomes.

In order to achieve this, health care must be safe, effective, timely, efficient, equitable, and people-centered" **WHO 2014**

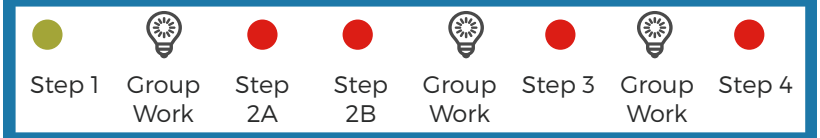
3

QUALITY IN HEALTH CARE

Definition of Quality in Health Care

"Comprehensive care that is measurably safe, effective, patient-centered, and uniformly delivered in a timely way that is affordable to the Ethiopian population and appropriately utilizes resources and services efficiently." (NQS 2016)

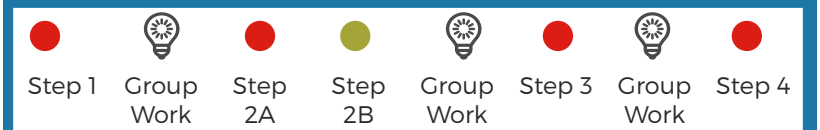
"the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional (Lancet ,2018)



4

The six dimensions of quality in health care

1. Safe
2. Timely
3. Effective
4. Efficient
5. Equitable
6. Patient-centered



Here are the six dimensions of quality in health care

- **Safe:** avoiding injuries to patients from the care that is intended to help them
- **Timely:** reducing waits and sometimes harmful delays for both those who receive and those who give care
- **Effective:** providing services based on scientific knowledge to all who could benefit, and refraining from providing services to those not likely to benefit
- **Efficient:** avoiding waste, including waste of equipment, supplies, ideas and energy
- **Equitable:** providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location and socioeconomic status
- **Patient-centered:** providing care that is respectful and responsive to individual patient preferences, needs and values, and ensuring that patient values guide clinical decisions

The Donabedian model is a framework for examining health service and evaluating its quality. To assess to what extent the health care system is providing quality services, we need to assess three categories: structure, process and outcomes

- **Structure** describes all the factors that affect the context in which the care is delivered such as hospital facilities, staff, equipment etc. These factors control how providers in a healthcare system act and are measures of the average quality of care within a facility or system
- **Process** means the interactions between patients and providers, through the delivery of healthcare including diagnosis, treatment, preventive care, patient education etc.
- **Outcome** refers to the effects of the healthcare on the health of the patient and the population including changes to health status, behavior or knowledge as well as patient satisfaction.

5 The Donabedian Framework for Quality in Health Care

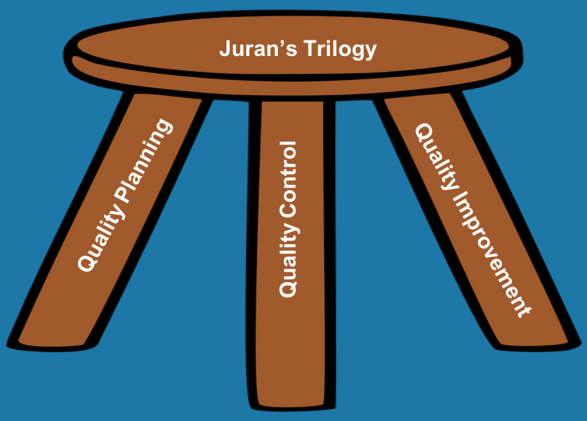
- The Donabedian model is a framework for examining health service and evaluating its quality.
- The Donabedian model makes clear that all the parts of a system (structure, process, and outcome) are connected and if only the interaction of all parts is optimal, the system functions optima
  - Structure
  - Process
  - Outcome

Look back at the flip chart for activity 2 where you wrote down the barriers. Ask the group where the barriers to quality of care fit in the Donabedian framework.

Most of the barriers that have been identified are likely to fit under “STRUCTURE”. Structural barriers are certainly very important and not easy for individuals to change. But we can see here that PROCESSES of care are also important for quality care that improves health outcomes.

We may not be so aware of PROCESSES of care, but they are the part of quality care that we can often change for the better. We will come back to that later.

6 **Core elements of Quality in Health Care**



Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

- Juran's Trilogy (quality planning, quality control and quality improvement.
- These core components of quality management, like a three-leg stool that if one leg is not there the stool cannot stand.

7 **Core elements of Quality in Health Care**

1. Quality Planning
2. Quality control
3. Quality Improvement

- QI sets an ambitious aim to improve quality, tests out ideas to improve quality and measures the changes, all in routine health care settings.
- Quality problems in our specific health facility and it is only useful if it leads to change that benefits our patients.

Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

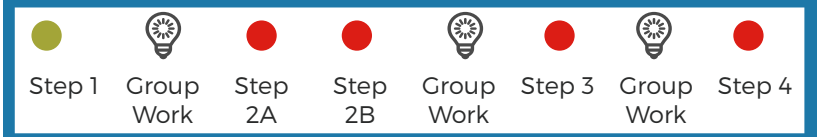
- **Quality Planning:** leadership and governance (setting the priorities, quality structures, data systems, building the capability etc); measures gap and establishes the goals, policies and strategies to close the gap ; ensues that resources are allocated to do this effectively.
- **Quality controll** is a normative process that includes quality assurance, where a system seeks to ensure that quality is maintained or improved, and errors are reduced or eliminated. QC programs evaluate current health care quality, identify problem areas, create a method to overcome issues, and monitor the method taken to improve quality.
- **Quality Improvement (QI)** is the topic of this whole training. It has been defined as: "the organized creation of beneficial change; the attainment of unprecedented levels of performance" (Juran 1988).

8

Knowledge for Improvement

An improvement is enhanced by combining subject matter knowledge and profound knowledge in creative ways. According to Deming's system of profound knowledge, there are Two Types of Knowledge

1. Subject Matter Knowledge
2. Profound knowledge



Subject Matter Knowledge: This knowledge can be acquired either through formal or informal learning. Subject matter knowledge is vital for developing changes that result in improvement.

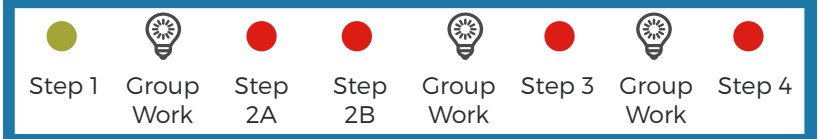
Profound Knowledge: This is the lens familiar form of knowledge that can help us with QI. It is the interplay of the theories of systems, variation, knowledge, and psychology. Profound knowledge makes you view your facility from a different perspective just like looking through a lens.

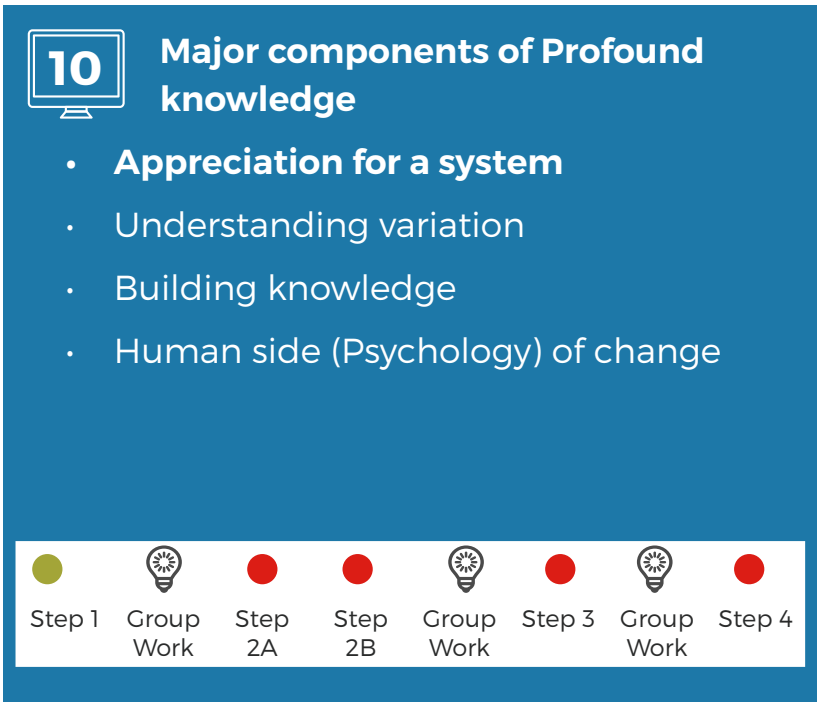
Looking with the lens of profound knowledge allow a person to see the interplay between four components; system, variation, knowledge and psychology.

9

Dr. W. Edwards Deming describes the System of Profound Knowledge, a framework based on four elements of organizations that should work together for improved quality

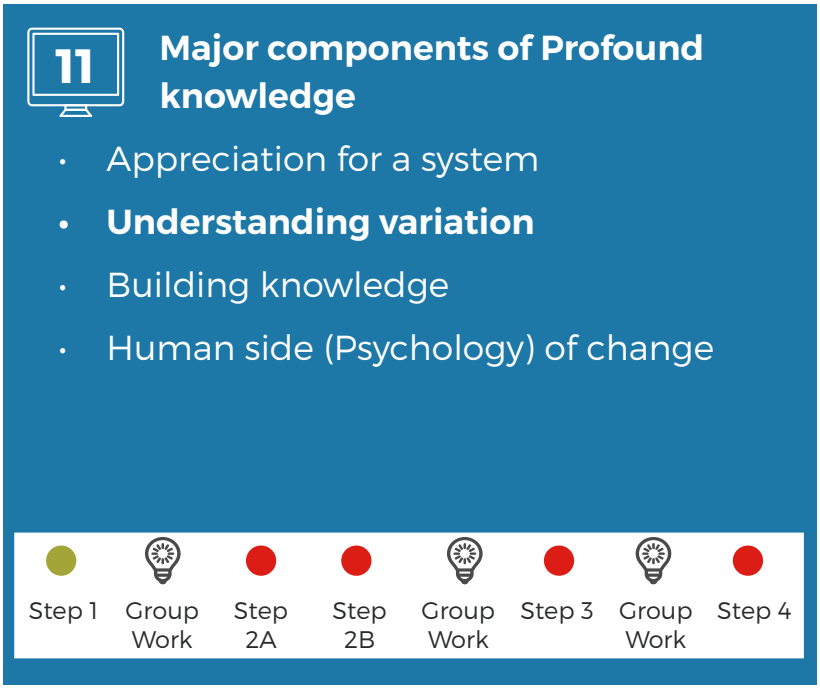
- Appreciation for a system
- Understanding variation
- Building knowledge
- Human side (Psychology) of change





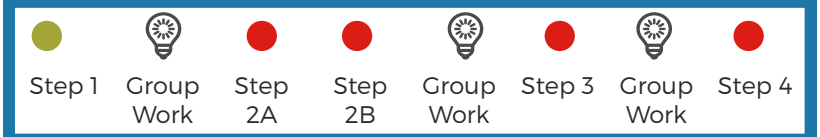
Appreciation for the system:
This component of profound knowledge is vital to understand the properties of a system. It is the interaction of the various parts that makes a system to perform at a certain level. Interactions among interdependent groups of people, procedures and items/ equipment working together towards achieving a common goal.

Understanding Variation:
Every system or process has variation (common or special cause of variation) embedded in it. Common cause variation is a variation within relatively small limits and inherent in the process or system.). Special cause variation- is a variation which is due to a special cause or event and not inherent in the process or system.



12 **Major components of Profound knowledge**

- Appreciation for a system
- Understanding variation
- **Building knowledge**
- Human side (Psychology) of change



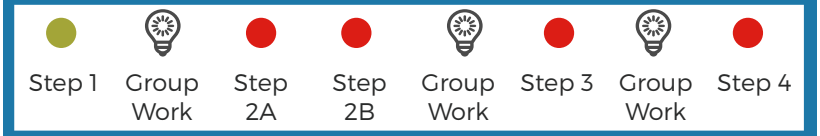
Building Knowledge: The theory of knowledge talks about the need to learn from the hypothesis or prediction we have about something, to test whether this prediction is right. Every change that you introduce is predicted to lead to improvement.

The better you understand the system you are trying to change, the better the prediction and the greater the likelihood that the change will result in improvement. A framework that is often used to facilitate this learning process is the Model for Improvement. A cycle of testing, learning and acting – referred to as the Plan-Do-Study-Act cycle is key in building knowledge for improvement.

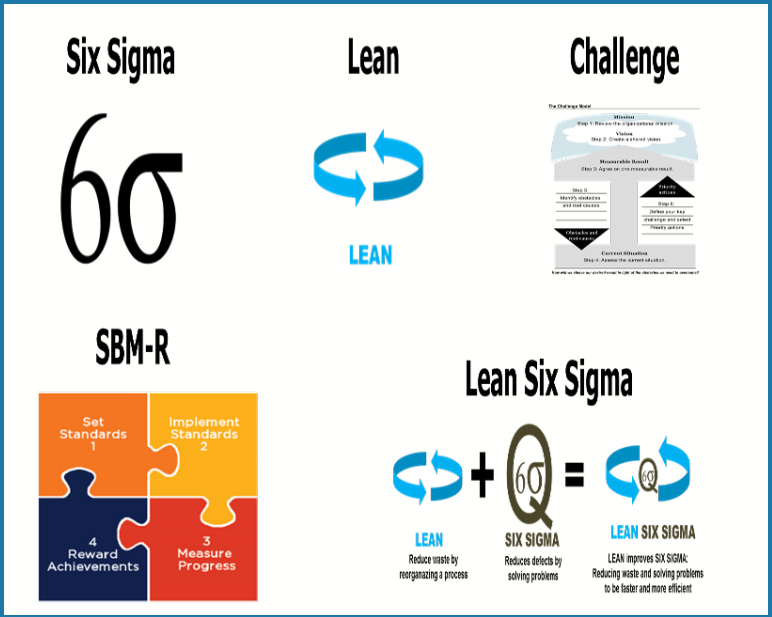
- **When we want to make changes to the way healthcare is delivered, we have to make sure that everybody understands the reasons for the changes and sees the potential benefit. This is called 'buy-in'.**
- The psychology of change therefore, helps to predict how people will react to change. It , understands how health workers are different and that we all react differently to new things.

13 **Major components of Profound knowledge**

- Appreciation for a system
- Understanding variation
- Building knowledge
- **Human side (Psychology) of change**



14 Quality Improvement Models: What is it? And Why?



Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

All of these QI models are a framework or roadmap used to organize the work of improvement initiatives or activities.

The advantages of using a QI framework are that:

(1) it encourages planning based on theory

(2) It empowers people in the organization/facility to

(3) It facilitates use of team work.

(4) It emphasizes and encourages iterative ongoing learning

All QI models have the following characteristics:

a. Set an aim

b. Collect data

c. Analyze data

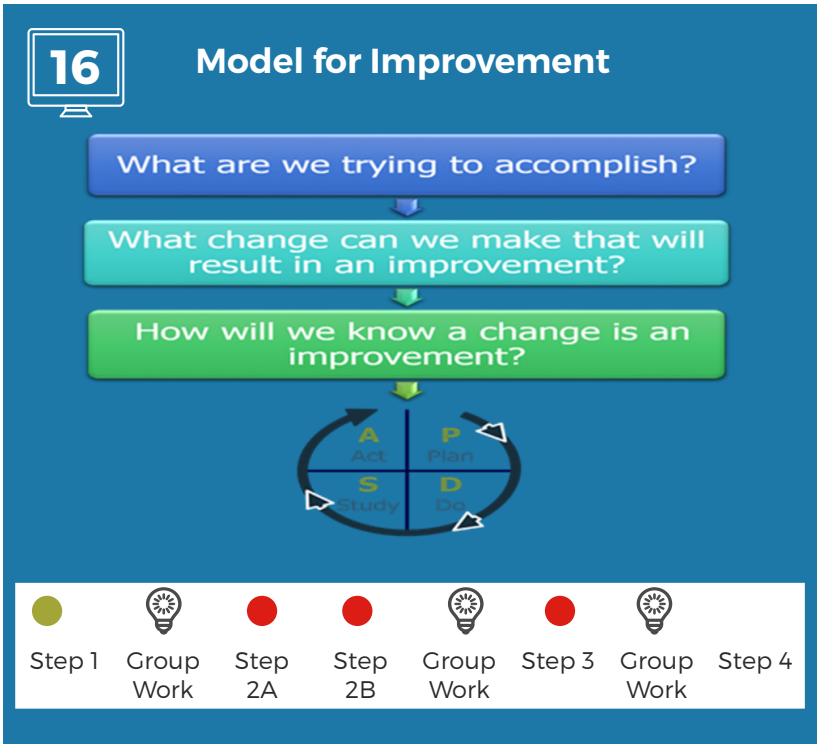
d. Test change: Focus on changes that have already proven to be effective and provide guidance on different ways to approach change, implement or sustain change.

- **Kaizen** is the engine driving improvement or the entry point of all QI activities. It focuses on improving efficiency and lowering cost.
- **Model for Improvement** is vehicle that provides structure for improvement.

15 Ministry of health identifies two models for quality improvement:

1. Kaizen-5s
2. Model for Improvement (MFI)

Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4



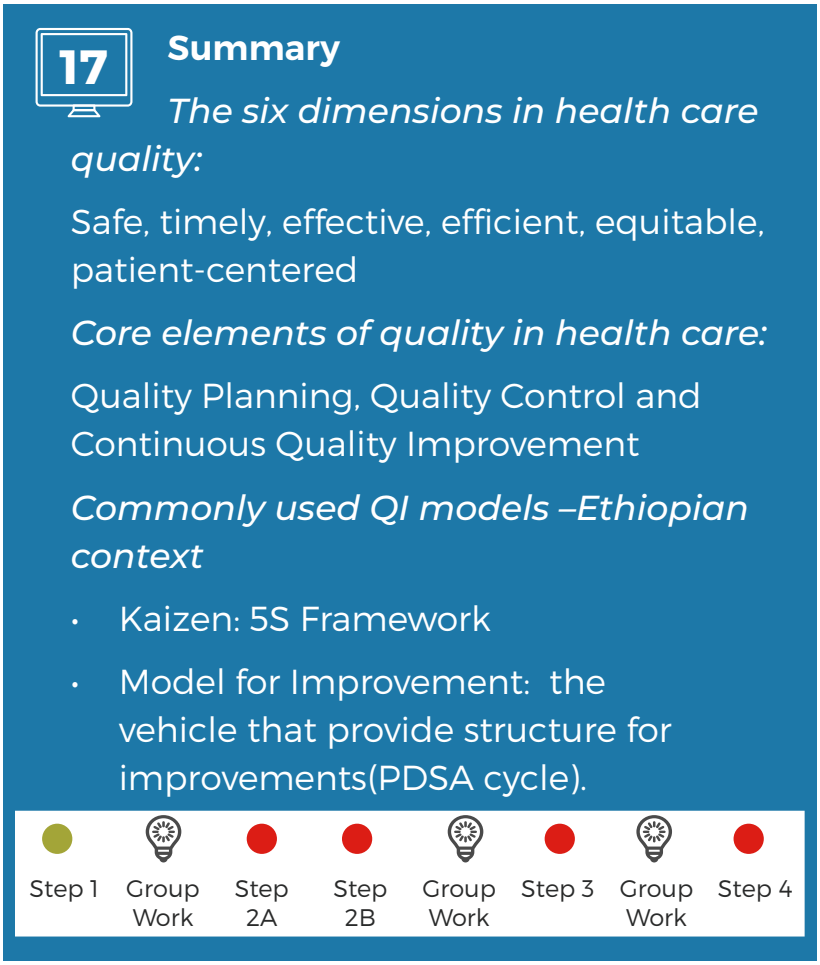
Components of Model for Improvement

1. Three Fundamental Questions

- What are we trying to accomplish?
- What changes can we make that will result in an improvement?
- How will we know that a change is an improvement?

2. PDSA cycle: plan, do, study, act

- Framework for an efficient trial-and-learning methodology used for learning, developing a change, testing a change , implementing a change.



Activity # 5: Next steps: 5 minutes

Discuss:

- Things to be done till next session (action plan)
- Date and time of next session

Thank participants.

Duration: 105 minutes

ACTIVITY 1: RECAP THE PREVIOUS SESSION (15 MIN)

- Key lesson learned from the previous session
- Reflection on the accomplishment and challenges of action plan
- Questions and problems

ACTIVITY 2: INTRODUCING NEW TOPIC /INFORMATION

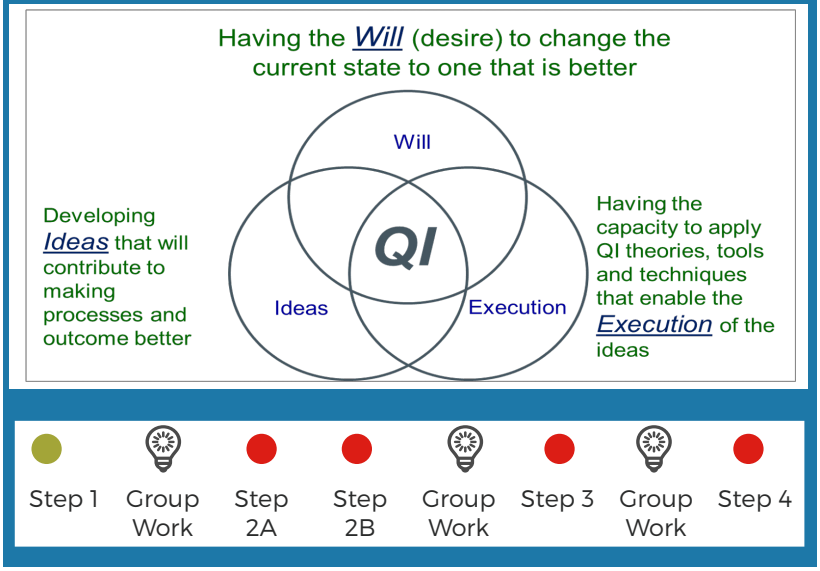
Explain the session objectives (Below): 5 minutes

- Describe key drivers for quality improvement
- Describe the purpose of assessing organizational Readiness Assessment and the key characteristics of readiness
- Identify the organizational QI structure in the health care facility
- Recognize characteristics, composition, role and responsibilities of effective QI teams
- Analyze the different tools to support readiness assessment

ACTIVITY 3: INTERACTIVE PRESENTATION (SLIDE 18-32): 20 MINUTES

Inform the participants that these slides are available in the learner manual along with space to take notes.

18 KEY DRIVERS OF QUALITY IMPROVEMENT



- The drivers of Improvement are:
- Will: Having the Will(desire) to change the current state to one that is better
- Ideas: Developing Ideas that will contribute to making processes and outcome better
- Execution: Having the capacity to apply QI theories, tools and techniques that enable the Execution of the ideas.

Purpose of carrying out a Readiness Assessment

A readiness assessment allows us to:

(1) identify the potential challenges that might arise when implementing new procedures, structures, and processes within our health facility or within this woreda.

(2) find ways to overcome these gaps and barriers either before, or as part of, the implementation plan

And (3) Helping team members to bond, and start to work together as a team

19 Readiness Assessment

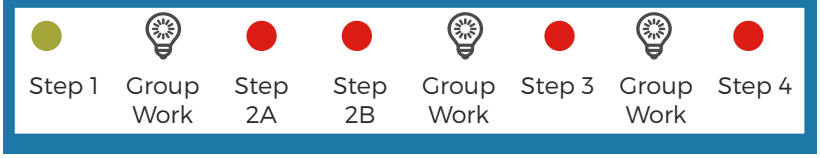
- Measuring readiness is a systematic analysis of an organization's ability to undertake a transformational process or change.

Purpose of Readiness Assessment

- To identify the potential challenges
- To afford the opportunity to remedy gaps
- To determine if there are potential barriers and overcome such barriers
- Gain a full understanding of the defined barriers
- Helping team members to bond

20 ***THERE ARE TWO LEVELS OF READINESS ASSESSMENT***

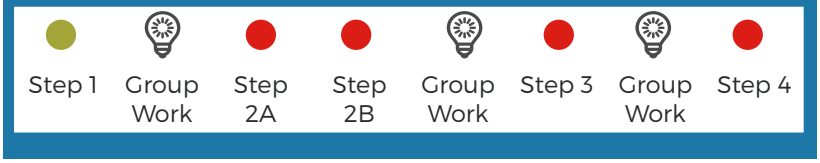
1. Organizational QI Program Readiness
2. QI Project Readiness



1. Organizational QI Program Readiness: Which involves an assessment of the organization's
2. QI Project Readiness: This involves an assessment of the QI team's readiness for change and motivation for improvement, its team infrastructure, and leadership support

21 **Characteristic associated with organizational QI program readiness**

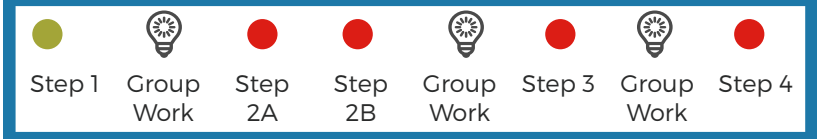
1. Organizational readiness
2. Staff Characteristics
3. Resource readiness



1. Organizational readiness includes commitment to the QI initiative, an understanding of the financial investment and time commitment and, Consensus throughout the organization
2. Staff characteristics includes provider's belief, openness, collaboration, and active participation.
3. The type and availability of organizational resources required for initial implementation of a QI initiative, as well as ongoing support for quality improvement

22 CHARACTERISTICS ASSOCIATED WITH QI PROJECT READINESS

1. Leadership
2. The QI Team
   - The QI team is a group of people who work together to achieve a common purpose and are mutually accountable to each other
3. Readiness for Data Collection, Measurement and Management
4. No blame
   - Program outcomes are a product of processes not people



- First, Leadership. Are the leaders engaged? Are they equipped to lead QI projects?
- The QI team also needs to be unified and working constructively.
- There also needs to be readiness in terms of being able to collect relevant data, adapt forms and measures to be suitable for the facility.

Most importantly of all, everybody needs to understand that QI is NOT about blaming individuals.

QI is about improving PROCESSES of care.

Focusing on individuals will not lead to sustainable or widespread improvements in quality.

If we focus on individuals, we get distracted from the real things that need to change.

If we blame individuals, we create a barrier for people to feel comfortable to reflect on their clinical practice.

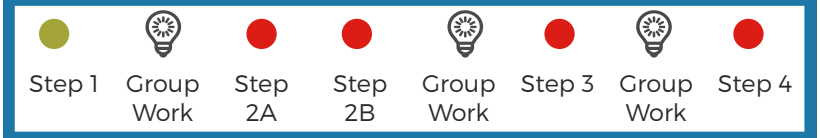
We can only improve quality if there is 'NO BLAME'.

Organizational culture affects several organizational dimensions, including job satisfaction, attention to error, learning, and overall quality of performance

Organizational culture has been associated with several elements of organizational experience that contribute to quality, such as, patient care, employee job satisfaction, and patient safety

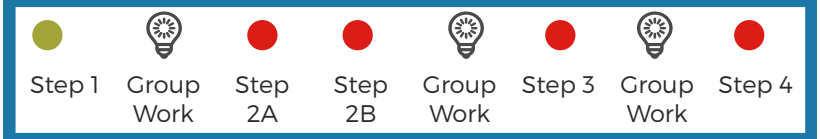
23 Assessing Organizational Culture for Change

- Organizational culture:
  - Is shared beliefs, perceptions, and expectations of individuals within an organization.
  - Related to an organization's ability
  - Affects several organizational dimensions
  - Related to quality healthcare...



24 Methods for promoting a quality organizational culture

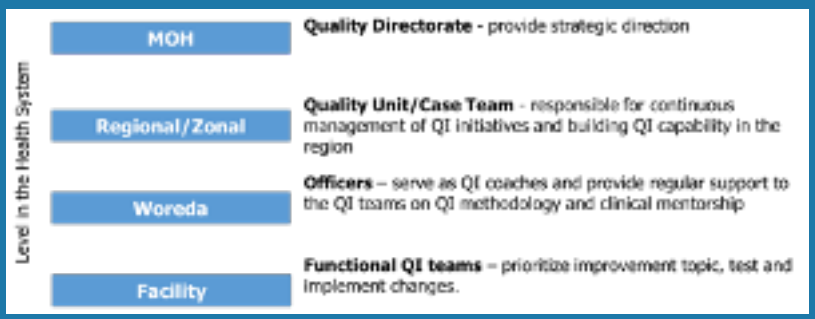
- Leadership
- Engagement of people
- Attention to learning.
- Work with its own management team and staff
- Motivational strategies for QI

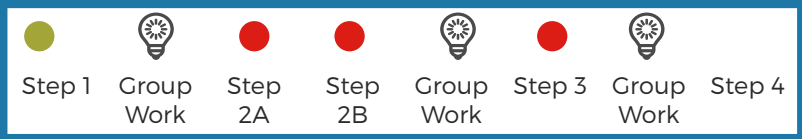


- Leadership embracing the promotion of quality through the articulation of the organization's mission and vision.
- Engagement of people throughout the organization in quality
- Attention to learning.
- Work with its own management team and staff

Typical quality improvement structures include the QI team (multidisciplinary QI team which includes individuals with clinical, management, technical, and leadership skills), the quality management (QM) team, the beneficiaries, and the coach(es). Subject matter experts (in this context, an expert in the area of medicine or public health that is the subject for improvement) may be added at any time as members of these groups.

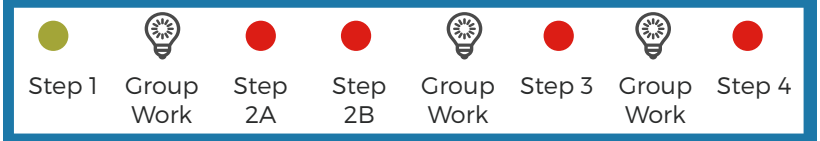
25 *QI STRUCTURE IN THE FACILITY*





26 Key characteristics of effectiveness QI teams

1. Enthusiastic participation
2. Genuine interest
3. Coaching support
4. Expertise in the technical content
5. Inclusion of the voices



Regardless of the structure's form, QI team effectiveness depends on five key characteristics:

1. Enthusiastic participation by local QI teams
2. Genuine interest in the project's management and motivational support from system leaders (district or province)
3. Coaching support to local QI teams with expertise in quality improvement
4. Expertise in the technical content of the improvement topic
5. Inclusion of the voices of empowered clients and other beneficiaries

27 Roles and Responsibilities in the Improvement Effort

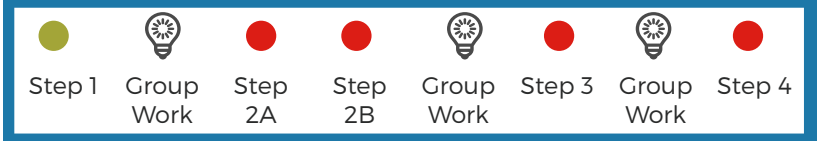
Quality Management Team

- Stay informed about the progress of the QI effort.
- Support scale-up of an effective intervention.
- Assess the project progress performance and evaluate project
- Enable institutionalization of effective changes.
- Address issues of sustainability.
- Support necessary policy changes.
- Attend learning sessions.
- Communicate with policymakers.
- Provide necessary resources.

28 ROLE AND RESPONSIBILITIES OF QI TEAM

Team Leader

- Focused on the aim and charter.
- Plan and organize team meetings.
- Identify needs and request support.
- Assign responsibilities
- Liaise
- Represent the team



QI team (Multidisciplinary QI team) which includes individuals with clinical, management, technical, and leadership skills

Team Leader

- Keep the team focused on the aim and charter.
- Plan and organize team meetings.
- Identify needs for and request additional support.
- Assign responsibilities to team members.
- Liaise with the management team.
- Represent the team during the learning sessions

Team Members

- Identify the leader of the QI team.
- Agree on the improvement topic and aim.
- Collect baseline information.
- Learn about the improvement model and its tools.
- Generate ideas for change.
- Develop an implementation plan for the changes.
- Implement changes and monitor their effects.
- Provide ideas for modifying the change package during learning sessions.
- Serve as coaches to new teams during the scale-up process.

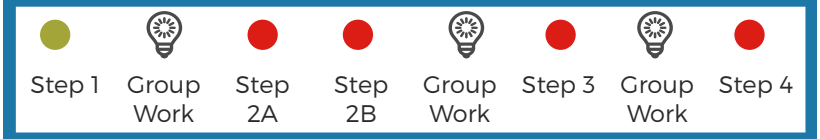
29 ROLE AND RESPONSIBILITIES OF QI TEAM

Team members

- Collect baseline information
- Learn about the improvement model and its tools
- Generate ideas for change
- Develop an implementation plan
- Implement and monitor changes
- Serve as coaches

30 *QUALITY IMPROVEMENT EXPERTS/ COACHES*

- Guide management and QI teams
- Teach and coach teams
- Assist the team challenges-will, ideas executions
- Review PDSA
- Support QI teams to develop QI project
- Assess the project's progress and the team's performance
- Support collective learning
- Document and evaluate the project

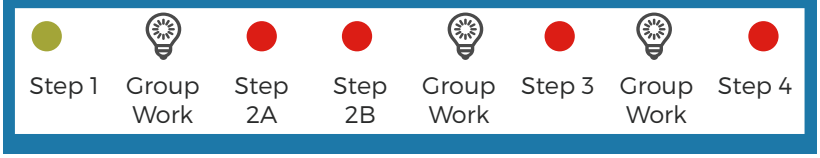


Subject matter experts may be added at any time as members of these group

Subject Knowledge Experts are often part of the management team)

31 *SUBJECT KNOWLEDGE EXPERTS (OFTEN PART OF THE MANAGEMENT TEAM)*

- Participate in developing an improvement charter.
- Teach and share evidence-based information at learning sessions.
- Mentor the teams' implementation of technical changes.
- Help develop standards of care



32 SUMMARY

- Measuring a readiness is an important first step when embarking on a quality improvement journey
- There are two levels of readiness assessment—Organizational QI Program Readiness and QI Project Readiness
- Key Characteristics of organizational Readiness (staff, resources, leadership, QI teams, Data Collection, Measurement and Management..)
- QI structures include
- QI team
  - Quality management (QM) team
  - the beneficiaries,
  - the coach(es).

The level of management support can make or break the QI team and its successes, it is therefore key to get management to support the QI initiatives

ACTIVITY #4: CASE STUDY 1: SIMPLE QI PROJECT (30 MINUTES)

Objective of the activity

To motivate participants that Quality Improvement is simple, feasible and can be applied in healthcare facilities

Instructions

- Divide participants into small groups (4-6 participants)
- Groups read **Case Study on simple QI project1** in the learner manual (page 1).
- Explain that participants should study the case study carefully and try to infer the QI training steps we are going through in the coming days.
- Once the group complete their task, give opportunity to reflect particularly on
    - How QI is simple, feasible and can be applied in healthcare facilities

Case study

Problem identification and prioritization

Depression is the most common mental health condition seen in primary care settings. Recently the NCD team learned from zonal review meeting that many studies indicate around 5-10% of people attending health centres have clinically significant depression. The team intrigued with such statistics. After returning from the review meeting, the team reviewed their reported data and the prevalence of depression reported by health center is very low,0.5 %. The team also planned to determine the proportion of patients, among patients visiting the health center, with depression. They identified 19 patients who visited the health center and, using a primary health care clinical guideline depression protocol, they identified around 10 % of patients had depression symptoms. In addition, depression is more common on patients with other chronic diseases. The NCD team was recently trained on onsite QI training and they identified two topics to address: low compliance of anti-epileptic and anti-bronchial asthma drugs for epilepsy and bronchial asthma patients respectively. They added “the low detection and management of depression” as a third problem. They did prioritize the problems using the prioritization matrix and the analyses came up with “low detection and management of depression” has a higher score on the priority matrix ; hence, the NCD team decided to work their quality project on improving the detection and management of depression.

Making a Team

A team was formed which worked to improve depression detection and management in that particular health center. Four health workers from different commit-

tee/team and the medical director form a team.following people were included in the team:

1. NCD team: leader
2. Medical director: deputy leader
3. OPD team leader: member
4. Quality improvement committee: member
5. EPHCG team: member

Aim

Improve the detection of all forms of depression from a current level of 0.5% to 7% within a period of 8 weeks.

Analysis of the problem

The team did analysis of a problem using root cause analysis matrix (fishbone diagram) with frontline health workers. center. They identified the following potential reason, among others, for possible low detection and management of depression in the order of importance.

- Most health workers at OPD do have inadequate knowledge and skills to identify notable signs and symptoms of depression.

Change idea

Team identified the following change idea:

- A poster was posted in all adult OPDs (including ANC clinic) which requests health workers to further probe for depression if the patient had 1 or more of the core features of depression for at least 2 weeks. The core features of depression written on the poster were:
  - Depressed mode most of the day, nearly every day or
  - Loss of interest or pleasure in activities that are usually pleasurable.

Measurement

To track the change we are implementing, the following indicator was developed:

% of patients who were diagnosed with depression=
Total number of new patients diagnosed with depression/total number of patients who visited the clinic(s) in that time duration *100

Testing changes

The QI team decided to test the change idea. The following interventions was conducted:

1. Poster is prepared which were posted in all OPDs
2. Orientation for all OPD health workers regarding the poster.

3. If patients had the notable sign, OPD health workers were instructed to use the depression page of EPHCG to further probe and confirm the diagnosis of depression.
4. All health workers were instructed to register on the diseases classification sheet if patients had comorbidity in addition to the depression diagnosis very neatly
5. After finishing the daily routine work, health workers in all OPD kept the data on depression on separate registration sheet and report to NCD team leader.

To test the feasibility and acceptability of the change idea, the team decided to test the change idea in NCD clinic.The team found it feasible and acceptable with minimal improvement on the new registration sheet: the separate registration sheet included phone number of patients and body mass index. They started the implementation. During the 8weeks period of implementation, they became successful in identifying 30 patients, among the six hundred patients showed up in the health center: that means a total of 5% of patients did have depression. The team applauded the achievement; yet, they continued testing other change ideas so that they could improve the identification of more patients with depression. After another 6 weeks, they achieved their aim—the prevalence of depression was 7.4 % in the health center.

Sustain and spread the change

Sustain and spread

1. The team decided to share the successful experience with other staff in the whole health center.
2. A notice to all health workers working in all OPDs were issued by the medical director which directed all health workers at OPDs should screen all patients for depression and further probe if the cardinal symptoms were presented
3. For new health workers joining the health center, orientation was given regarding depression.
4. Finally, the quality project report was communicated to woreda and zonal health offices for its implementation in other similar health centers.
5. The QI team published the project on annual MOH quality bulletin.

After three months of implementation, the detection rate of depression was still high: 6.8% of patients were diagnosed with depression.

Activity # 5: Next steps: 5 minutes

Discuss:

- Activities to be done till next session
- Date and time of next session
- Coaching and support

STEP ONE: PROBLEM IDENTIFICATION, PRIORITIZATION AND AIM SETTING

Duration: 105 minutes

SESSION OBJECTIVES: AT THE END OF THIS SESSION, PARTICIPANTS WILL BE ABLE TO:

Activity # 1: Recap the previous session (10 min)

- Key lesson learned from the previous session
- Reflection on the accomplishment and challenges of action plan
- Questions and problems

Activity # 2: Introducing new topic /information (60 min)

- Explain the session objectives (slide # 33): 5 minutes

Activity # 3 Interactive Presentation (Slide 34 to 49): 20 minutes

- Present the slides 33-49 using the talking points provided with each slide. Inform the participants that these slides are available in the learner manual along with space to take notes.

33

Learning objectives

Participants will be able to:

- Review data to identify problems
- ·rioritize which problems to work on
- Form a team to work on that problem
- Write a clear 'aim statement

Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

Slide 33

- Review the learning objectives
- Emphasize how the first step is important and useful for QI initiatives

Slide 34

Problems/gaps in the context of health care service could be: a practice that is not performed at all or low performed/coverage or practices that are performed incorrectly or incompletely.

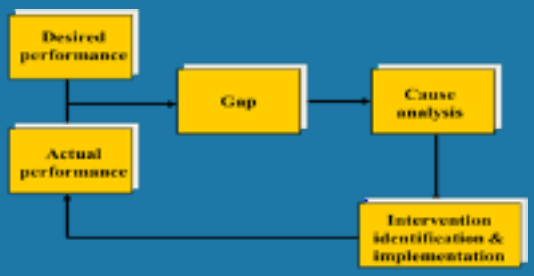
34

Care for mothers and newborns in health facilities

A problem is

" the difference between things as perceived and things as desired" and Weinberg (1989)

" the gap Gause between the existing state and the desired state of a process" Health Quality Ontario



Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

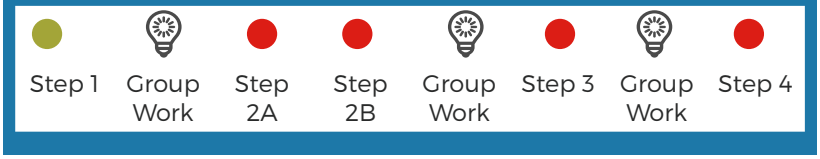
35

Identify quality gaps /problem

Problems that we can be identified in the health care can be grouped in three main categories

1. Effectiveness issues
2. Efficiency issues:
3. Responsiveness issues

N.B. Always consider problem that are simple, easy to change, not needed to much resources, data is available , value patient outcome/staff safety and under team control.



1. **Effectiveness issues:** in these situations, the system does not deliver according to the expected performance. Example, incomplete medical records.
2. **Efficiency issues:** In this situation the system uses too many resources to deliver the service but the service does not deliver to the expected . Example: long waiting times, unnecessary referral
3. **Responsiveness issues:** the system does not address the needs of its clients to their satisfaction, for instance when we discriminate or stigmatize certain groups of patients

Slide 36

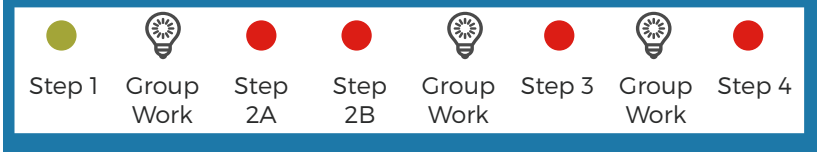
How can we identify problems with the quality of care? Here are some data sources.

Ask the group to think of quality problems that could be detected with these data sources.

36

Tools/Data sources that can be used to identify problems relating to the quality of care

- Health Management Information System (HMIS)
- Facility registers
- Patient charts
- Walk-through
- Satisfaction survey /client interview / community forum



- **HMIS:** this can be used to detect major gaps in performance leading to low coverage (e.g. under-detection of pre-eclampsia), high morbidities (high levels of obstetric complications) or mortalities (high levels of stillbirths). HMIS serve as an excellent starting point to determine performance gaps of the facility
- **DHIS2:**
  Facility registers: capture a summarized version of information for the clients. It usually contains detailed information about individual clients. For example, we can see from antenatal care registers what % of women have their blood pressure recorded for each visit.

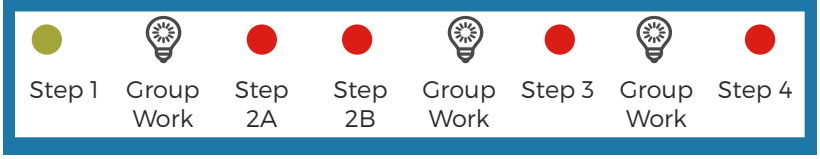
- **Patient charts** may provide more detailed information about each step of the care that we have provided to a client. E.g. whether the treatment followed guidelines (PHCG). Or sometimes patient records can tell us problems with adequate recording of important information e.g.. medication dose.
- **Observation of clinical skills:** helps to Identify weaknesses in clinical skills or patient-centered care through observation. This is a very useful way to identify areas for improvement
- **Walk-through** during which a health professional experiences the health service as a patient. It helps providers better understand the experience of care from the patients' perspective and since QI is predominantly focusing on the patient, a very useful method to identify areas for improvement.

