

Improving the Quality of Care for Mothers and Newborns in Health Facilities



POCQI: Point of Care Quality Improvement

Four simple steps to practice quality improvement at health facility level



Facilitator's Manual Version 02



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 - Massoud MR, Ottosson A, Nsubuga-Nyombi T, Karamagi- Nkolo E, Stern A, Ismail A. 2015. Improving Health Care. Case Study: Nutrition Assessment Counseling and Support (NACS)
 - Singh R, Singh M, Jha R, Sharma P, Livesley N. 2016. Improving Quality in Healthcare: A practical guide for health care providers. Technical Report. Published by the USAID ASSIST Project.
- Bose C, Hermida J. Eds. 2016. Improving care of mothers and babies: a guide for improvement teams. 2016. American Academy of Pediatrics and University Research Co., LLC. <https://www.usaidassist.org/resources/improving-care-of-mothers-and-babies>
- Materials developed by the Institute for Healthcare Improvement (<http://www.ihl.org/Pages/default>)
- Evidence based practice for improving quality (<http://www.epiq.ca>)

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SECTION 1

Introduction



Introduction

For reducing maternal, newborn and child mortality the focus has been on reaching higher coverage with key RMNCH interventions². It has been observed that the evidence-based interventions are often delivered with insufficient quality³. A number of studies over the past years have documented poor quality of care provided to neonates and children^{4,5,6}. Similarly deficiencies in maternal health care, for both routine and emergency care, have also been described⁷. Poor quality of care may even be harmful for the health of the individual and lead to adverse effects on future health-seeking behaviour by communities⁸. Low utilization of health care services by the population and lack of progress towards achieving MDG 4 and 5 can be partially attributed to the poor quality of the services. Issues of quality of care for maternal, newborn, child and adolescent health have been deliberated in several Regional Meetings. Member States have urged WHO-SEARO to provide support for establishing quality of care improvement in a systematic manner.

The Global Strategy for women's children's and adolescents' health (2016-2030) and SDG framework provide further impetus towards ending preventable mortality among mothers, newborns and children. Universal health care is a center piece for SDG3 wherein the quality of health care is a crucial element. Quality of care is embedded in the recently developed global frameworks like ENAP (Every Newborn Action Plan) and EPMM (Ending preventable maternal mortality). It is therefore mandatory that interventions are delivered with sufficient quality, meeting appropriate standards of care.

WHO-HQ with partners has put forth a Global vision for improving quality of MNH care that emphasizes provision of quality of care as well as improved experience of care at the time of childbirth. WHO has worked with partners to finalize the MNH standards⁹ for good quality and respectful care, implementation guidelines and a measurement framework.

WHO-SEARO has published Regional Framework for Improving Quality of Care for RMNCAH¹⁰. The Framework describes the following steps for operationalization at country level:

1. Getting started

- Identify leadership and champions
- Define roles at various levels

²Countdown to 2015. Accountability for maternal, newborn and child survival: the 2013 update. 2013. WHO and UNICEF.

³Souza JP, Gulmezoglu AM, Vogel J, Carroli G, Lumbiganon P, Qureshi Z et al. Moving beyond essential interventions for reduction of maternal mortality (the WHO Multicountry Survey on Maternal and Newborn Health): a cross-sectional study. *Lancet* 2013 May 18;381(9879):1747-55.

⁴Sidik NA, Lazuardi L, Agung FH, Pritasari K, Roespandi H, Setiawan T et al. Assessment of the quality of hospital care for children in Indonesia. *Trop Med Int Health* 2013 April;18(4):407-15.

⁵Duke T, Keshishyan E, Kuttumuratova A, Ostergren M, Ryumina I, Stasii E et al. Quality of hospital care for children in Kazakhstan, Republic of Moldova, and Russia: systematic observational assessment. *Lancet* 2006 March 18;367(9514):919-25.

⁶Nolan T, Angos P, Cunha AJ, Muhe L, Qazi S, Simoes EA et al. Quality of hospital care for seriously ill children in developing countries. *Lancet* 2001;357((9250)):106-10.

⁷Ocviyanti D, Prasetyo S, Adisasmita A, Moegni E, Pambudi I, Lawintono L et al. Assessment of the quality of care for mothers and newborns in health facilities in Indonesia. in preparation 2013.

⁸Zaidi AK, Huskins WC, Thaver D, Bhutta ZA, Abbas Z, Goldmann DA. Hospital-acquired neonatal infections in developing countries. *Lancet* 2005 March 26;365(9465):1175-88.

⁹WHO: Standards for improving quality of maternal and newborn care in health facilities. Access: http://www.who.int/maternal_child_adolescent/documents/improving-maternal-newborn-care-quality/en/

¹⁰WHO-SEARO: The Regional Framework on improving quality of care for reproductive, maternal, newborn, child and adolescent health. Access: http://www.searo.who.int/entity/maternal_reproductive_health/documents/qoc-framework/en/



2. Setting standards of care

- Develop guidelines based on standards
- Develop an assessment tool based on standards and guidelines

3. Assessing current quality of care and identifying gaps in quality with reference to the established standards. Professionals (Pediatricians, Obstetricians) are trained to assess quality of care by using the tools developed in the country

4. Improvement

- Create improvement teams to identify problems and implement solutions
- Implement a collaborative approach to ensure adherence to guidelines based on standards of care
- Train health providers (in technical and QI methods) to implement the quality improvement system

5. Continuous monitoring of performance and provision of supportive supervision and (self-) assessments of quality of care to measure progress towards the achievement of standards

6. Documentation and publication of QI efforts and recognition and celebration of achievements of the standards

7. Scaling up to all hospitals and health facilities and communities

SEAR countries have reported the use of a variety of approaches for improving quality of care in hospitals/health facilities at a variable scale and pace. Related to steps 1-3 in the Regional Framework, several countries have established or are establishing a structure for quality assurance/quality improvement in MOH at national and sub-national levels; are adopting or updating global standards and guidelines for managing maternal, newborn and child health conditions and have undertaken assessment of quality of care in selected hospitals using WHO integrated assessment tools and others.