37

Problem Prioritization Tools

1. Pareto Chart

- Pareto Chart is one of the prioritization tools based on the Pareto Principle (i.e. The 80/20 rule).
- Approximately 80% of the problem is the result of only 20% of the causes of the problem. Therefore, it is possible to address 80% of your problem by only solving 20% of the contributors to the problem.
- Pareto Chart is a graphical tool and consists
  - Bar/Column chart – representing categories/frequencies displayed in order of size
  - Line graph – representing the cumulative percentage
  - Two vertical (y-) axis

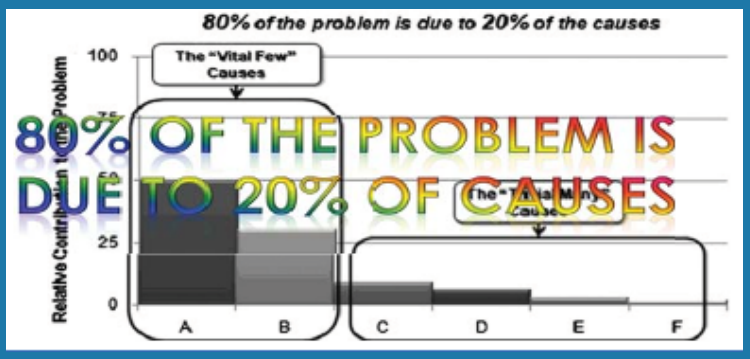


- We might find a lot of problems with quality of care . That can be a bit demoralizing . Also , we can't tackle them all at the same time . We need to focus on the most important problems
- We can make use of prioritization tools such as the Pareto Chart and the Prioritization matrix in order to decide which problem should come first.

Prioritization tools help to organize the data we have for a problem per category/ group in descending order. In addition, the cumulative percentage indicates the vital few (those categories/groups that make up close to 80% of the problem) and the useful many (all other contributors which are important but only account for approximately 20% of the problem.

38

Pareto charts



Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

See Annex 1: Steps in constructing Pareto Chart

Slide 39

Here is an example of a prioritization matrix being applied to some common quality problems around childbirth.

- It is a very helpful tool when resources to address health problems are limited or when you want to prioritize problems using a number of criteria.
- Common criteria used to prioritize problems
  - Cost and/or gains when resolved
  - Availability of solutions
  - Availability of resources (staff, time, equipment, etc.)
  - Urgency of problem
  - Size of problem

38

Example : Prioritization matrix

Possible aim	Important to patient outcomes (1-5)	Affordable in terms of time and resources (1-5)	Easy to measure (1-5)	Under control of team members (1-5)	Total score (4-20)
Uterotonic given within 1 min	4	5	5	5	19
PPH management	5	3	3	4	15
Immediate drying	4	4	5	5	18
Delayed cord clamping	3	3	3	5	14
Decrease in low temperature at 1 hr <36.5 degree C	5	5	5	4	19
Decrease in low birth weight <2500 grams	5	2	5	1	13

Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

Slide 40

Having a diverse team is

good, you should have a wide range of people – staff such as cleaners and guards can also contribute depending on the identified problem.

Ask the group: when might it be relevant to include cleaners?

One example could be when intervening to reduce post-partum sepsis.

It is also good to assign different roles:

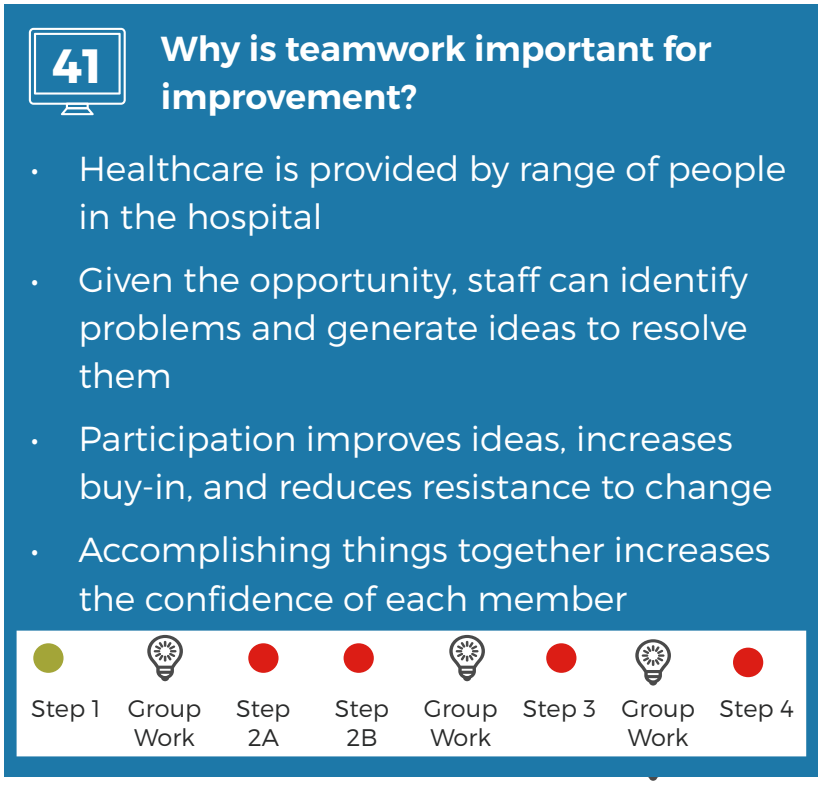
Leader – lead meetings, direct activities to achieve goals, represent the team

Recorder - Record meeting notes

Communicator - communicates and liaison among members

Slide 41

- Healthcare is delivered by a range of people.
- Any person Healthcare workers who will have to change how they work (their existing practices) should be included in the QI team working on that problem.
- Involving a whole range of people will lead to a wider range of ideas for how to fix problems, thus increasing the chances of success
- People do not like to be changed by others but are willing to change when they get to decide how to change

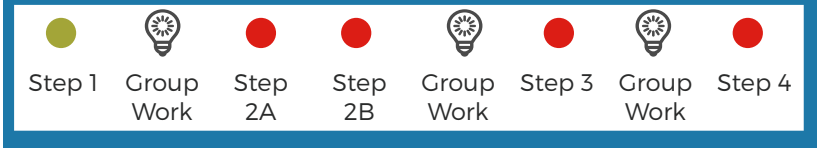


- Accomplishing things together leads to increased team spirit and confidence to address bigger problems subsequently
- There is no ideal size of a team. Generally, a good team comprises 6-9 members. Keeping too many or too few may be less effective, even harmful for the project

42 Select your team

Look for volunteers who are:

- **Enthusiastic** - they want to make change interested, in making changes and will self – motivate:
- **Involved** - they are already doing the work that needs change. people on the team are doing the hands-on work that needs to change.
- **Influential** - others people listen to them and they can get thing

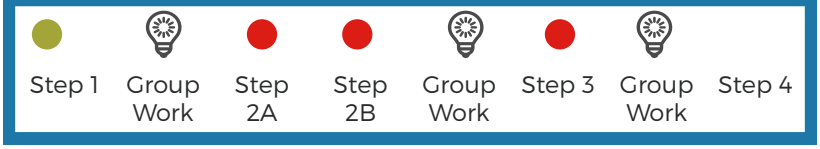


- Influential – look for team members who are able to involve and influence other people

43 Problem statement

A clear and concise statement that describes the symptoms of a problem and helps to clarify and communicate the area identified for improvement.

- Questions can help to formulate the problem:
  - What is the problem ? (Size)
  - How do we know it is a problem?
  - How long and frequently does it occur? (Time)
  - What are the effects of this problem? (Impact)
  - Where does the problem exist ?
  - How will we know the problem is resolved?



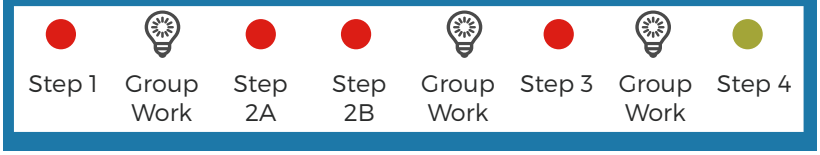
Questions to formulate the problem

- What is the problem (not the cause or the solution)? What is not functioning as we desire? What are the boundaries of the problem? (Size)
- How do we know that it is a problem? What information do we have to support or confirm the existence of the problem or deficiency?
- How long has this been a problem? How frequently does it occur? (Time)
- What are the effects of this problem on quality and on the population we serve? (Impact)
- Where does the problem exist
- How will we know the problem is resolved? What does the “desired” state look like? What data will we need to answer these questions?

44

Example Problem Statement

Waiting times (elapsed time from when the patient arrives at the health center to when the patient is seen by the midwife) for pregnant women has shown over the past three months to take on average three hours. This has been states as a reason that women do not make the desired four antenatal visits before delivery".



Use the above questions to evaluate the appropriateness of the problem

- The aim statement is useful, as an internal and external communication tool to clarify the improvement work to be done.
- It is the first principle for improvement, knowing why you need to improve and answers the question "What are you trying to achieve?"

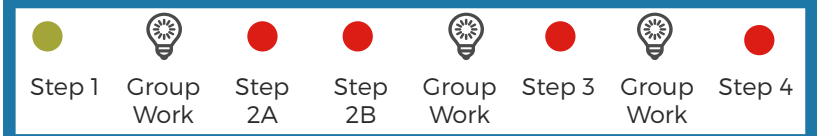
Ask the group to think of an aim for the previous problem of long antenatal care waiting times. Write it down.

45

Aim statement

Characteristics of a good aim statement

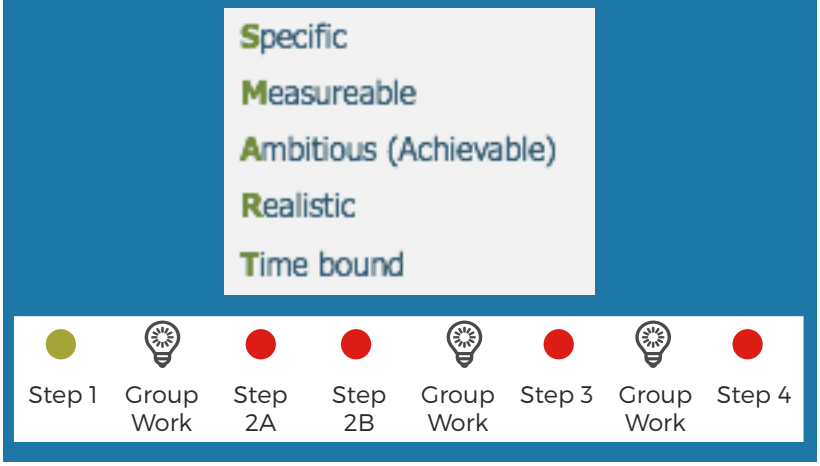
- States a clear, specific aim
- Linked to specific patient population
- Should include a goal:
  - Neither too difficult nor too long to achieve
- Includes a solution
  - Do not include possible, yet unproven solutions



46 **Aim statement**

It is the first principle for improvement, knowing why you need to improve and answers the question "What are you trying to achieve

An aim should be SMART



An aim should be SMART and stands for Specific, Measurable, Ambitious, Realistic and Time bound.

- **Specific**: specify the system that needs to improve and/or the target group that will be affected.
- **Measurable**: often we say an aim should have a numeric goal, something that can be measured and you can compare the data over time.
- **Ambitious**: your target/aim should be ambitious for your current state, something you may not deem possible.
- **Realistic**: the target/aim should be realizable in the redesigned system, after introducing something different/new to the system
- **Time bound**: specify the beginning and the end, so that the duration to achieve the aim because clear

Ask the group to look at the aim they developed for waiting times.

Is that aim SMART?

How could that aim be made SMARTER?

Example 1

47 AIM STATEMENT EXAMPLE 1

Problem: All babies are not dried immediately after birth

We will implement standard practice of immediate drying at birth in all 100% of births from current 60% within 4 weeks.

- **Who** (which patients) - Newborn
- **What** (the process) - mmediate drying using dried clean towel
- **How much** (the amount of desired from baseline rate of 60 % to 100%
- By when (time over which change will occur) - within 4 weeks

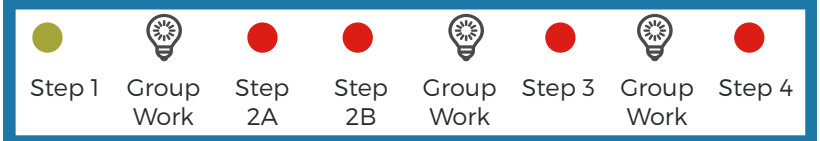
Example 2

47 AIM STATEMENT EXAMPLE 2

Problem: Babies are cold at one hour following birth

We will reduce the percentage of newborns with low temperature (<36.5 C) from 50% to <10% within 6 weeks

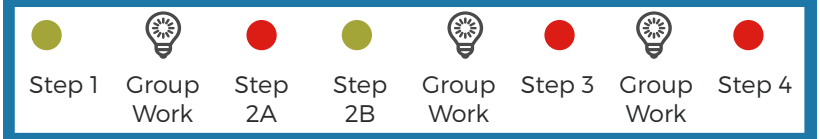
- **Who** (which patients) - Newborn
- **What** (the outcome)-Hypothermia
- **How much** (the amount of desired improvement)-from baseline rate of 53 % to <10%
- By when (time over which change will occur) - within 6 weeks



48 IS THIS A GOOD AIM STATEMENT

To establish skin to skin contact after delivery in low risk mothers admitted in Labour Room, AIIMS New Delhi ✗

To establish skin to skin contact immediately after delivery for at least one hour to an extent of 25% in two weeks in low risk mothers admitted in Labour Room, AIIMS New Delhi ✓



- The first aim statement is not specific meant by skin-to-skin contact), is not measurable (does not have a target) and does not have a timeline.
- The second one is good. It provides:
  - a definition of what is meant by skin-to-skin contact
  - a target – "improve by 25%"
  - a timeline

49 SESSION SUMMARY

- Problem identification is the first step in QI
- Prioritization tools can help focus which problem to start with
- A good problem statement answers a series questions including the size, impact, location and frequency of the problem
- A aim statement should be SMART

STEP 1

Activity #4 Case scenario: Identifying and prioritize the problem, forming a team and writing aim statement (30 minutes)

Objective of the activity

Participants will be able to:

- Prioritize which problem to work
- Form a team to work on that problem
- Write a clear aim statement

Instructions:

- Divide participants in to small groups(4-6)
- Groups read **Case scenario part 1 and 2** in the learner manual (page 2 and 5).
- Explain that participants should also review the data in **Figure 1 (page 3)**, answer the questions on the next page (page 4) and write their answers in the space provided.
- Give opportunity for the group to reflect their work
- Provide feedback and the learning points below to the larger group
- Time: 45 min (30 min to complete the task and 15 min to reflection and feedback

Learning point: Discussion 1.1: Identifying the problem

- Process' is an action or activity that is done in healthcare. For example, giving a medication, washing hands, transferring patients, etc.
- Outcome' is the result of the activities done in healthcare. Outcomes are what the health workers are trying to achieve (clinical outcome).

By improving processes of care (correct medications, hand washing, drying babies, timing of care etc.), we can improve the related outcomes of care. For example, a QI team may try to reduce the incidence of infection (an outcome) by improving hand washing (a process).

The answers for each question are:

What are the different processes of care and outcomes of care listed on the Birth Register shown in Figure 1 in the learner manual?

PROCESSES OF CARE	OUTCOMES OF CARE
Delivery route	Apgar scores
Uterotonic given	Birth weight
Immediate drying	Temperature at 1 hour
Delayed cord clamping	Post-partum hemorrhage

Calculate the percent performance of three processes of care

PROCESSES OF CARE	PERFORMANCE
Uterotonic given	50%
Immediate drying	70%
Delayed cord clamping	80%

Calculate the percent performance of two outcomes of care

OUTCOME OF CARE	PERFORMANCE
Hypothermia at 1 hour	50%
PPH	20%

Instructions: Case scenario part 2: Prioritizing the problem, choose quality gaps, writing problem statement, forming a team and writing aim statement

- After completing Discussion 1, ask the group to read Case scenario part 2 in the learner manual page 5 in the learner manual (Page 8) and fill in the prioritization matrix
- Individuals /Groups choose gaps in quality based on their prioritization.
- Allow some of the individuals/groups to reflect their prioritized items and ask WHY
- Provide the below learning points as feedback to the participants

Learning point: Discussion 1.2: Prioritizing the problems and writing problem statement

Because the situation is hypothetical, there are no right answers to the matrix and numbers assigned by participants may vary from the sample given below. But it is clear that low birth weight, while an important problem, is hard to improve and you should steer the team away from trying to work on this. Emphasize that this matrix can be useful for getting consensus on prioritizing problems to work on. Group facilitator should use a flip chart to build consensus on the prioritization.

Sample of a prioritization matrix with hypothetical values. (1= Low; and 5= High)

POSSIBLE AIM	IMPORTANT TO PATIENT OUTCOMES (1-5)	AFFORDABLE IN TERMS OF TIME AND RESOURCES (1-5)	EASY TO MEASURE (1-5)	UNDER CONTROL OF TEAM MEMBERS (1-5)	TOTAL SCORE (4-20)
Uterotonic given within 1 min	4	5	5	5	19
PPH management	5	3	3	4	15
Immediate drying	4	4	5	5	18

Delayed cord clamping	3	3	3	5	14
Decrease in low temperature at 1 hr <36.5 degree C	5	5	5	4	19
Decrease in low birth weight <2500 grams	5	2	5	1	13

Learning points: Discussion 1.3: Forming a team

After discussing what problem to solve, ask the group to move onto Discussion 1.3 (Forming a team). Ask participants to identify from the case scenario who should be on the team that is trying to address the quality gap that they picked in Discussion 2.

You should use this discussion to emphasize the importance of having the right people on the team (people who are involved in actually giving care, people who are interested in fixing the problem and people who are influential enough to get other people involved as well). Ask participants who should be the team leader and why. Discuss the factors that make a good team leader. The facilitator should emphasize the importance of listening to all voices on the team (not just the most senior people) and involving them in identifying and fixing problems.

Some attributes of a good leader of a QI team include:

- Wants to improve care
- Values the input of others on the team
- Does not think he/she has all the answers
- Gives team members authority/permission to try new ideas to improve care
- Is good at communicating with others in the team and outside the team

Learning points: Discussion 1.4: Writing an aim statement

In this discussion, make sure that participants learn how to write a good aim statement that describes “what” they want to achieve, “who” are the people that they want to help, “how much” benefit they expect to achieve and “by when” they want to get the expected results.

Possible aim statements for the two problems identified are:

- Neonatal health:
    * We will reduce the percentage of newborns with low temperature (<36.5˚C at one hour after delivery from 50% to 10% within 6 weeks.
- Maternal health:
    * We will increase the percentage of women receiving uterotonic medicine

within one minute after normal vaginal delivery from 50% to 100% within 4 weeks.

As long as the team has all the essential elements their aim statement is good. There is no right answer about what the target should be or when the team should reach its target. Usually a timeline between 2 weeks and 3 months is appropriate for most QI projects. Less than 2 weeks is hard to achieve most QI aims and more than 3 months may be too long to sustain motivation for working on a problem. Also, the target should not be too low or too high – so a 5% reduction in newborn hypothermia is not ambitious enough; on the other hand, eliminating post-partum hemorrhage is unrealistic.

Summarize Step 1

After the groups have completed Discussions 1.1 to 1.4, ask for volunteers to give the answers for each of the concepts discussed in Step 1:

- Examples of different processes and outcomes of care
- Calculated percent performance of the processes and outcomes
- The problems that they decided to work on
- Team members
- Factors that make a good team leader
- An example of a good aim statement

Activity # 5: Next step (30 minutes)

Developing Own Quality Improvement Project

Give the following instructions for the expected tasks:

- Ask the participating hospital / health facility teams to use the provided **QI Project Template** to describe their project.
- Allow Participants /group to read the below key points to be emphasized for planning a QI project
- After they fill in each section ask them to respond to the questions on the QI Project Review Sheet and reflect on their planned project.
- Request the group facilitators to work on the table with the small groups (consisting of hospital teams) and guide the teams to use the QI Project Template in refining their project design.
- The **QI Project Example Template** provides an example of how the **QI Project Template** and **QI Project Review Sheet** may be filled out. This is a good tool for the facilitators to guide the work of hospital teams.
- **key points** to be considered during the design of quality improvement projects are given pp ----to --- in the participant manual
- **Project template is also given from pp 120 to 124 in the participant manual**

- Discussion on
  - Activities to be accomplished till next session (Action plan)
  - Date and time of next session
  - Coaching and mentoring support: during the week the facility trainers will support the trainees to work on the deliverables for that week.
  - Next week Deliverables:
  - Identified problem after conducting problem analysis using prioritization matrix
  - Team is already formed which will continuously work on QI project
  - Problem statement and aim statements are drafted.
  - The Expected time the team invest is approximately 4-6 hours in that week.

Duration: 120 min (60 min for presentation and 60 min for activity)

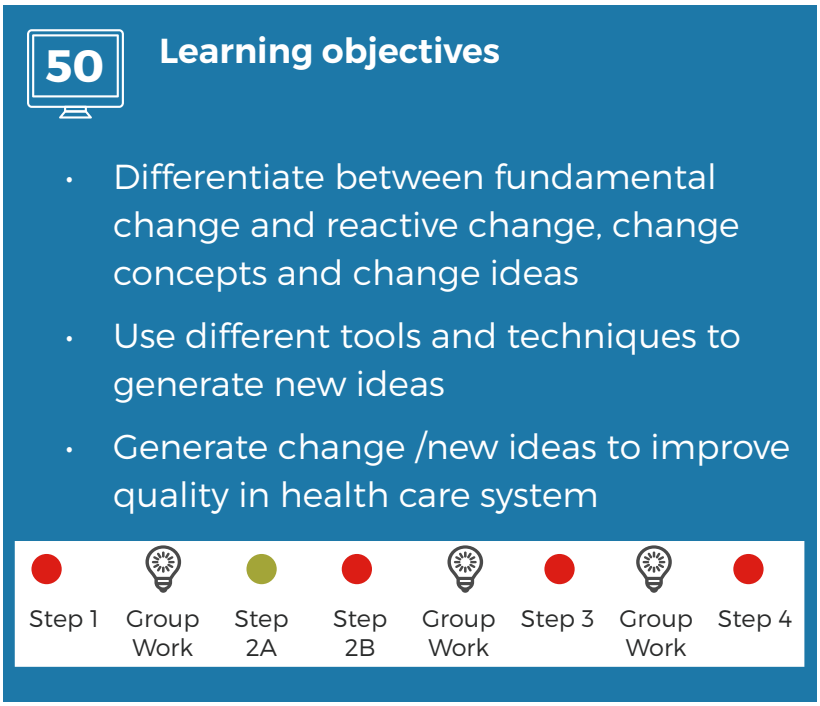
Activity # 1: Recap the previous session: 10 minutes

- Key lesson learned from the previous session
- Reflection on the accomplishment and challenges of action plan
- Questions and problems

Activity # 2: Introducing new topic /information

- Discuss the session objectives (slide # 50) : 5 minutes
- Interactive Presentation (Slide 51 to 69): 45 minutes

Interactive Presentation (Slide 50 to 69)

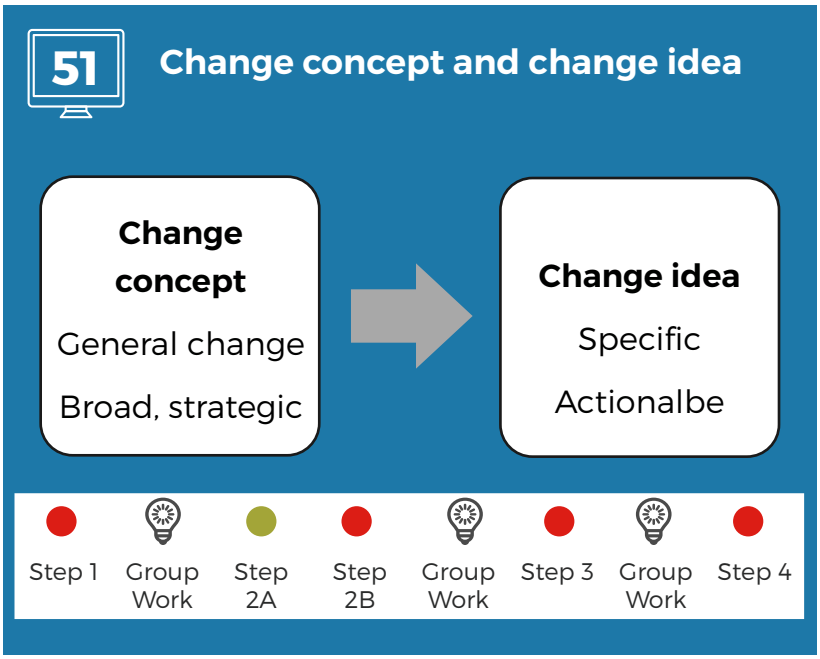


Slide 50

- Today the session is all about change
- Tell/review the learners what they will be able to know and do as a result of participating in the learning session

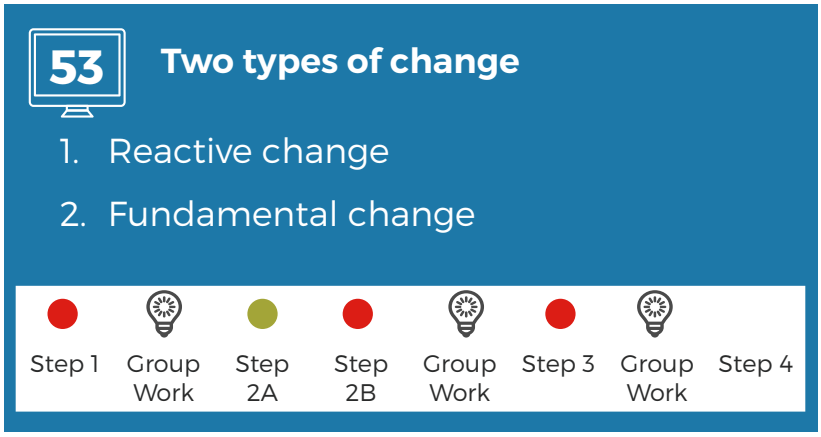
- A change concept is a general description on what to change. The concept can be used to generate change ideas which are specific description of interventions.

We can also turn a change idea into a change concept to generate new ideas. This is often done with benchmarking



Slide 52

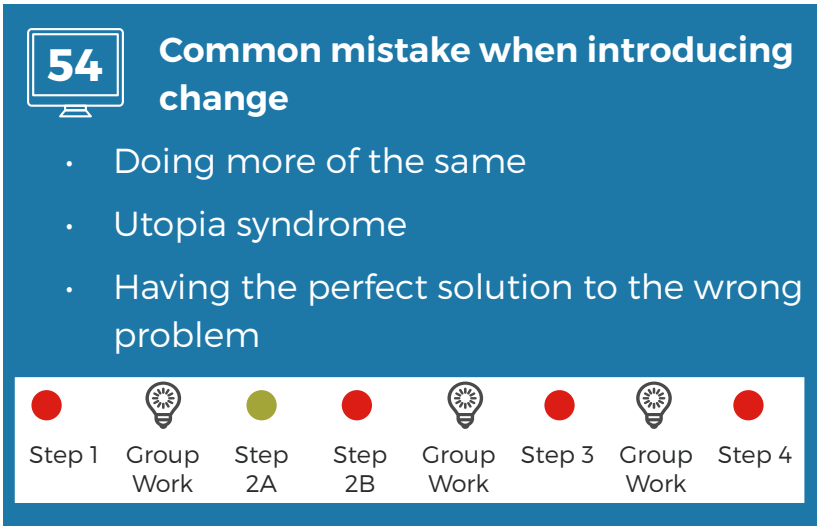
- The first question for quality model for improvement is an aim statement or **"What are you trying to achieve?"**
- The second question is **"What change can we make that will result in an improvement?"**
- The third question is **"How will we know that the change is an improvement?"**
- QI means the organized creation of beneficial change, the attainment of unprecedented levels of performance (Juran, 1989)



Reactive change responds to a sudden problem that has occurred and the change tries to reset the system back to its old performance. These kinds of changes have a short-term impact and only impact certain parts of the system. E.g. if a health officer accidentally writes phenobarbitone 120mg twice daily instead of once daily. The reactive change could be keep the system running, solve problem or react. However, human beings will always make mistakes from time to time. What we need is a PROCESS change that prevents one human error turning into a serious incident. What we need is fundamental change

Fundamental change which focuses on system redesign, to bring the performance to unprecedented levels. These kinds of changes often have long term impact and effect multiple parts of the system.

For this example, can the group think of more fundamental changes? E.g. we could require that the pharmacist should always double-check unusual prescriptions before dispensing, or the patient could be better informed about their medication so that they question the health worker about the prescription.



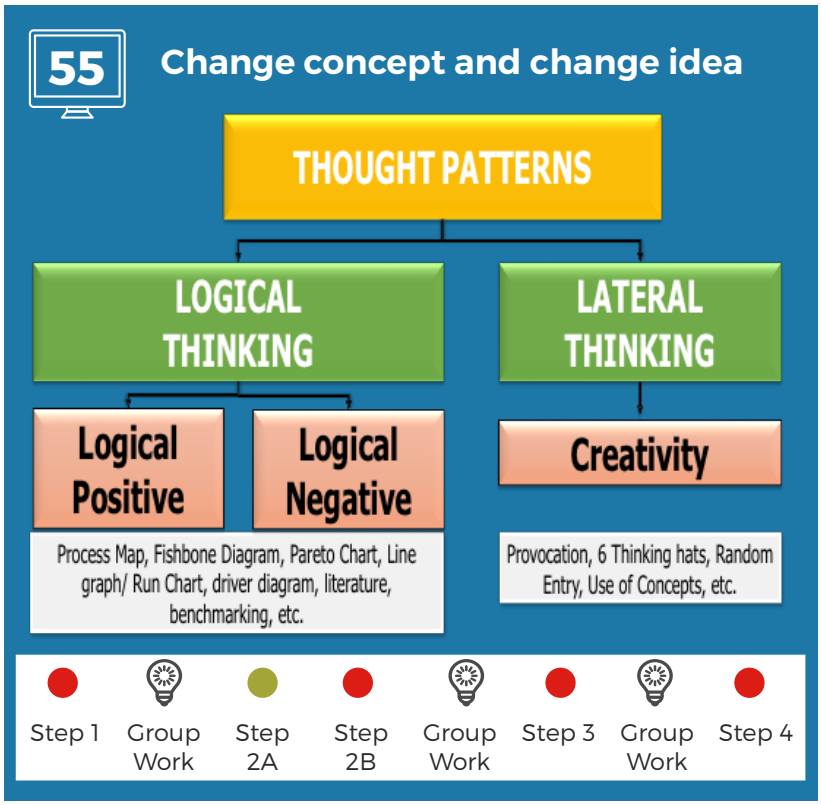
Slide 54

Doing more of the same, as we have already said, this will not really bring improvement. However, often the first solutions suggested are to add more staff, more equipment etc. This might be a reactive change but we need fundamental change is QI.

Utopia syndrome, which delays testing of any change, because the team is trying to find the perfect change. For example, unless we have an ultrasound scanner we can't improve the quality of antenatal care.

Logical thinking comes in two forms

1. Logical positive thinking: reasoning on ways to make a new idea work
   Logical negative (critical) thinking: finding problems to the new idea, why it might fail
2. Lateral thinking- thinking that creates new thought patterns outside normal thought patterns is called lateral thinking. Lateral thinking makes use of creativity



56

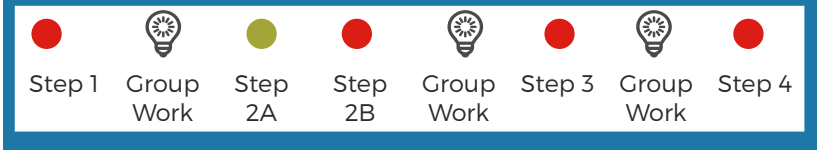
Ways for generating new ideas

Brainstorming

- It allowing the brain to form its normal thought patterns to come up with possible solutions for the problems identified
- Possible ideas grouped in thematic areas and creating an affinity diagram

Benchmarking

- Compare yourself to others
- Help to learn from others in what they do different as compared to what you are doing



Brainstorming: It allowing the brain to form its normal thought patterns to come up with possible solutions for the problems identified

Benchmarking: Identify high performers or best practices in the area where you are tying to improve quality. You can learn what they do differently compared to what you are doing. This learning is not limited to organizations working in the same field; as a health care facility you can learn from other industries

When you are developing and reviewing the possible changes, it is good for the team to discuss:

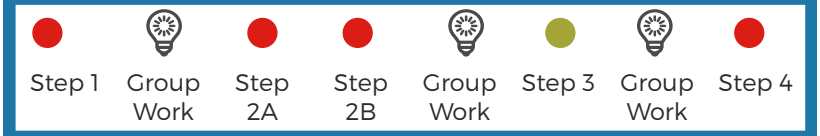
- Based on what we learned from our analysis, what changes should we make?
- Why and how will this change solve the problem we identified in our analysis?
- What result do we expect to see in the process and outcome measures (indicators)?

57

Developing changes -Ask your Team

What changes will we make ?

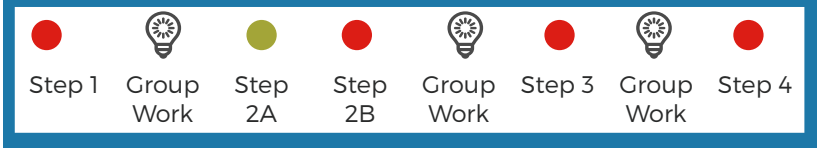
- Why will this change result in an improvement?
- How will it work?
- What improvement will we expect to see as a result of this change ?



58 Understanding process of care using process map

Process map is a pictorial presentation of a process in the form of a process map or flow chart helps to:

- Understand the process and communicate to others
- Standardize the process and the procedures involved
- Identify steps/actions that add value and steps that don't add value (muda or waste)
- Identify opportunities for improvement



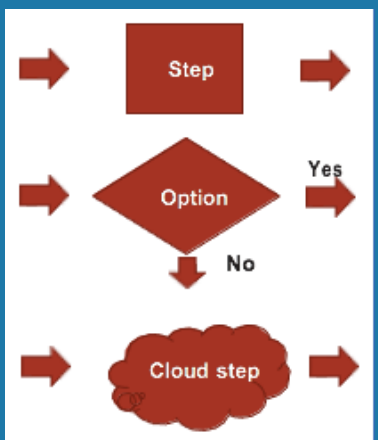
- Our healthcare system is made up of various processes, health workers, patients, equipment, medication etc., all this needs to come together and interact together to be able to cure our patients.
- Lack of understanding of how systems work (appreciation of the system, Profound Knowledge), how the various parts interact to achieve its common goals, results into poor functioning systems that are not able to achieve the goal.

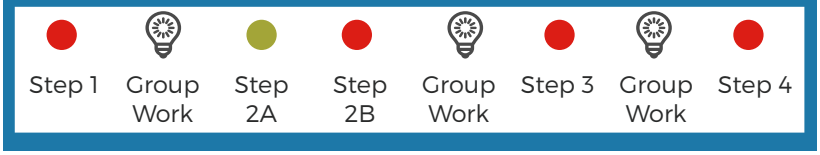
59 Process Flow Chart

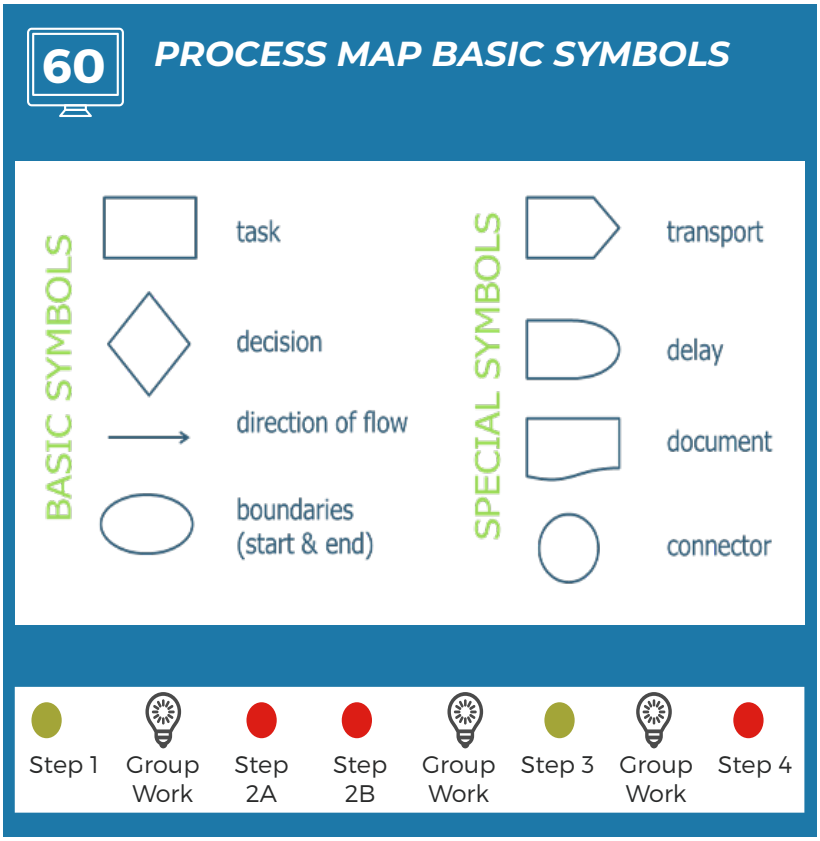
Different shapes are used to visualize the steps of a process (process mapping) in a flow chart:

- start and finish (oval)
- routine actions that always happen (rectangles)
- option points (diamonds) – these are steps that lead to different options:
  - Either someone makes a decision about what
  - happens next (e.g. a triage step)
  - Or the care in that step does not always happen (e.g. only 50% of women get oxytocin in the first minute after delivery)
- unclear steps (clouds) these are used when you are not sure what happens

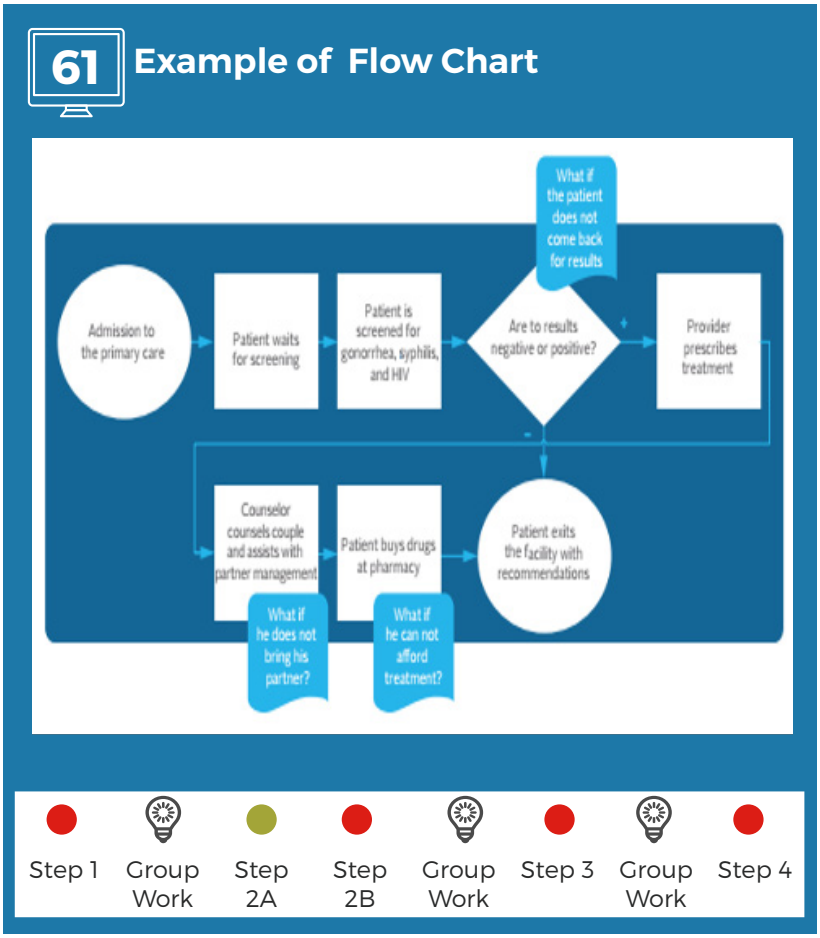
- One flow line out of step
- Two flow lines out of steps that lead to different options
- One flow line out of cloud steps that are not clear





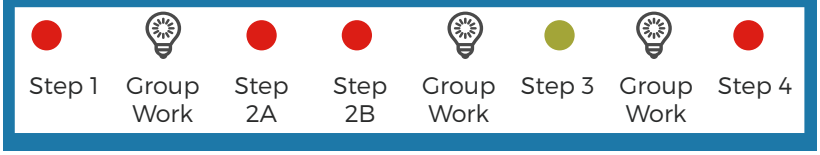


- Flowcharts for quality improvement should always reflect the actual process (what really happens), not the ideal process. Involve people who know the process— while the flowchart is developed. Or ask them to reviewers when the chart has been completed
- Be sure that the flowchart focuses on the identified problem—the process that needs improvement



62 Process Map Analysis

- Aim at reducing waste and improve value for the patient/client
- Look at for the steps that:
  - Definitely add value
  - Add no value, but are unavoidable
  - Add no value, but are avoidable



During process map analysis, look out for the following:

- Are steps repeated or out of sequence?
- Are there steps that do not add value to the output/ patient?
- Is the process standardized?
- Are there steps where errors occur frequently?
- Are there steps that can run in parallel?
- Are there bottlenecks (areas with a lot of delay)?

Example of an inefficient process: *Woman attends antenatal care Gets card - Sits in waiting room-Nurse takes BP-Sits in waiting room - Has ANC check-up - Sent for-investigation - Pays for investigation - Waits for investigation - Has Investigation - Waits to see ANC staff again to review investigation...?*

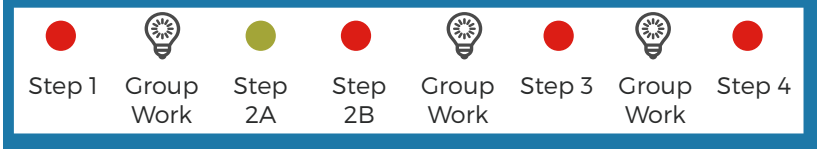
"In health care, it's easy to understand the difference between treating the symptoms and curing the condition. A broken wrist, for example, really hurts! But painkillers will only take away the symptoms; you'll need a different treatment to help your bones heal properly " - MindTool

63 Root Cause Analysis for generating change ideas

- Help to Identify the underlying reasons (causes) for the problem
- Is a good method to apply to avoid treating "symptoms" and target treating the "parasites"

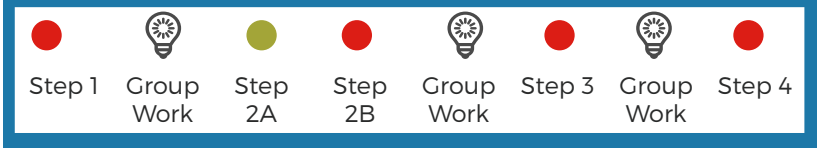
Two commonly used methods

- 5 WHYs
- Fishbone (Ishikawa) Diagram or Cause and Effect Diagram



64 *"FIVE WHYS"*

- "Five whys" is a tool for identifying the root-cause
- Doing five whys involves asking 'why' a problem exists and then continuing to ask 'why' after each answer until you identify a possible way of fixing the problem Illustrate with the example

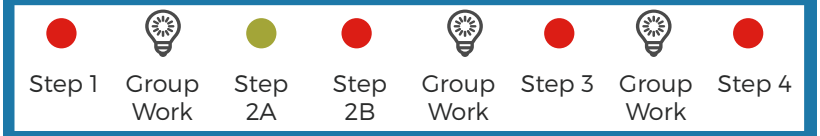


How to apply the 5 WHYs?

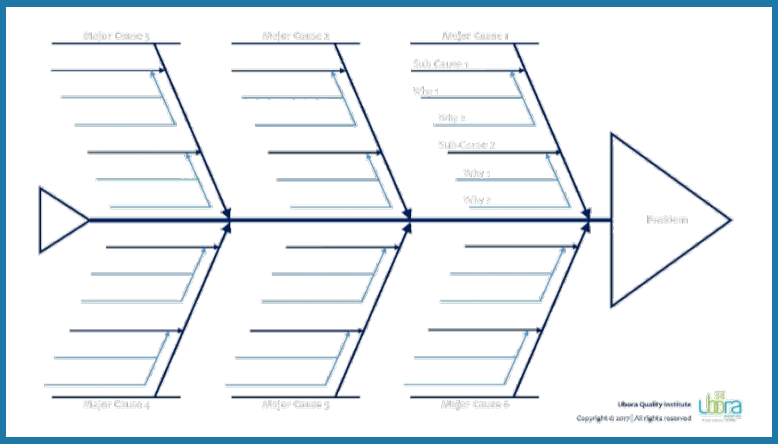
- Write problem statement in the form of a question
- Write the answer/response (provide one response, not multiple options)
- Restate the each answer as a question and ask again "why?"
- Every question and response must be written down
- Asking approx. 5 times why will lead to the root cause of the problem

65 Example of 5 WHYs

- Why don't women exclusively breast feed for 6 months?
  - Because they think when the baby cries after a feed it is still hungry
- Why do they think when the baby cries after a feed? It is still hungry?
  - Because that's what their mother-in-law is telling them
- Why is their mother-in-law telling them this?
  - Because when she had her babies this is what everyone believed
- Why is this what everyone believed?
  - Because babies died of malnutrition in their villages so people feared that inadequate breastmilk supply was the cause



66 STRUCTURE OF FISHBONE DIAGRAM

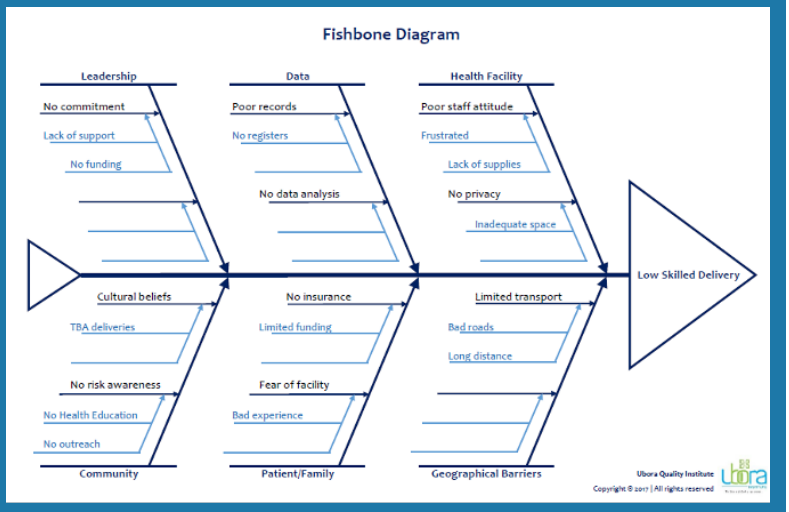


Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

A fishbone or cause and effect diagram is a pictorial tool that can be used to Identify all know causes contributing to the problem, both internal and external.

The fishbone diagram will help a team to brainstorm about possible causes of a problem, accumulate existing knowledge about the causal system surrounding that problem, and group causes into general categories.

67 EXAMPLE FISHBONE DIAGRAM



Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

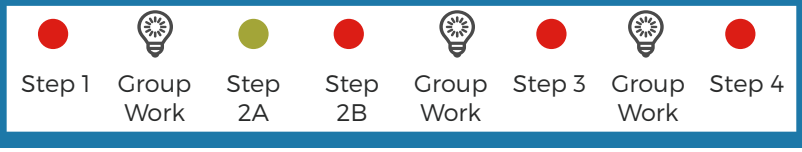
- The categories can also be organized according to the building blocks of the health system: leadership/ governance, human resources, health information systems, equipment and supplies, financing, service delivery, and community
- A fishbone diagram can help broaden the team's thinking, because it is organized around categories of causes
- All group members brainstorm about possible contributing factors to the problem and write them down, after which all these information is organized under major causes and their sub-causes
- All arrows will point towards the heads since the cause contribute the problem.
- Each of the cause (major cause) has various sub-causes and even sub-causes have sub-sub-causes

68

Steps to construct a Fishbone diagram:

Steps to construct a Fishbone diagram:

1. Define problem (negative form)
2. Draw a line horizontally along the page. This line will be the "spine" of the fish.
3. Draw the head of the fish and write the problem inside.
4. Brainstorm and identify the main categories (causes) contributing to the problem (ensure to include internal and external causes)
5. Draw the “bones” – label each bone with a main cause using a noun
6. Brainstorm on sub-causes and why for each of cause – write them alongside the bones
7. Review the diagram
8. Give an appropriate title
9. Identify areas where immediate changes can be tested



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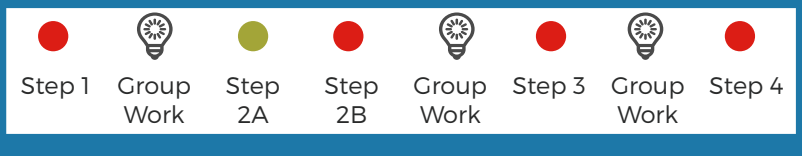
Session Summary

Methods /tool for Generating changes ideas

METHODS/TOOLS	APPLICATION	GENERATE CHANGE IDEAS
Benchmarking	Learn from high performance	Use change concept and generate ideas
Process Map	Pictorial presentation of a process	Identify areas that do not add value and generate ideas to increase value
Prioritization tools (Pareto Chart, focus matrix)	Prioritize areas with greatest impact	Ideas that impact the major contributors
Root Cause Analysis (Fishbone and 5 WHYs)	Contextual knowledge about a problem and its causes	Potential solutions to the root cause(s) of the identified problem



SESSION 4: 2

Activity #4: Case scenario: STEP 2: Analyzing the problem and generating change ideas: 60 minutes

Objective:

Participants will be able to:

- Differentiate between fundamental change and reactive change, change concepts and change ideas
- Use different tools and techniques to analyze problems
- Generate change /new ideas to improve quality in health care system

Instructions: Case scenario part 3

- Participants continue working on the same group
- Groups to read case scenario part 3 in the learner manual (page 8).
- Explain that in **Case scenario part** 3 the team has decided to pick two aims: reducing neonatal hypothermia at one hour and improving uterotonic administration to the woman within one minute of delivery.
- The small group work will now focus on helping the team to understand what are the key factors contributing to babies being cold and women not receiving the uterotonic within one minute of delivery.
- Explain the figures in the learner manual one by one. Figure 2 - Flowchart of immediate post natal care of the baby; Figure 3 - Flowchart of care of the mother; and Figure 4 - Fishbone diagram for uterotonic (Inj. Oxytocin) administration.

Figure 1: Newborn Care Flowchart

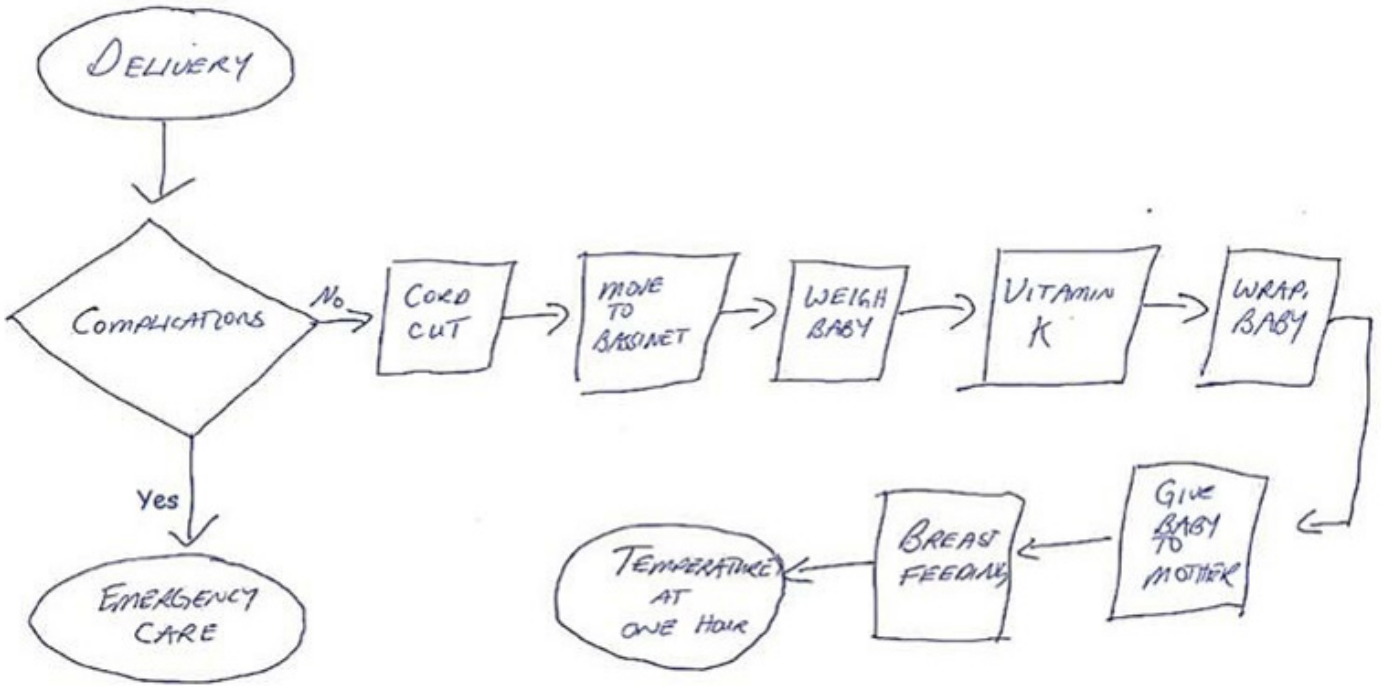
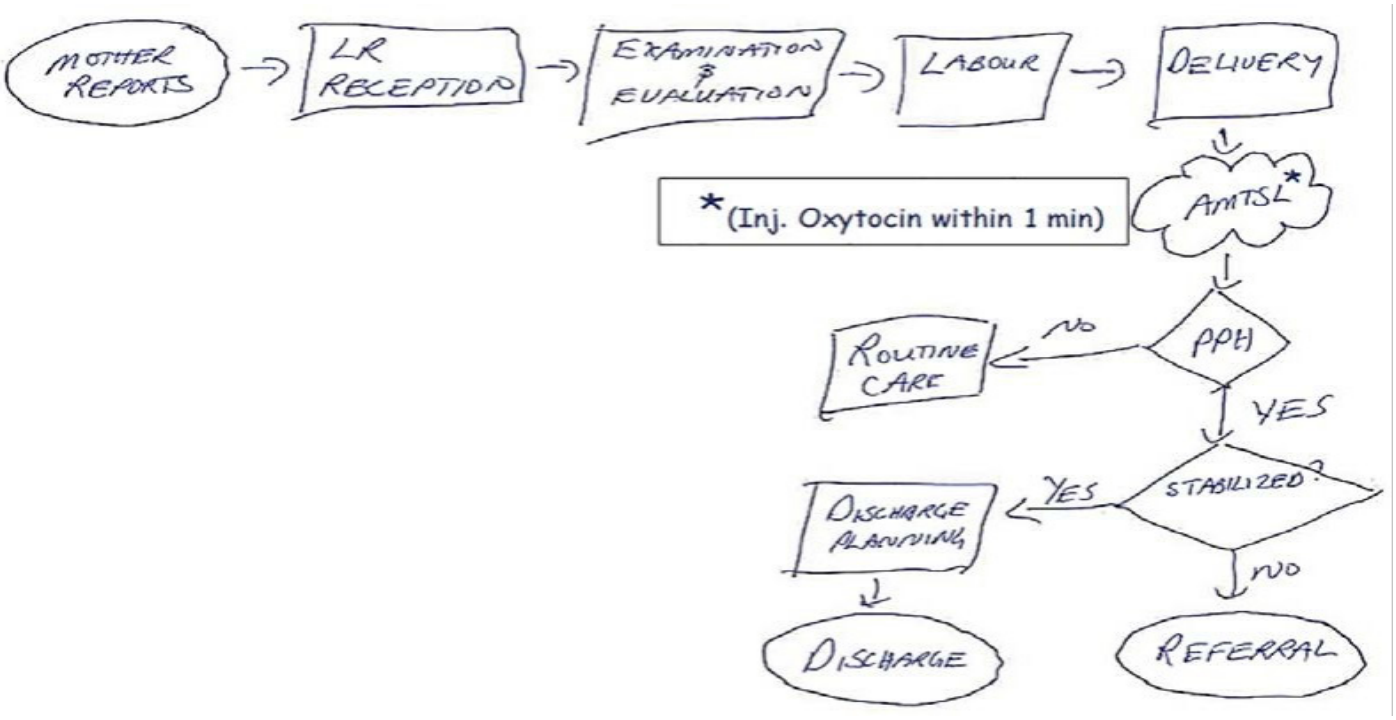


Figure 2: Maternal Care Flowchart

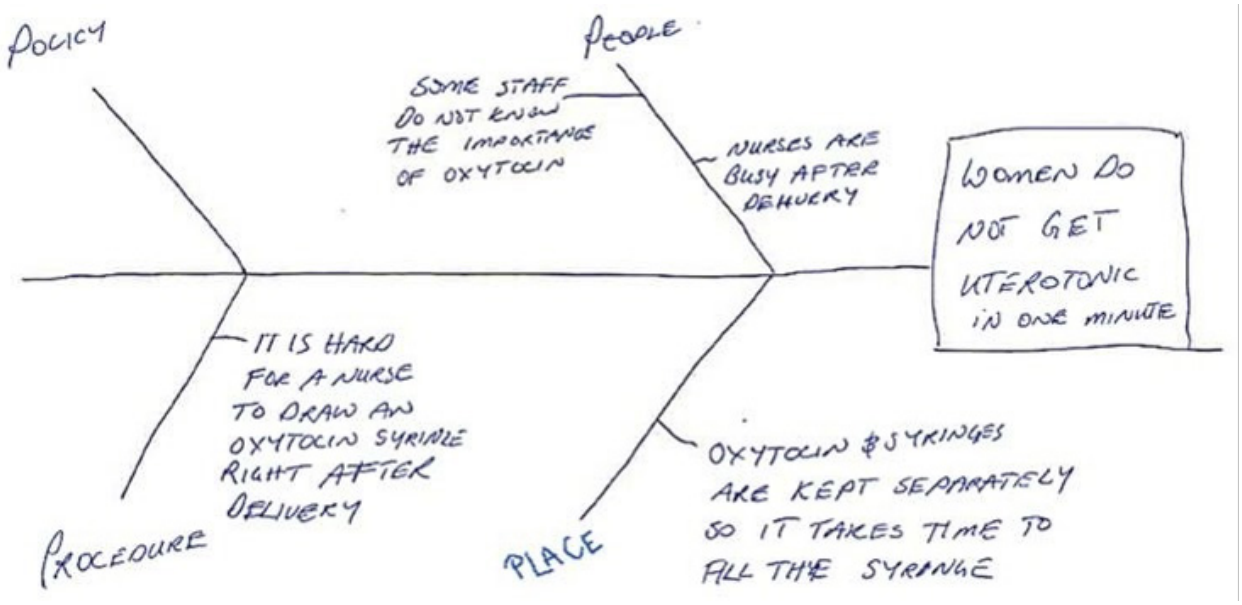


Learning Points: Discussion 2.1: Analyzing a flow chart (analyzing a problem)

In **Discussion 2.1**, ask participants to review the Newborn Care Flow chart. Make sure that they understand the meaning of the different symbols (shapes). Ask them to identify steps on the flow chart that could be making babies cold. Emphasize that the point of analyzing is to find specific causes for problems that can be changed. In this example, there are many steps between delivery and putting the baby with the mother which could be making the babies cold. Some of these steps of care could be performed while the baby is in skin-to-skin contact with the mother.

Learning points: Discussion 2.2: Analyzing a fishbone diagram (analyzing a problem)

Figure 3: Maternal Care Fishbone



In **Discussion 2.2**, ask the team to review the maternal care Fishbone diagram. Make sure that they understand that the diagram has four large sections (policy, people, place and procedure); these sections they have smaller subsections coming of them. Help the team to identify that the problems leading to women not getting oxytocin are related to:

PLACE: Oxytocin ampoule/vial and syringes are kept in separate places

PROCEDURE: The usual procedure is to fill the syringe with oxytocin after the baby is born

These two factors mean that it is hard for the nurse/midwife to actually fill oxytocin into the syringe from the ampoule/vial within a minute of delivery.

Instructions: case scenario part 4a: Maternal Health Scenario

Ask participants to read **Case scenario part 4a in the learner manual (Page 11** and to discuss how the analysis tools helped them identify possible changes that could improve care.

Instructions: Discussion 2.3: Improving uterotonic administration-change ideas

Ask them to list some possible changes to improve uterotonic administration. Encourage them to think why these changes could fix the problem.

Note: Many new improvement teams focus on training, management directives/ orders and on individual performance as possible solutions. They are not able to pay attention to system problems and the process of care. There is no need to correct them if they identify the former since they are often important,

but it helps them to think of system or process issues that could be redesigned or reoriented leading to improvement by improving the efficiency of the process of care often without additional resources.

This is also a good time to look back at the improvement team. If the people who will need to test the selected change in the delivery of care are not on the team, it would be good to add them at this stage. Emphasize the effect of just telling people to change their behaviour or practice in comparison to involving them in planning right from the beginning on how to change their practices.

Instructions: Case scenario part 4b: Newborn Health Scenario

Ask the group to read **Case scenario part 46** and to discuss how the analysis tools helped them identify possible changes that could improve care.

Instructions: Discussion 2.4: Developing changes

Ask them to list some possible changes to reduce neonatal hypothermia. Encourage them to think why these changes could fix the problem.

Note: Many new improvement teams focus on training, management directives/ orders and on individual performance as possible solutions. They are not able to pay attention to system problems and the process of care. There is no need to

correct them if they identify the former since they are often important.

But help them to think of a system or process issues that could be redesigned or reoriented leading to improvement by improving the efficiency of the process of care often without additional resources.

In particular, encourage participants to use the flow chart for reducing neonatal hypothermia to identify ways of reorganizing how care should be provided to the newly born babies.

This is also a good time to look back at the improvement team. If the people who will need to implement the selected change in the delivery of care are not on the team, it would be good to add them at this stage. Emphasize the effect of just telling people to change their behaviour or practice in comparison to involving them in planning right from the beginning on how to change their practices.

Summarize Step 2

- After the groups have completed Discussions 2.1 - 2.4 review the Step 2 . Ask them:
- What are some of the reasons for babies getting cold after birth?
- What are some reasons for women not receiving Inj. oxytocin within 1 minute of delivery?
- What change ideas were developed based on the problem analysis?

Activity # 5 : Next step(10 minutes)

Discussion on

- Activities to be accomplished till next session (Action plan)
- Date and time of next session
- Coaching and mentoring support: during the week the facility trainers will support the trainees to work on the deliverables for that week.
- Next week Deliverables:
  1. The team continue working on the next assignments
  2. Problem is analyzed deeply by employing either using the flow chart, and/or fishbone diagram and/or, 5 WHY techniques
  3. Change idea(s) generated
- The Expected time the team to invest is approximately 4-6 hours in that week.

Duration: 105 min

Activity # 1: Recap the previous session :10 minutes

- Key lesson learned from the previous session
- Reflection on the accomplishment and challenges of action plan
- Questions and problems

Activity # 2: Introducing the new topic /information

- Discuss the Session objectives (below slide # 70): 5 minutes
- Interactive presentation and discussion (Slide 71-94): 45 minutes

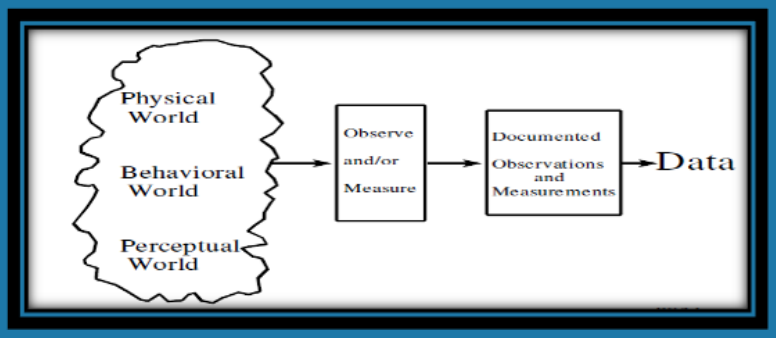
70 SESSION OBJECTIVES

At the end of this session, participants will be able to:

- Explain the importance of data/measurement
- Describe an indicator and its key attributes of a robust indicator
- Design quality improvement indicators
- Construct a run chart and Interpret using a run chart rules

Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

71 DATA IN QI



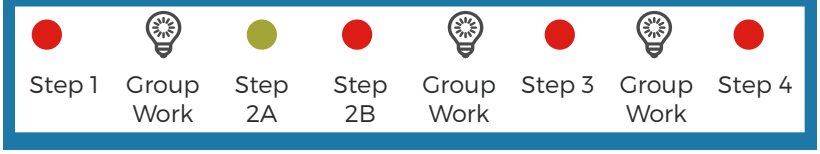
Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

- Data is defined as documented observations or the results of performing a measurement process. In quality improvement work, data plays an important role. Data is only a helpmate to improvement but improvement cannot act without it.
- The purpose of data in quality improvement is not for judgment (for deciding whether or not to buy or to accept or reject) but For the purposes of learning.
- Data helps QI teams to learn about the impact of their changes being tested by
- Keeping track to see if the system is meeting the customer/ client needs and expectations
- Knowing if particular changes being tested should be kept (adopted), modified (adapted) or rejected (abandoned)
- Understanding causes of the problems and
- Clarifying aims for improvement

72 WHY WE MEASURE

- Assess progress on aim
- Learn from the impact of the change
- Assess whether the system as a whole is improving
- Helps to make informed decision on what to do next

Measurement also helps in answering the question "how will we know that a change is an improvement?" in the Model for Improvement



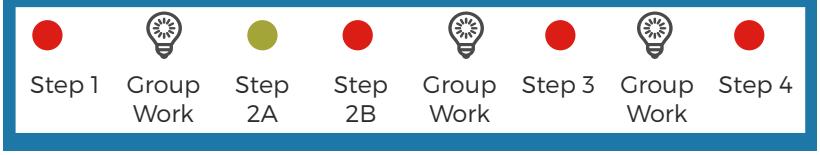
- The use of measurement is essential for identifying and measuring problems and setting goals for improvement

The common tools used for data collection (slide 74 below)

- **Registers:** Registers are the standard collection tools used in all facilities to record the service delivery data. They mainly serve as the primary source of data for the services being rendered
- **Reporting forms:** These forms are used to summarize service delivery from the registers periodically (weekly, monthly, quarterly, etc.). These forms are usually submitted by the facilities to its Primary Health Care Unit

73 THE COMMON TOOLS USED FOR DATA COLLECTION

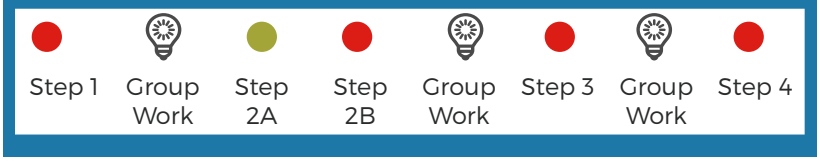
- Registers
- DHIS2
- Reporting forms
- Checklist:
- Observational guide
- Questionnaire
- Interview guide:
- Chart audit



- **Checklist:** It is a form used to collect information on a particular service delivery e.g.: Surgical Safety Checklist.
- **Observational guide:** It is a tool that contains information to record observations on processes and procedures in service delivery

74 The common tools used for data collectio (continued)

- Registers:
- Reporting forms
- Checklist:
  - Observational guide
  - Questionnaire
  - Interview guide:
  - Chart audit



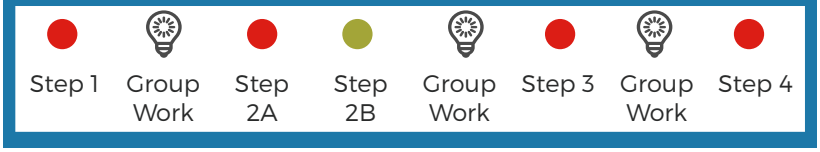
- **Interview guide:** It is a set of broad open-ended questions to be used by the interviewer as a guide for the interview.
- **Chart audit:** A chart audit is an examination of medical records to determine what has been done, and sees if it can be done better.

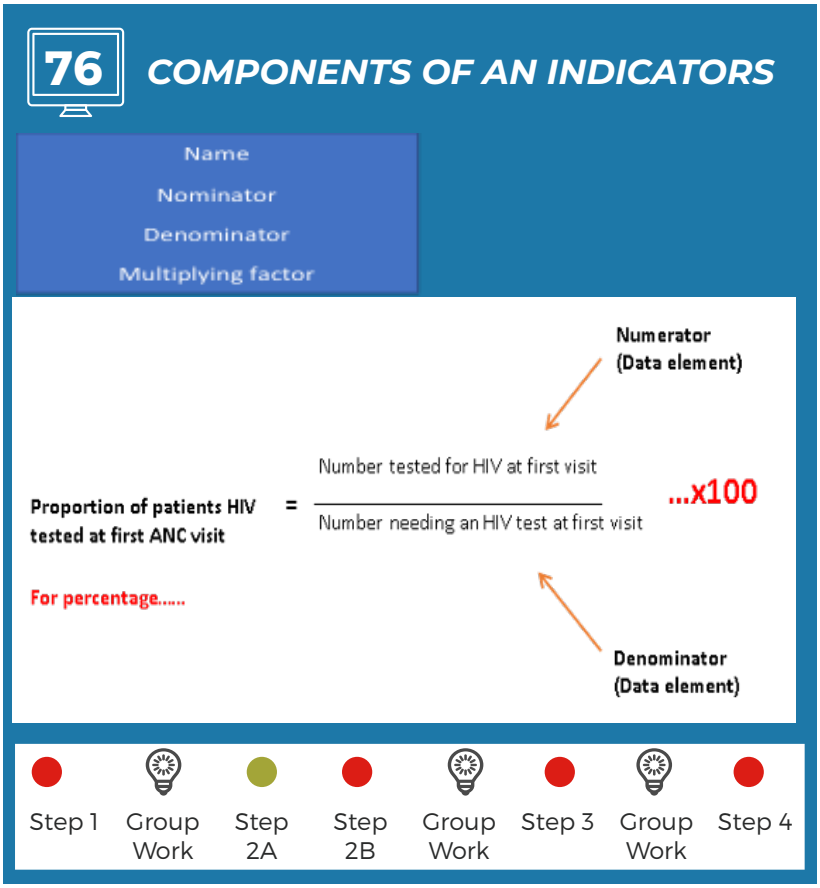
- An indicator is:
  - A measurement tool
  - defines a rate/ratio or an event
  - Used as guide to monitor and evaluate the quality of healthcare – Is it improving?
  - A tool to make continuous improvement in quality of care

75 *INDICATORS IN HEALTHCARE*

An indicator is defined by OECD/DAC as "A quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect changes connected to an intervention, or to help assess the performance of a development actor". (OECD/DAC Glossary of Key Terms in Evaluation and Results Based Management, May 2002)

According to the definition adopted by USAID, an indicator is: "A quantitative or qualitative variable that provides reliable means to measure a particular phenomenon or attribute". (USAID Glossary of Evaluation Terms, March 2009)

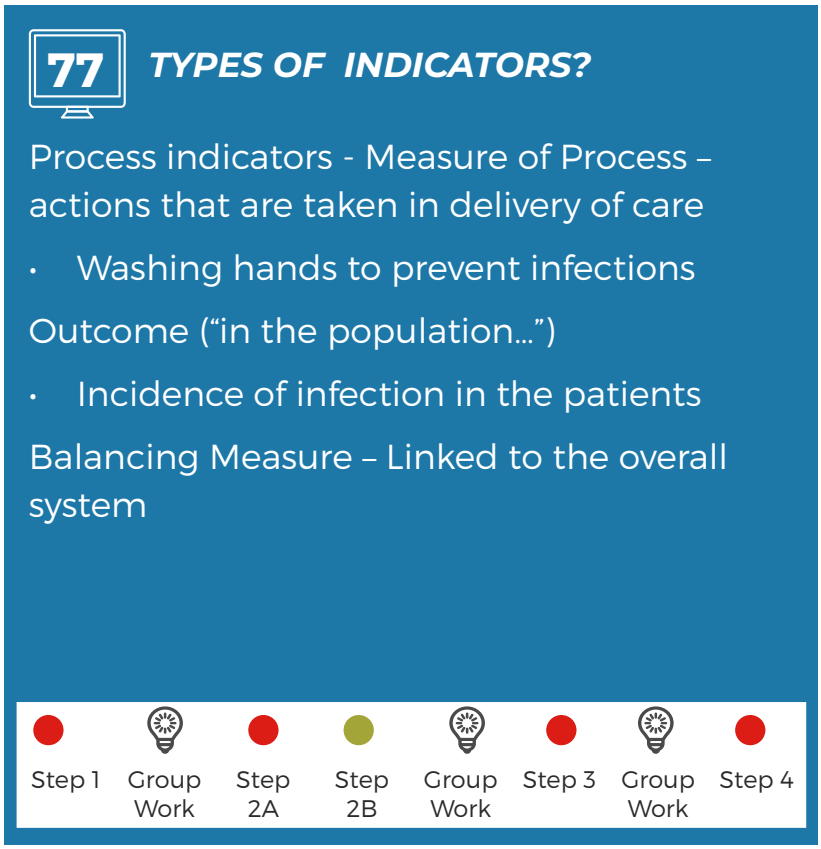


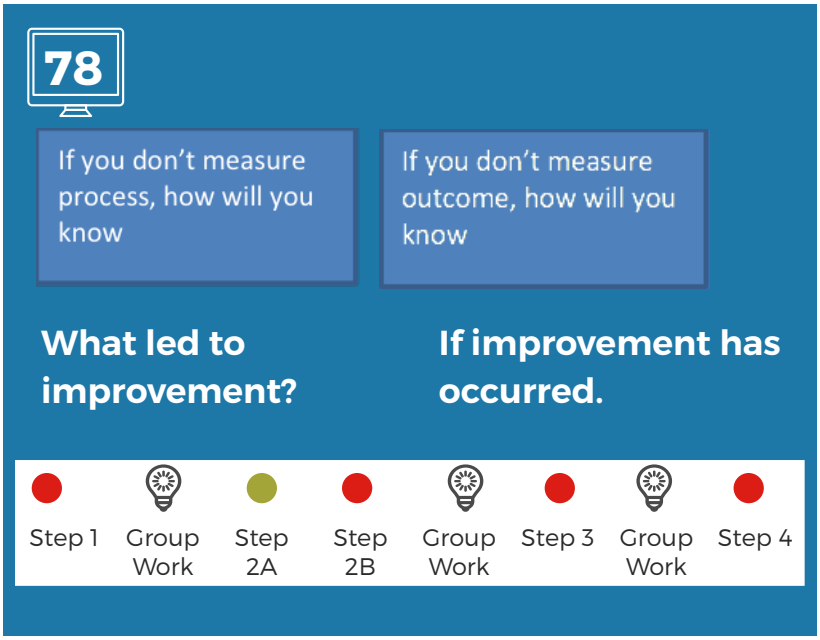


Types of indicators

- Process indicators measure actions that health out to achieve something
- Outcome indicators measure what health workers are trying to achieve (clinical outcome)
- Balancing indicators- is an indicator that tracks some of these other parts of the system so that any harm caused will not go unnoticed.

For example, a QI team may try to reduce the incidence of infection (an outcome) by improving hand washing (a process)

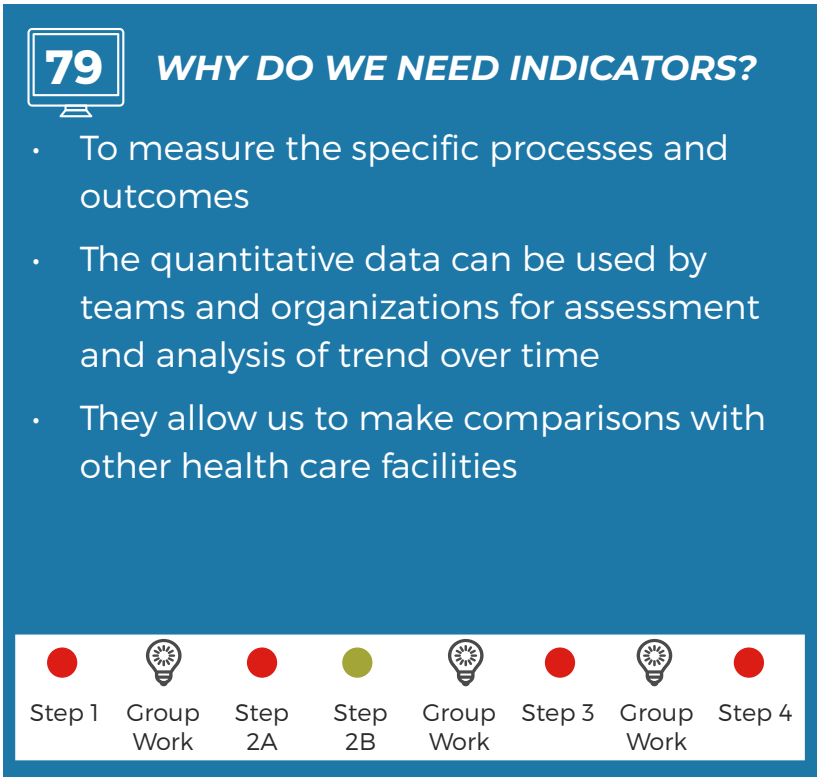




Ideally QI projects should measure both process and outcome because they give different information:

- Process measures let you know if you putting into practice the new process or not. For example, the percentage of health workers washing their hands tells you how effective the team is at improving hand-washing behaviour
- Outcome measures let you know if you are actually getting the result that you want and that matters to patients. For example, the percentage of newborns with injection tells you if hand washing is working or not.

- Indicators help us to understand how we are currently doing in providing care and help us to plan what to do next
- They also allow us to compare our performance with other health facilities that are working on similar problems. This can help to identify lessons that we can take from other facilities.

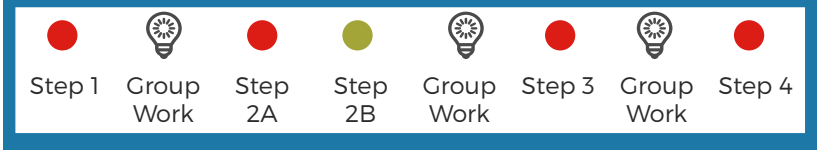


80 QUALITIES OF A GOOD INDICATOR

- Clear and unambiguous (teams will not confuse what is meant by a particular indicator)
- Identifies a clear numerator and denominator

Also important to decide

- Source of data and who is collecting it
- Frequency at which data would be collected

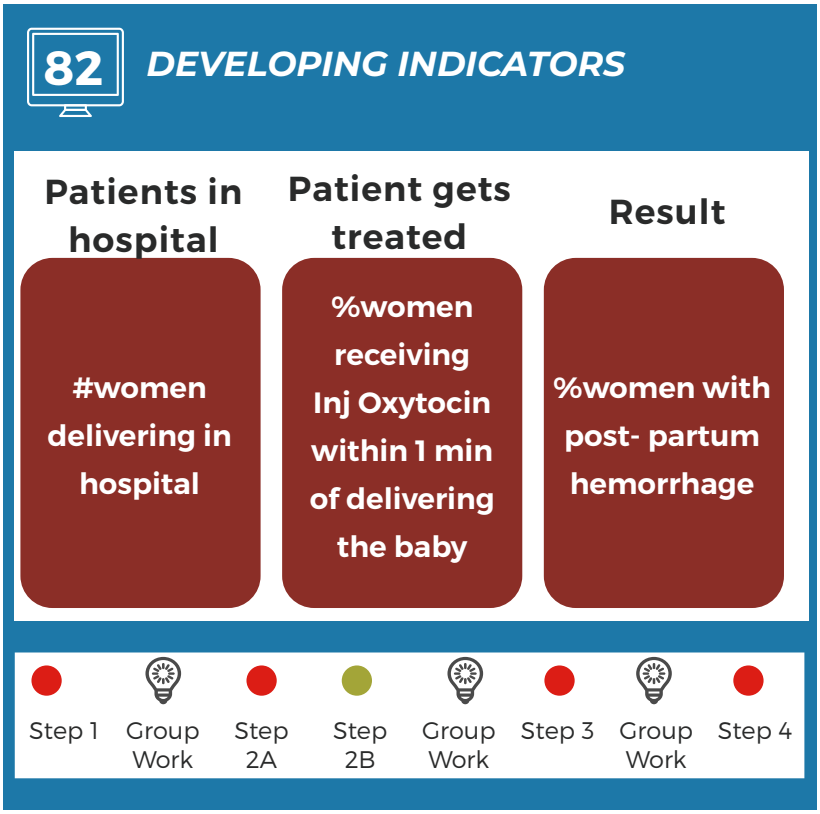


- Indicator has to be clear and precise so that everyone can understand it in the same way and knows how to measure it.
- This includes having a well-defined numerator and denominator
- It is also important to decide as a team who should collect the data, where from and how data will be collected and how often you should collect and review the data.

Best use of indicators: Emphasize the key points on how to use the selected indicators

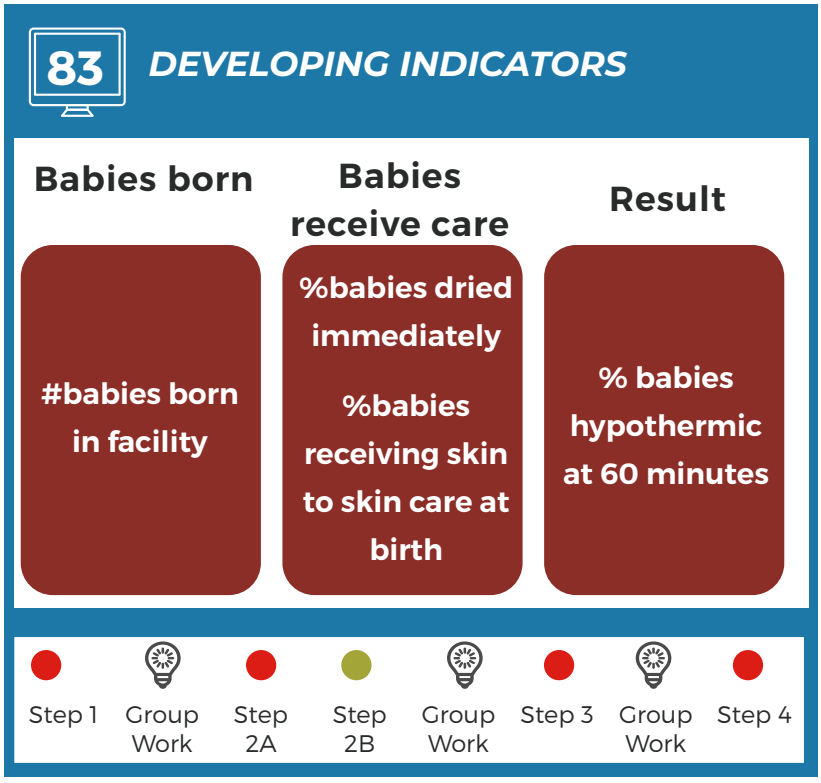
81 KEY ELEMENTS FOR PUTTING INDICATORS TO USE

- Indicators should be linked to aims
- Should be used to test change and guide improvement
- Should be integrated into team's daily routine
- Important to select a few key measures – don't overburden with endless data collection



How to develop indicators:
Example 1: Explain from the slide

How to develop indicators:
Example 2: Explain from the slide



84 EXAMPLE OF GOOD INDICATOR

- Indicator: The rate of PPH in women in the hospital
- Numerator: **Number of cases of PPH**
- Denominator: **Number of women giving birth**
- Source: **Labour room register in the health facility**
- Person responsible: **Delivery room nurse**
- Frequency: **Labour room register will be reviewed monthly**

- Here is an example of a good indicator. It specifies the numerator, denominator, source, who is responsible for data collection and frequency of data for review.
- It would be good to highlight here that monthly data review is okay for outcome indicators but you should look at process indicators daily or weekly to speed up the learning process.

Key tips for defining an indicator

- Use the following words for
  - stating an indicator
  - Number of...
  - Average...
  - Proportion of...
  - Percentage ...
  - Rate of...

Avoid the following word for stating an indicators

- Improve
- Reduce
- Increase
- Decrease

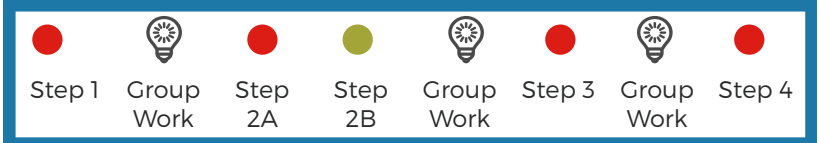
85 KEY TIPS FOR DEFINING AN INDICATOR

Use the following words for stating an indicator

- Number of...
- Average...
- Proportion of...
- Percentage ...
- Rate of ...

Avoid the following word for stating an indicators

- Improve
- Reduce
- Increase
- Decrease



86 MEASURES OF CENTRAL TENDENCY

Mean

- Arithmetic average of data
- Sum of all individual values divided by the size of the population N

Median

- Middle value of ordered data in ascending or descending order

Mode

- Most frequently occurring value

Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

Mean:

- Balance point of a distribution of values
- Sum of all individual values divided by the size of the population N
- Is sensitive to extreme values / outliers

Median

- Central value of a distribution
- Value dividing the lower from the upper half of a distribution

Mode

- Most frequent value of a distribution

87 MEASURES OF CENTRAL TENDENCY

Compute the following: Mean, Median and Mode.

Data set 1	Data set 2	Data set 3	Data set 4
5	48	2	0
19	6	9	19
3	57	7	29
0	39	5	14
16	52	24	2
14	25	3	7
8	33	7	22
7	37	7	25
4	41	6	9
3		6	7
		2	
Group 1	Group 2	Group 3	Group 4

Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

88 PLOTTING A TIME SERIES CHART

A good way to review data (value) of your indicators is to plot the data on a time series chart (or a run chart)

- A Run Chart is also known as Time Series Chart or Trend Chart .It is graphical display of data plotted in some type of order. A run chart is line graph with a median line.
- Time-series charts show data over time so that you can see how the data are changing over time.