What is quality improvement?

There are several common reasons why people do not receive the requisite care in health facilities/hospitals. These include:

- Lack of resources in terms of physical infrastructure and basic facilities, appropriate staff, essential equipment and supplies
- Health workers have insufficient clinical knowledge and skills or understanding of how to ensure good quality of care
- Lack of organization of services at health facilities so that staff are not able to easily provide care that they know is important

Quality improvement (QI) is a management approach that health workers can use to re-organize patient care at their level to ensure that patients receive good quality healthcare. While QI primarily focuses on re-organizing care within the existing resources, it can also contribute to addressing related issues. For example, QI leads to more efficient use of resources that can solve at least some issues of scarcity. It could help to identify the most relevant gaps in knowledge and skills among healthcare workers and help to prioritize their training and skills building. Quality improvement does help to identify deficiencies in quality of care but is NOT a fault finding exercise. It is a problem solving approach within the local context in health facilities and usually without requiring additional resources.



Quality improvement is best used as part of a larger healthcare system strategy to address issues of quality of care. An ideal system should include methods to set targets for performance and approaches to change how care is provided to reach those targets as well as a system of accountability so that clients can be sure that good care is being provided. Defining 'Standards of care' is one way of setting clear targets that must be followed in all health facilities. Quality assurance or accreditation mechanisms using external assessors evaluating against the pre-defined standards are ways of ensuring accountability.

In line with the WHO-SEARO Regional Framework for improving quality of care for RMNCAH Member States are establishing or strengthening the national and subnational institutional mechanisms (e.g. quality of care units and teams at national and state/district levels) across the health system to promote and monitor the quality of care provided and experienced by the clients using the health care services. Member States would adopt/adapt the global standards for maternal and newborn health care that have been published in 2016 and also the standards for child care that will be published subsequently.

In the Regional Framework step-4 is on promoting improvement of quality of care at the level of health facilities. WHO-SEARO would support Member States to build capacity of healthcare workers to incrementally and progressively improve quality of services at the point of care in health facilities. For this, WHO-SEARO in collaboration with the WHO Collaborating Centre for Newborns, All India Institute for Medical Sciences (AIIMS) New Delhi and the United States Agency for International Development Applying Science to Strengthen and Improve Systems (USAID ASSIST) project, has developed a model to be implemented at point of care in health facilities by the teams of healthcare workers to improve the quality of care for mothers and newborns.

Such a quality improvement approach at health facilities will not only receive support but also active encouragement by the district and state health system within the national framework and action plan for quality of care led by the ministry of health in the country.

Point of Care Quality Improvement (POCQI) model

The Point of Care Quality Improvement (POCQI) model has been designed to build capacity for quality improvement in the health facilities by teams of healthcare workers who will be suitably and actively supported by the management of the hospital/health facility and the district management for quality of care. Existence and availability of essential infrastructure for patient care is of course a pre-requisite to attempting quality improvement.

For this model a training package has been developed to build knowledge and skills of front line health workers to use quality improvement approaches to solve problems in their health facilities and reliably deliver better care for mothers and newborns around the time of birth. The POCQI training package includes a facilitator's manual, a learner's manual, a set of slides and other learning materials. Although the focus is on the care of mothers and newborns at the time of birth, the training package provides a generic approach for continuous quality improvement of health care that can be applied in other areas in health facilities such as sick newborn care and paediatric care.

The unique feature and strength of the POCQI model is that it offers a simplified common sense approach that has been tested successfully and helps bring incremental improvement in quality of care within the available resources and without many additional resources.



The POCQI model intends to offer a newer paradigm, beyond the often followed approach of providing clinical training/coaching to health workers with the assumption that knowledge-deficit is the primary cause of poor performance and inadequate quality of care. The focus in this model is on team building among the health workers at the health facilities and build their capacity to collectively decide, based on local data, a target that involves problem solving and improving availability and efficient use of existing resources including time, essential medicines and equipment in order to achieve standardization of care for improving quality of care and patient satisfaction.

The underlying assumption for this approach is that healthcare workers want to ensure the best health outcomes for all their patients. The simplified approach of POCQI that looks for early success will immediately improve job-satisfaction among healthcare workers as well as keep them motivated to work as a team at the health facility. Working together will ensure in the long run a movement towards continuous quality improvement with moving targets, from easy to change to harder to change process of care for ensuring patient satisfaction with the healthcare they receive. Any knowledge deficit that is identified by teams of healthcare workers would also get resolved by their own initiative to seek the required information and skills through traditional and modern sources.

The training package combines strong features of several packages including those prepared by USAID ASSIST, Institute for Healthcare Improvement (IHI), Helping Babies Survive and Thrive, and Canadian Evidence Based Practice for Improving Quality (EPIQ) that have been used successfully in a range of settings across several countries. The POCQI package has been field tested in several settings in countries of the Region and has been found to be acceptable and feasible to apply in health facilities for improving maternal and newborn health care.



Learning objectives

This two-day course is focused on teaching the principles and a simple step-wise approach for quality improvement at the point of care in health facilities and focuses on care of mothers and newborns around the time of childbirth, and care of sick and small babies. It is designed to build the skills of front-line health workers to identify and solve problems at their level without seeking significant additional resources. It does not discuss standards of care or external assessment.

The first day of the course focuses on introducing four QI steps and basic principles and concepts in improving quality of care. The second day guides facility level staff to develop a simple QI project related to their present work and responsibility that they consider is feasible to implement in their health facility with possibility of visible improvement in short time.