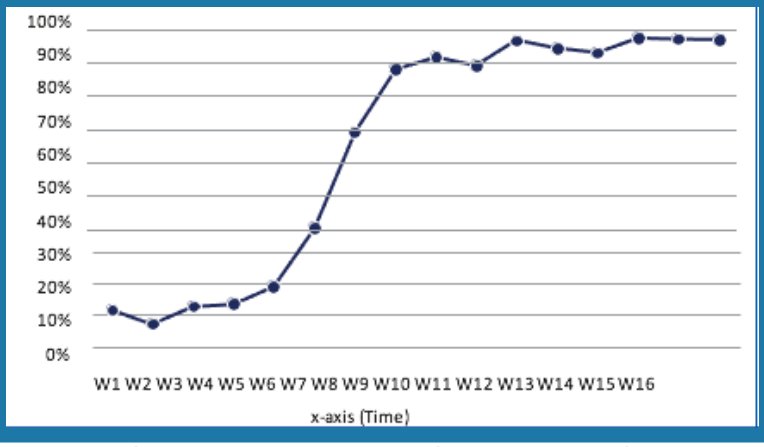
Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

A time-series chart has the following components:

- A clear title
- Well-labelled x and y axes
- The x or horizontal axis represents time. This is the time period that you are using to review your data
- The y or vertical axis represents the percentage performance of the indicator. It is usually from 0 to 100%
- It is also important to annotate on the chart the time points when you introduced specific change ideas so that cause – effect relation is clear.

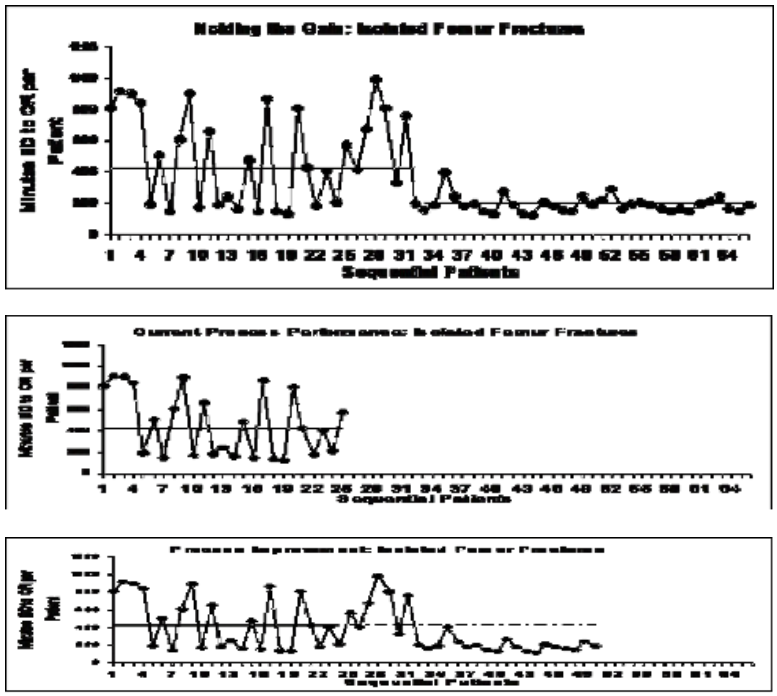
89 TIME-SERIES CHART

Percentage of women receiving uterotonic within one minute



Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

90



Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

Fundamental uses of a run chart

1. Display data to make process performance visible
2. Determine whether a change resulted in evidence of improvement
3. Determine whether we are holding the gain made by our improvement

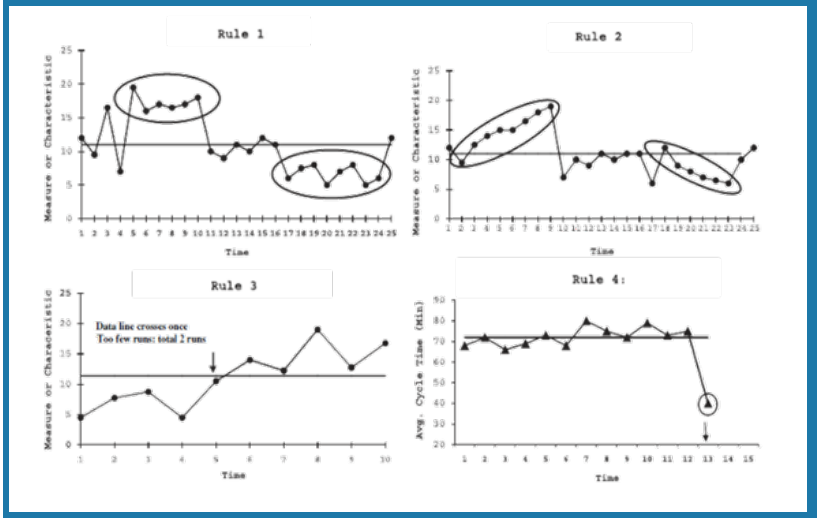
91

STEPS TO CONSTRUCT A RUN CHART

1. State the question that the run chart will answer and obtain data necessary to answer this questions
2. Develop the horizontal axis. This is usually is in a time scale (days, weeks, months, quarters, years etc.)
3. Develop the vertical axis
4. Plot the data points
5. Label the graph completely with a useful title
6. Calculate and place the median of the data on the run chart
7. Add additional information to the chart

Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

92 RULES FOR INTERPRETING RUN CHARTS



Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

Rule 1 - Shift: A group of Six (6) or more consecutive data points on one side of the median. Points on the median are to be ignored because they do NOT make or break a shift.

Rule 2 -Trend: A group of Five (5) or more consecutive data points all going up or all going down. In this rule a median line can be ignored. Like points (consecutive data points with the same value) are counted as one

Rule 3 - Run: A run is a series of points in a row on one side of the median

This rule has 4 steps, however first we need to know what a run is.

A run is a group of data points on one side of the median. To count the runs we: Step 1a) count the number of times the performance line crosses/cuts the median; Step 1b) add a constant 1 to the value from step 1a, this gives you the number of runs; Step 2) count the number of data points that do not fall on the median; and Step 3) make use of the reference table and determine whether your runs are within or out of the normal range

Rule 4 – Astronomical Data Point

- Data point that is obviously different from the other points, it falls out of the normal variation of the performance. For detecting unusually large or small numbers and data that is Blatantly Obvious different value.

93 REFERENCE TABLE – RULE 3

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
15	5	12
16	5	13
17	5	13
18	6	14
19	6	15
20	6	16
...	...	...

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
15	5	12
16	5	13
17	5	13
18	6	14
19	6	15
20	6	16
...	...	...

Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

94

SESSION SUMMARY

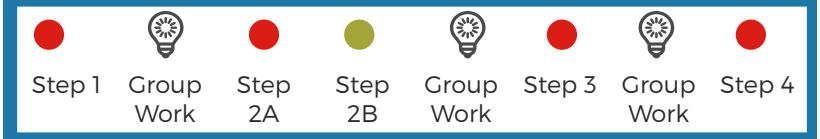
The purpose of data in QI is not for judgment but for the purposes of learning

Measurement answering the question "how will we know that a change is an improvement?"

an indicator is: "A quantitative or qualitative variable that provides reliable means to measure a particular phenomenon or attribute

A run chart is a graphical display of data plotted in some type of order (data over time)

4 Rules for Interpreting Run Charts- Shift, Trend , Run and Astronomical Data Point



SESSION 5

STEP 3: Developing measurement

Activity #3:Case Scenario part 5 (45 minutes)

Team will discuss what indicators will they use to measure program.

Instructions: Discussion 3.1: Developing indicators

Ask them to write **an outcome measure for reducing neonatal hypothermia** and a **process and outcome measure for improving uterotonic administration**. Because the team in the newborn case scenario has not yet decided on the process to reduce hypothermia, they do not yet have a process measure.

Encourage discussion about the importance of reviewing data frequently (in days or weeks) for process measures so that you can learn quickly.

Please emphasize that improvement in the real world is not a linear series of steps like in this training. The steps are linked to each other and you sometimes need to go back to a previous step for better understanding of the situation.

Case Scenario part 6

Instructions: Discussion 3.2: Plotting data over time

Ask the group to draw two time-series charts on the flip chart and make sure that they understand the basic components: 1) x-axis in weeks, 2) y-axis with the numerator of interest, 3) dots showing the level of performance, 4) lines connecting the dots, as shown in the below two figures.

Figure 4: Percentage of women receiving uterotonic within one minute

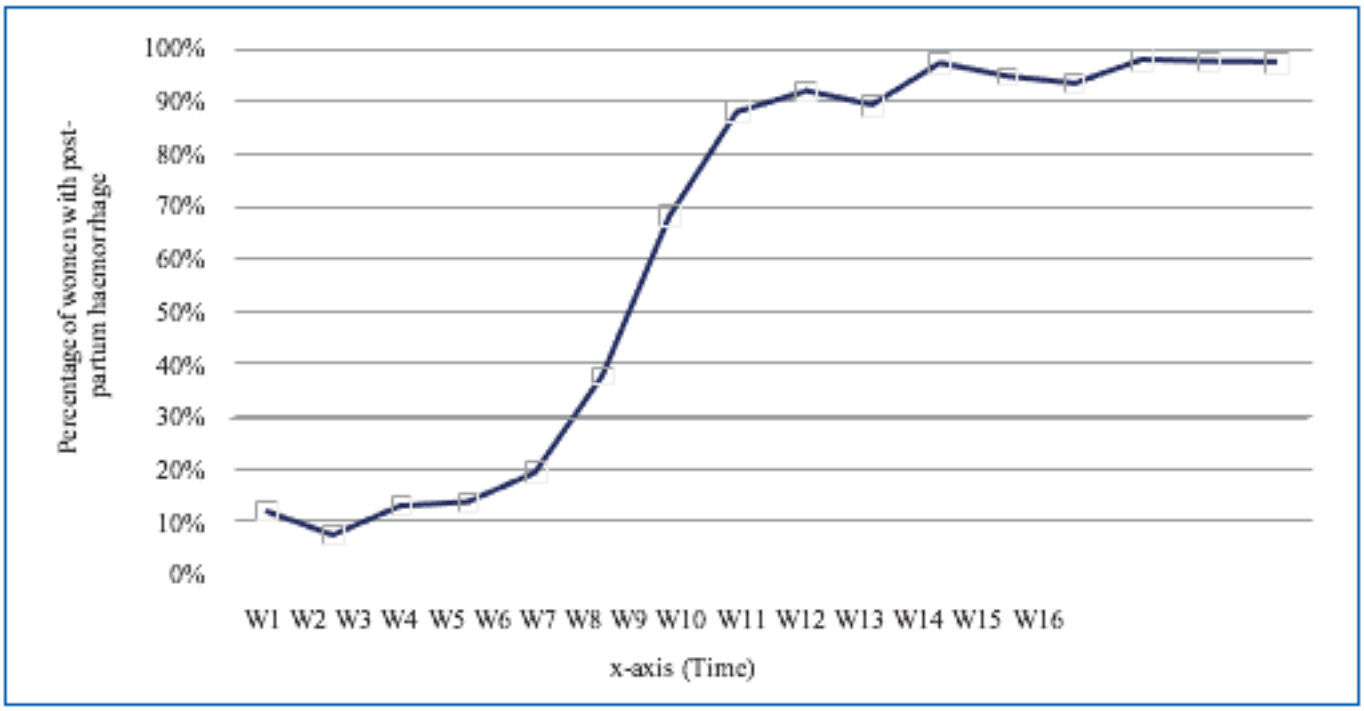
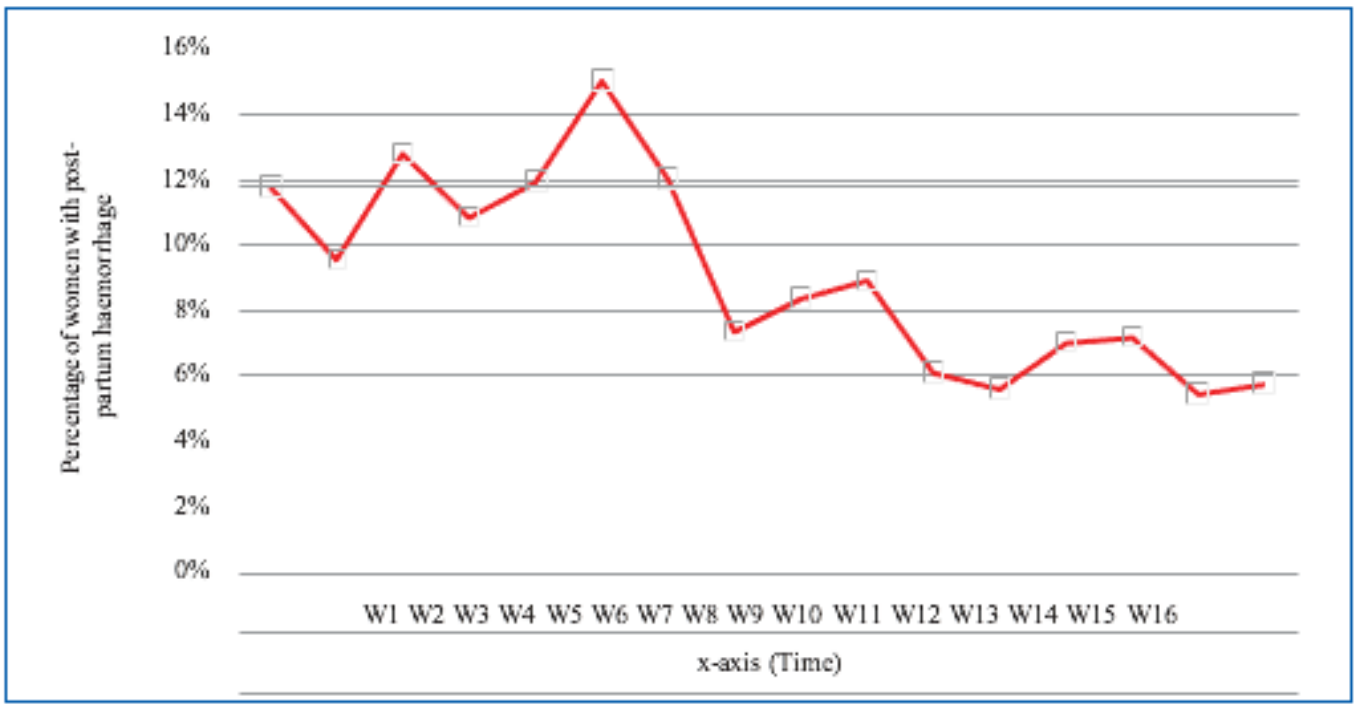


Figure 5: Percentage of women with post-partum hemorrhage



Summarize Step 3

After the groups have completed Discussions 3.1 & 3.2 review the Step 4. Ask them:

- Examples of good outcome indicator for neonatal hypothermia and process and outcome indicators for improving oxytocin administration.
- Ask one team to share their time series chart. Make sure to point out what has been plotted against the x-axis and y-axis as well as the data.

Activity # : Next steps (10 minutes)

Discussion on:

- Activities to be accomplished till next session (Action plan)
- Date and time of next session
- Coaching and mentoring support: during the week the facility trainers will support the trainees to work on the deliverables for that week.
- Next week Deliverables:
  - The team continue working on the next assignments
  - Indicators are generated (process, outcome and balancing indicators)
  - Indicator table is prepared defining the type of indicators(the numerator and denominator; how frequent is the data to be collected; data source to be used; and who is responsible)
- The Expected time the team to invest is approximately 2-3 hours in that week.

Duration: 120 min

- **Activity # 1: Recap the previous session (10 minutes)**
- Key lesson learned from the previous session
- Reflection on the accomplishment and challenges of action plan
- Questions and problems

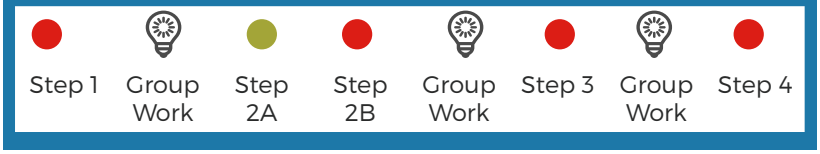
Activity # 2: Introducing the new topic /information

- Discuss the Session objectives (below slide # 94): 5 minutes
- Interactive Presentation (Slide 94 to 105): 30 minutes

94 SESSION OBJECTIVES

At the end of this session, participants will be able to:

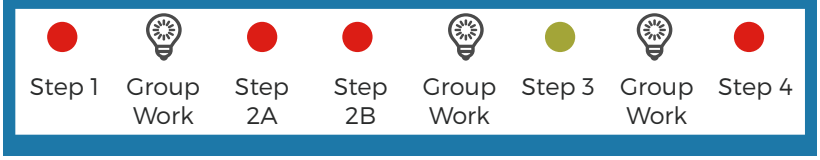
- Describe the purpose of testing
- Apply principles of testing change
- Test changes using Plan-Do-Study-Act cycles
- Differentiate between testing and implementation
- Use Run Chart rules to assess impact of the change tested



- Once a change has been developed, it should be further explored and refined by testing
- The idea of testing a change does not seem to come naturally. Tests should be designed so that as little time, money, and risk as possible are invested while at the same time enough is learned to move toward full – scale implementation of the change.

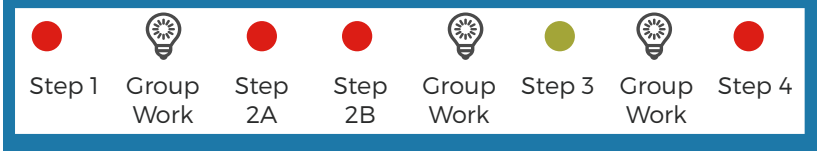
95 WHY SHOULD WE TEST OUR CHANGE AND NOT JUST IMPLEMENT?

- Learning about its potential impact
- Learned to move toward full – scale implementation of the change
- Increase the scale of the test on the basis of learning



96 PRINCIPLES FOR TESTING

1. Test initially on a small scale and increase the scale of the test on the basis of learning
2. As the scale of the test is expanded, include different conditions in your test
3. Plan the test, including data collection



1. By using an approach of sequential testing that starts with testing on a small scale, we can learn about the impact of the change and its side effects.

2. As you are scaling up your change, possible circumstances that could affect performance should be discussed and plans to learn about their impact should be included in the tests.

3. A test of change may not be successful because the test was not planned well. To plan a test, people should explicitly document what is being tested and who will do what, when and where. This should include a plan for the collection of data

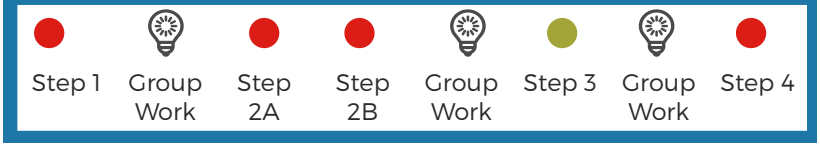
State the common steps in a plan to introduce the change idea in your practice at the health facility

97 PLAN THE CHANGE

What will your team do ?

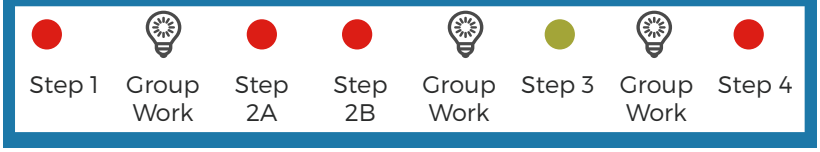
Ask and document the details for:

- What needs to be done?
- Who will do it?
- Who will measure indicator?
- Where will the test takes plac?
- When will it be started
- When will result be reviewed ?
- How should the effect change be measured?



98 TESTING THE CHANGE

- Test BIG changes on small scale
- Test individual changes separately when possible
- Negative results are opportunity to learn
- Think about how conditions change over time (monthly, seasonal patterns, external variables)



- The rationale of testing things initially at a small scale is that it allows you to know if it succeeds and gives you the confidence to practice at large scale and adopt more innovative changes in future.
- It is also important to highlight that some of your change ideas will not work. That is good. Testing on a small scale means that they will not do any harm and they are an opportunity for learning.
- It is good to test the change/ idea in different working conditions to learn if the change always works, for example, testing on weekends or night time will let you know if changes will work .

Testing the change idea:

It is rare that any change will work perfectly the first time. It will usually need some adjustment to work in your setting.

Because of this, it is easier to fix problems when you test the new ideas to learn how they work and to adjust them to your setting

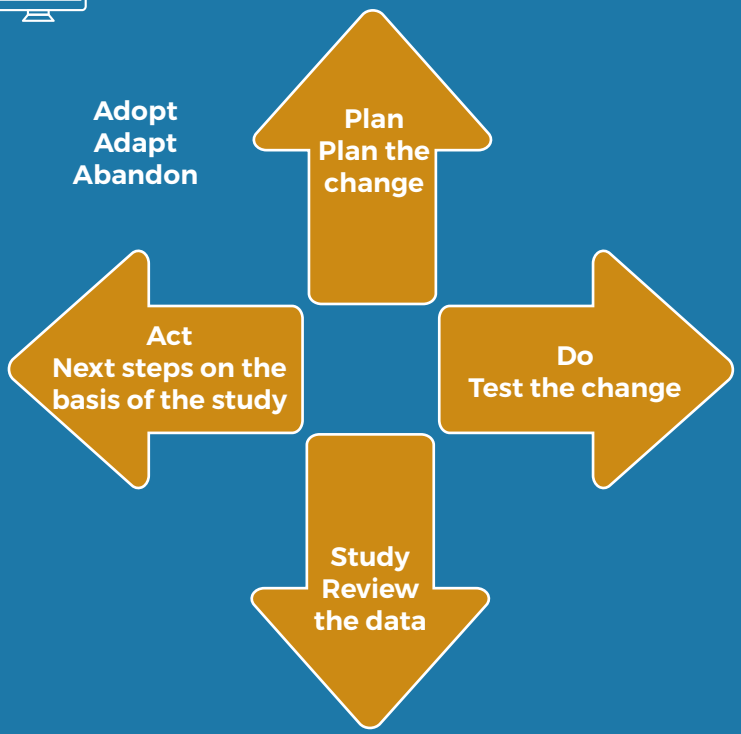
The PDSA cycle is very useful for this. PDSA stands for: Plan, Do, Study, Act These are steps to take when testing a new idea

Plan – you decide how the change idea will be implemented.

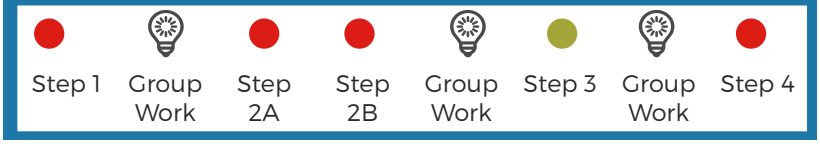
Do – carry out the change

Study – the team reviews whether the desired change has been fully implemented; what they learned from the test; whether it was a success or a failure based on the collected data

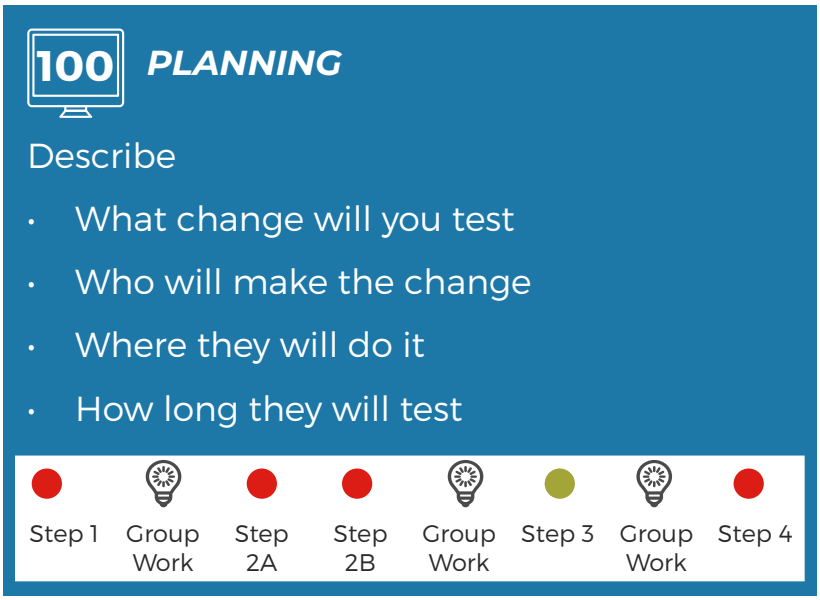
99 TEST CHANGES



- Did the change lead to improvement?
- Is it significant improvement?



Act – the team decides what to do next depending on the experience and result of implementing the change idea. It is important to emphasize that a team can do small scale PDSA cycles very quickly. Teams can do short PDSA cycles as well to learn how new ideas are working and to adapt them.

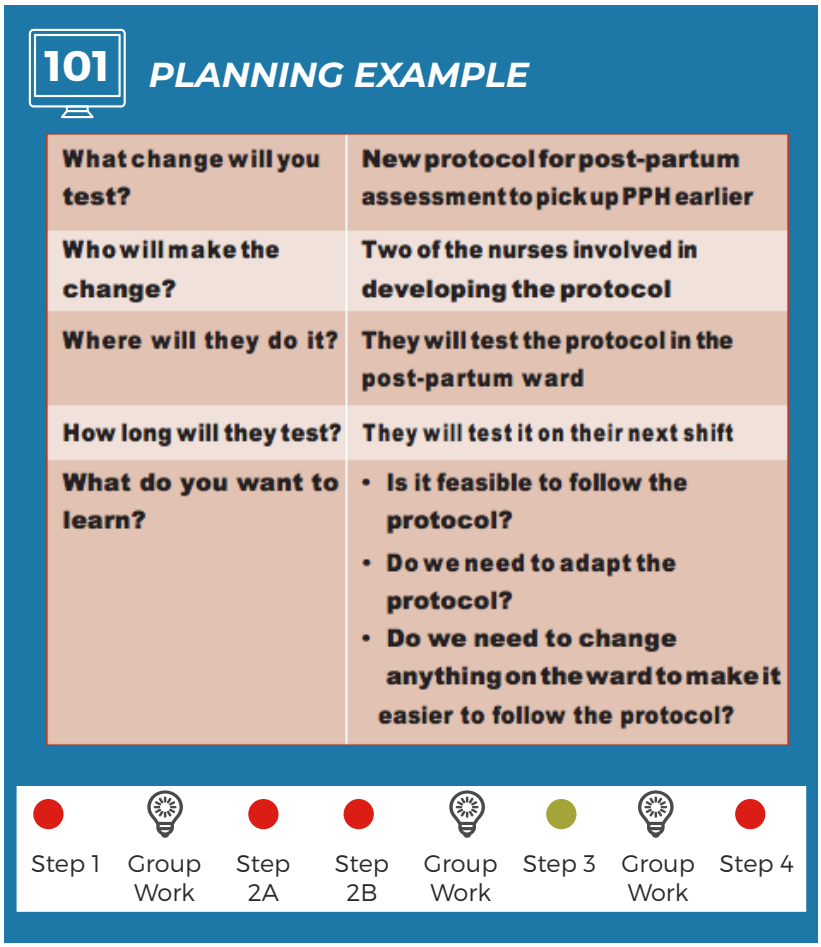


Describe the Plan step of the PDSA cycle:

- Plan – the team decides:
- Who will test the change/new idea
- What they will do
- When they will do it
- What you want to learn from the test

Describe the Plan step of the PDSA cycle:

- Plan
  - Share the example from the slide.
- Do
  - In this step the assigned persons in the team tests the change as per the plan developed in the previous step.



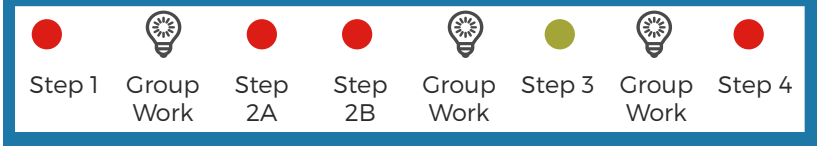
102 STUDY AND ACT

After testing the change you need to think about:

- Is this feasible in our setting
- What else needs to be done so this change can happen
- Do we think it will solve the problem

After answering these questions the team will decide if they should:

- Adopt
- Adapt
- Abandon



Study

- The team reviews what they learned from the test:
- whether it is feasible in our work setting
- whether it was successful in addressing the problem as hypothesized by the team
- Act

After studying the results of implementation the team will decide to:

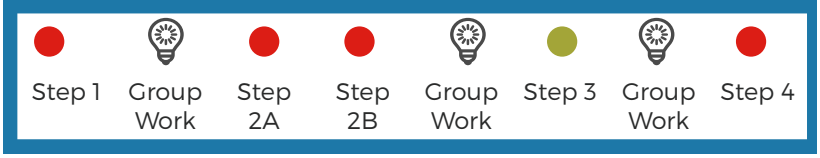
- Adapt the change – if it has not fully succeeded, make some modifications and implement again
- Adopt the change – if it works perfectly make sure everyone in the health facility uses this change
- Abandon the change – if it does not work at all or makes things worse so stop doing it

Implementing the change that led to improvement:

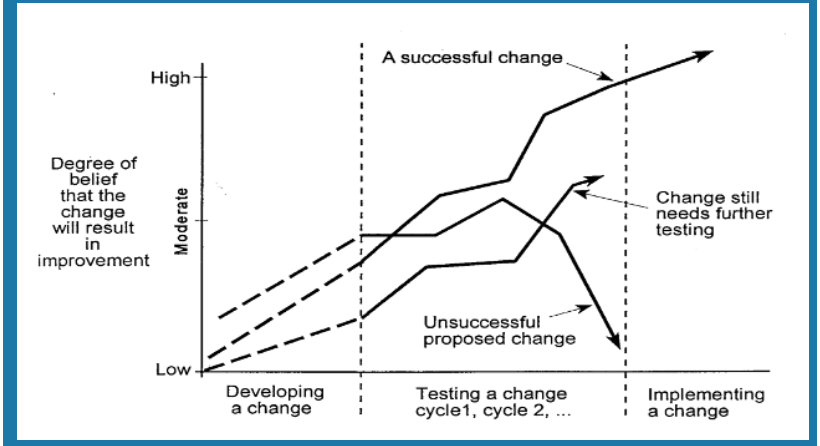
- We have to take care that the successful change is adopted by other units in the health facility/hospital since it is very likely improving care across the facility.
- At the same time it should be permanent practice.

103 IMPLEMENTATION

- Making the change in the new standard process across the health facilities (unit/ department)
- Specific steps taken to prevent from slipping back to the old ways of working. (Hardwiring through job descriptions, protocols etc.)
- System to keep an eye on key indicators to ensure improvement is sustained
- Making the successful change permanent and consistent



104 REMEMBER : TEST FOR MULTIPLE SITUATIONS TO INCREASE DEGREE OF BELIEF



Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

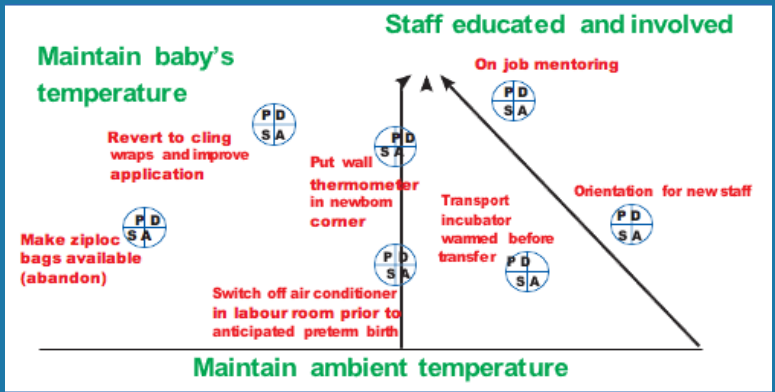
The "Act" part of the PDSA cycle is about making the decision to adapt, adopt or abandon the change. This decision should be guided by the lessons learned from the impact of the change on the system.

Once the degree of belief that the change will result in improvement is high and the risk is low or moderate, we can proceed in making the change permanently part of the system.

- It is rare to succeed with doing one PDSA cycle per change
- Try to test one change at a time. The changes in the illustration can happen at different times in the health facility.

105 MULTIPLE RAMPS OF CHANGES TOWARDS A SINGLE AIM

Aim: Reduce severe hypothermia in newborn babies by 50% in 3 months



Adapted from the Institute of Healthcare Improvement (IHI)

Step 1 | Group Work | Step 2A | Step 2B | Group Work | Step 3 | Group Work | Step 4

SESSION 6

STEP 4: Testing Changes

Activity #3 Section A: Case Scenario: Maternal Health Scenario (60 minutes)

- Explain that for Step 3 group work, there are two options. Teams can either choose to work on the Maternal Health Scenario (Scenario A) or on the Neonatal Health Scenario (Scenario B).
- The group should choose which one they want to focus on. If time permits, they could do the other scenario as well.

Case Scenario Part 7: Maternal Health Scenario

Ask the group to read **Case scenario part 7**. In the case scenario, there are people in the team who have different opinions about whether the change will work or not. This happens in all teams at some point. Pros and cons for alternative approaches need to be discussed. Emphasize that testing new ideas (even if not everyone agrees that they will work) gives groups a way to avoid conflict – instead of discussing whether a change will work or not, the people who think it will work should try it out on a small scale to learn whether it is worth considering.

Instructions: Discussion 4.1: Testing changes

In Discussion 3.2, ask participants to plan the initial test. Things to highlight include:

- Because some of the group are skeptical, these changes should be tested on a small scale (just a few patients)
- The plan should explain "who" will do "what", "where" they will do it and "when", for example, Nurse A ("who") will test preloading the syringe with oxytocin when the woman comes into the labour room ("what") for all the women who come to the labor room for delivery during her next shift ("when") in the labor room ("where"). Similarly, Nurse B will test preloading the syringe at the start of her shift.
- The key idea is to initially undertake a PDSA cycle on a small scale to learn if the change is feasible. The team will collect information about how easy the change was and if there is anything else that they need to do to make the change easier. The focus should be on learning how to make the change better and easier.

A reasonable approach to designing a PDSA to one of the ideas would be:

Plan	What change will you make?	Pre-loading the oxytocin syringe when the woman comes into the labour room
	Who will make the change?	One of the enthusiastic nurses will test the change
	Where will this take place?	In the labour room
	How will they test the change	The nurse will pre-fill a syringe when the woman comes into the labour room so that the syringe is ready and can be administered within one minute of delivering the baby
	For how long will the change be tested?	They want to see if the new way of working is feasible. They only need to do a couple of deliveries to learn if it is feasible before they decide to test throughout in one shift (8 hours)
Do		
Study	What do you want to learn from this test?	The team wants to learn whether there is enough time to do this when a woman comes into the labour room and where the pre-loaded syringes should be kept
Act		

Similarly, Nurse B will test preloading the syringe at the start of her shift.

Case Scenario Part 8: Maternal Health Scenario

Instructions: Discussion 4.2: What to do as you learn from PDSA cycle

Ask participants to read **Case scenario part 7** and start **Discussion 4.1** about what they should do after these PDSA cycles.

Highlight that the initial test showed which of the changes had to be abandoned and which could be adapted further. The participants may have different ideas about what to do next but some good next steps would be:

1. To arrange for extra cold packs to keep the oxytocin safe in the syringes
2. To test different number of syringes to reduce wastage

Case Scenario Part 9: Maternal Health Scenario

Instructions: Discussion 4.3: Testing changes

Ask them to read Case scenario part 9. This describes how the team progressed from testing and adapting the new way of working on a small scale (one shift at a time) to making it the norm for all deliveries in the hospital.

How many changes has the team tested so far?

The team has tested three changes:

Change 1 - Preload syringe when the woman enters labor room Change 2 - Preload syringe at start of shift

Change 3 - Preload syringe when all previously pre-loaded syringes have been used

How many PDSA cycles have they done?

Change 1: Preload syringe when the woman enters labor room

PDSA 1: this change did not work – they abandoned it

Change 2: Preload at start of shift

PDSA 1: test in one shift – this test taught them that they needed another cold pack and five pre-loaded syringes is too many

PDSA 2: in the next shift, they tested using three and getting the extra cold pack. This worked but they learned that they needed to label the date and time

PDSA 3: in the next shift, they learned that sometimes three syringes were not enough; so they developed another change to support change 2

Change 3: Preload additional syringes once all previously pre-loaded syringes have been used

PDSA 1: this worked well. This practice was introduced in all shifts (by all nurses)

Section B: Case Scenario -Newborn Health Scenario

Case Scenario Part 7: Newborn Health Scenario

Ask the group to read **Case scenario 7**. In the case scenario, there are people in the team who have different opinions about whether the change will work or not. This happens in all teams at some point. Emphasize that testing new ideas (even if not everyone agrees that they will work) gives groups a way to avoid conflict – instead of discussing whether a change will work or not, the people who think it will work should try it out on a small scale to learn whether it is worth considering.

Instructions: Discussion 4.1: Testing changes

Ask participants to plan the initial test. Things to highlight include:

- because some in the group are skeptical, these changes should be tested on a small scale (in just a few patients)
- the plan should explain *"who"* will do *"what"*, *"where"* they will do it and

"when" (when should include the scale – for example, Nurse X (*"who"*) will test how easy it is to put the baby after birth onto the chest of the mother, dry the baby on the mother's chest, initiate breastfeeding and weigh the baby and give vitamin K after the first breastfeed (*"what"*) for all babies she delivers during her next shift (*"when"*) in the labour room (*"where"*).

- the idea is to initially undertake a PDSA cycle on a small scale to learn if the change is feasible. The team will collect information about how easy the change was and if there is anything else that they need to do to make the change easier. The focus should be on learning how to make the change better and easier.

A reasonable approach to designing a PDSA cycle to test the new order of work would be:

Plan	What change will you make?	Change the order of activities after the baby is born (redesign the process)
	Who will make the change?	One of the enthusiastic nurses will test the change
	Where will this take place?	In the labour room
	How will they test the change	The nurse will try the new sequence of events: 1) put the baby on the mother's chest as soon as it comes out, 2) dry the baby on mother's chest, 3) cut the cord (delay to 1-3 minutes after birth), 4) encourage initiation of breastfeeding, 5) give vitamin K and weigh the baby after the first breastfeed has been taken
	For how long will the change be tested?	They want to see if the new way of working is feasible. They only need to do a couple of deliveries to learn if it is feasible so they decide to test in one shift.
Do		
Study	What do you want to learn from this test?	The team wants to learn if mothers like or dislike getting the baby on their chest immediately, if it is possible for the nurse to care for the baby on the mother's chest and if the nurses still remember to weigh the baby and give vitamin K before baby and mother go out of the labour room
Act		

Case Scenario Part 8: Newborn Health Scenario

Instructions: Discussion 4.2: What to do as you learn from PDSA cycle

After discussing the PDSA cycle, ask participants to read **Case scenario part 8** and start **Discussion 3.3** about what they should do after the first PDSA. Highlight that this initial test showed that most of the sceptic team members objections to the change were not factual (at least in the two deliveries that were part of the test) and that the way the equipment in the labour room was currently placed made

the new way of working more difficult. The participants may have different ideas about what to do next but some good next steps would be:

1. place the baby care trolley with sterile towels and other supplies next to the delivery table to make it easier to provide care while the baby is on mother's chest
2. test that the labour room reorganization works and also continue to learn if women are happy to receive their baby on their chest immediately after delivery and if nurses continue to remember to weigh the baby and give vitamin K.

Case Scenario Part 9: Newborn Health Scenario

Ask the team to read **Case scenario part 9**. This describes how the team went about reorganizing the labour room. After the team learned that following the new order of steps of caring for newborns (change 1) they decided to reorganize the room (change 2) to make it easier to care for babies on their mother's chest.

The nurses were not sure how to reorganize the labour room so they tried one particular way, realized that it could be better reorganized differently and did it again. A nurse then tried to follow the new order of steps in the reorganized labour room for one full shift.

Instructions: Discussion 4.3: Testing changes

Ask them to read case scenario part 9. This describes how the team progressed from testing and adapting the new way of working on a small scale (one shift at a time) to subsequently making it the norm for all deliveries in the hospital.

How many changes has the team in the scenario tested so far?
The team tested two changes: • Changing the order of steps of caring for newborns • Re-organizing the labour room
How many PDSA cycles have they done?
The team did four PDSA: • They tested the new order of steps for one shift • They reorganized the labour room without a mother there x 2 • They tested the new order of steps in the reorganized room for one shift and reorganized again after the first delivery

Case Scenario Summary

Staff team in this hospital decided that they wanted to improve care for mothers and babies. They reviewed their data and used a **prioritization matrix** to pick two specific **aims**:

a) increasing the use of uterotonic within one minute of delivery

b) reducing neonatal hypothermia

They then formed a **team** to work on these aims (STEP 1).

The team used **flowchart** and **fishbone** diagram to **analyze** the problem and identify key issues that they needed to address to reach these aims. They realized that their main problems were that the flow of care after delivery led to the situation that babies did not receive skin-to-skin care immediately after delivery which led to hypothermia, and that the procedure of filling a syringe with oxytocin after delivery led to a situation that most women did not get the drug within one minute of delivery (STEP 2).

Based on their analysis, the team decides to pre-load oxytocin syringes for the mother and to change the work flow for newborn care after delivery so that skin-to-skin care can start immediately. They **tested these ideas** first during one shift to see if these are feasible and then a series of **PDSA cycles** to identify the best way to work for different nurses working at different shifts on different days (STEP 3).

They also involved all the other staff, nurses and cleaners so that they all understood the **new way of working** (STEP 4). The figures below show the progress of the team.

Figure 6: Percentage of women receiving a uterotonic within one minute and women with post-partum hemorrhage

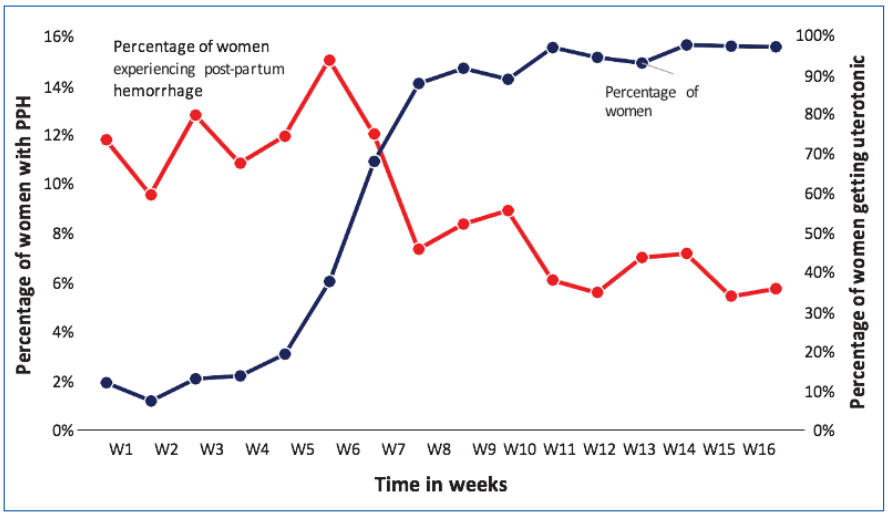


Figure 7: Annotations show the relationship between various PDSA cycles and improvement in the indicator

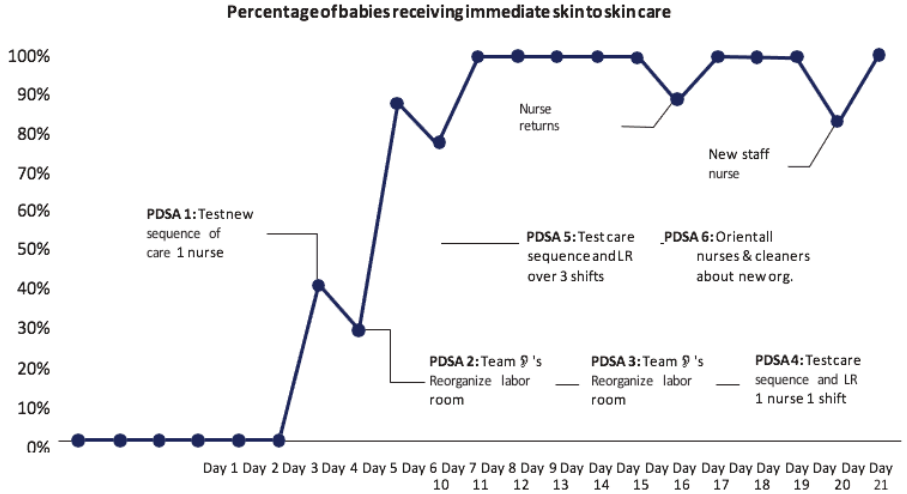
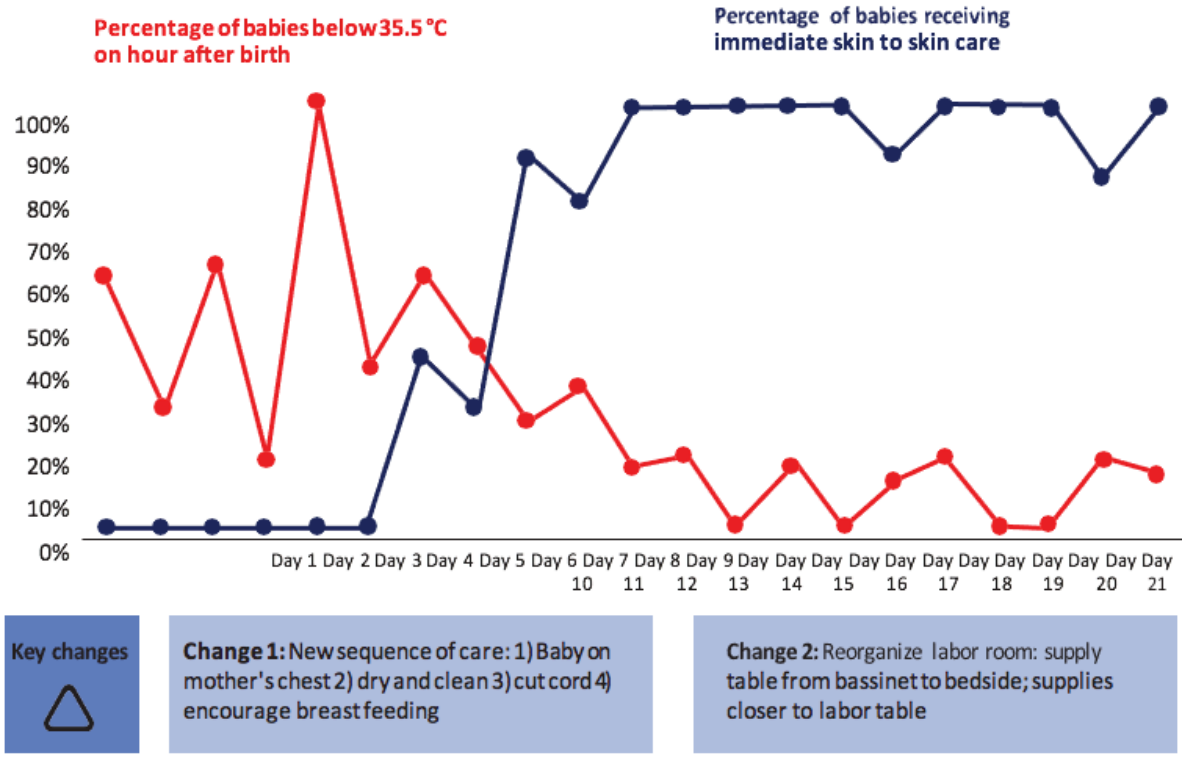


Figure 8: Percentage of babies with hypothermia and percentage of babies receiving skin- to-skin care



Activity # 5 Next steps (10 minutes)

Discussion on:

- Activities to be accomplished till next session (Action plan)
- Date and time of next session
- Coaching and mentoring support: during the week the facility trainers will support the trainees to work on the deliverables for that week.
- Next week Deliverables:
  - The team continue working on the next assignments
  - Initial plan for testing changes using PDSA worksheet.
  - The execution of initial plan for testing change (if the team have already started)
- The Expected time the team to invest is approximately 2-3 hours in that week.

STEP 5: SUSTAINABILITY, SPREAD & SCALE UP OF IMPROVEMENT

Duration: 60 minutes

SESSION OBJECTIVES: AT THE END OF THIS SESSION, PARTICIPANTS WILL BE ABLE TO:

Activity # 1: Recap the previous session (10 minutes)

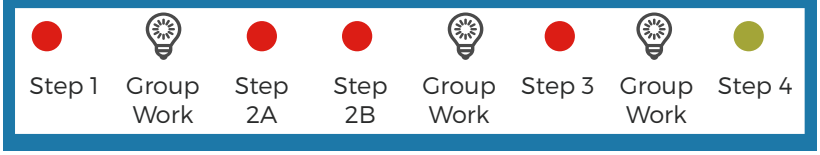
- Key lesson learned from the previous session
- Reflection on the accomplishment and challenges of action plan
- Questions and problems

Activity # 2: Introducing the new topic/information

- Discuss the Session objectives (below slide # 106): 5 minutes
- Interactive Presentation and discussion (Slide 107 to 117): 45 minutes

106 ***LEARNING OBJECTIVE***

- Identify Key practice needed to sustain improvement
- Plan Diffusion of innovation through spread and scale up
- Plan and manage diffusion of innovation, through spread and scale up

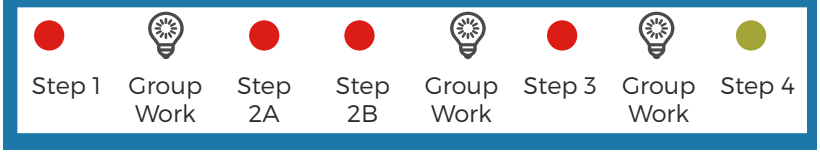


Sustainability:

- The ability to be maintained at a certain level; looking in the progress made and continuously build upon it; holding the gains.

107 ***DEFINITION***

- Sustainability
- Spread
- Scale up



Spread:

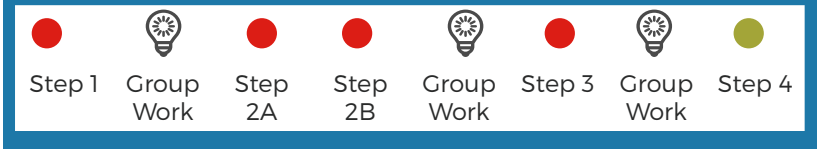
- Adoption and replication (with little modifications) of an intervention/change within a system;
- Taking a new system or intervention/change and replicating it at other sites

Scale up:

- Addressing the infrastructure or resources or other system issues that arise during implementation and spread of changes to a larger number of individuals/units.

108 ***SUSTAINING IMPROVEMENT***

- Once improvements are implemented, practices need to be established to ensure that the change becomes the normal way the system is run.

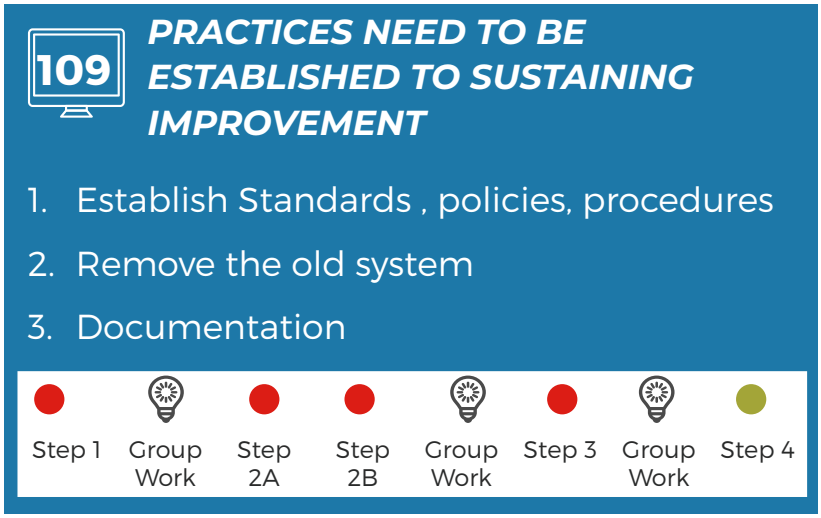


Once you have found successful solutions that work it is important to take some concrete steps to make sure that they are sustained in the health facility. Ideas include:

- Developing new guidelines of patient care or standard operating procedures
- Building a work culture in the health facility focused on improvement in quality of care and looking for further opportunities to improve it.

- You can also help your other colleagues (beyond your own team) learn by sharing your work. Some things will be contextual but some can be shared and could work with the same success.

1. **Standards Establish** or update specific recognized policies, procedures, standards that act as a model or guidelines for the changed process.

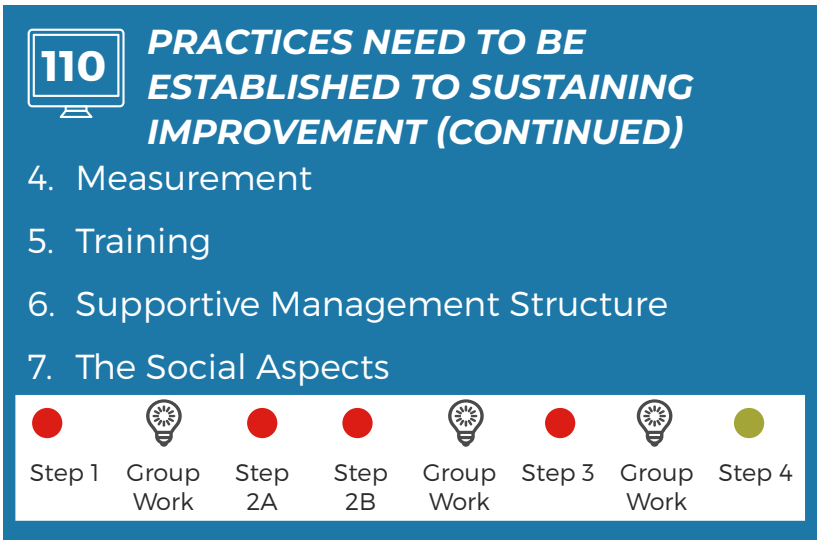


2. **Remove the old system**
Remove the old system from the standards and incorporate the new/changed system, otherwise staff, no matter how supportive of the new system, will always be tempted to go back to the old system

- Hardwiring" is what we call the steps we take to prevent the system from slipping back to the old ways of working after we have identified and tested a better way of working.

3. **Documentation**

- Documentation needs to be continuously updated, incorporating any new knowledge of the system and its performance.
- Documentation is key to create a shared sense of the systems to be improved in which all stakeholders in making improvement share an understanding of the processes and systems that they are seeking to improve, and are clear on their contribution to the sought-after improvement.



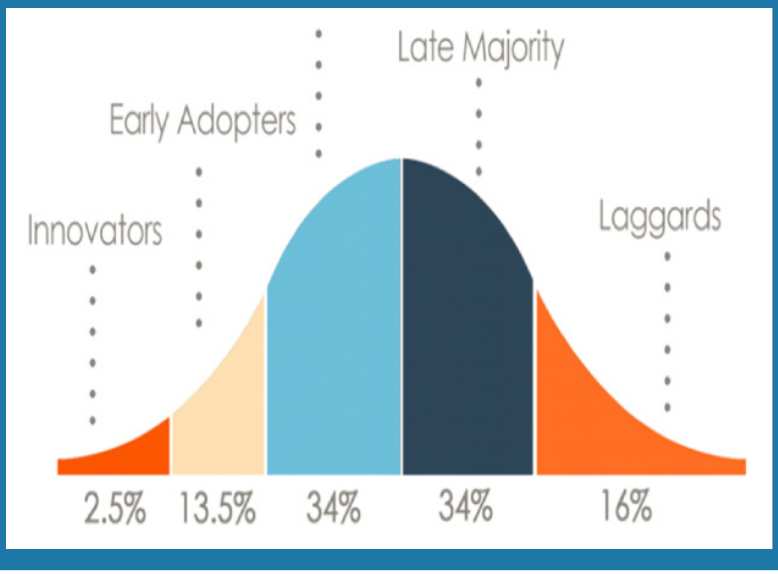
4. **Measurement:** Provides robust, transparent feedback systems to review whether key the system is still performing at the level of the new standards/ policies set by management

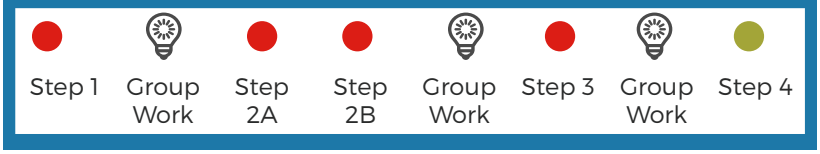
- Measurement is a source of learning during implementation and a method of tracking whether improvement is sustained

5. **Training:** Some form of training is usually required to implement a change. If the change is more complex and is more of a systems redesign, extensive training may be required to implement the change.

6. **Supportive management structure:** important in holding the gains, to create a culture of improvement. In order to support the sustainability, the hospital's management should treat quality of care as a high priority, devoting regular attention, creating accountability systems for improvement, making resources available and recognizing the successes.
7. **Social Aspects:** Connect with hearts as well as minds, engage with individuals' values and beliefs

111 ***DIFFUSION OF INNOVATION***

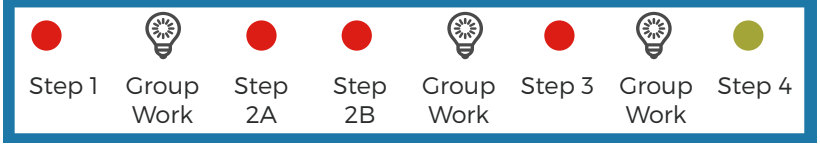




- Not every innovation/successful change is able to successfully spread
- Initially, spread is slow from innovator, who introduces a new idea in to the culture and early adopters who pick up the idea gradually. When the number of early adopters reaches a critical mass, between 5-15%, the process becomes irreversible and will spread through the culture, it has bridge the chasm and the early majority has started accepting the innovation

112 **There are five characteristics that could affect the rate at which innovation gets adopted by society**

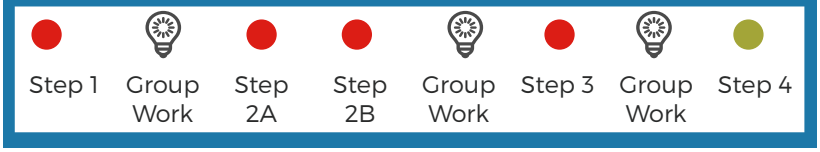
- Relative Advantage
- Compatibility
- Complexity
- Testability
- Observability



- **Relative Advantage:** is the innovation better than the current way? Will people perceive it as better?
- **Compatibility:** How does the innovation fit with people's past experiences, and present values and needs? If it does not fit well, it won't spread well
- **Complexity**: How difficult is the innovation to understand and apply? The more difficult the slower the adoption process.
- **Testability:** Can people try out the innovation first, allowing the innovation to be tested and abandoned if desired.
- **Observability:** How visible are the results of using the innovation. Less visible ideas are likely to spread slower.

114 USEFUL TIPS TO SUSTAIN SPREAD

- Successful team involves new members in Health Centers/PHC to join; help forms multiple teams
- Spread best practices among colleagues in the Health Centers/PHC
- Keep higher ups informed: Hospital team informs MS/ Director and they inform the district/state
- System rewards successful teams – Certificates, QI jewel of month
- System provides opportunities to successful teams to disseminate and share their success widely



It is also important to build more enthusiasm among health care teams for quality improvement. Useful strategies for doing this include:

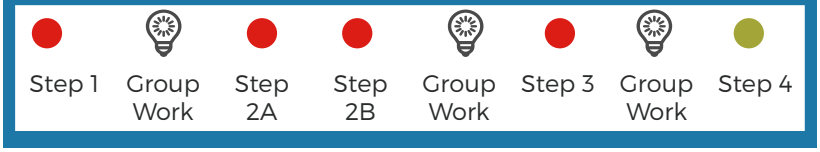
- Build multiple teams in the health facility so that they can learn and support each other
- Health care team should keep higher-ups in the system informed and tell them about your success
- Manager of the health facility should continuously encourage the health care team to incrementally improve quality of care
- Rewarding people who are involved in QI efforts
- Give opportunities for them to share their work

Success Factors

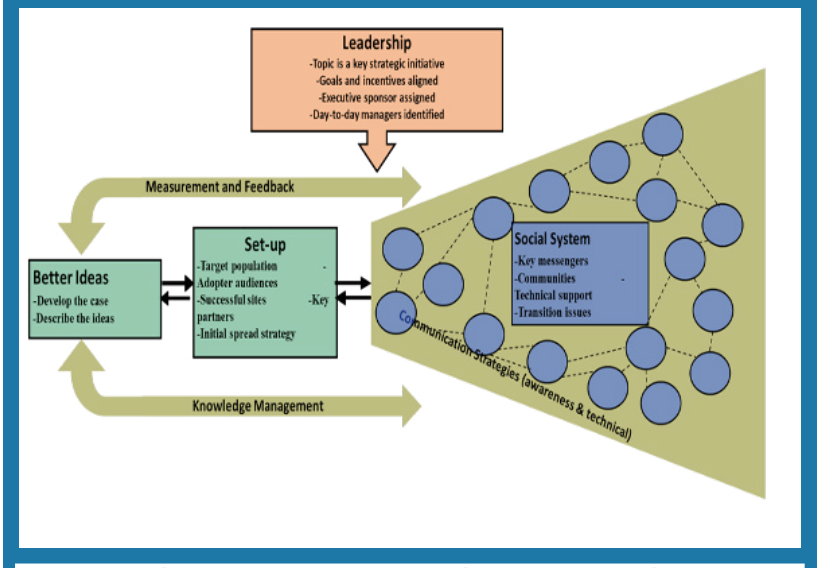
- Highlight the importance of a champion: A champion is someone who takes ownership and leads the QI initiative in the health facility or in the health system. Explain the qualities of a champion from the slide.
- Focus on the big picture. The point is not to mechanically pick aims, do fish bone exercise, draw charts and undertake PDSA cycles but to ensure best health outcomes for the patients. QI is another tool, such as a stethoscope and antibiotics that can let us help more patients.

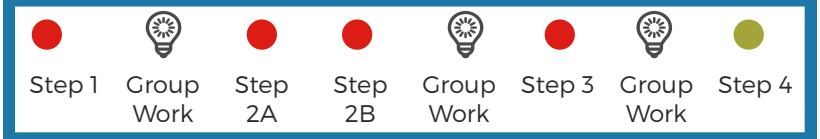
113 KEY TO SUCCESS

- **Local champion:** A team leader who respects others, is a keen listener, uses collective wisdom of the team rather than being directive, identifies & harnesses key strengthens of members, sets example
- **Personal aspirations:** Remember most of us entered medical profession with aim to alleviate sufferings and help society
- **Positive attitude:** Being positive and prepared to address barriers, challenges which prevent us achieving this aim



115 FRAMEWORK FOR SPREAD AND SCALE UP OF IMPROVEMENT



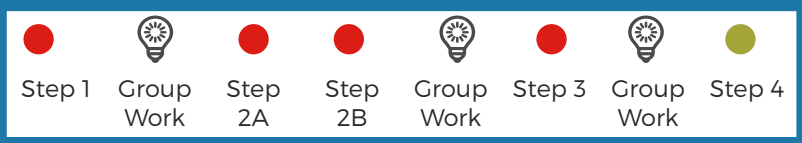


Frame work serves as a guide for leaders to use in incorporating the components into their spread strategy:

- the role of leadership,
- the organizational setup to support spread,
- the description of the new ideas,
- methods of communication,
- nurturing of the social system,
- measurement and feedback systems, and
- knowledge management.

117 SUMMARY

- Once improvement has been achieved we need to do Celebrate ,Spreading change ideas, Build upon it; holding the gains
- Practices need to be established to Sustaining Improvement includes Standardize, Remove the old system, documentation, measurement ,training , and supportive management and social aspects
- Not every innovation/successful change is able to successfully spread. Need for a Framework for planning and implementing for Spread and Scale Up of new ideas/ changes



Activity 3: wrapping up of the onsite (30 minutes)

- The established team will continue the QI
- Coaches will continue support the QI projects
- Plan of action will be prepared by the team and submitted.

DEVELOPING OWN QUALITY IMPROVEMENT PROJECT

Key points to emphasize for planning a QI project

STEP 1

Identifying the problem, forming a team and writing an aim statement the

PICKING AN AIM:

Key points	Common reasons for failure
We want participants to enjoy their first improvement project and find it useful so that they feel excited and encouraged to move onto a second improvement project. Help them realize that QI is quick, easy and useful. This is the most important part of the training. Things to think about in helping them pick their first QI project are: — Gets **RESULTS**: Help the team pick a project that is likely to get results quickly within days or weeks rather than months. Factors that help to get results quickly include: • Identify changes that can be tested frequently. • The process you want to change / improve happens frequently. • Data to measure improvement are easily available and do not need a new system to collect. — Most of the process they are targeting takes place in one place in their health facility. — Does not require too many additional resources (including staff time) — Is **RELEVANT** to the people doing the work and are wanting to improve. Team members feel: • it is important and has impact on patient outcome or patient satisfaction • data are as objective as possible so they can be sure that there is improvement • it is something that is likely to reduce work for team members (improve efficiency) — Is **RECOGNIZED** by others • You want the team to get appreciation from as many people as possible • Projects that solve problems that leaders and teams are interested in or make patients happy are good	— The team selects a problem which is too complex — The problem and choice of aim is such that changes cannot be tested quickly – results are not evident in short time: • Infrequent event • Involves follow up so the effect of the change is only available days or weeks later — There is no easy source of objective data collection — Data collection is done by inspection/observation or checklist which takes a lot of resources and also interferes with teamwork — The aim is vague (not SMART) — Inappropriate or heterogeneous team that cannot come to a common understanding and fail to agree to a common project.

FORMING A TEAM

Key points	Common reasons for failure
Improvement requires changing the way we work. While we might want to change people's behaviour, it usually is not pleasant when someone tells us do so. The people who will have to change how they work should be on the team and part of the process from the very beginning. — Look for **volunteers**. You want people who are **interested** in making changes and will self-motivate. — Titles and hierarchy should not much influence team selection. You want people who understand the problem and have an **ability to fix** the problem at their level. — **Each step** in the process needs to have a **representative** on the team — Good people to have on a QI team: • Are **enthusiastic!** – they want to make changes • Are **involved!** – they are already doing the work that needs change • Are **influential!** – other people listen to them and they can get things done — Too many people in a group is hard to manage; try to keep around 6-8 people — The **team leader** is not necessarily the senior-most person but more a middle rung person who is **aware of the ground realities** and working conditions and at the same time can move things around.	— The team is made up of only senior people who then issue **directives** for junior people to change how they work. This creates problems with getting the junior front line health-care workers to agree to change the way they work. If you want nurses to do something differently, then nurses need to be involved closely in the QI team and be the main source of ideas about how the health care team should work differently. — The team is chosen **based on designation** of the people rather than interest. — **Poor communication** within the team. It is important to allow everyone to give their opinion. — Many people on the team are not involved in the day-to-day work that they are **trying to improve**. — The team is **too big** and is hard to manage and reach consensus. — The team is **too small** and leads to fatigue as members are overworked.

STEP 2

ANALYZING THE PROBLEM

Key points	Common reasons for failure
People often develop or have a fixed set of solutions that they fall back on when they need to fix a problem. These include: more resources, more training and management (administrative) directives. Not all problems can be fixed by these standard solutions. The purpose of system analysis is to come up with specific and different types of solutions. — **Use analysis** to find the root cause of problems. — Try to **find the few key factors** that account for most of the problem (Pareto's principle). — Help the teams think about how **reorganization** of the process of care can help in fixing the problem. — Use the **right tools**. For example, • Flow charts to track the steps of care and movement of patients through the system • Fishbone analysis to categorize different problems • Pareto chart to identify the most important causes • 'Five Whys' to identify root cause	— The team **does not do any analysis** but thinks that they already understand the problem and jump to solutions. — The team thinks **that analysis will take too long** so decides not to do it. — The team **analyses how the process is supposed to work** rather than study how it actually works. — The team **does not have the people** who are responsible for doing the work that needs to be improved, so deep analysis cannot be achieved. — The hospital management or the health care team ends up **blaming** individuals. — The team tries to use multiple tools, all at once, to fix the problem.

GENERATING CHANGE IDEAS

Key points	Common reasons for failure
The only way to deliver better care for your patients is by doing something differently. This requires making changes. After identifying the problem in the analysis stage, the team needs to come up with some change ideas. Change ideas will improve care if **1) they are the right ideas** **2) they are put into action** **3) they are properly adapted to the local context** Tips to support teams to come up with change ideas that meet these three criteria include: The right idea: • Being careful with analysis helps teams develop good change ideas • Helping teams think about all the steps that will link, implementing the change to getting the outcome you want. • Never assume the idea is correct and will definitely succeed unless the team has tested it in the local context. Putting the change idea into action: • Healthcare workers are more likely to adopt changes if they are part of the team right from the planning stage. Having the people who will have to change is crucial to coming up with change ideas that you want to implement. • Involving individuals who have authority to get the idea implemented is also crucial. Adapting it properly to the local context: • Almost all change ideas need to be tested and adapted (see next section) to local situation	— Change idea did not come from a careful analysis. The team is doing 'more of the same' – waiting for more resources, doing more training, giving more orders — The idea is imposed by senior people and the 'workers' do not buy in to it or carry it out.

STEP 3

DEVELOPING A MEASUREMENT SYSTEM

Key points	Common reasons for failure
Do not scare people with technical jargon, sophisticated theory and math around measurement. People do not need to learn this in the initial phase. There is not enough time to explain the more complex issues around measurement in this training and it is not helpful to introduce complex ideas without demystifying them. Instead **focus on the basics**: — Looking at **data over time** is crucial and more frequent measurement (daily or weekly) is better than less frequent (monthly). — **Only collect the data that you are going to use** — If possible, try to have both a process and outcome measure. Sometimes it may not be practical to have both types of measures: For example, to improve Vit K administration in newborn babies we cannot feasibly measure the negative outcome of bleeding. So we only measure the process of Vit K administration for the purposes of the QI project. — If possible, try to use data that are already recorded in the health facility or that will be very easy to collect	— Data collection is prioritized over undertaking changes. — Too much data are collected and **not enough are used or acted upon**.

STEP 4

TESTING CHANGES

Key points	Common reasons for failure
— Most new ideas do not work without adapting them to the local setting. — Testing new ideas to learn if they are working or to try entirely new ideas is critical for getting improvement. — Encourage your team to plan some PDSA cycles that only take place on one or two patient initially or can be completed in a few days.	— Not enough small scale testing undertaken — The team does not discard or modify the changes that did not work. — The team does not come up with new ideas based on what they have learned from previous tests. — The team goes ahead with a test on a larger scale without knowing if the change idea will work.

STEP 5

SUSTAINING IMPROVEMENT

Key points	Common reasons for failure
For successful ideas to become a part of routine work, it requires concrete action in the form of new guidelines, job responsibilities and standard operating procedures in the health facility to which everyone has to comply.	— Successful change ideas are dumped after an improvement project ends. — Ignoring the previous improvement activities once team embarks on a new QI activity. — Not assigning a lead person for a completed QI project, who can share continuously the data and gains. — Efforts are not made to scale up small successes across different staff, shifts, units, and departments in the hospital/ health facility. — Not engaging staff beyond improvement team. — Not changing the system to support the improvement.

QUALITY IMPROVEMENT PROJECT TEMPLATE

STEP 1

IDENTIFY PROBLEM, TEAM AND AIM STATEMENT

What problem do you want to solve?

Who should be on your team?

Member names and designation:

Team leader:

Recorder:

Date of first team meeting:

What is your aim statement?

STEP 2

ANALYZING THE PROBLEM AND GENERATING CHANGE IDEAS

What tools will you use for the analysis?

What information do you want from each tool that you plan to use?

Develop Changes:

What changes do you think will help solve the problem and why do you think it will improve care?

Change	Why do you think it will improve care?

QUALITY IMPROVEMENT PROJECT TEMPLATE

STEP 3

DEVELOPING MEASUREMENT

What measures will you use?

Process Measure:
Numerator:
Denominator:

Outcome Measure:
Numerator:
Denominator:

How will you collect the data?

Process measure:	
Person responsible for data collection:	
What data sources will you use?	
What baseline data will you collect?	
How frequently will you collect and review data?	

Outcome measure:	
Person responsible for data collection:	
What data sources will you use?	
What baseline data will you collect?	
How frequently will you collect and review data?	

STEP 4

TESTING CHANGES

PDSA cycle 1		
Plan	Change to be tested	
	Who will test? (if this person is not on the QI team, he/she should be added)	
	Over how much time will the test be done?	
	When will it take place?	
	What will you measure?	
	What do you predict will happen?	
Do		
Study	When will the team meet to review?	
Act		

PDSA cycle 2		
Plan	Change to be tested	
	Who will test? (if this person is not on the QI team, he/she should be added)	
	Over how much time will the test be done?	
	When will it take place?	
	What will you measure?	
	What do you predict will happen?	
Do		
Study	When will the team meet to review?	
Act		

STEP 5

SUSTAINING IMPROVEMENT

QUALITY IMPROVEMENT PROJECT REVIEW SHEET

STEP 1

IDENTIFYING A PROBLEM, FORMING A TEAM AND WRITING AN AIM STATEMENT

Why is this a good aim?

Can you get results quickly?	
What extra resources do you think will be required?	
How important is the aim to the QI team - has the team used the prioritization matrix?	
Who else will think the aim is important?	
How can you motivate others to support this initiative?	

Why is this the right team? Do you have people on the team who are:

Enthusiastic about fixing this problem?	
Involved in delivering care related to this problem?	
Influential enough to get more people involved?	

STEP 2

ANALYZING THE PROBLEM AND DEVELOPING CHANGE IDEAS

Why is this the right analysis plan?

Will the tools you have chosen help you to identify the right changes?	
Do you have people on the team who can analyse what happens at the patient level?	

Will these changes address the root cause of the problem?

How do the changes you are planning address what you found in your analysis?	
If all of your changes are related to education or management directives, how sure are you that lack of information or lack of direction is the root cause?	

STEP 3

DEVELOPING MEASUREMENT

Why is this the right measurement plan?

How difficult will it be to collect the data?	
Easy to measure valid data?	
Are these new data variables?	
Can you review these data frequently?	
What will be the plan to share and analyse the data?	

STEP 4

TESTING CHANGES

How easy will it be to put these changes into action?

Were the staff who will have to make these changes involved in picking them?	
Will you need to change anything else to test these changes?	

Are you making sure that you can learn as much as possible from your tests?

Is there any way of doing the testing faster?	
What will you do if the change does not work?	

STEP 5

SUSTAINING IMPROVEMENT

How should we get other people involved?	
How can the organization and its leaders promote improvement?	

PLAN OF ACTION FOR THE TEAM

By this time, participants will have understood the basic steps of quality improvement, prepared a small QI project and have ideas on how to carry out a quality improvement project.

In this session, teams will prepare a plan of action to undertake upon returning to their duty station. A matrix/table is provided in the learner manual on section 4 in which they can fill in the details.

Date of Planning	Activity	Why are we doing this/ what output is expected?	Responsible Person	By when will this be done?	Status (Not started, In progress, Completed)	Comments; Extra resources needed

Give 15 minutes to complete this exercise working as the hospital teams.

Column 1: Mention the date of Planning

Column 2: Identify activities / tasks to be done: Here are some examples of initial activities that may be needed upon return to the facility.

Organize a briefing of the staff in their hospital or unit (e.g. with staff from paediatrics, neonatology, Ob-Gyn)

Organizing a briefing for the leadership of the hospital - the superintendent or director to share the quality improvement methods they learnt in the workshop and their planned project.

Identify team members to work on the project

Orientation of selected team members to the quality improvement concepts and methods

Review the project (they have planned during the workshop) with the team and revise the project plan if needed

Column 3: Mention the reasons for undertaking each activity – what will it achieve (output)?

Column 4: Person(s) responsible for carrying out each specific activity.

Column 5: Timeline by when each activity is expected to be completed

Column 6: Current status of the activity. This column can be periodically updated as the project progresses.

Column 7: Comments. Any additional points of note can be mentioned here. Such as any anticipated obstacles or supporting factors for each planned activity. Men-

tion if any extra resources will be required.

In the plenary feedback session (15 minutes), request one hospital team to share the activities they have identified. Provide opportunity to all participants to discuss and share additional or alternate activities as per their local contexts. If time permits, ask another hospital team to share their activities especially if they have identified some different and additional activities. In this way, all participants will be clear on what specific activities they will need to undertake upon returning to their hospitals.

WRAP UP SESSION

- Congratulate participants for all their hard work
- Ask participants to fill in the workshop feedback form and collect the forms.
- Create a social media group – for example a Facebook page or a Whats App / Viber group / email group to enable ongoing sharing and learning among participants. It is important to include one or two facilitators as online resource persons in the group.
- Facilitator provides his/her contact information and a list of technical resources for any future information and technical needs.

APPENDIXES

APPENDIX 1: STEPS IN CONSTRUCTING A PARETO CHART

	Steps in constructing a Pareto Chart:	
1	List all the possible categories/groups	
2	Collect the data – how many of each	
3	Arrange the categories/groups from the highest to the lowest	
4	Calculate the total, add up the frequencies	
5	Calculate percentage for each category/group	
6	Calculate the cumulative percentage	
7	Draw the axes:	
	a. horizontal: categories/groups	
	b. vertical left: frequencies/ 'raw' data	
	c. vertical right: cumulative percentage	
8	Plot the data in your graph	

APPENDIX 2: STEPS IN DEVELOPING A PRIORITIZATION MATRIX

1	Create a table/matrix	
2	List all the health problems in the left most column (vertically)	
3	List all the criteria for rating in the top row (horizontally)	
4	Ensure you have one empty column on the right side of the table/matrix for your priority scores	
5	Determine a rating scale, for example:1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree)	
6	Weight the criteria, some criteria may have a different level of importance so you may way them twice or three times other criteria which are less important	
7	Rate the health problems against each of the criteria	
8	Calculate the priority scores	
9	You can now identify which health problem has highest priority	

APPENDIX 3: STEPS TO IN CONSTRUCTED A PROCESS MAP

1	Define the process boundaries - beginning and end	
2	Spell out the focus of the process map: a Patient/Client; an expenses claim form; a patient folder etc.?	
3	Be clear on what you are mapping: current or ideal process	
4	Show the steps of the process	
5	Follow one path at a time at decision points	
6	Defer for future completion if team lacks the detail understanding to complete a section	
7	Review the completed diagram	

APPENDIX 4: STEPS IN CONSTRUCT A FISHBONE DIAGRAM

1	Define problem (negative form)	
2	Draw a line horizontally along the page. This line will be the "spine" of the fish.	
3	Draw the head of the fish and write the problem inside.	
4	Brainstorm and identify the main categories (causes) contributing to the problem (ensure to include internal and external causes	
5	Draw the “bones” – label each bone with a main cause using a noun. All the bones/lines should point in the direction of the problem	
6	Brainstorm on sub-causes and why for each of cause – write them alongside the bones	
7	Review the diagram	
8	Give an appropriate title	
9	Identify areas where immediate changes can be tested	

APPENDIX 5: STEPS INVOLVED IN CONSTRUCTING A RUN CHART

The following are the steps involved in constructing a run chart:

1. State the question that the run chart will answer and obtain data necessary to answer this questions.
2. Develop the horizontal axis. This is usually is in a time scale (days, weeks, months, quarters, years etc.).
3. Develop the vertical axis.

- Estimate the range (the smallest value to the largest value) of the data points to be plotted on the vertical axis
- Then use this range to develop a vertical scale for the run chart
- Be sure to construct your vertical scale so that it is high or low enough to encompass variation in future data and reference values such as your goal or a benchmark if it is meaningful to the chart

4. Plot the data points.

- Make a dot or another symbol
- The dot should always be distinguishable from the line
- The data are communicated through the dots, not the line

5. Label the graph completely with a useful title.

- Label the horizontal axis with the sequence of data (case 1, case 2 or Jan, Feb and etc.)
- Label the vertical axis with the name of the measure or characteristics that you are studying

6. Calculate and place the median of the data on the run chart.
7. Add additional information to the chart.

- A goal or target line if appropriate
- Annotate unusual events, changes tested or other pertinent information at an appropriate time location

APPENDIX 6: QUALITY IMPROVEMENT PROJECT TEMPLATE

STEP 1

PROBLEM, TEAM AND AIM STATEMENT

What problem do you want to solve?

Who should be on your team?

Member names and designation:

Team leader:

Recorder:

Date of first team meeting:

What is your aim statement?

STEP 2

ANALYZING THE PROBLEM AND GENERATING CHANGE IDEAS

What tools will you use for the analysis?

What information do you want from each tool that you plan to use?

Develop Changes:

What changes do you think will help solve the problem and why do you think it will improve care?

Change	Why do you think it will improve care?

STEP 3

DEVELOPING MEASUREMENT

What measures will you use?

Process Measure:
Numerator:
Denominator:

Outcome Measure:
Numerator:
Denominator:

How will you collect the data?

Process measure:	
Person responsible for data collection:	
What data sources will you use?	
What baseline data will you collect?	
How frequently will you collect and review data?	

Outcome measure:	
Person responsible for data collection:	
What data sources will you use?	
What baseline data will you collect?	
How frequently will you collect and review data?	

STEP 4

TESTING CHANGES

PDSA cycle 1		
Plan	Change to be tested	
	Who will test? (if this person is not on the QI team, he/she should be added)	
	Over how much time will the test be done?	
	When will it take place?	
	What will you measure?	
	What do you predict will happen?	
Do		
Study	When will the team meet to review?	
Act		

TEST CHANGES: PLANNING INITIAL PDSA CYCLES

PDSA cycle 2		
Plan	Change to be tested	
	Who will test? (if this person is not on the QI team, he/she should be added)	
	Over how much time will the test be done?	
	When will it take place?	
	What will you measure?	
	What do you predict will happen?	
Do		
Study	When will the team meet to review?	
Act		

STEP 5

SUSTAINING IMPROVEMENT

APPENDIX 7: TRAINING EVALUATION TOOLS

7.1. DAILY EVALUATION FORM

The purpose of this daily evaluation tool is to assess how participants felt about the training program so that make all appropriate intervention to improve the training. Please read the statement and rate your response honestly.

DAY _____ (State the Date) Session covered today _____

Aspect/Areas of training	Agree	Neutral	Disagree
Trainer (s)			
The trainer was well organized (arrive on time and comes with prepared with all the learning resources) and role mode			
The trainer masters the subject matter content			
Trainer was **creating positive learning environment** (treat respectively, help to feel comfortable, etc..)			
The trainer was **use effective facilitation skill** (display enthusiasm, communicate in the way that is easy to understand, Keep eye contact with students, use loud voice , etc...)			
The trainer encourage me to maximally engage / participate in the learning materials			
The trainer was effectively **facilitate group learning activities** (tell, the objective of the group activity, give clear direction, give opportunity to react , give feedback, and summarize the activity etc..)			
Session objective, content & Delivery			
Objectives of the session was clear for me			
Content was relevant to me (related to my current or future role & responsibility)			
The content was organized in logical sequence			
The learning methods and activities allow me to maximally engage (to think, practice, reflect....)			
Time allocated to the session is adequate to achieve the session objectives			
Logistic			
Training venue/hall, seating arrangement, tea/coffee breaks was convenient			

What did you like most? _____

_____

What did you like least and need to be improved? _____

_____

Any Other comment _____

_____

7.2. END OF TRAINING EVALUATION

The purpose of this end of training evaluation tool is to assess how participants felt and learn about the training program so that make all the necessary action to improve the future training. Please read the statement and rate your response honestly

Aspect/AREA of the training	Agree	Neutral	Disagree
Trainer /facilitators			
The trainers were well organized (arrive on time and comes with prepared with all the learning resources) and role mode			
The trainers masters the subject matter content			
Trainers were creating positive learning environment (treat respectively, help to feel comfortable, etc..)			
The trainer were use effective facilitation skill (display enthusiasm, communicate in the way that is easy to understand, Keep eye contact with students, use loud voice , etc...)			
The trainer were encouraged me to maximally engage / participate in the learning materials			
The trainer were effectively facilitate group learning activities (tell, the objective of the group activity, give clear direction, give opportunity to react , give feedback, and summarize the activity etc..)			
TRAINING objective, content, and DELIVERY			
Training goal and objectives were clear and achievable			
The scope and the difficulty level of the training were appropriate for me			
The topics/sessions covered for this training were adequate.			
The module session was well organized in logical sequence			
All Training content in each sessions were relevant and directly related to my current and/or future job and responsibilities			
The learning methods and activities allow me to maximally engage (to think, practice, reflect....)			
The training balance both theoretical and practical parts			
The duration of the training were adequate to achieve the training goal and objectives			
Training materials and resources were up-to-date, clear and helpful			
Over all The training help me to acquire all the essential KAS and make me confident to perform QI activities			
Training logistic and coordination			
Training venue/hall, seating arrangement, tea/coffee breaks , toilets etc... were appropriate and convenient			
The Training coordination were alright			

Over all, how do you rate the following aspects of the training?

		Poor			Excellent
Trainer/facilitators competence	1	2	3	4	5
Training design and delivery	1	2	3	4	5
Training logistic and coordination	1	2	3	4	5

What do you like most from this training?

_____

_____

_____

What do you like least that need improvement _____

_____

_____

Any idea / comment/ feedback/suggestion? _____

_____

_____

7.3. KNOWLEDGE ASSESSMENT

Correct answer is in bold with a tick mark. You can compare the responses from participants.

Select ONE answer for each of the following questions:

1. When starting your first quality improvement project you will aim to do which of the following?

a. Fix all the problems
b. Do whatever the facility in-charge decides
c. Select a single and easy problem for the first QI project √
d. Select a challenging problem to solve

2. Who should decide at a facility what needs to be achieved in a QI project?

a. Facility in-charge will order what needs to be achieved
b. Medical officer will decide
c. QI team members get together and decide √
d. QI coach tells staff what to do.