At the end of this course, it is expected that participants will have learned to:

1) Identify a problem with quality of care, forming a team and writing an aim statement

- How to review data to identify problems
- How to prioritize what problem to work on
- How to form a team to work on that problem
- How to write a clear aim statement

2) Analyze and measure quality of care

- Tools for understanding processes and systems and how to use them
- How using these tools can help identify possible solutions to reach your aim
- How to develop indicators for process and outcome of care
- How to use indicators to track progress of improvement

3) Develop changes and test these to learn what works

- How to come up with ideas about what to change to reach your aim
- How to plan a plan-do-study-act (PDSA) cycle to test change ideas
- What to do as you learn from PDSA cycles
- How to test multiple change ideas to achieve your aim

4) Sustain improvements

- How to build enthusiasm, motivate team, recognition by certificates and celebration
- How to share the results and successful projects widely
- How to make policy with new ways to work
- How to hardwire the gains by making system change

Course structure

- Most of the course consists of small group work using a learner's manual.
- The learner's manual includes a Case scenario and exercises and discussion around the first three steps for quality improvement.



- On day one, each step is introduced with a short presentation to provide and clarify the key concepts.
- On the second day, the groups use a QI project template to develop a QI project for their health facility and share their plans with the rest of the participants to get their inputs.

Organizing the workshop

Whom to invite

This course is designed for front-line health workers who will use these skills in their day-to-day work to improve care. It works best when the health facilities send three or more staff members (nurses, doctors and other staff) who are involved in direct care for women and babies around the time of labour (childbirth) and care of sick and small babies.

It is recommended to involve managers from these facilities right from the beginning so that they can understand the QI concepts and steps in the POCQI model and subsequently support the QI projects.

The number of people to invite will depend on the number of facilitators available. Ideally there will be one facilitator per group of 6-9 participants. A group of 32-36 participants and at least four facilitators generally works well.

The invite should clearly describe the objective that participants should be able to work as a team to complete steps of quality improvement. The ultimate goal being able to carry out quality improvement projects in their facilities when they return from the training.

How to organize the room

Most of the workshop involves staff from each hospital/health facility working together in teams. Because of this, the room should not be set up conference style or around a single table. Instead, teams from one or more health facilities should sit together around a table. It is a good idea to limit the group to 6-9 people on one table with one facilitator.

Training equipment and materials

- Computer
- Projector and screen
- Microphones, as required
- A whiteboard or flipchart with marker pens for each group around the table
- Highlighter and pencil for each participant
- Materials for any game activity if inbuilt in the course
- Name tags for participants and facilitators



Training documents

- a. Each participant should have:
 - 1. Agenda of the workshop
 - 2. Learner's manual
- b. Each facilitator should have
 - 1. Agenda
 - 2. Facilitator's manual
 - 3. Learner's manual
 - 4. Powerpoint presentations for each step (for lead facilitator)
 - 5. Powerpoint presentation of the QI Project Template
 - 6. Video clip files
 - 7. Copies of workshop feedback form (one for each participant)



Model programme of the workshop

A model programme for the two-day workshop is given below. Based on the expertise of the instructors and facilitators the agenda can be modified to include games and other activities to reinforce the concepts.

Improving the Quality of Care for mothers and newborns in health facilities		
Point of Care Quality Improvement (POCQI) Workshop		
Venue:		Date:
Day 1 - The four steps of quality improvement		
Time	Session	Purpose
08:30 – 09:00	- Registration - Distribution of materials	
09:00 – 09:15	- Introduction to the workshop - Introductions of facilitators and participants	Overall plan, logistics
09:15 – 10:00	Introductory case study - How a team addressed a problem and provided better care by implementing a selected change	Simple success story about QI to motivate participants
Step 1 - Identifying a problem, forming a team and writing an aim statement		
10:00 – 10:20	Presentation by lead facilitator	Share key concepts
10:20 – 11:00	Group work	Understand concepts
11:00 – 11:15	Tea/Coffee Break	
Step 2 - Analysing the problem and measuring quality of care		
11:15 – 12:00	Presentation by lead facilitator	Share key concepts
12:00 – 12:45	Group work	Understand concepts
12:45 – 13:30	Lunch	
Step 3 – Developing and testing changes		
13:30 – 14:00	Presentation by lead facilitator	Share key concepts
14:00 – 14:30	Group work	Understand concepts
Step 4 – Sustaining improvement		
14:30 – 15:00	Presentation by lead facilitator and Discussion	Share key concepts
15:00 – 15:30	Participants do the knowledge assessment exercise	Knowledge assessment
15:30 – 16:00	Tea/Coffee break	



16:00 – 16:30	Feedback on knowledge assessment	Knowledge assessment
16:30 – 17:00	Briefing for work on Day-2 for drafting own quality improvement project	Plan for Day-2
Day 2 - Developing Own QI Project		
Time	Session	
09:00 – 09:30	Review of previous day and clarifications Overview and instructions for Day 2	
09:30 – 10:15	Step 1 - Group work using QI project template	
10:15 – 11:00	Step 2 - Group work using QI project template	
11:00 – 11:30	Tea/Coffee break	
11:30 – 12:15	Step 3 - Group work using QI project template	
12:15 – 13:00	Teams review their projects and prepare PPT for sharing in the plenary	
13:00 – 14:00	Lunch	
14:00 – 15:30	Teams share their projects with the whole group and get feedback (Plenary)	
15:30 – 16:00	Tea/Coffee break	
16:00 – 17:00	Plan of action for the team	
17:00 – 17:30	Feedback on workshop	



Facilitation guidance

Lead facilitators

There should ideally be one or two lead facilitators.

The lead facilitator is a person who has knowledge about healthcare of mothers and newborns at the time of childbirth and basics of QI, has facilitated at least two QI workshops and knows about the entire programme logistics.