3. A quality improvement team should have (Tick which one is NOT correct):

a. Staff from various cadres
b. Health workers who carry out the processes that will need to be changed
c. Team should have manager or leaders of facility
d. Team leader should always be the facility In-charge √

4. In order to prioritize a problem and solve which of the following problem identification method focuses on few (20%) but important areas to solve and get a major (80%) solution?

a. Prioritization Matrix
b. Six dimensions of Quality Care
c. Pareto diagram √

5. To understand all the steps of a process, which problem analysis tool will be helpful to use?

a. Five whys
b. Fishbone
c. Process flow chart √
d. Pareto chart

6. To understand the multiple causes of a problem, which tool will be helpful to use?

a. Five whys √
b. Fishbone
c. Process flow chart
d. Pareto chart

7. To understand in depth a single underlying cause of a problem which tool will be helpful to use?

a. Five whys
b. Fishbone
c. Process flow chart
d. Pareto chart

8. In line with many thought patterns of bringing change, which of the following tool can assist a team to quickly generate ideas and/or determine the possible causes?

a. Benchmarking
b. Brainstorming √
c. Provocation

9. Measurement is important for (tick which is NOT correct):

a. Identifying barriers that may be stopping us from getting results
b. Understanding whether there is any improvement or not
c. Judging which health facility is doing badly so that action can be taken against it √
d. Planning what to do next in a QI project

10. PDSA is:

a. Plan, Do, Say, Act
b. Plan, Do Study, Act √
c. Program, Do, Study, Accurate
d. Program, Do, Study, Act

11. There are essential steps to follow in the process of quality improvement. What is the first step in the suggested sequence for an effective PDSA (Plan, do, study and act) approach?

a. Develop √
b. Identify
c. Analyze

12. During implement a change collecting a data is one essential component of a PDSA cycle. Which part of the cycle is collecting data for the identified indicators by the quality improvement team?

a. Plan
b. Do
c. Study √

13. Why is it important to test a new change idea?

a. To understand whether the change is working or not
b. Increase acceptability among the health workers involved in the change
c. To prevent large cost of failure
d. All of the above √

14. In a healthcare setting there is always scope for improvement. Yet not many efforts are made for improvement. Which of the following is NOT the reason for this?

a. At present there is limited knowledge in the health system on how to systematically improve quality of care
b. It may be difficult to identify changes that can be made and will lead to improvement
c. Doing better always requires more resources such as beds, equipment, supplies and manpower. √
d. It requires soft skills to motivate people to participate in improvement activities

15. A team of nurses and doctors in a newborn care unit have found that mothers of preterm babies can provide more expressed breast milk if they are encouraged to come to the newborn care unit within the first day of birth of baby and handle the baby. As doctor-in-charge of another newborn care unit after hearing this success story what should you do?

a. Implement this practice in your unit
b. Cannot do this in your unit as mothers do not maintain hygiene and it can result in increased incidence of sepsis
c. Do nothing. It will not work because this is a different set-up.
d. Test this idea in your unit by doing it for a small number of babies over next few days and collect data how it affects feeding practices and sepsis and see what nurses think √

16. A newborn care doctor wants to decrease the time it takes to get an X-ray done for a baby with respiratory distress. What changes will lead to achieving this objective?

a. Buying and placing an X-ray machine within the unit
b. Recruiting and placing an X-ray technician at the unit
c. Outsourcing X-ray services
d. First understanding various steps (processes) that are needed to get the X-ray done. √

17. Over the last few years fewer users are forgetting their ATM card in the ATM machine. What is the reason for this?

a. ATMs now have posters reminding people not to leave behind their ATM card
b. Banks send an SMS after money withdrawal which reminds them to collect the ATM card
c. You get the money after you take out the card. The steps in money withdrawal from ATM have been revised to ensure that users do not forget their card. √
d. Average bank balances have improved over last few years which makes people more alert

18. Newborn care units in three out of ten hospitals are reporting high infection rates. The state child coordinator (MoH) passes an order that all doctors and nurses should wash hands as per guidelines. Is this going to decrease infection rates significantly?

a. Yes, orders work best and doctors and nurses will start washing hands consistently
b. This is not an effective way of changing behaviour as frontline healthcare workers are not involved √
c. No, because healthcare workers lack the knowledge and skill to do hand washing
d. Yes, because the guidelines are evidence based

19. The indicator for the change idea and its specific activities to measure how well activities are being executed as against how they are planned is;

a. Outcome indicator
b. Process indicator √
c. Impact indicator

20. The doctor in-charge of a newborn care unit starts to monitor infection rates. What type of measure is incidence of infection?

a. Outcome measure √
b. Process measure
c. Balance measure
d. Ranking measure

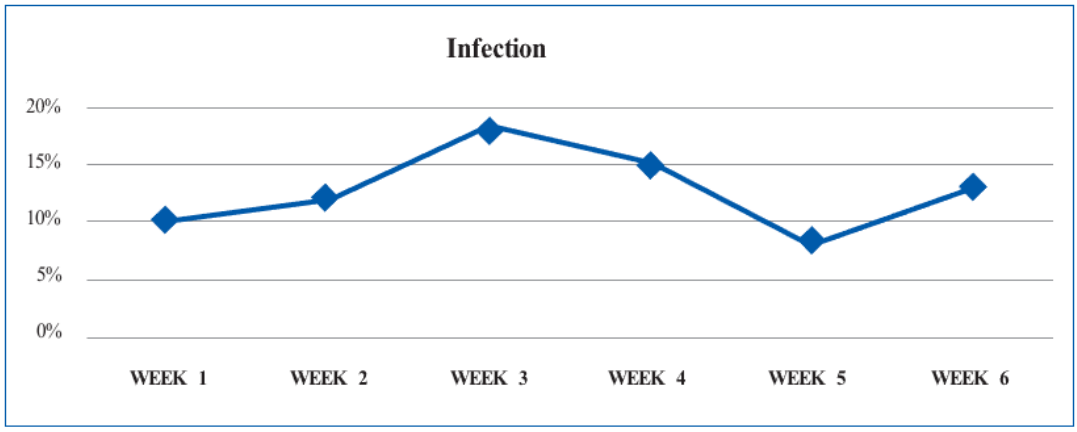
21. The doctor is also recording proportion of healthcare workers washing hands. What type of measure is compliance to hand-washing?

a. Outcome measure
b. Process measure √
c. Balance measure
d. Ranking measure

22. The aim statement written by the doctor for this improvement project is "To reduce the rate of hospital acquired infection in my unit". What is missing in this statement?

a. Does not specify how much reduction
b. Does not specify the timeline by when infection will be reduced
c. Does not specify in which patients
d. All of the above √

23. The data collected for infection rates are being plotted in the graph shown below.



This type of chart is called:

a. Time series chart √
b. Frequency polygon
c. Incidence chart
d. Histogram

24. You notice in your unit register that despite recommendation of routine administration of vitamin K to all neonates at birth, 20% of neonates do not get the dose. What will you do next?

a. Tell everyone to fill a syringe and keep it as a part of resuscitation tray
b. Hang a poster near the resuscitation trolley
c. Tell the nurse in-charge to review the patient file before discharging the baby
d. Form a team and get together to analyse the problem √

25. The district health officer forms quality improvement teams in newborn care unit at one health facility. Whose presence is least likely to be beneficial in the QI team of facility?

a. Nurses from the unit
b. Doctors working in the unit
c. Hospital administrator
d. A senior specialist from tertiary healthcare facility √

7.4: ON-SITE PERFORMANCE OBSERVATION CHECKLIST

	AREAS OF OBSERVATION	
	Trainee Meet his/her supervisor as soon as after the QI training ends to discuss action plan, the resources and support needed and expected changes	
	Trainee Update all staff shortly after the training and share any materials	
	Trainee plan on-the-job- QI training course (Selecting of participants, class room arrangement , course preparation…)	
	Conduct QI training	
	Form QI team and help to define their roles and responsibilities appropriately	
	Assist QI teams to conduct baseline assessment (tool development, data collection, analysis, action plan preparation…)	
	Help the team to identify and prioritize problems and write aim statement (Step 1)	
	Help QI team to analyze problem (step 2)	
	Help QI teams to generate and test ideas(step 3)	
	meeting with facility leadership as a means of respect, building trust and relationships	
	Observe clinical processes and provide clinical mentorship	
	Facilitate QI team meetings	
	Share learning between facilities and Document learning from multiple QI teams	
	Help healthcare teams build their skills in improving care	

APPENDIX 8: QI TECHNICAL SKILLS

How should a coach build teams' QI technical skills?

People learn different QI skills at different rates. Some QI skills typically take longer to learn than others. The coach should not try to teach everything at the start. Instead, she should start by helping people to learn the easier skills first, and build their confidence in applying these skills to solve real problems. As people become comfortable with the easier skills, the coach should help them to build new skills to allow them to address increasingly complex problems.

It requires judgment to know when people are ready to learn more advanced skills. The table below outlines some of the skills that new teams usually pick up quickly and some which often take some time and experience for people to understand completely.

Some important QI skills for a coach to focus on with QI teams are listed in the table below. The coach should initially focus on the skills that are under the 'new QI team' column. Many problems are fixable just using these skills. As teams' progress and start working on more complex problems, the coach should help them use the skills in the 'more experienced QI team' column.

QI SKILL	NEW QI TEAM	MORE EXPERIENCED QI TEAM
Prioritizing problems and choosing good aims	Pick problems that are: • under the control of the team • easy to measure objectively • will not take too much additional time or resources to fix • important for all those who are involved	Move on to more complex problems which may: • need to involve team members from other units • be more challenging to measure • take longer to fix Help them focus on solving issues that lead to better outcomes of care as well as processes
Working effectively in teams	Form a multi-disciplinary team involving representatives from all categories of staff whose work will need to change to reach the aim	Get more involvement and leadership from more junior members of the team (who often know the most about what is actually happening)
QI SKILL	**NEW QI TEAM**	**MORE EXPERIENCED QI TEAM**
Analyzing problems to find root causes	Use basic QI analysis tools – fishbone diagram, 5 Whys, Pareto principle, flowchart	Focus on identifying root causes related to 'place' and 'procedure' rather than 'people' and 'policy'
Developing Indicators and measurement plan	• Define simple indicators related to the aim • Identify simple ways to collect the required data	• Simplify data collection • Understanding various types of measures process, outcome and balancing measures
Understanding data	• Use data to know if there is improvement. • Use MSExcel or other software to collect and display data. • Plot data over time.	• Use and interpret run charts or control charts
Developing change ideas	• Come up with simple doable ideas to reach the aim	• Look for change ideas that move beyond training or issuing orders
Testing and adapting changes	• Test change ideas to see if they work	• Try more ambitious ideas focusing on using smaller tests to adapt changes
Sustaining improvement	• Based on the successful change, prepare standard operating procedures (SOPs) or policies to sustain improvements	• Focus on changing systems to make improvements sustainable.

APPENDIX 9: FREQUENTLY ASKED QUESTIONS

Q1. What is meant by Quality of Care?

On the basis of several definitions in the literature, the WHO definition of quality of care is "the extent to which health care services provided to individuals and patient populations improve desired health outcomes. In order to achieve this, health care must be safe, effective, timely, efficient, equitable and people-centred".

Operational definitions of the characteristics of quality of care

- Safe – delivering health care that minimizes risks and harm to service users, including avoiding preventable injuries and reducing medical errors
- Effective – providing services based on scientific knowledge and evidence-based guidelines
- Timely – reducing delays in providing and receiving health care
- Efficient – delivering health care in a manner that maximizes resource use and avoids waste
- Equitable – delivering health care that does not differ in quality according to personal characteristics such as gender, race, ethnicity, geographical location or socioeconomic status
- People-centred – providing care that takes into account the preferences and aspirations of individual service users and the culture of their community

(Source: WHO: Standards for improving quality of maternal and newborn care in health facilities)

Q2. What is the difference between Quality improvement and Quality assurance?

Quality Assurance (QA) ensures basic functions of a healthcare delivery system. QA determines whether the healthcare being delivered is in compliance with predefined standards. Many of the interventions such as having policy, standards, guidelines, adequate human resource, equipment and infrastructure are important quality assurance parameters.

Quality Improvement (QI) is about changing behaviors, approaches and systems to maximize the quality of care that patients receive. Quality improvement moves beyond quality assurance and seeks to transform the culture within which healthcare is delivered. Quality improvement requires the systematic use of improvement models or tools, such as the Plan-Do-Study-Act (PDSA) cycle.

Here are some more features or QA vs. QI:

QUALITY ASSURANCE:	QUALITY IMPROVEMENT
Driven by regulatory and accrediting agencies	Internally driven, empowers all personnel to make improvements
Tends to focus on finding who is responsible for errors	Focuses on improving the system and processes of care; seeks to prevent errors
Relies on inspections to identify errors	Relies on improving processes
Periodically monitors quality	Continuously strives to improve quality
Management/leadership: Top down	Management/leadership: Shared responsibility with involvement of people at the point of care
Maintain a predefined level of quality	Continuously improving quality

Example: You want to make sure that everyone washes their hands on entry to a neonatal unit. Some illustrative standards to enable hand washing would be:

- Instituting a hand washing policy
- Ensuring there is a sink near the unit entrance
- Ensuring availability of soap and running water

Quality assurance assessment / accreditation will be done by assessors periodically to check if all of these standards are in place. Having a policy and availability of soap, water and sink is necessary but it may not necessarily lead to the behaviour of consistent hand washing by the staff/visitors.

So the staff at the unit would need to use quality improvement methods to continuously strive to ensure that more and more people who enter the neonatal unit wash their hands. Staff would review if there are processes that make it difficult for people to wash their hands; make certain changes in the process; engage stakeholders in adopting those changes; and would measure the progress of hand washing rates to track progress towards achieving the aim.

Thus, maintaining the healthcare delivery system up to the pre-defined standards is quality assurance. Understanding the processes of care (how the healthcare is delivered) and making such processes better continuously is quality improvement. Hence, QA and QI are interlinked and both are important to ensure the good functioning of a health care system.

Q3. Are quality improvement methods used only to improve care during birth?

QI methods can be used to improve any system, including any healthcare delivery system. Same principles apply everywhere.

Q4. Would quality improvement add to already overburdening data collection in our facility?

If thoughtful data collection is undertaken, no additional burden would be added. Data-based decision-making is at the core of quality improvement methodology. All decisions must be based on evidence and any data collection in the system should generate information for taking actions. It is advisable to start with existing data but if nothing exists data collection should be started soon as possible as data are the backbone for any improvement initiative.

Q5. Why do we need to use quality improvement methods when our clinical interventions are already based on scientific evidence?

While evidence-based medicine/public health tells us what interventions will work, quality improvement methods will tell us how to adapt the process of care to our own context to make the evidence based guidelines work.

Q6. We have many problem areas in our facility. Should we start multiple projects for each one of those?

It is wise to start with only one or two projects initially. Start with a simple, feasible improvement activity with rapid turnaround time and take up more projects as the team builds their understanding of quality improvement methods by applying them and gain confidence.

Q7. Our staff members just do not want to work. How will quality improvement approach help with that?

Quality improvement methods work by decreasing individual resistance to change, encouraging data-

based decision-making and improving communication among staff. All these, put together, increase motivation levels among staff. In any organization it is hard to get everyone to join improvement initiatives, but once you start others will get convinced and join the movement.

Once other people see how things have become better (based on the data) using quality improvement approach they will get interested and curious to learn and adopt too.

Q8. Will quality improvement help us in getting accreditation? How is quality improvement different from accreditation?

Quality improvement will not directly help in accreditation. Accreditation is a voluntary one time compliance to prescribed standards (Quality Assurance) while Quality Improvement aims at ongoing improvement in specific service areas. However continuously doing quality improvement at a facility can make it easier for the facility to meet and perhaps in some areas even surpass the accreditation requirements.

Q9. Do we need to have a designated person for doing QI work in our facility?

Not necessarily. Quality as an embedded culture among all staff is preferable compared with having a designated person for quality. But often you need a local champion who can quick start the improvement projects and provide some extra support to frontline staff who are doing the quality improvement work.

Q10. Do we need continuous trainings on quality improvement for facility staff?

Initial training and handholding support is required for facility staff, once they learn the basics of QI and have executed one or two projects on their own; no more formal trainings are required. There are several online resources from where anyone interested in quality improvement can continue to build their knowledge base. The main learning will come from actually doing projects on the ground.

Q11. Do improvement initiatives create additional work for facility staff?

QI does not require much extra time; you can manage it during your routine work. QI helps to improve your routine work outcomes and in some cases you may in fact be able to reduce your workload. By applying quality improvement, you can bring efficiency into the system by reducing wastage of time and resources.

Q12. I am working hard and trying my best, why should I use QI?

Quality improvement is a management approach that helps to solve system problems together in a team. Even If you are working at your best, the system where you work may not be working to its maximum potential. This is because very few people work to their best in a given system. QI will help to involve more people within the system to work together and will improve the performance of the system overall, which in turn will give benefit to all stakeholders. In other words quality improvement is a broader approach to improve the performance of the system as a whole and not just an individual.

Q13. Does QI require extra resources?

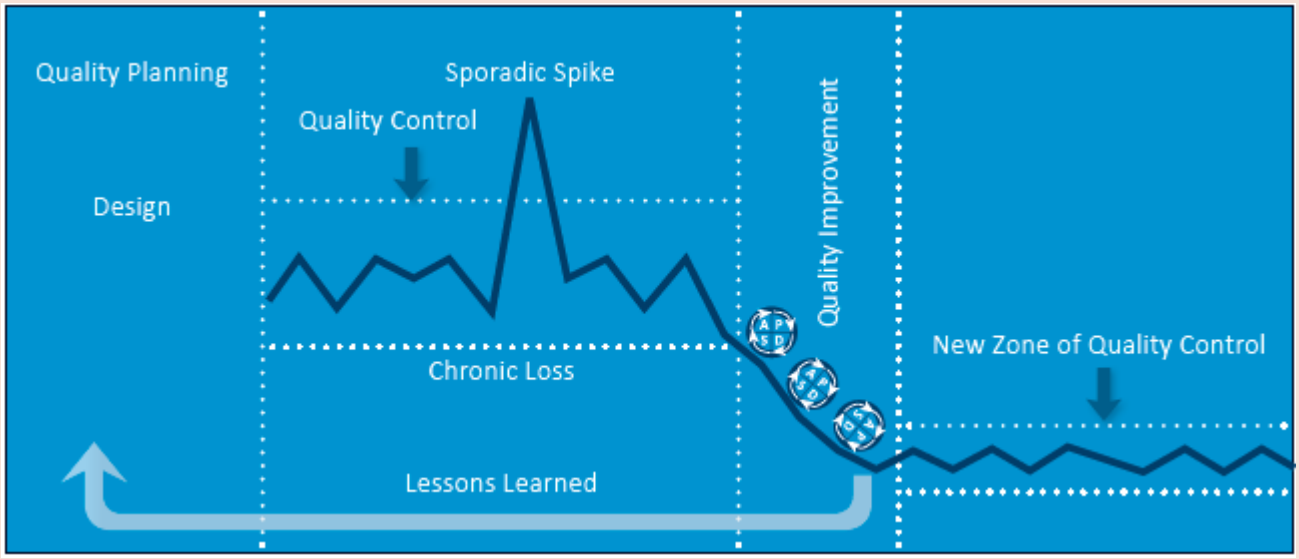
To the best of our ability and creativity improvement should be done with the help of existing resources without any significant additional support from outside. Quality improvement helps us to realize that by reorganizing day-to-day work we can get better results within the same resources. However, commitment to learning and practicing quality improvement is a must

SECTION 6

SUCCESSFUL CASE STUDIES ON QI

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

Ethiopian Health Care Quality Bulletin

Continuous Health Care Quality Improvement through Knowledge Management

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Table of Contents

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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To site: Yimam Z, Berhanu L, Abebe T, Shemsu L, Tadesse T, Hamza A, et al. Quality Improvement for Better Vitamin A Uptake at Community Level, Ethiopia. EHQB 2019; 1: Page 9-13.

Abstract

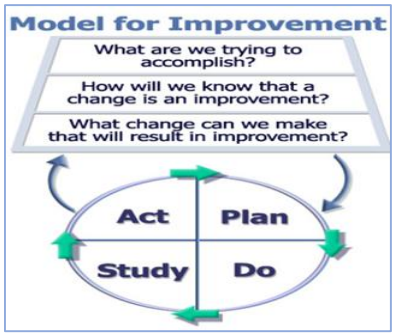
Background: Vit-A deficiency in children 6-59 months is the major public health problem in Ethiopia. Vitamin A supplementation reduced death from measles by 50%, from diarrhea by 40% and overall child mortality by 24%. Vitamin A supplementation coverage in Growth through Nutrition activity supported 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 pictures 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).

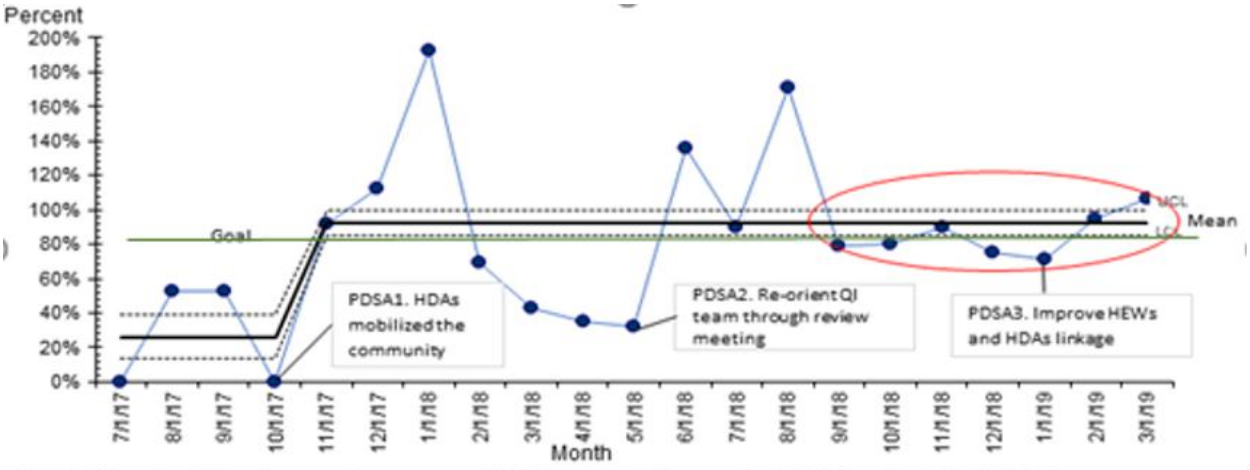


Fig1. Vitamin A Supplementation among Children Age 6-59 months in Yefereziye HP, SNNPR

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).

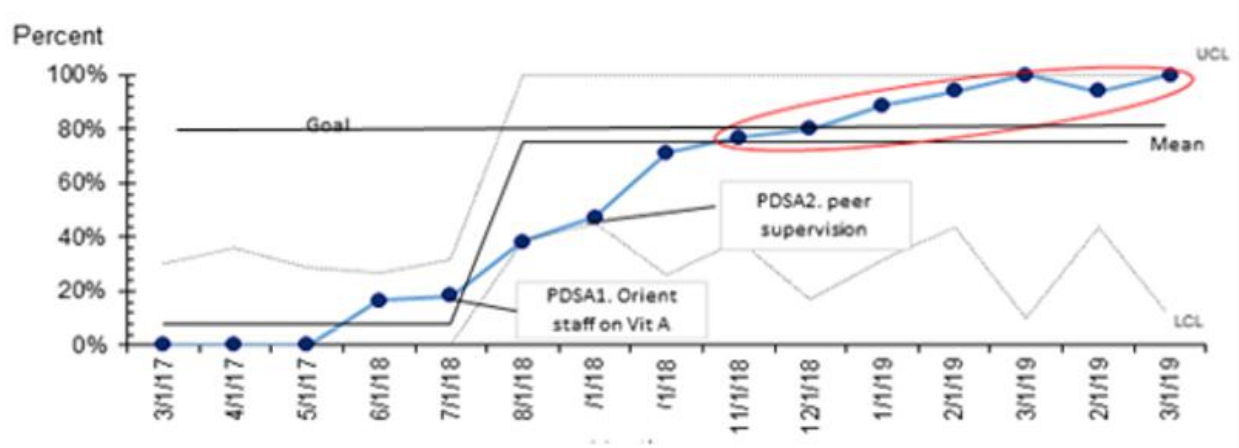


Fig2. Vitamin A Supplementation among Children Age 6-59 months in Tede HC, East Oromia Region

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).

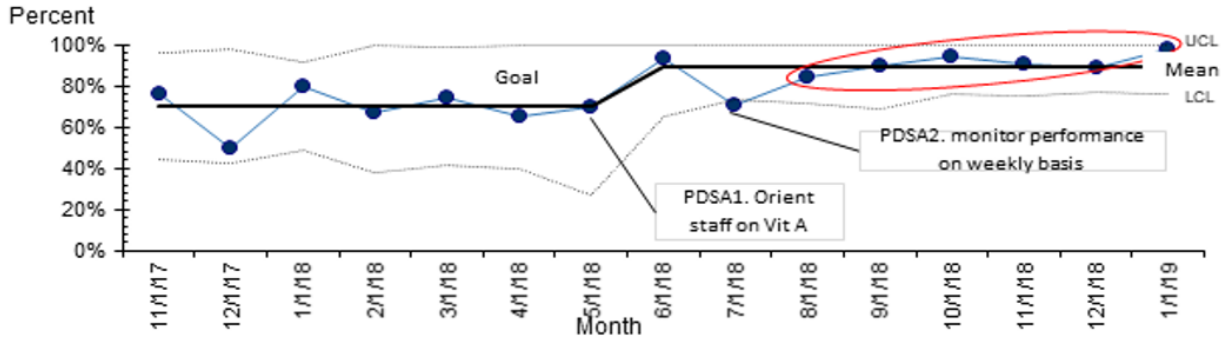


Fig3. Vitamin A Supplementation Among Children Age 6-59 month in Gino HC East Oromia

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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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.

To site: Yimam Z, Berhanu L, Zewdu M, Ayele A, Zikargie A, Mequanint T, et al. Improving Iron and Folic Acid Supplement Uptake by Pregnant Women at Primary Health Care Unit in Ethiopia. EHQB 2019; 1: Page 14-17.

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.

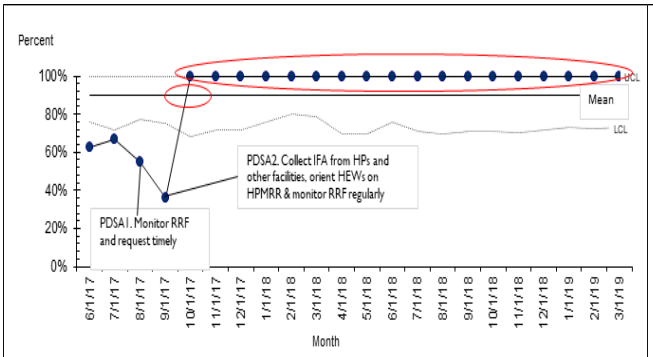

Fig 1 Pregnant Women who received iron folic acid supplementation at least for three months at Emdibir HC SNNPR

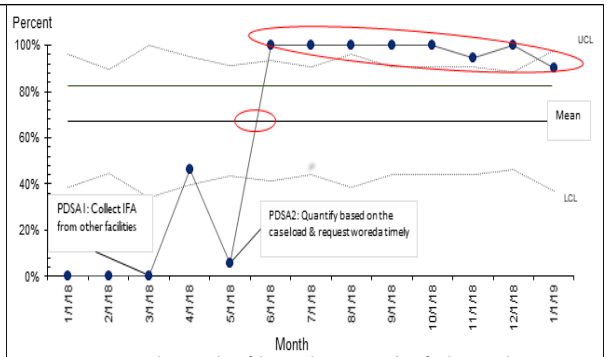

Fig2. Pregnant Women who received iron folate supplementation at least for three months at Gino HC East Oromia Region

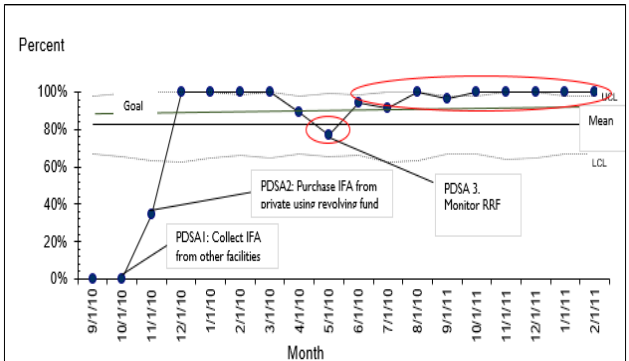

Fig 3. Pregnant Women who received iron folate supplementation at Yetmen HC East Gojam Amhara Region

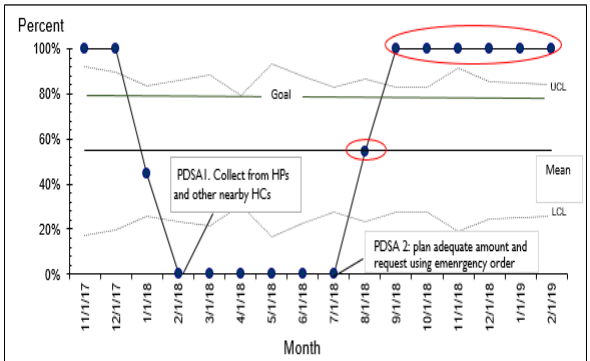

Fig4 Pregnant Women who received iron folate supplementation at Walkitane Gudane HC West Oromia

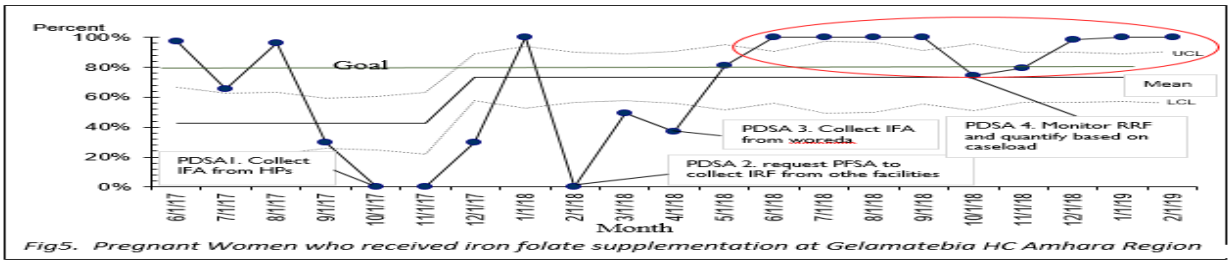

Fig5. Pregnant Women who received iron folate supplementation at Gelamatebia HC Amhara Region

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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To site: Biadgo A, Asrat S, Abebe A, Birkety Mengistu B. Quality improvement project to reduce ANC waiting time: the case of Woreta. EHQB 2019; 1: Page 18-22.

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.

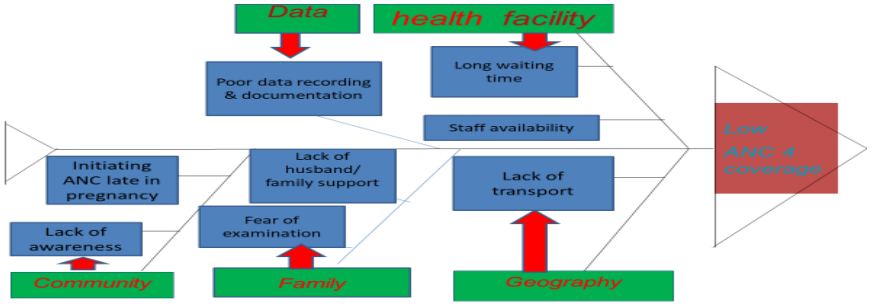

Figure 1: Factors associated with the low coverage of ANC 4

[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.

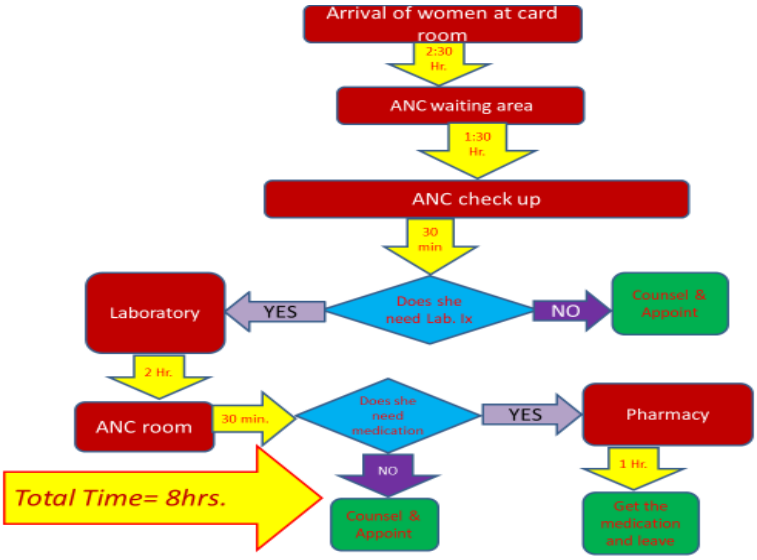

Figure 2: ANC flow chart of Woreta health center as of Hamle 15, 2009 E.C

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).

[2] Mother support group are organized to counsel and support other mothers living with HIV/ADIS.

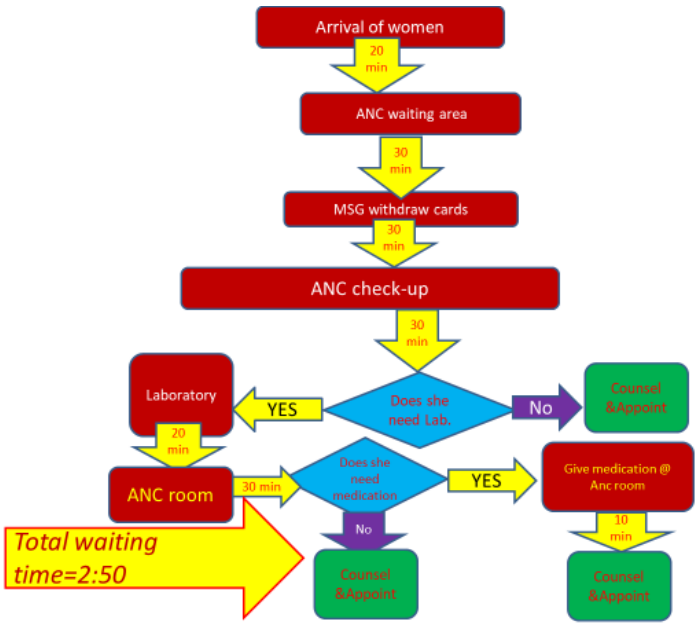

Figure 3: Proposed flow chart of ANC with the new change ideas for Wereta health center

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.

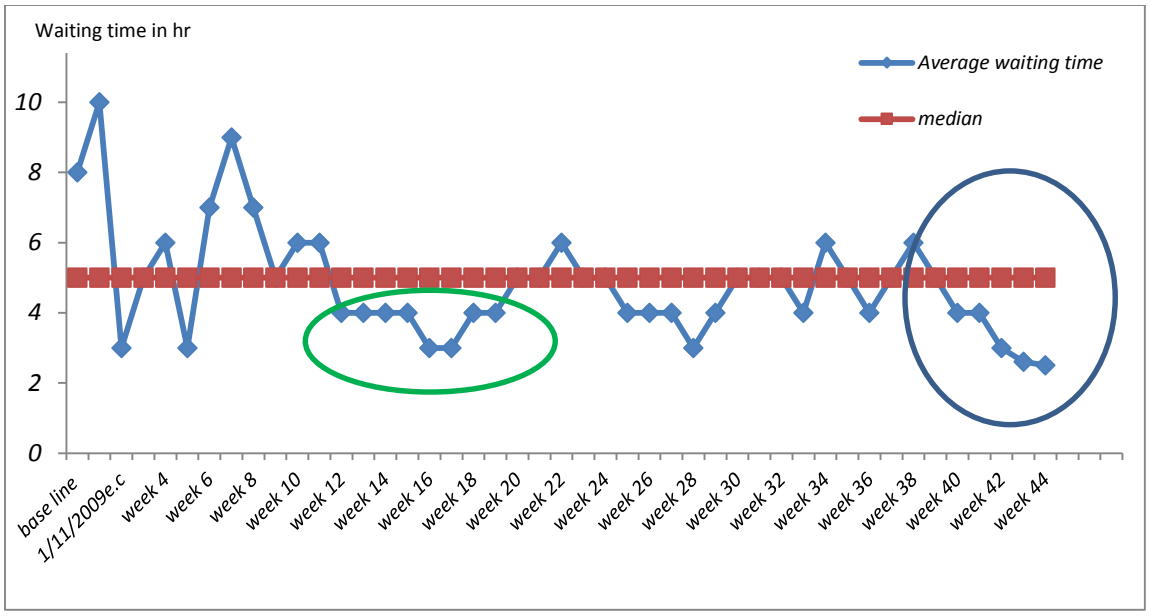

Figure 4: Run chart on average waiting time of ANC mothers in Woreta health center, from Hamle 08, 2009 EC to Miazia 30, 2010 EC.

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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To site: Yifru D, Mefin T, Dejene A, Kacha R. Improving Emergency Care Service Quality score at St. peter Specialized Hospital. EHQB 2019; 1: Page23-27.

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.

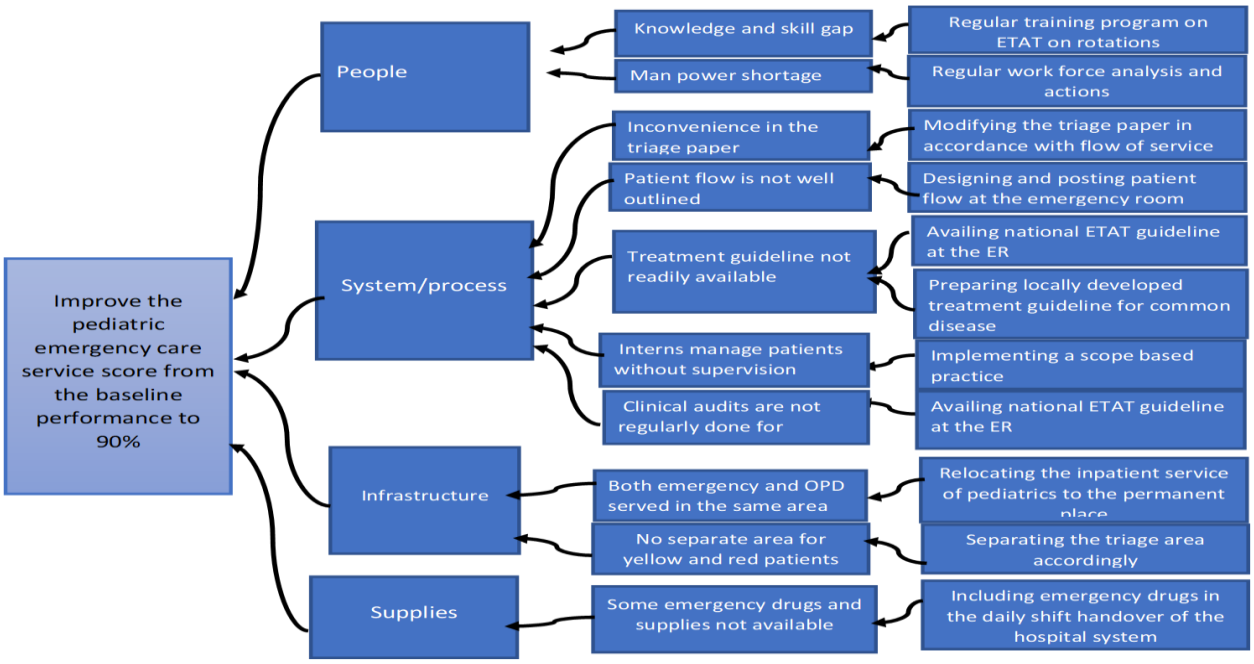
Specific objectives

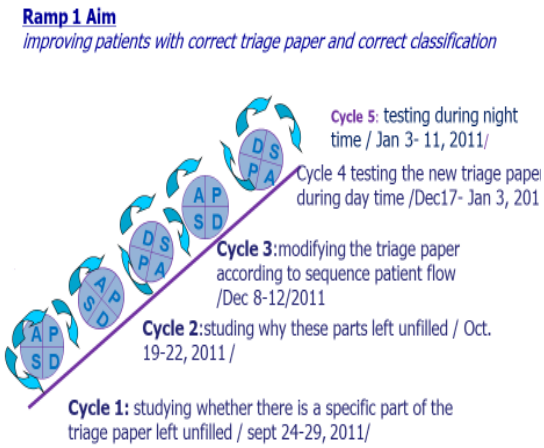
- Improving ETAT implementation >90 %
- Provision of comprehensive clinical evaluation by the right clinician >90%
- Appropriate outlining of management plan >90%

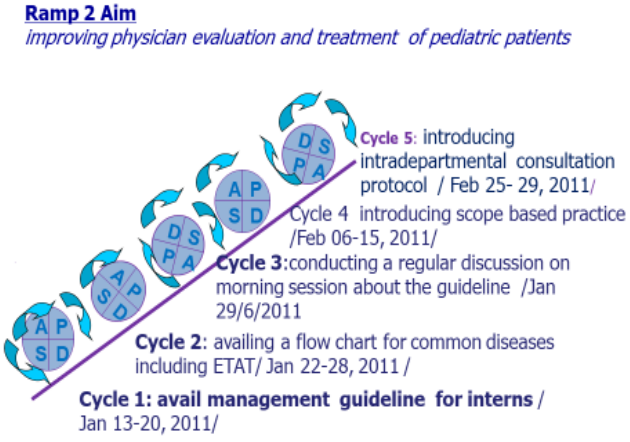
Methodology:

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.







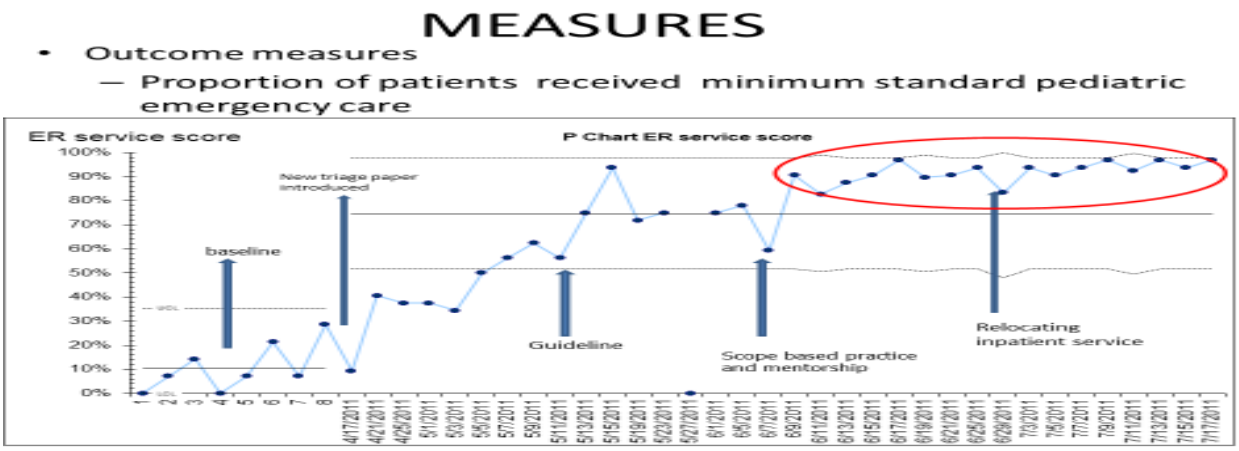
Data collection and analysis:

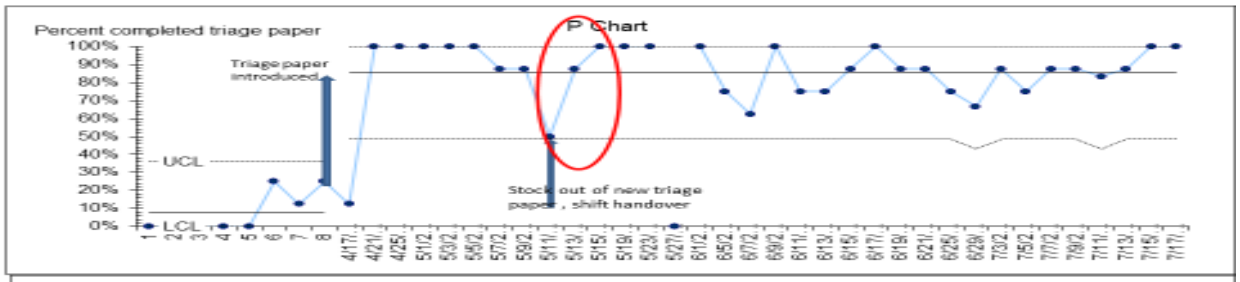
- 4 charts were selected using simple random sampling
- Chart audit checklist was used to fill the audit findings for each case; Audit findings was fed to an excel data base (1 if standards of interest are met and 0 for any missing component from a particular standard) , a hard copy of the audit finding 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

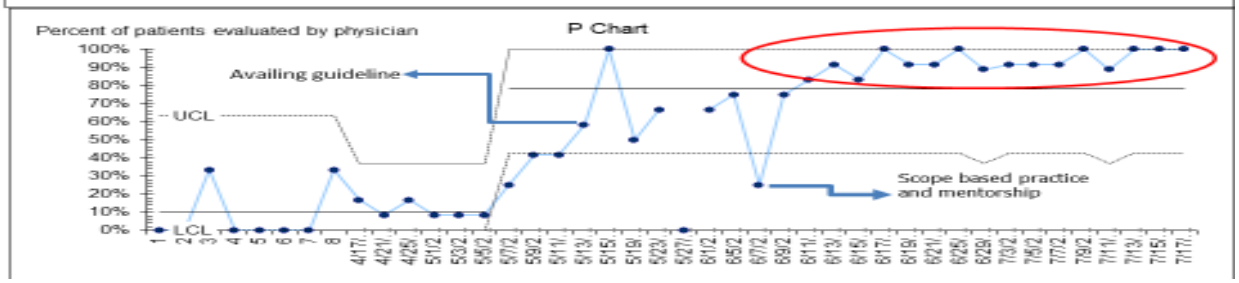
Measures

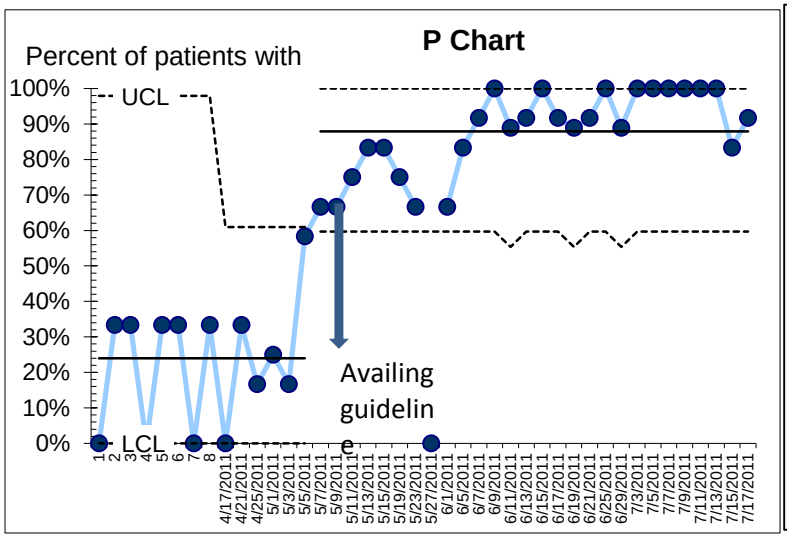
- Outcome measures
    - Proportion of patients received minimum standard pediatric emergency care
- Process measures
    - Proportion of weekly cases in the week who are triaged appropriately and correct triage classification given
    - Proportion of weekly cases with a justifiable diagnosis following 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

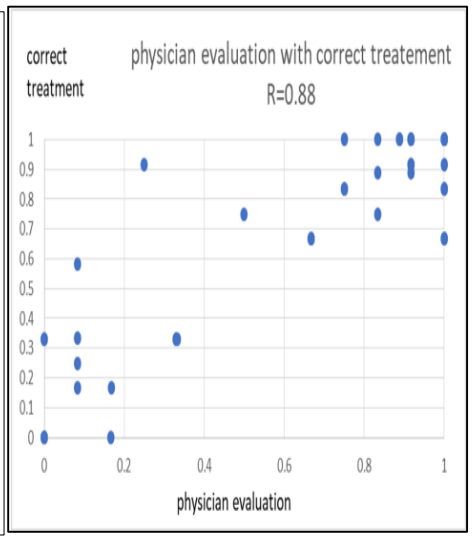
Results











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

To site: Bekele B, et.al. Improving Early Post Natal Care within the First 8 hours in Kebado Primary Hospital, Dara Woreda, Sidama zone. *EHQB* 2019; 1*: Page 28-31.*

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

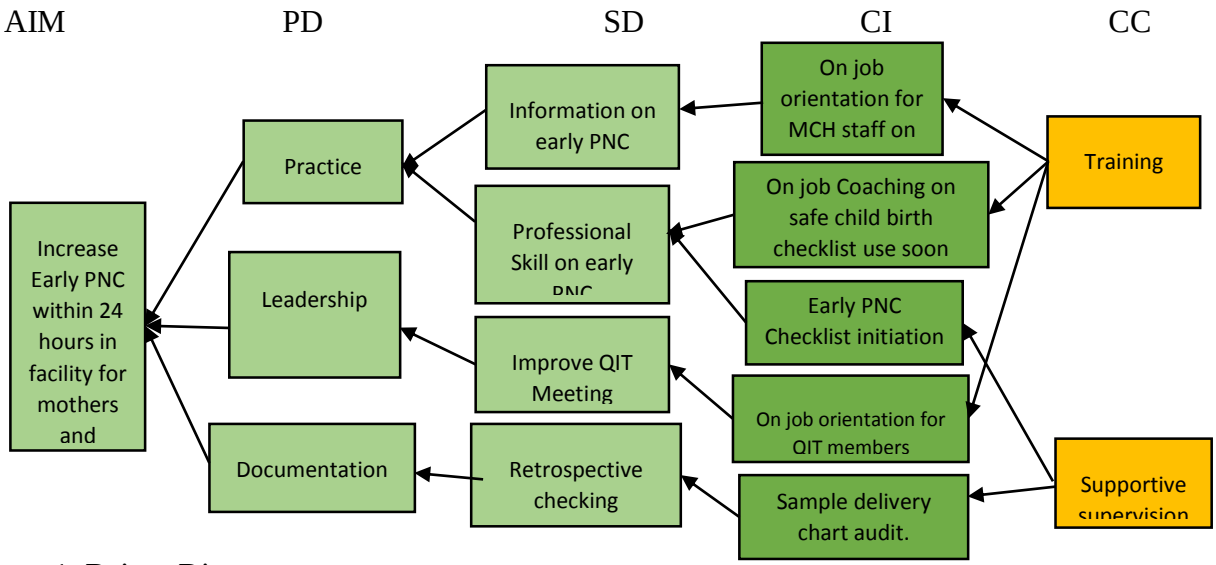
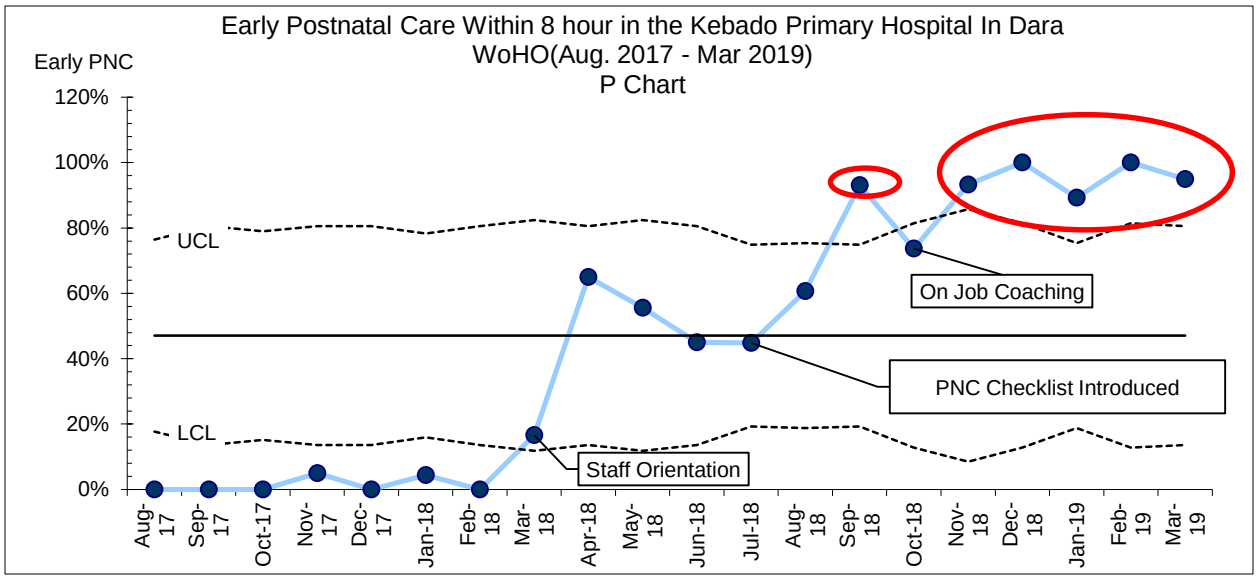


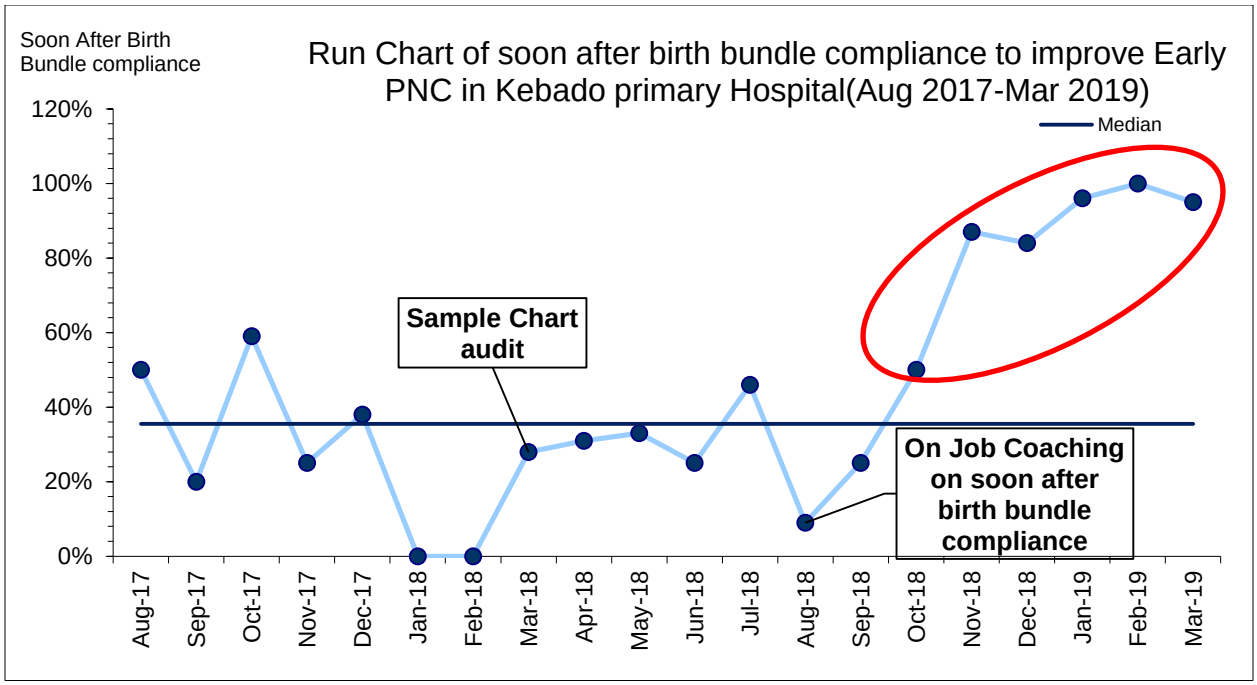
Figure 1. Driver Diagram

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.



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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To site: Wendwessen N, Mengistu B, Magge H, Debaro E. Reduction of Neonatal Mortality at GebreTsadiq Shawo Hospital By Decreasing Neonatal Hypothermia. EHQB 2019; 1: Page 32-38.

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^{o}C -27^{o}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 ^{o}C and NICU suite temperature at 27^{o}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).

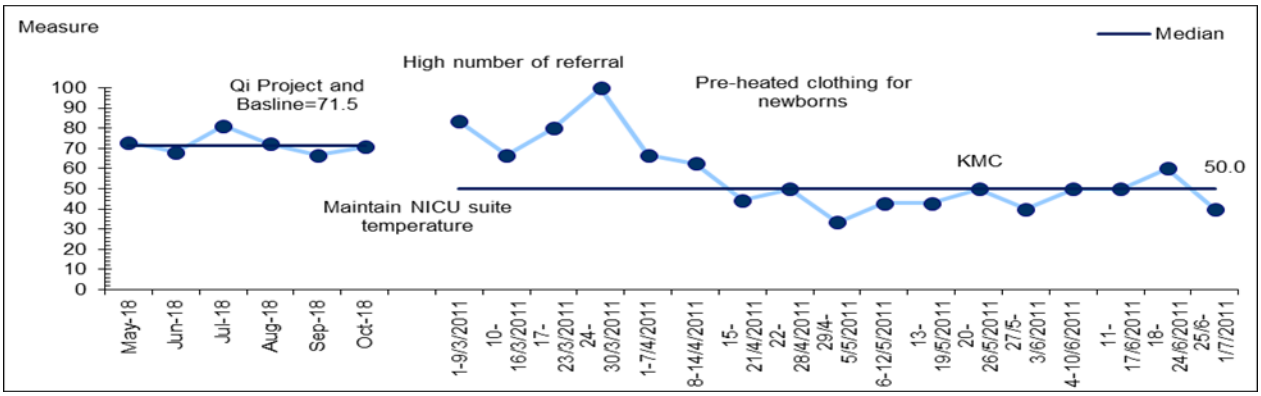

Figure 1; Percentage of neonatal Hypothermia among NICU admitted newborns at GTSGH, 2019

The percentage of neonates delivered in labor ward showed improvement by full filling run chart rule (Shift) (figure2).

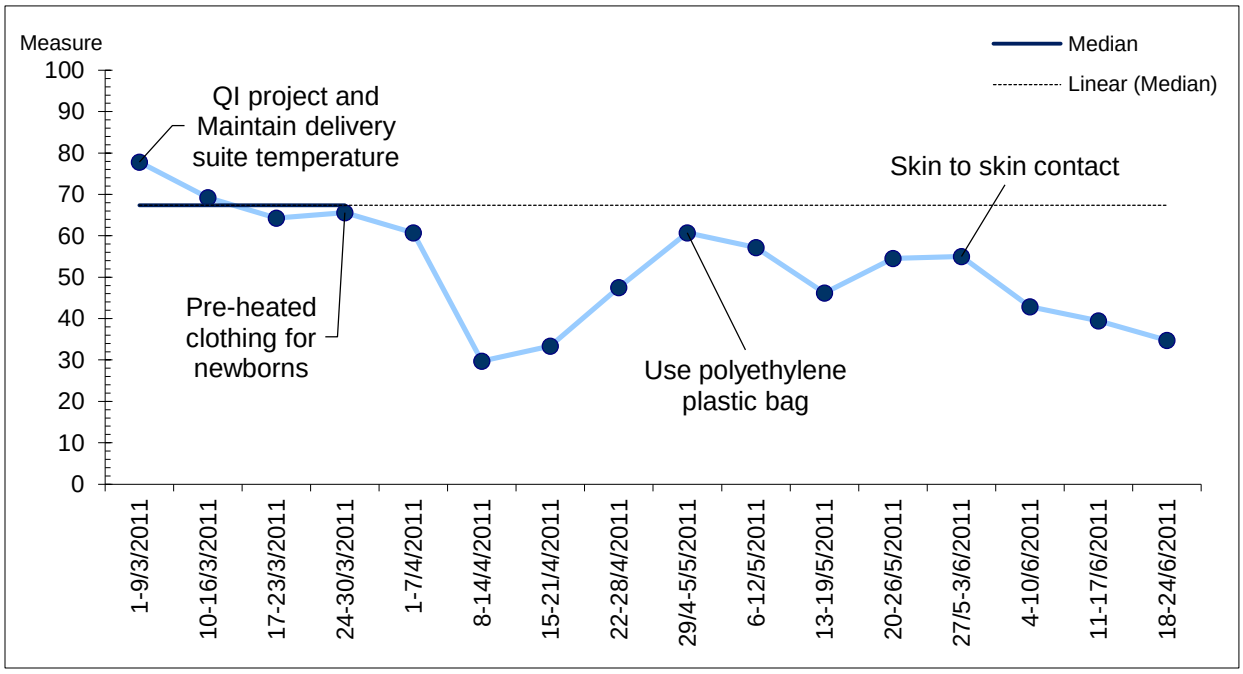

Figure 2: percentage of neonatal hypothermia among new born delivered in labor ward at GTSGH, 2019

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).

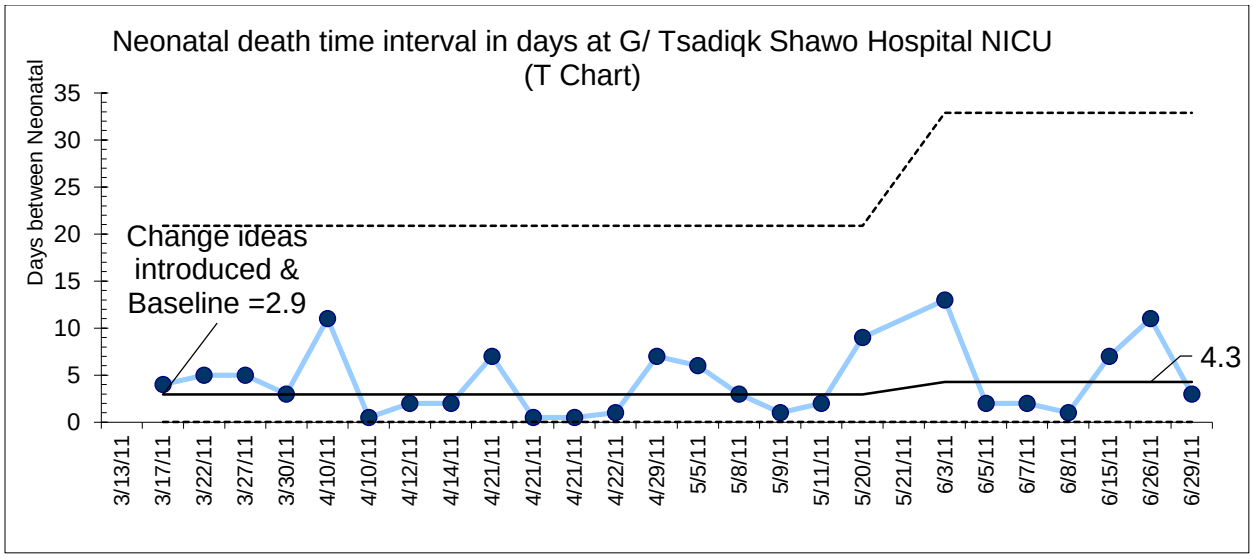

Figure 3: Average days between neonatal death at GTSGH NICU, 2019

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.

References

1. Onalo R. Neonatal hypothermia in sub-Saharan Africa : A review. Niger J Clin Pract. 2013;16(2):129–138. doi: 10.4103/1119-3077.110120. [PubMed] [CrossRef] [Google Scholar]

2. United Nations (UN) The Millennium Development Goals Report 2014. New York: United Nations; 2014. [Google Scholar]

3. Imtiaz Jehan et,al, Neonatal mortality, risk factors and causes: a prospective population-based cohort study in urban Pakistan, Bulletin of the World Health Organization 2009;87:130-138. doi: 10.2471/BLT.08.050963

4. EDHS 2016, Ethiopia Demographic and Health Surveys 2016

5. Department of Reproductive Health and Research (RHR), World Health Organisation. Thermal protection of the newborn: a practical guide (WHO/RHT/MSM/97.2). Geneva: World Health Organisation, 1997.

*6. Lunze K, Bloom DE, Jamison DT, Hamer DH. The global burden of neonatal hypothermia: systematic review of a major challenge for newborn survival. BMC Medicine 2013;**11**(24):1–11. DOI: 10.1186/1741-7015-11-24*

7. Seyum T, Ebrahim E. Proportion of neonatal hypothermia and associated factors among newborns at Gondar University teaching and Refferal hospital, Northwest Ethiopia: a hospital based cross sectional study. Gen Med. 2015;03(04):1–7. [Google Scholar]

*8. Laptook A, Salhab W, Bhaskar B, the Neonatal Research Nerwork. Admission temperature of low birth weight infants: predictors and associated morbidities. Pediatrics 2007;**119**(3):e643–9. DOI: 10.1542/peds.2006-0943*

*9. Wilson E, Maier RF, Norman M, Misselwitz B, Howell EA, Zeitlin J, Effective Perinatal Intensive Care in Europe (EPICE) Research Group. Admission hypothermia in very preterm infants and neonatal mortality and morbidity. Journal of Pediatrics 2016;**175**:61–7. [10.1016/j.jpeds.2016.04.016]*

10. World Health Organization . Thermal Protection of the Newborn: a practical guide. Maternal and Safe Motherhood unit. Geneva: World Health Organization; 2006. [Google Scholar]

11. McCall EM, Alderdice F, Halliday HL, Vohra S, Johnston L.Interventions to prevent hypothermia at birth in pretermand/or low birth weight infants. Cochrane Database of Systematic Reviews 2018, Issue 2. Art. No.: CD004210. DOI: 10.1002/14651858.CD004210.pub5. www.cochranelibrary.com

12. Lunze K, Yeboah-Antwi K, Marsh DR, Kafwanda SN, Musso A, et al. (2014) Prevention and Management of Neonatal Hypothermia in Rural Zambia. PLoSONE 9(4): e92006. doi:10.1371/journal.pone.0092006

13. Anhøj J, Olesen AV. Run charts revisited: a simulation study of run chart rules for detection of non-random variation in health care processes. PLoS One 2014;9:e113825.

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.

To site: Yimam Z, Berhanu L, Zewdu M, Ayele A, Zikargie A, Mequanint T, et al. Quality of Maternal Screening and Counseling in Primary Care Units in Ethiopia. EHQB 2019; 1: Page 39-43.

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).

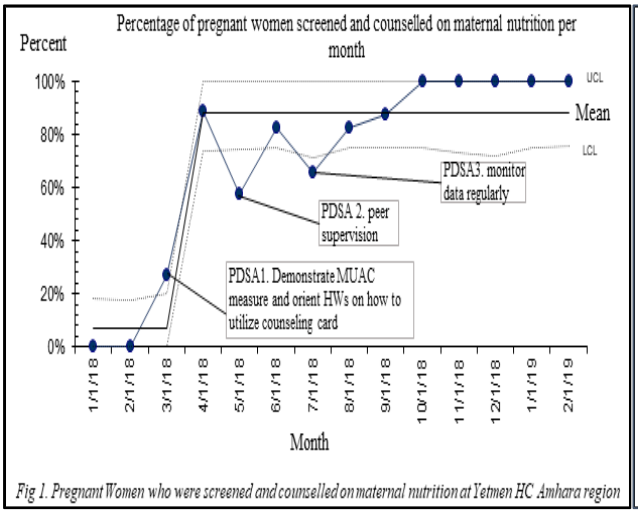

Fig 1. Pregnant Women who were screened and counselled on maternal nutrition at Yetmen HC Amhara region

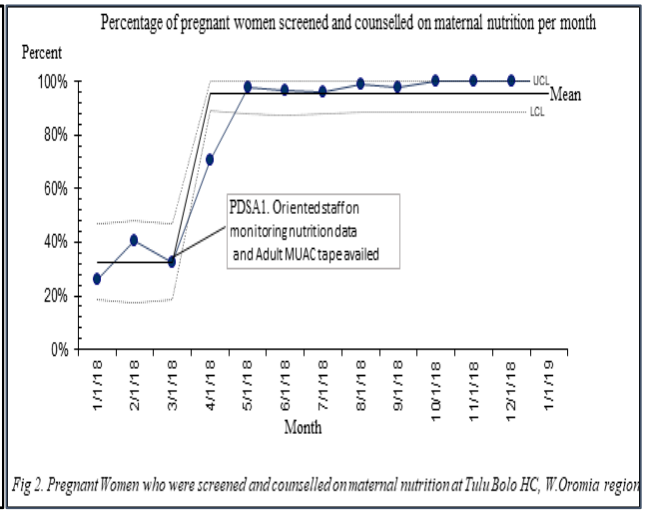

Fig 2. Pregnant Women who were screened and counselled on maternal nutrition at Tulu Bolo HC, W.Oromia region

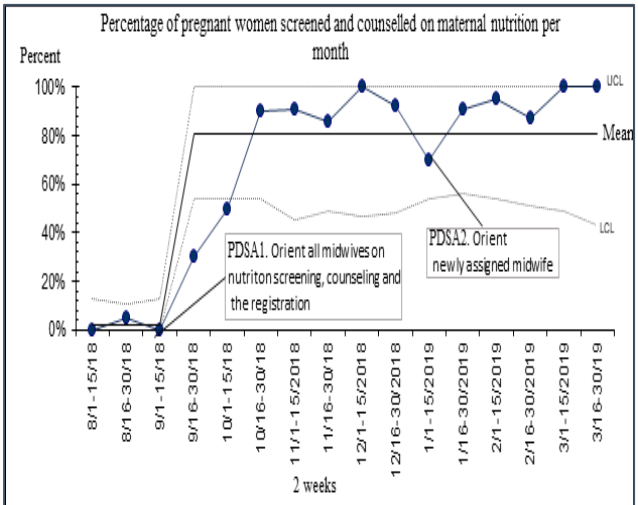

Fig 3. Pregnant Women who were screened and counselled on maternal nutrition at Tede HC, E.Oromia region

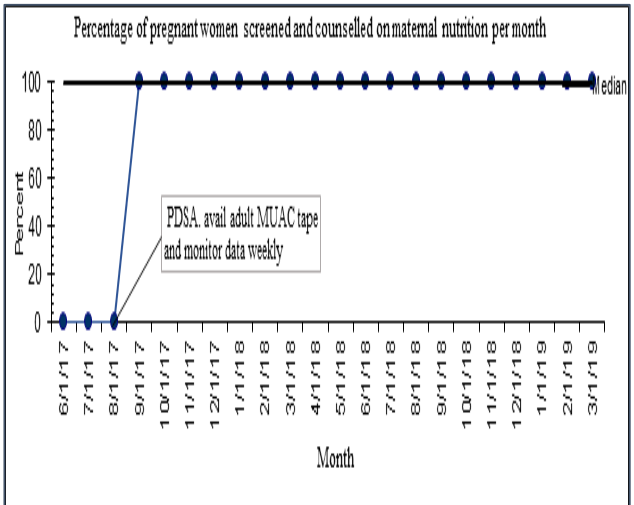

Fig 4. Pregnant Women who were screened and counselled on maternal nutrition at Emdibir HC, SNNPR

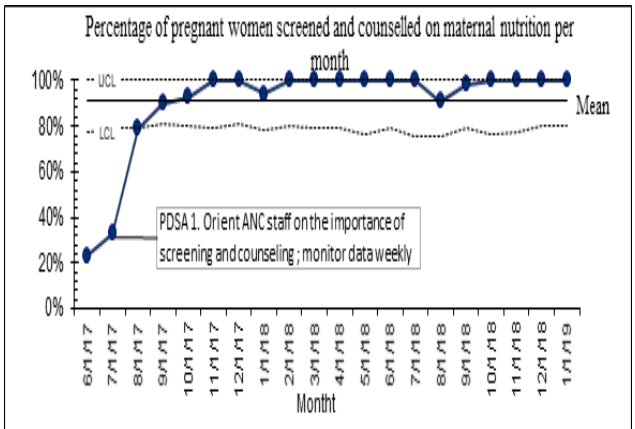

Fig 5. Pregnant Women who were screened and counselled on maternal nutrition at Gelamatebia HC,Amhara region

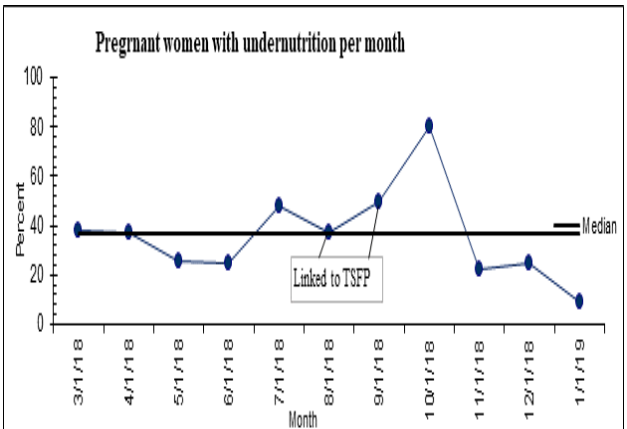

Fig 6. Pregnant women who had more than one visit and still undernutrition (MUAC <23cm) at Gelamatebia HC,Amhara region.

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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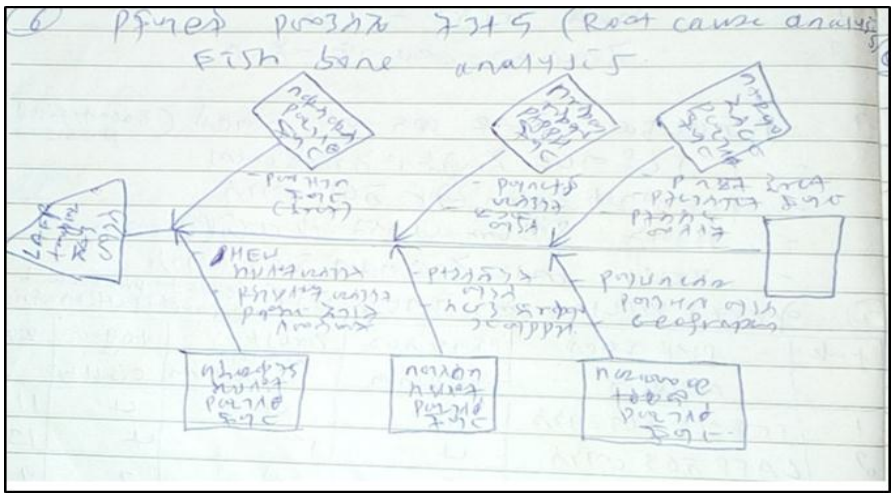
Background

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.

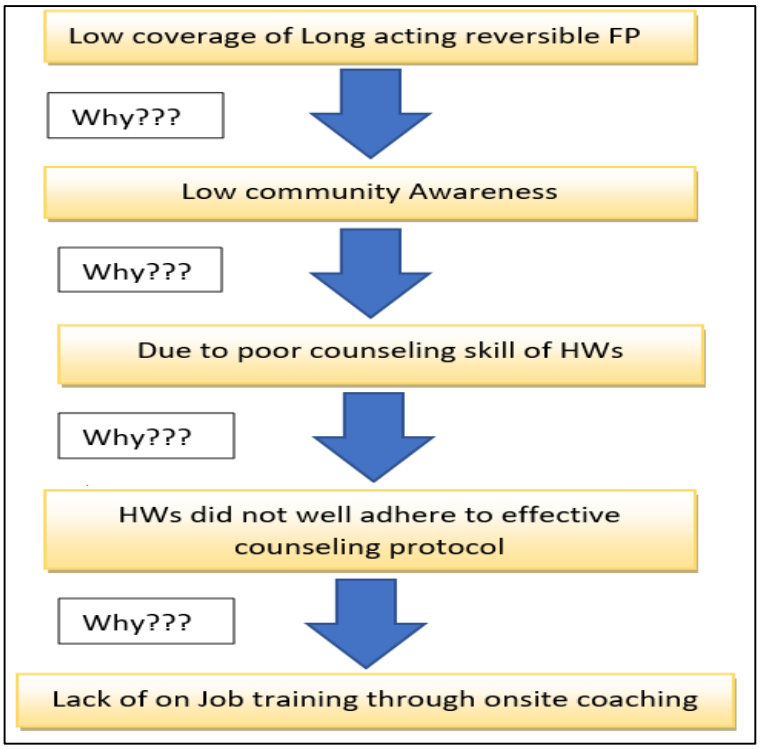
In Manbuk HC catchment area in the last two years LARC service coverage is too low and which has great contribution for Maternal child health problems. As consequence, low up take of FP well leads to maternal & child health complication and final to death.



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.

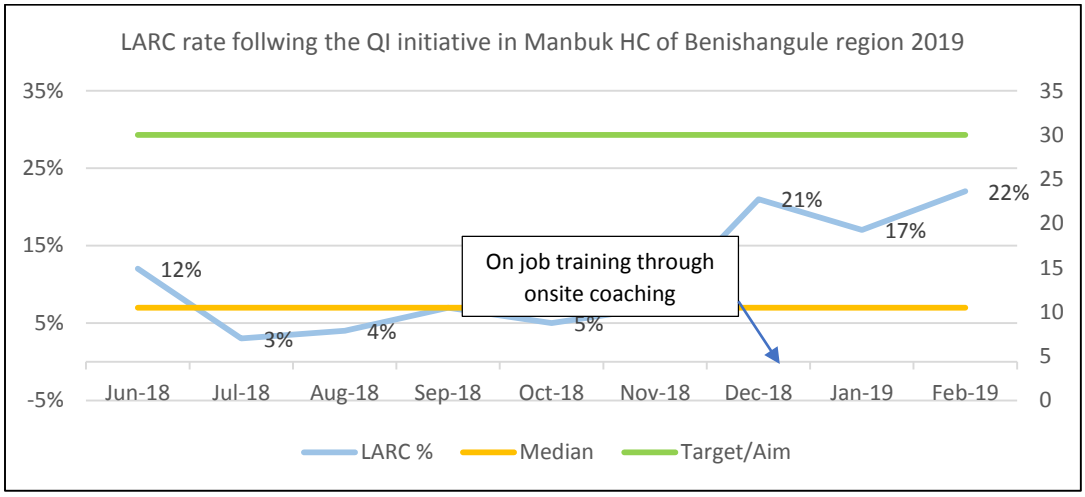
Measurement

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

To site: Tebeje W. Hailemichael A, Bekele A, Mellese S, Gerem A, Kebede N. Proper and Complete Use of Partograph to Improve Quality of Maternal and Neonatal Care Service at Dubertie Health Center, West Gojam Zone, Amhara Region, EHQB 2019; 1: Page 47-49.

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.

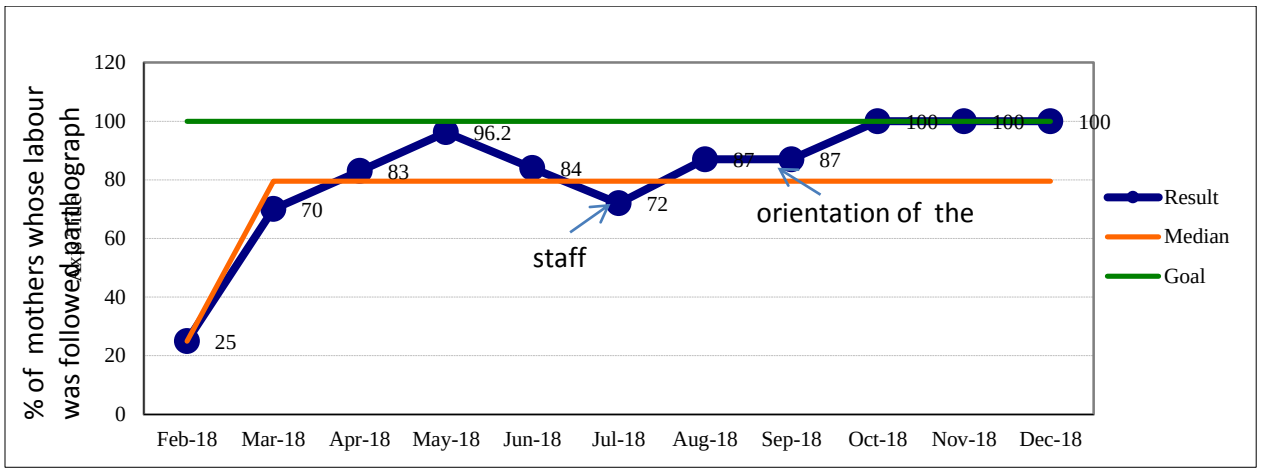

Figure: Run chart on complete and correct use of partograph Utilization, in Durbetie Health Center, West Gojjam Zone, March 1-December 31, 2018.

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

To site: Teshome B, Wondwosen B, Mengistu B. Improve Community TB detection in Wacha Primary Hospital. EHQB 2019; 1: page 50-54.

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%

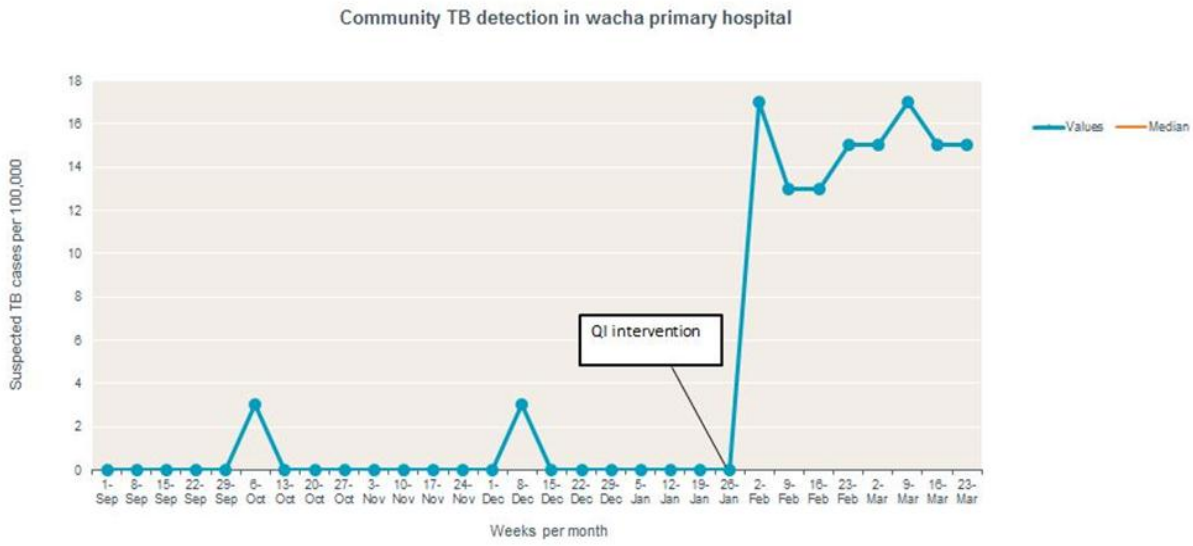

Fig: TB detection in Wacha primary hospital 2019

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

Authors : Mohammed Meded, Redi Essa, Abdella Seid, Nesredin Nursebo, Ekima Hussen, Abdurazik Abdella, Jemal Shifa
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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

To site: Meded M, Essa R, Seid A, Nursebo N, Hussen E, Abdella A, Shifa Y. Improving the quality of Nursing Care Plan at Pediatrics ward, EHQB 2019; 1: Page 55-59.

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: -

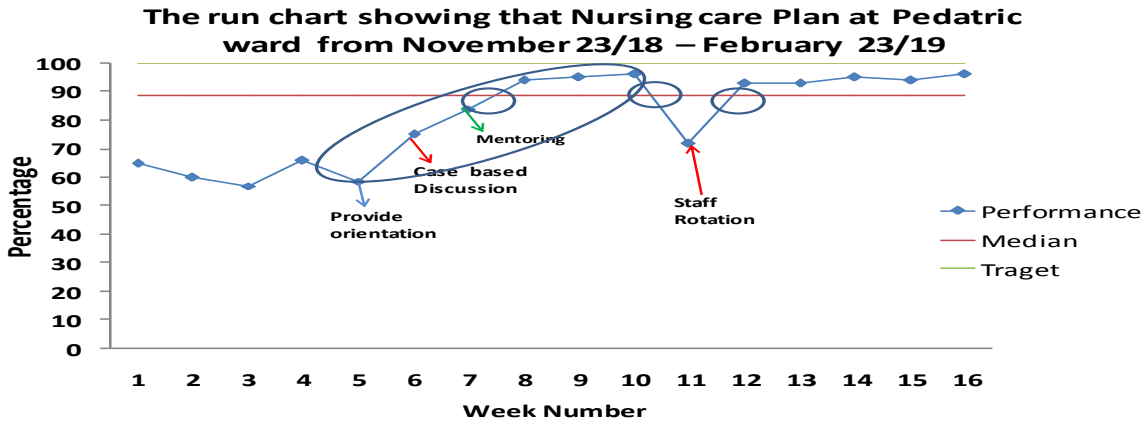
Client Chart review**:**

- 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



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: -

- Rule2: trend is present five or more consecutive point move up
- 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.
- 100% of pediatrics ward nursing staffs was oriented/trained on Nursing care plan
- 96% of percent of patient discharge having complete Nursing care plan, which is almost the same to the aim
- Case based discussion cessation was conducted for eleven weeks
- Mentoring cessation was conducted for eleven weeks
- Ninety-five Percent of patient satisfied with the nursing care provision
- Ninety percent of medical record completeness
- Decrease patient average length of stay

Limitations and Lessons Learnt

- NCP Performance was decreased during Staff rotation
- 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

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

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

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2. Institute for Healthcare Improvement, Addis Ababa, Ethiopia
3. Chencah Primary Hospital, Chencha, Ethiopia

To site: Hailu D, Kifle A, Magge H, Mengistu B, Nigatu W, Chewa Z, Maja M. Quality Improvement (QI) Project to Reduce Newborn Hypothermia at Birth in Chencha Primary Hospital , EHQB 2019; 1:Page 60-66

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).

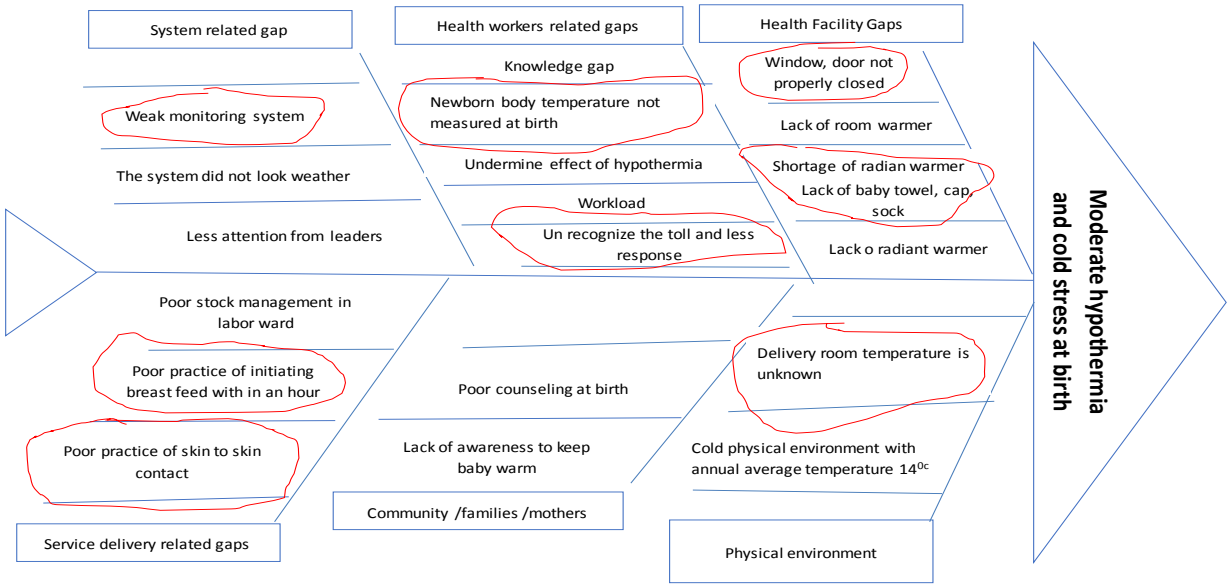

Fig 1: Root cause analysis for newborn hypothermia at birth in Chencha Primary Hospital

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.