It is recommended that the lead facilitator must have completed at least two QI projects along with his/her team and must be proficient in coaching and conducting participatory training and be able to collate feedback for future improvement in the training workshop.

Group facilitators

The group facilitators should have experience in using QI approaches to improve care for women and neonates, especially around the time of delivery. They should have good communication skills, strong inter-personal skills and a flair for participatory learning.

Each group facilitator works with the groups of 5 - 9 participants and help them understand the concepts. Their job is to give explanations, answer questions, lead the group discussions, and help the groups keep time.

Number of facilitators

Ideally there will be one facilitator per group of 6-9 participants. Generally a workshop of 32-36 participants with at least four group facilitators and one lead facilitator works well.

If you do not have enough facilitators:

If there are not enough facilitators, the course will still work but the lead facilitators will have to give some more direction before each group session so that the groups know what is expected of them. The available facilitators would move from table to table to supervise and enable learning and provide feedback

Facilitator knowledge and skills

Facilitators for POCQI need to have the following knowledge

- Knowledge of the four steps of the POCQI manual
- Knowledge of the Case scenario in the POCQI package



Facilitators should have the following skills:

POCQI facilitator skills	Required for lead facilitators	Required for group facilitators
Skill 1 - Sharing a QI case study, preferably one that they have done themselves	Yes	No
Skill 2 – Presenting the POCQI powerpoint slides	Yes	No
Skill 3 - Group facilitation of the case scenario exercise in the POCQI manual	Yes	Yes
Skill 4 – Guide participants in drafting their QI project and giving feedback	Yes	Yes
Skill 5 - Post-workshop follow-up and mentoring of new QI projects	Yes	Preferred
Skill 6 - Conducting interactive sessions or games to convey QI concepts	Yes	Preferred

Facilitator roles and responsibilities

Lead facilitator

The lead facilitator/s will do the following

- Organize the workshop - The lead facilitator/s will ensure that the right people are invited, that the right people are facilitating, that the room is set up correctly and that the workshop progresses well
- Introduce - The lead facilitators will introduce the workshop and participants
- Keep time - The lead facilitators will help the groups keep time
- Presentations - The lead facilitators will do the presentations for each step (or delegate to a group facilitator) and facilitate presentations from the groups
- Manage to workshop - Distribute the tasks, who will do what, among the group facilitators in advance

Group facilitators

The group facilitator does three things:

- **Enhances learning**
 - Makes sure that each participant understands what they are expected to do
 - Answers participants' questions and clear any confusions



- Provides feedback on exercises and help correct any incorrect or incomplete answers
- When the group is planning the project for their own facility, provides advice on what makes a good initial improvement aim, who should be on the improvement team and how to go about analysing the problem
- **Motivates**
 - Compliments people on giving correct responses/expressing views
 - Encourages all members of the team to contribute
 - Is positive about their ability to do this work at their health facility
 - Manages
 - Makes sure that the group has everything it needs
 - Helps the group stay on time
 - Ensures everyone is engaged and busy with group work
 - Avoids distractions
- **Manages**
 - Makes sure that the group has everything it needs
 - Helps the group stay on time
 - Ensures everyone is engaged and busy with group work
 - Avoids distractions

General advice for all facilitators

What to do:

- Be enthusiastic and positive.
- Be attentive to participants' questions and needs.
- Watch people's body language to see if people need additional help.
- Listen to people's questions and discussions and help direct them rather than jumping to provide the 'right' answer.
- Encourage the quiet members to participate.
- Keep a check on timing and encourage the group to complete the task within time.
- Be an observer and listener rather than controlling the discussion.
- Get up from seat and walk around to see if everyone is doing assigned task or if anyone needs help.
- Be aware of language fluency, facilitators should speak slowly and clearly if the participants are not fluent in the language of instruction.
- If there are participants in the group who grasp things quickly then encourage them to help others in the group.
- Use Flip chart more often - giving variations and using different ways make learning easy.
- Give clear instructions for every assigned activity.
- Be available to give extra time to your participants to clear any doubts .This can be one to one after you are done with the group work or during breaks.



What not to do:

- Do not work on other things while the course is taking place.
- Do not be rude or make people feel that they do not know anything.
- Do not lecture – the participants should talk more than the facilitators.

Note: The objective of all facilitators is to inspire and encourage participants to do a **QI** project after the workshop.



SECTION 2

Day 1: The four
steps of quality
improvement



Day 1 – Instructions for lead facilitators

- **Welcome everyone to the workshop**
- **Explain the objectives of the workshop.**
 - This two-day course is focused on teaching the principles and a simple step-wise approach for quality improvement at the point of care in health facilities
 - The focus is on improving care of mothers and newborns around the time of childbirth.
 - It is designed to build the skills of front-line health workers to identify and solve problems at their level without seeking significant additional resources.
- **Explain briefly the overall plan for the next two days, logistics and any ground rules.**
 - Check that all participants have a copy of the learner's manual
 - Explain that the first day of the course focuses on introducing four QI steps and basic principles and concepts in improving quality of care using a Case scenario in Section 2 of the learner's manual
 - The second day guides participants to develop a simple QI project related to their present work and responsibility.
- **Introduce other facilitators and participants**
 - Ensure that every table/group has an assigned group facilitator
 - If any group / table does not have an assigned facilitator then assure them that other facilitators will walk around to them intermittently to address their queries throughout the workshop and they can always ask any of the available facilitators at any time.
- **Narrate the introductory case study**
 - Narrate a case study of how a team of facility staff used QI methods to solve a problem
 - The facilitator can use their own example of a simple successful QI experience or use the example in Appendix 5: Introductory case study.
 - A complex case study or one that used complex tools should not be used.
 - The case study should be used to emphasize the following:
 - Each of the four steps in the POCQI model
 - At least some of the changes the team makes involve changing processes of care and go beyond simply educating, training or instructing staff
 - That this is a simple and common sense approach that can be undertaken at most places within the existing resources and without any significant additional resources.



STEP: 1



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

Learning objectives

You will learn:

1. How to review data to identify problems
2. How to prioritize which problem to work on
3. How to form a team to work on that problem
4. How to write a clear aim statement

Facilitation instructions

Presentation by the lead facilitator (Slides 1 to 12)

- The lead facilitator will present the slides 1-12 from the POCQI powerpoint presentation.
- The presenter can use the explanations provided with each slide in Section 4 of the facilitator's manual.
- Inform the participants that these slides are available in the learner's manual in Section 4 with space to take notes.

Group work instructions

- Group facilitator takes the participants through the learner's manual.
- Participants to individually read **Case scenario 1.1** in the learner's manual.
- Explain that participants should review the data in **Figure 1**, answer the questions on the next page and write their answers in the space provided.
- They can do this exercise as a group or as individuals. If they do it as individuals, please encourage discussion in the group after everyone is finished.
- If the group does not have a group facilitator assigned to their table, ask them to raise their hand if they need a facilitator to come to them.
- Lead facilitators should move from group to group to oversee and support the group facilitator.



Case scenario 1.1

Learner's manual
page no. 4

You work at a district hospital in which around 2000 babies are born annually.

*A **single nurse at a time** works in the labour room where she provides routine delivery care, basic emergency obstetric care and postnatal care for mothers and babies.*

*A **nurse in-charge** oversees operations, including ordering supplies.*

*There is also a **pharmacist** on site.*

*A **doctor** manages the labour ward and is available for emergencies but because they have no blood bank and limited facilities, most emergencies are referred.*

Mothers and babies are kept together after birth and are typically discharged after 24-48 hours. The staff work hard but they think that the care they provide is not as good as it could be.

They decide to look at the data in their hospital birth register to identify some problems that they can fix. The register has information about both processes of care and outcomes

Processes are activities that health workers carry out and outcomes are the end result of those activities.

*The team looks at how well they are carrying out important processes of care and if they are getting the outcomes that they want for their patients. Information on care at birth is collected from the records as shown in the **Hospital Birth Register (Table 1)**.*



Table 1: Hospital birth register

	Name B/O	Date of birth (DD/MM)	Time of birth (24 hr)	Delivery route	Uterotonic given in 1st minute	Apgar 1 min, 5 min	Birth Wt (grams)	Temp °C at 1 hour	Immediate drying	Delayed cord clamping	Discharge Date (DD/MM)	Discharge (Home, Died Referred)
1	Gini	15.06	00.45	Vag	✓	8,9	3400	35.4	✓	✓	16.06	Home
2	Meenu	15.06	06.30	C/S		7,8	2460	34.5		✓	17.06	Home
3	Geeta	15.06	14.30	Vag		8,9	2350	35.2			16.06	Home
4	Ranchu	16.06	09.20	Vag	✓	6,8	3310	36.8	✓	✓	17.06	Home
5	Tina	16.06	17.50	Vag		6,8	2670	37.1	✓	✓	17.06	Home
6	Puja	17.06	02.42	Vag		5,7	2740	34.9		✓	18.06	Referred, PPH
7	Kiran	18.06	08.16	Vag	✓	8,9	2851	36.8	✓		19.06	Home
8	Meera	18.06	12.25	Vag	✓	8,9	2780	37.1	✓	✓	19.06	Home
9	Saroj	19.06	18.20	Vag		8,9	2618	35.8	✓	✓	23.06	Referred, PPH
10	Kirti	19.06	22.10	Vag	✓	9,9	2651	37.4	✓	✓	24.06	Home



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:

A) What are the different processes of care and outcomes of care listed on the Birth Register?

Processes of care	Outcomes of care
• Delivery mode	• Apgar scores
• Uterotonic given	• Birth weight
• Immediate drying	• Temperature at 1 hour
• Delayed cord clamping	• Post-partum haemorrhage

B) Calculate the percent performance of three processes of care

Process of care	Performance
Uterotonic given	50%
Immediate drying	70%
Delayed cord clamping	80%

C) Calculate the percent performance of two outcomes of care

Outcome of care	Performance
Hypothermia at 1 hour	50%
PPH	20%

Note: Discussion guidance:

Sometimes participants question whether temperature is a process or outcome. While the action of taking a patient's temperature is a process, the value of the temperature taken tells us the clinical outcome. In the above scenario we are using the value of the temperature to know the clinical status of the babies in the facility, so it is outcome data.

Also, often there is discussion on whether the mode of delivery is a process or outcome measure. While the discussion is pertinent, the participants should be told that discussion for this particular case scenario should be limited to the above mentioned processes and outcomes, so it is important for the facilitators to keep the discussion on track and reach the end points within the stipulated time.

After completing Discussion 1.1, ask the participants to individually read Case scenario 1.2.



Case scenario 1.2

Learner's manual
page no. 7

The staff in the facility identify a number of problems with the care that they are providing.

They realize that they are not giving all women uterotonic (Inj Oxytocin) within one minute and that women are suffering from post-partum hemorrhage (PPH).

They also realize that 20% of babies are born at low weight, that many are not dried quickly and are having their cord clamped early and that many are cold at one hour after delivery. (Hypothermia is temperature < 36.5C)

They decide that they cannot fix everything at once so decide to prioritize one or two projects to work on. They ask for advice on filling in a prioritization matrix.

Discussion 1.2 - Prioritizing a problem

Ask the participants to fill out the prioritization matrix based on their experience in their facility, they have to assign points from 1 to 5 for each problem listed in the first column of the table.