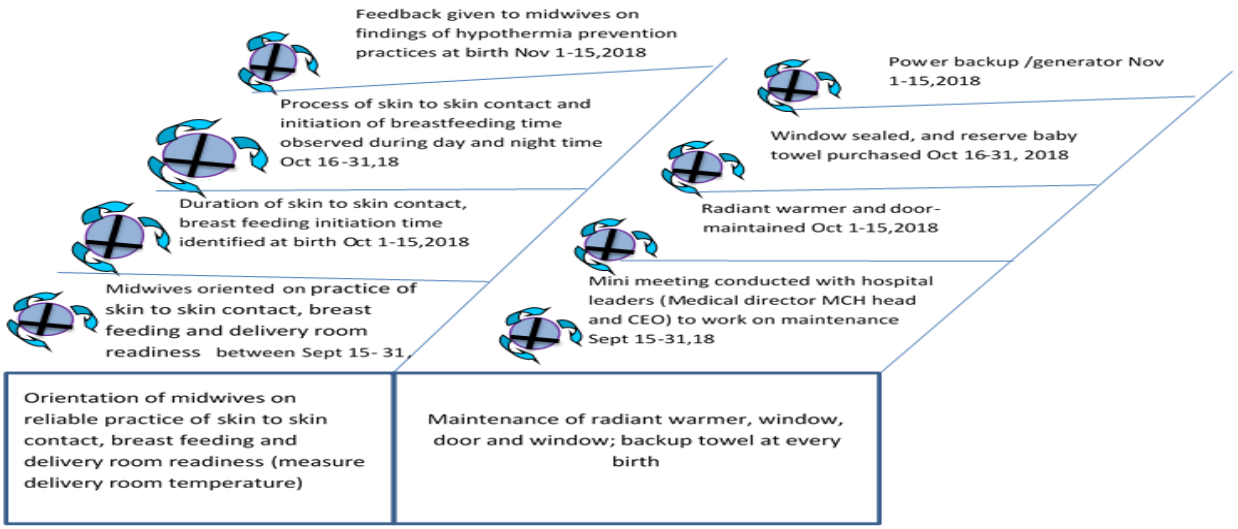

Figure 2: Ramp of PDSA Cycle

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.

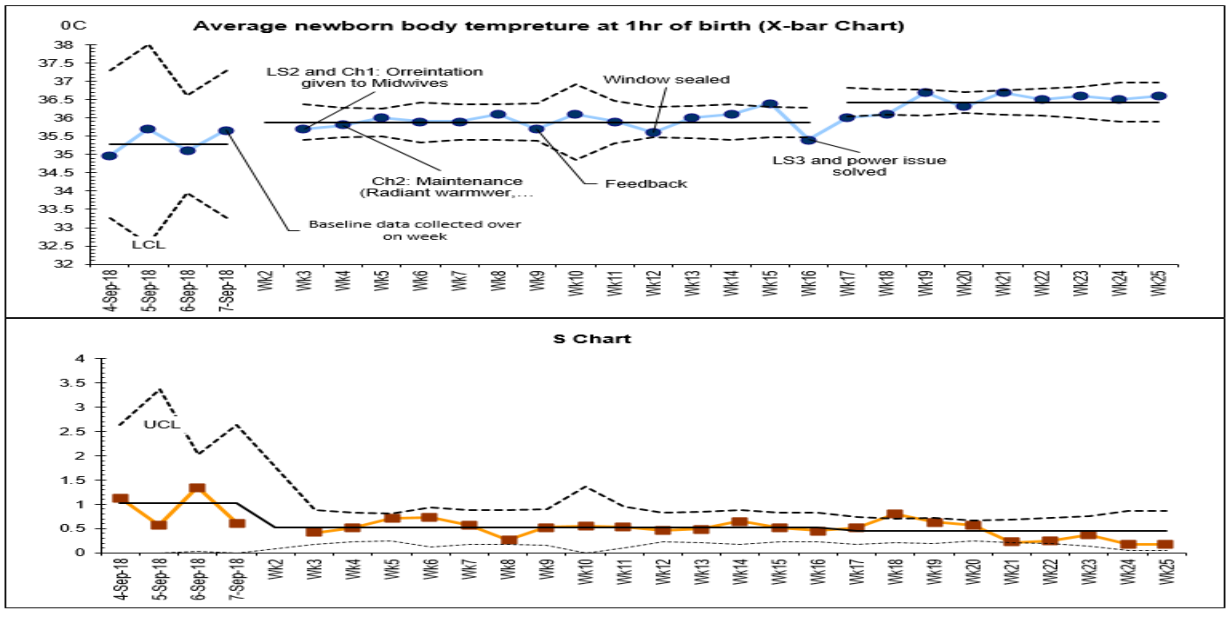

Figure 3: Newborn body temperature at one hour of birth X bar S chart

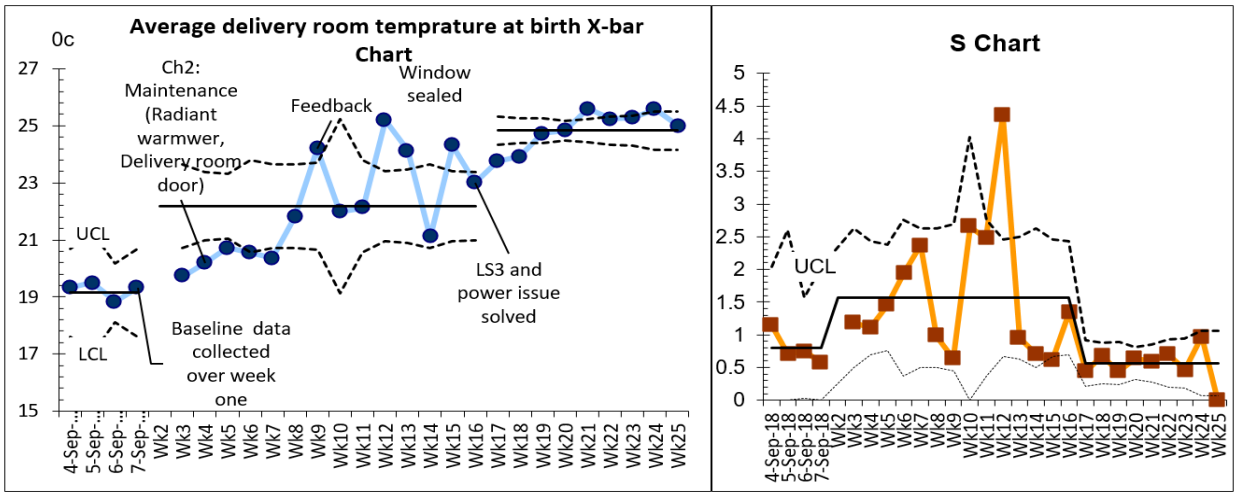

Figure 4: Delivery room temperature at birth

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.

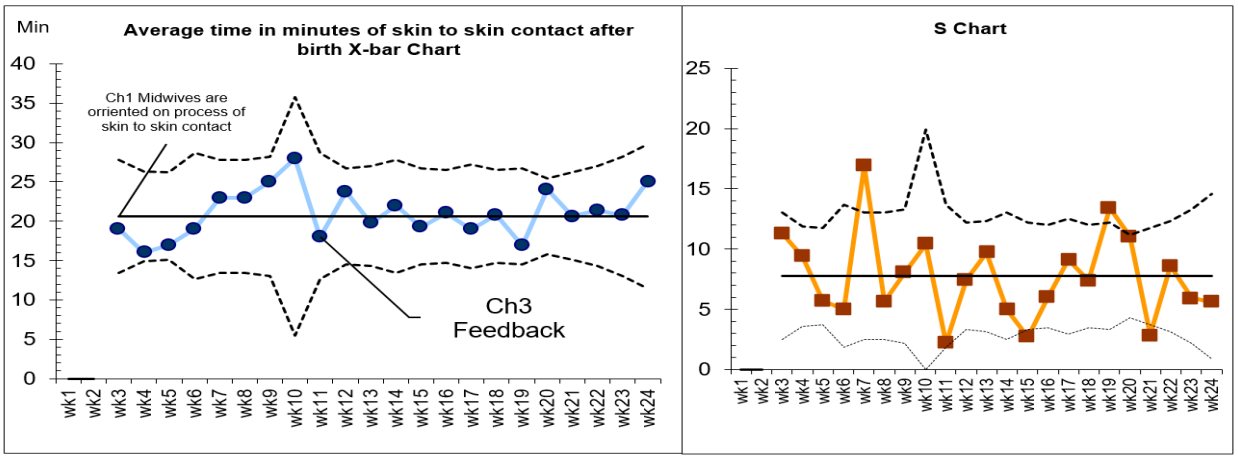

Figure 5: Duration of skin to skin contact at birth

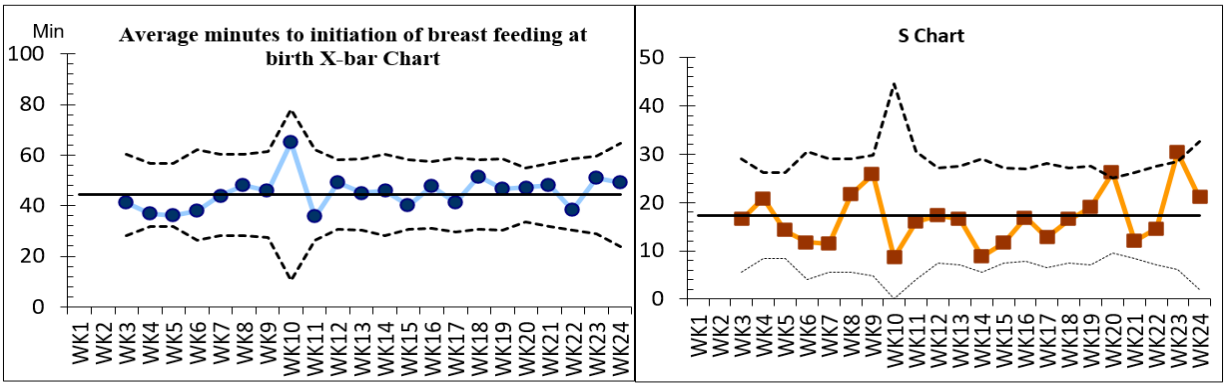

Figure 6: Breast feeding initiation time in minute at birth

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

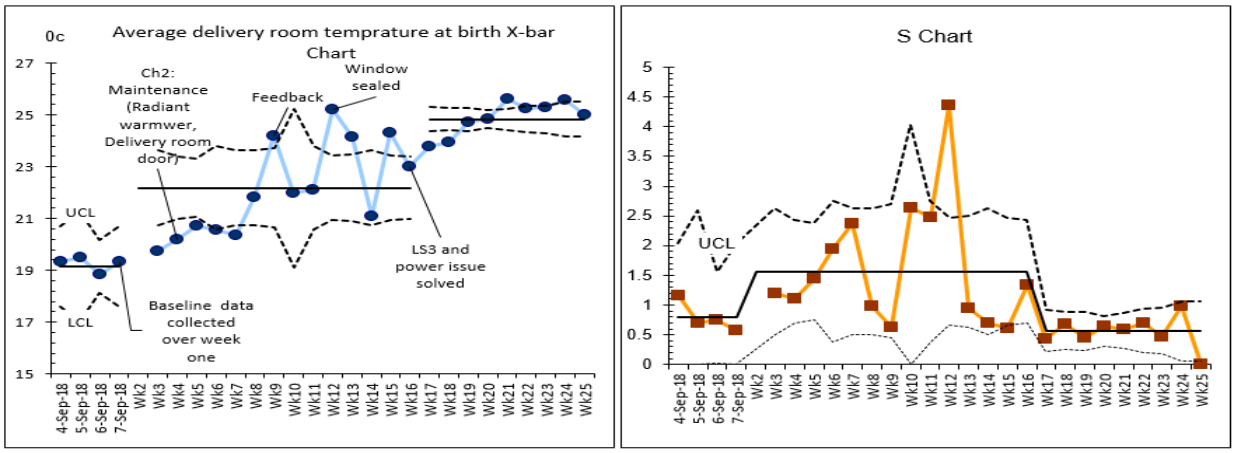

Fig 7: Average delivery room temperature at birth

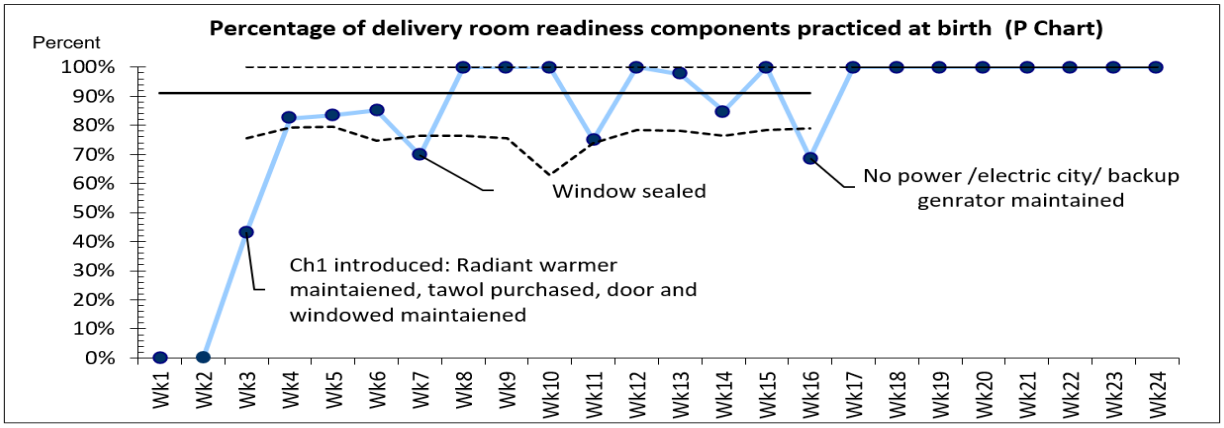

Fig. 7 Data on delivery room readiness

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.

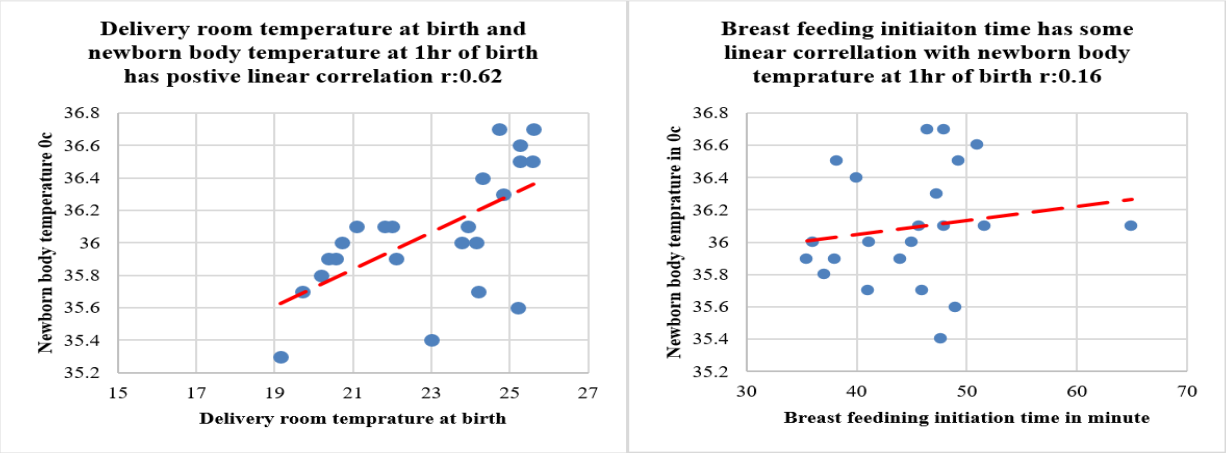

Fig 8: correlation of delivery room temperature and breast feeding with newborn body temperature at birth

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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Affiliation: 1. USAID Transform: Primary Health Care Project, Addis Ababa, Ethiopia

To site: Tebeje W, Hailemichael A, Bekele A, Mellese S, Belachew H, Kebede N. 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, EHQB 2019; 1: Page 67-69.

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.

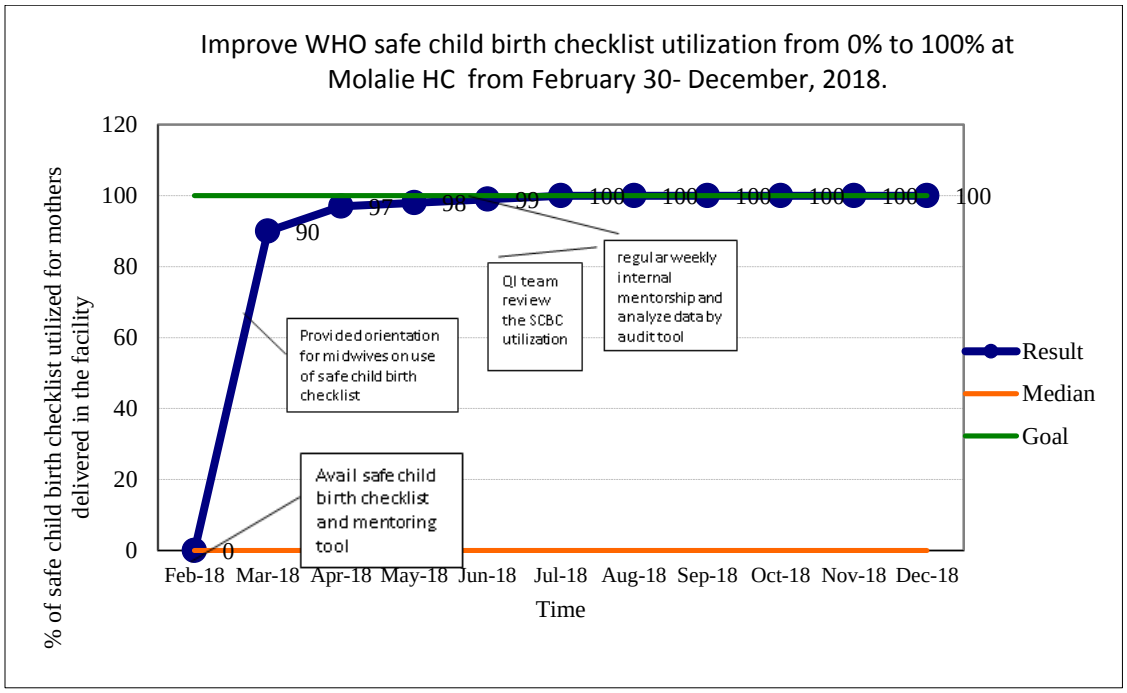

Fig: Utilization of safe childbirth checklist, in Molalie HC, North Shewa, Feb. - Dec. 31, 2018.

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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Affiliation: 1. USAID Transform HDR, Addis Ababa, Ethiopia
2.Bambasi Health Center, Bambasi, Ethiopia

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.

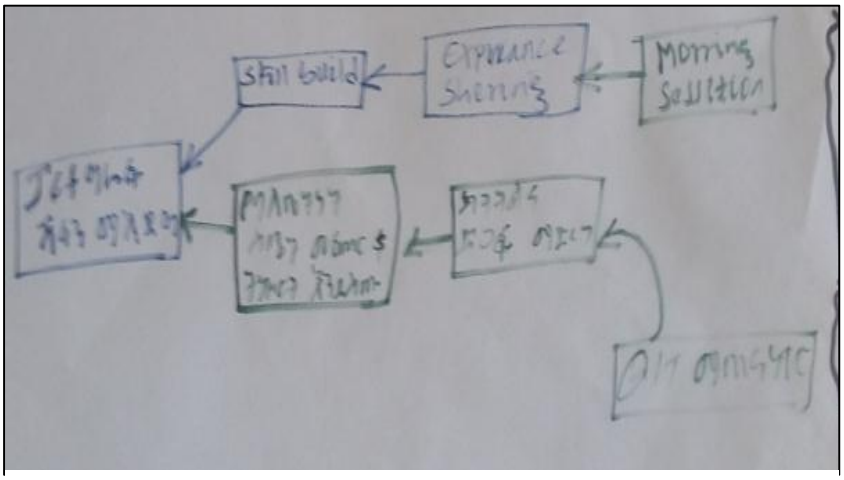

Fig 1. Root cause analysis using driver Diagram

To site: Yeshitla A, Abera Y, Argeta Y, Addisu T, Adem T. Increase Partpgraph Use through Improvement Intervention in Bambasi Health Center, Benishangul Gumuz Region, Ethiopia, EHQB 2019; 1: Page 70-72.

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.

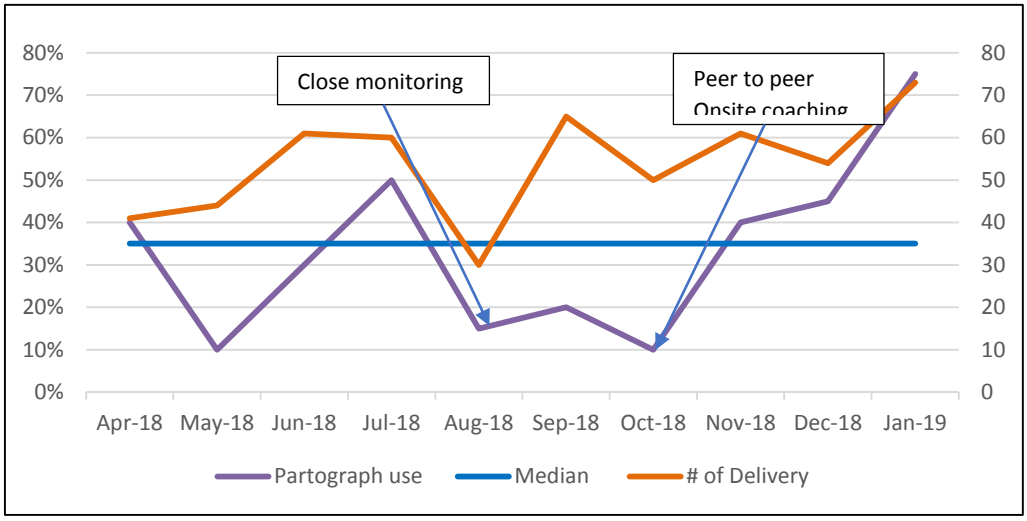

Fig 2. Delivery and Partograph use, Bambasi Health center

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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Affiliation: 1. Worabe Comprehensive Specialized Hospital, Worabe, Ethiopia

To site: Nursebo N, Watero M, Kedir A, Kebede Y, Ahmed K, Mohammed A, Shifa J. Reducing Outpatient waiting time to consultation at outpatient department, worabe hospital EHQB 2019;1:page 73-77.

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)..

Method*s*: - 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.

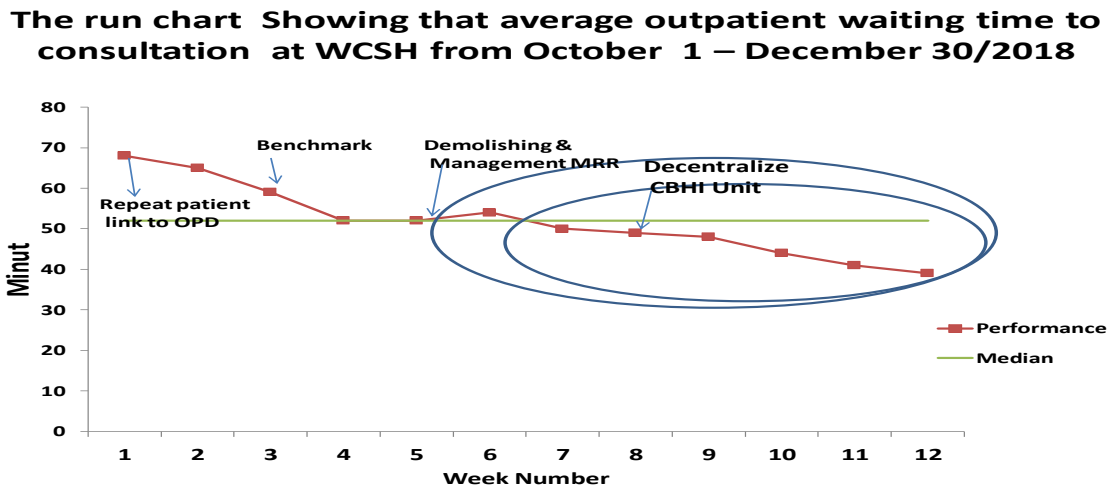
Measures

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



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.

To Site: Alemayehu E, Surge plan; a Quality Improvement Booster. *EHQB 2019*;1: Page 78-81

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

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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						
Feasibility		**1**	**2**	**3**	**4**	**5**
	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

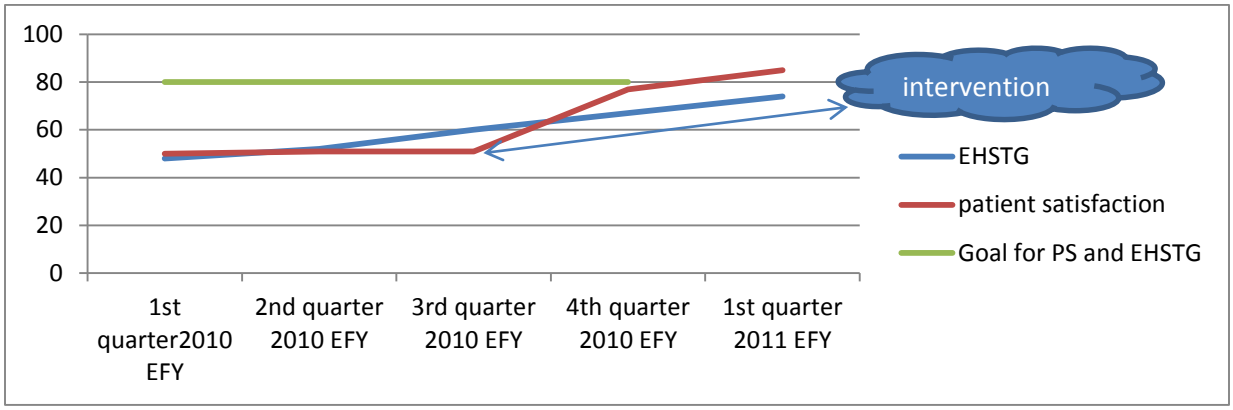

Fig 2; - This line graph shows the change in EHSTG and patient satisfaction of MTUTH in and after the intervention period.

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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To site: Teshome A, Fekadu AbdisaF, Zelalem B, Temesgen N. QI project on improving elective surgical service access at Yekatit 12 Medical College. EHQB 2019;1: Page 82-87.

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.)

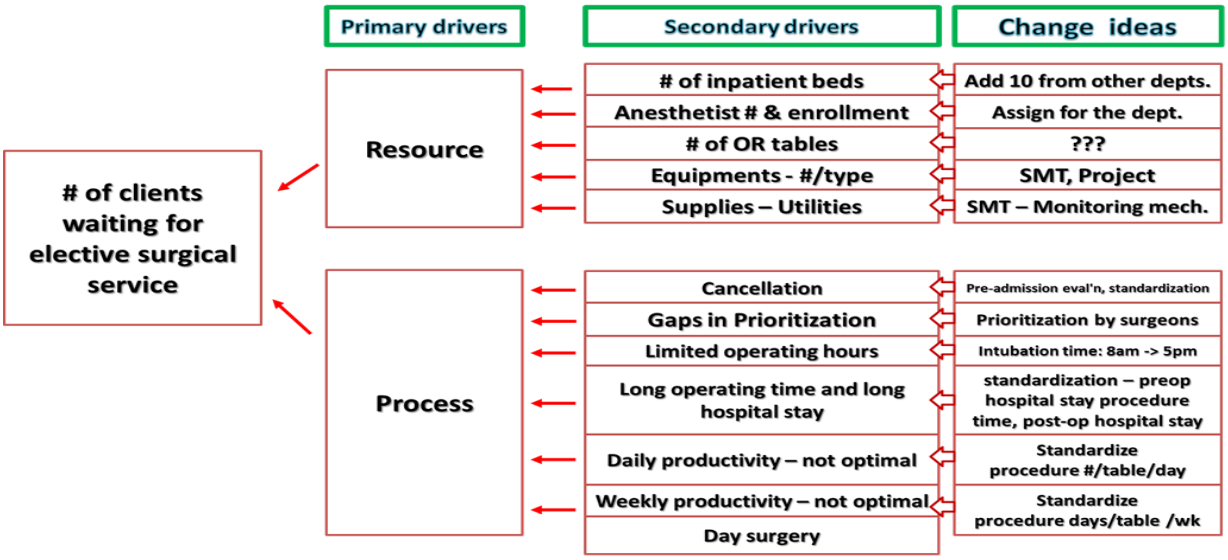

Figure 1: Driver diagram

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.

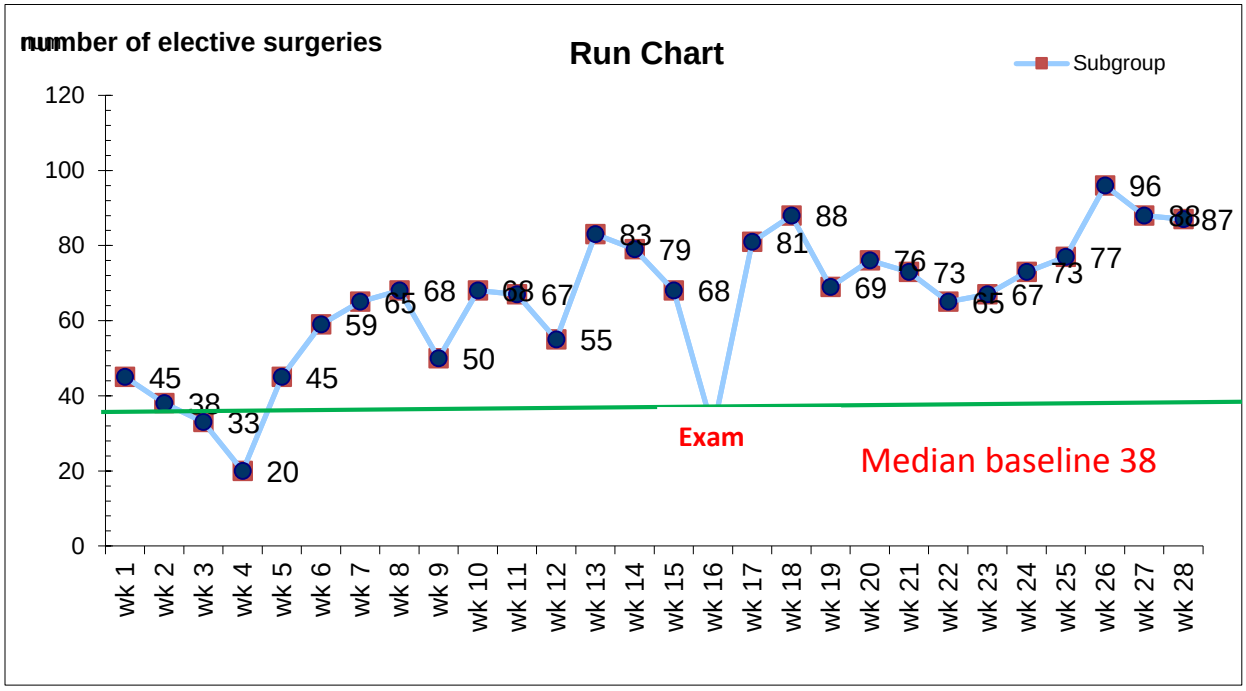

Figure 2: Run chart with data before and after change package inserted

Also, analysis with C- chart showed special cause variation (shift) immediately following the introduction of the change package. (See figure 2)

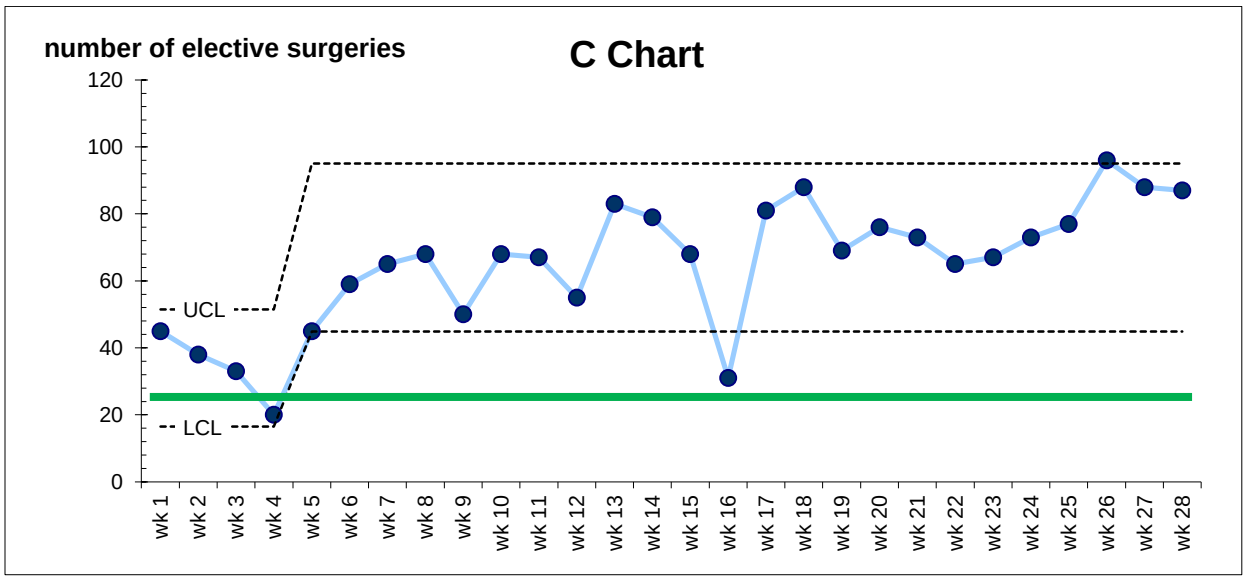

Figure 3: C - chart showing improvement in elective surgical service productivity at Y12HMC

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

To site: Getachew M, Kassaye M, Varallo J, Troxel A. Expanding Access to Safe surgery through a Multidisciplinary Mentorship Approach. EHQB 2019;1: Page 88- 91.

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

Reference

1. Meara JG, Leather AJ, Hagander L, et al. Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. Lancet 2015;386:569–624

2. United Nations. Transforming our world: the 2030 agenda for sustainable development [Internet]. New York. 2015 https:// sustainable development. un. org/ content/ documents/ 21252030_ Agenda_ for_ Sustainable_ Development_ web. pdf

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. Accordantly, 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.

To site: Tadeg H, Mekete F. Building local manufacturing capacity to improve access to critical MNCH Medicines, EHQB 2019; 1: Page 92-94.

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.

References:

Admasu T, Stenehjem EA, Margoles L, Ermias K, Blumberg HM and Kempker RR (2013). Infection Control Knowledge, Attitudes, and Practices among Healthcare Workers in Addis Ababa, Ethiopia. Infect Control Hosp Epidemiol. 34(12): 1289–1296.

Allegranzi B, Storr J, Dziekan G, Leotsakos A, Donaldson L, Pittet D (2007). The first global patient safety challenge "clean care is safer care": from launch tocurrent progress and achievements. J Hosp Infect. 65(Suppl 2):115–23.

Allegranzi B, Bagheri Nejab S, Combescure C, Graafmans W, Attar H, et al (2011). Burden of endemic health-care-associated infection in developing countries: systematic review and meta-analysis. Lancet. 377(9761):228-41.

Bouallègue O, Naija W, Said H, Nouria A, Jaidane N, Dhidah L, and Boujaafar N, (2013): Incidence of ICU acquired nososcomial infections in University Hospital of Sahloul (Sousse-Tunisia), Antimicrobial Resistance and Infection Control 2(Suppl 1):P233.

Federal Ministry of Health, Ethiopia (2012). National Infection Prevention and Patient Safety Advisory Technical Working Group. Infection Prevention and Patient Safety Training Resource Package, Facilitator's and Participant's Guides. April 2012 Addis Ababa.

Gebremariyam BS (2019). Determinants of occupational body fluids, healthcare workers' precautionary practices: a hospital-based study in Addis Ababa, Ethiopia. Ethiop J Health Dev ;33(1):4-11.

Jain M, Dogra V, Mishra B, Thakur A & Loomba PS. (2012) Infection Control Practices among Doctors and Nurses in a Tertiary Care Hospital, India. Annals of Tropical Medicine ad Public Health. 2012: 5(1); 29-33.

Kelemua G, Gebeyaw T (2014). Assessment of Knowledge, Attitude and Practice of Health Care Workers on Infection Prevention in Health Institution Bahir Dar City Administration, Science. Journal of Public Health. 2(5): 384-393.

Sahiledengle B, Gebersilassie A, Desta H, Tadesse G (2018). Infection prevention practices and associated factors among healthcare workers in governmental healthcare facilities in Addis Ababa, Ethiopia. Ethiopian Journal of Health Science;28(2):177-86.

Yakob E, Lamaro T, Henok A (2015) Knowledge, Attitude and Practice towards Infection ControlMeasures among Mizan-AmanGeneral Hospital Workers, South West Ethiopia. J Community Med Health Educ 5: 370.

World Health Organization (2010). WHO best practices for injections and related Procedures toolkit, Geneva, Switzerland.

World Health organization (2017). Infection prevention and control in health care: time for Collaborative action technical paper, Fifty-seventh Session.

Zenbaba D (2018). Knowledge and Practices of Healthcare workers towards Infection Prevention and its' associated factors in Bale Zone hospitals, Ethiopia, (Unpublished Masters Thesis). Madda Walabu University, Robe, Ethiopia.

Zenbaba D and Allison D (2018). Infection Prevention and Patient Safety: IPPS and CASH Preliminary Assessment July 2018 (unpublished).

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.

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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).

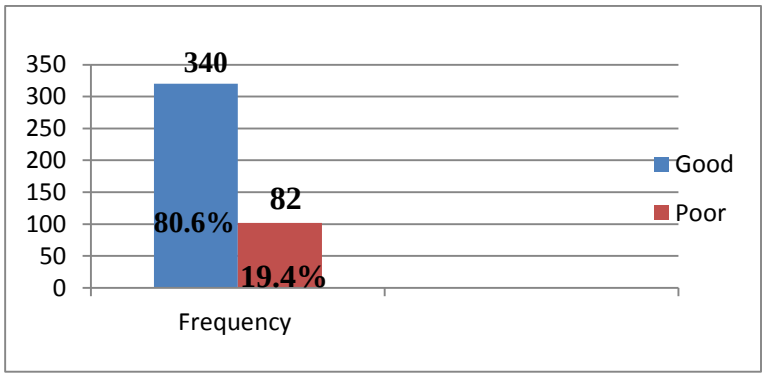

Figure 1 Availability of drugs and equipment in the public hospitals of Wolayta zone, 2018

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)

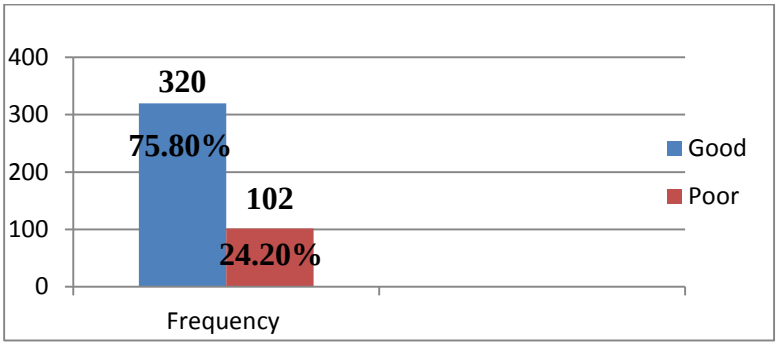

Figure 2 Level of quality of immediate newborn care practices in the public hospitals of Wolayta zone, South Ethiopia, 2018 (n=422)

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.

References

1. *UNICEF and SAVE THE CHILDREN, Newborn health in the humanitarian setting, 2015.*
2. *FMOH, Neonatal Intensive Care Unit (NICU) Training Participants' Manual, in Essential new born care 2014: Addis Ababa, Ethiopia.*
3. *Darmstadt G, Bhutta Z, Cousens S, Adam T, et al, Evidence based cost-effective intervention: how many newborn babies can be save, April 24, 2009. Lancet. 365*
4. *UNICEF, Estimates Developed by the UN inter-agency Group for Child Mortality Estimation, 2017.*
5. *Wolayta zone Health department, Annual health service delivery report, 2017.*
6. *FMOH, mini Ethiopian Demographic and Health data, 2014*
7. *Ganatra H, Zaidi A, Neonatal infections in the developing world. Semin Perinatol, 2010. 34 (6): p. 416-425.*
8. *Lawn J, Blencowe H, Waiswa P, et al, Stillbirths: rates, risk factors, and acceleration towards 2030 . The Lancet, 2016.*

9. *Millar K, Lancet launches every newborn series; Where we have been and where we need to go. lancet, may 2014.*
10. *MacLennan C, Oladapo OT, Gulmezoglu AM, et al, Quality of care for pregnant women and newborns-the WHO vision. BMC Journal of Gynycology 2015. 122(8).*
11. *FMOH, National Strategy for Newborn and Child Survival in Ethiopia 2015/16-2019/20*
12. *Tegbar S, Josvan R, Fantahum E, et al, Quality of Midwife-provided Intrapartum Care in Amhara Regional State, Ethiopia 2017, BMC Pregnancy and children, 17(261).*
13. *WHO, Standards for improving quality of Maternal and newborn care in Health facilities, 2016.*
14. *Abadi K, Fitwi T, Gebremedhin G, Knowledge and practice of immediate newborn care among health care providers in eastern zone public health facilities, Tigray, Ethiopia. BMC Pediatrics, 2017: **17**(157).*
15. *Mirkuzie A, Sisay M, Reta A, Bedane M, Current evidence on emergency obstetric and new born care services in Addis Ababa Ethiopia , BMC Pregnancy and child, 2014, 14(354).*
16. *Taha F, Assessment of knowledge, attitude and practices of nurse midwives towards immediate Care of the Newborn in Khartoum state teaching hospitals. 2016.*
17. *Subbiah N, Sarin J, Jeeva S, Effectiveness of educational intervention on neonatal resuscitation among nursing personnel. Health and Population: Perspectives and Issues, 2012. 35(1).*
18. *Demis B, Hanna G, Level of Knowledge and Associated Factors of Postnatal Mothers' towards Essential Newborn Care Practices at Governmental Health Centers in Addis Ababa, Ethiopia. Hindawi Advances in Public Health, 2018.*

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

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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.

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