- Important to patient outcomes – how important is this aspect of care for patient outcomes? 1 is not important (lowest score), 5 is vitally important (highest score).
- Affordable in terms of time and resources – how easy will it be to fix this problem? 1 is not affordable (it will take a lot of time or resources), 5 is very affordable.
- Easy to measure – how easy will it be to measure this problem? 1 is very difficult, 5 is very easy.
- Under the control of team members – will people in the unit be able to fix this themselves? 1 is not at all under the control of the team members, 5 is entirely under the control of the team members.

Because the situation is hypothetical, there is not one answer to the matrix and numbers assigned by participants may vary from the sample given below.

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



Once the teams have filled in the matrix ask them to choose a gap in quality that they would like to work on based on prioritization.

Note: Important points

1. **Sometimes participants may give 5 points in all the criteria.** This defeats the purpose of the prioritization exercise and will not help them determine which aim to select. For example, if someone gives 5 points to all aims under the column 'important to patient outcomes', then you can ask them what would they rather have

a. a baby which is not dried immediately but is warm at 1 hour after birth

OR

b. a baby that was dried immediately but is still cold at 1 hour after birth.

This will help them understand that the outcome of reducing low temperature at 1 hour or birth is more important to the patient than the process of 'immediate drying' and thus they can give the aim of 'drying' a lower score in column one than 'low temperature'.

2. **Make it 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 can use a flip chart to build consensus on the prioritization.

Choose a gap in quality that the team should improve:

Any of the following are acceptable:

Giving oxytocin within one minute of delivery

Neonatal hypothermia

Delayed cord clamping

Immediate drying



Case scenario 1.3

Learner's manual
page no. 8

The staff has now figured out which of the problems in the care of mothers and newborns they should prioritize and tackle first.

They now need help in forming a team to address these gaps.

Discussion 1.3 - Forming a team

After discussing what problem to solve, ask the group to move onto Discussion 1.3. 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 1.2.

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.

Possible answers for forming a team to improve uterotonic administration are given below:

Team members • Nurses • Nurse-in-charge • Pharmacist • Doctor There are very few people in the facility so all should be included and all of them play a role in care for mothers and newborns.	Roles • Nurse-in-charge – Team leader • Nurse A – Data collection • Doctor – Communicator • Pharmacist – Recorder There can be additional roles and there could be more nurses.
Team leader It is better if the nurse or nurse-in-charge is the team leader as they are the ones most familiar with the situation and are at the clinic most of the time.	Characteristics of a good team leader? • 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



Case scenario 1.4

Learner's manual
page no. 9

Now that a team is in place to address the problem they all need to develop a clear aim statement. This is important to do so that all of them have the same common understanding of what needs to be achieved.

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, who, how much and by when"

- "What" describes the outcome or process that needs improvement
- "Who" describes the patient group that will be affected
- "How much" describes the change from baseline to the desired result
- "By when" describes by when you plan to achieve your desired goal



The aim statement should follow the structure:

We **aim to** (what do you want to achieve) in (which patient group) **from** (what is the current performance) **to** (what is the desired level of performance) **by** (how long).

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 – a 5% reduction in newborn hypothermia is not ambitious enough; on the other hand eliminating post-partum haemorrhage is unrealistic.

Sample aim statements

Neonatal Health:

We: aim to reduce the percentage of newborns with low temperature (<36.5°C) at one hour after delivery

In: all the live births happening at our facility

From: 50% to 10%

By: 8 weeks - starting from 1st May to 1st July

Maternal health:

We: Aim to increase the percentage of women receiving uterotonic within one minute after delivery

In: All women with normal vaginal delivery in the labour room

From: 50% to 100%

By: 4 weeks - starting from 1st May to 1st June

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



STEP: 2



Analysing the problem and measuring the quality of care

Learning objectives

You will learn:

1. Tools for understanding processes and systems and how to use them
2. How using these tools can help identify possible solutions to reach your aim
3. How to develop indicators for process and outcome of care
4. How to use these indicators to track progress of improvement

Facilitation instructions

Presentation by the lead facilitator (Slide 13 to 39)

- The lead facilitator will present the slides 13 – 39 from the POCQI powerpoint presentation.
- The presenter can use the explanations provided with each slide in Section 4 of the facilitator's manual.
- Inform participants that these slides are available in the learner's manual in Section 4 along with space to take notes.

Group work instructions

- Explain that in Case scenario 2.1 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 team will then analyze the problems using various analysis tools.
- Ask participants to individually read Case scenario 2.1 and review the flowchart and fishbone diagrams in the learner's manual.
- The 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.



Case scenario 2.1

Learner's manual
page no. 10

The team decides that they want to fix two problems and develop two aim statements.

- A) *Maternal health (M): We will increase the percentage of women receiving a uterotonic within one minute after vaginal delivery from 50% to 100% within 4 weeks.*
- B) *Neonatal health (N): We will reduce the percentage of newborns with low temperature ($<36.5^{\circ}\text{C}$) at one hour after delivery from 50% to 10% within 6 weeks.*



Discussion 2.1 – Selecting tools for analysis

This exercise helps participants recall the various tools for analysis.

List some of the tools that can be used for analyzing these problems

- Flowchart
- Fishbone
- Five Why's
- Pareto Principle



Case scenario 2.2M(Maternal health)

Learner's manual
page no. 10

Analysis - Improving uterotonic administration

For Improving uterotonic administration the team uses the following analysis tools:

- The team develops a process flowchart for maternal care at the time of delivery (Figure 1) in order to understand how they can ensure that all women receive a uterotonic within one minute of delivery.
- They also use a fishbone diagram (Figure 2) to identify problems with providing a uterotonic in the first minute after delivery.

Figure 1: Maternal care flowchart

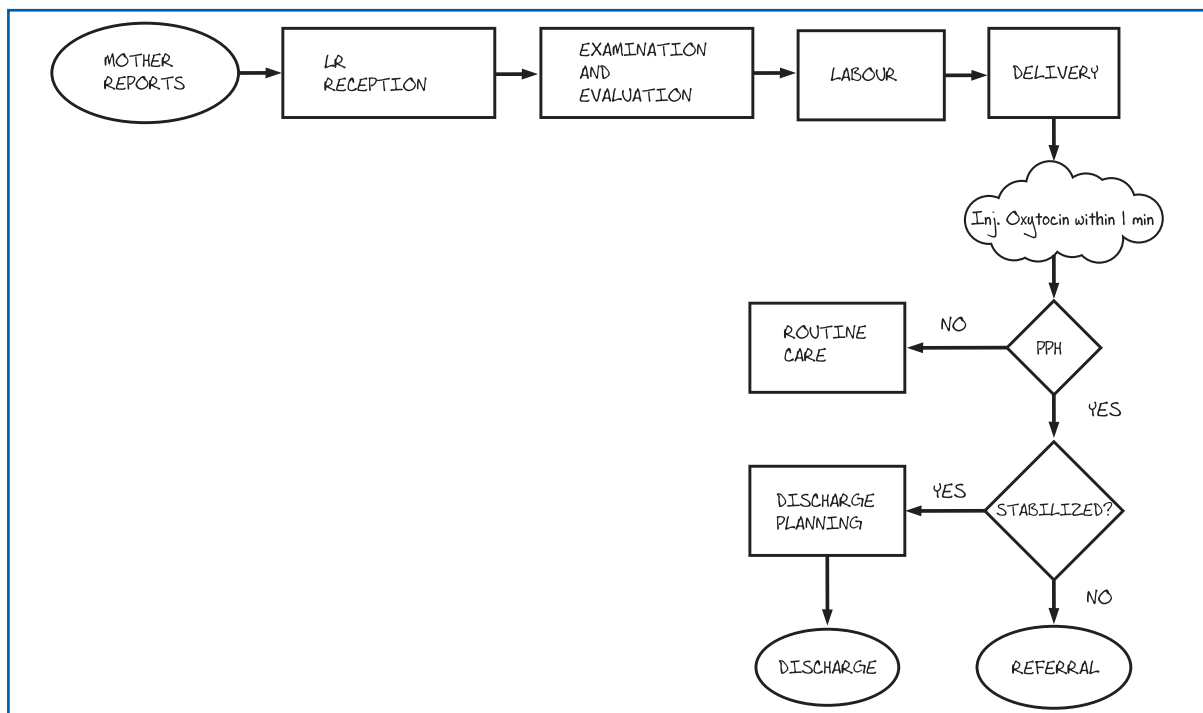
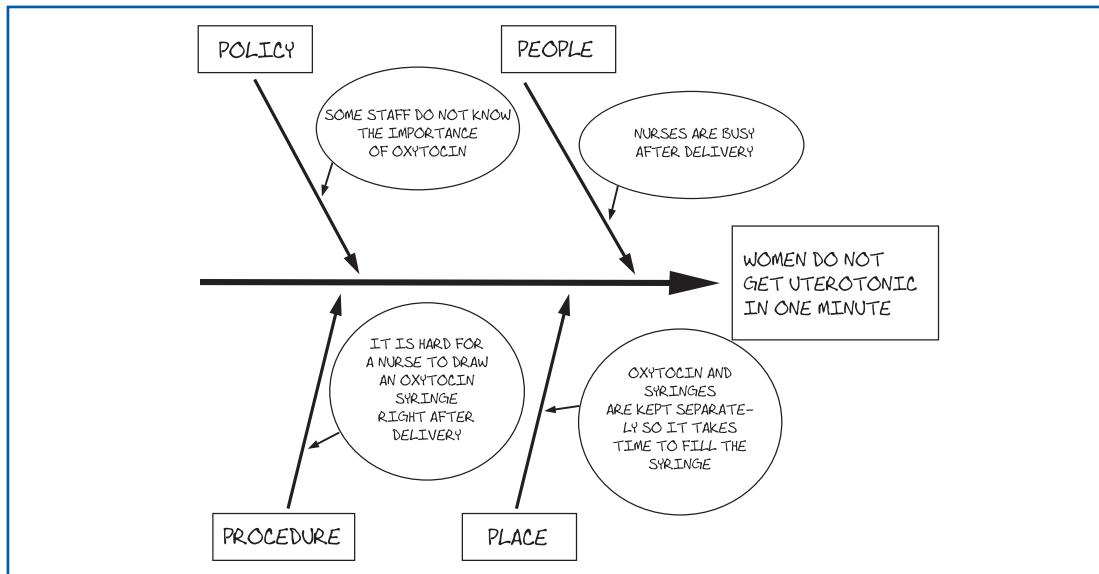




Figure 2: Maternal care fishbone discussion



Discussion 2.2M - Using a fishbone to analyze the problem

Ask the team to review the maternal care fishbone diagram (Figure 2).

Make sure that they understand that the diagram has four large sections (policy, people, place and procedure); each of these sections can have smaller subsections.

What do you think could be some of the problems contributing to women not receiving a uterotonic after delivery?

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.

Note: Highlight important concepts

1. **Encourage participants to move away from the 'People' component of the fishbone.** If the participants are only focused on identifying people related causes such as training, attitude and motivation - tell them that the purpose of the fishbone is to make them think more broadly and about issues other than these. **Encourage them to think about place and procedure because these are usually within the control of the team members and can be fixed.**
2. **What purpose did the maternal flowchart serve?** Note that the team drew a maternal care flowchart before drawing the maternal care fishbone. However, the maternal care flowchart doesn't give any useful information. You don't always know which tool to start with or what is the best tool to use in a particular type of problem. **If you don't get useful actionable information from a particular tool then try a different tool.** In this case since they didn't get any useful information from the maternal flowchart the team then used the fishbone which helped them identify some fixable problems.



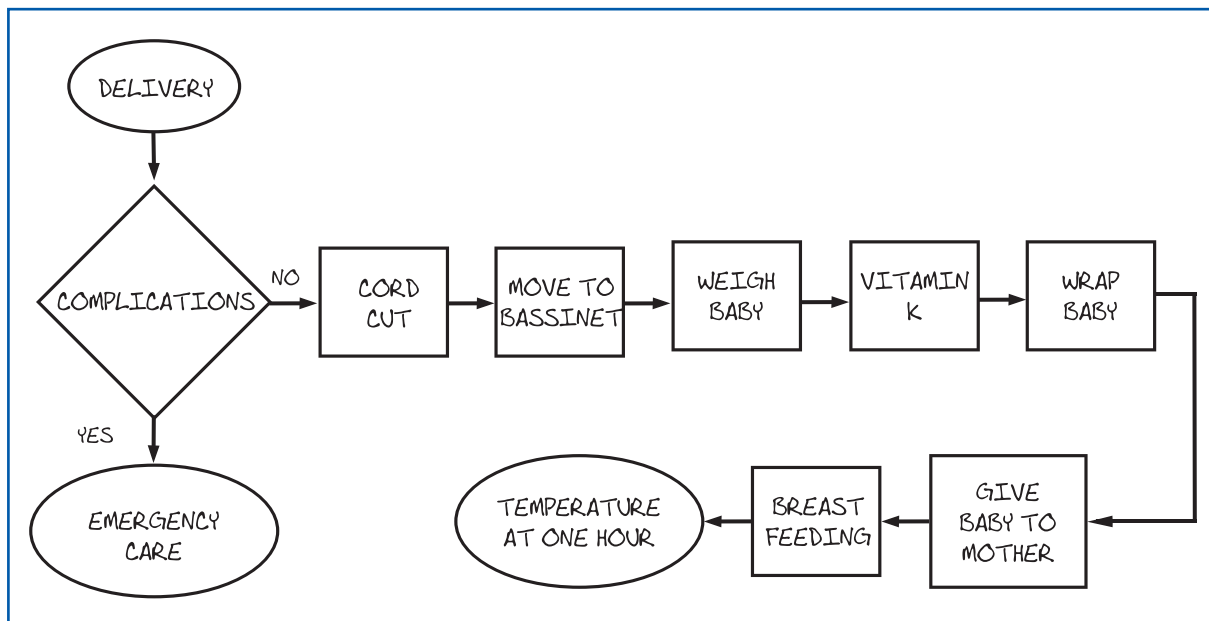
Case scenario 2.2N (Neonatal health)

Learner's manual
page no. 12

Analysis - Reducing neonatal hypothermia

*The team is not sure why so many babies are getting cold so they decide to use a **process flowchart** to describe all actions to care for the babies and see if they can identify what is making the babies cold.*

Figure 3: Newborn care flowchart



Discussion 2.2N - Using a flowchart to analyze the problem

Ask participants to review the newborn care flowchart (Figure 3). Make sure that they understand the meaning of the different symbols (shapes).

In this example, there are many steps between delivery and putting the baby with the mother which could be making the babies cold. Ask participants to identify steps on the flow chart that could be making babies cold.

Emphasize that the point of this analysis is to find specific causes for problems that can be changed. Some of these steps of care could be performed while the baby is in skin-to-skin contact with the mother.



What do you think could be some of the problems contributing to babies getting cold?

Possible answers:

1. Baby is wrapped late
2. Baby is given to mother later
3. After delivery, baby has been moved to Bassinet
4. Immediate drying not done
5. Baby is wrapped after giving vitamin K injection and weighing baby

Note: Key point to highlight.

Detecting process problems is key to improving care - Ask the participants whether they think it is a good thing or a bad thing that these are the problems in delivering care to newborn babies? Most participants will say it is a bad thing since care is being delivered incorrectly. You have to tell them that although it is bad that care is not being delivered properly it is a great thing that the problems leading to poor care are because of the order in which care is being delivered. This means that all you have to do to improve care is to change the order in which things are done, you do not need to increase workload or ask for extra supplies or training to improve care.

After discussing the analysis of the problems ask participants to think about how they are going to measure their performance and move on to Discussion 2.3.



Case scenario 2.3

Learner's manual
page no. 12

The team now discusses what indicators to use to measure progress.

Discussion 2.3 - Developing indicators

The team now needs a way to measure their progress.

*Ask the participants to define **process and outcome measures for improving uterotonic administration.***

The participants will also define an outcome measure for reducing neonatal hypothermia. 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.



Sample Indicators:

A) Process measure for improving uterotonic administration:

Process measure:	% of woman receiving uterotonic within one minute after normal vaginal delivery
Numerator	Total no of woman who received uterotonic within one minute after normal vaginal delivery
Denominator	Total no of woman with normal vaginal delivery
Data source	Labour room register
Person responsible	Staff nurse
How frequently	Once a day

B) Define an outcome measure for improving uterotonic administration

Outcome measure:	% of woman who had PPH
Numerator	Total no of woman who had PPH
Denominator	Total no of woman delivered vaginally
Data source	Labour room register
Person responsible	Nurse in-charge
How frequently	Monthly

C) Define an outcome measure for reducing neonatal hypothermia

Process measure:	% of newborns with low temperature (<36.5 degree Celsius) at one hour of birth
Numerator	Total no of babies born with low temperature at one hour of birth
Denominator	Total no of live births
Data source	Neonatal register
Person responsible	Nurse
How frequently	Weekly

Note: It is not mandatory to have a process and outcome indicator for all projects. Some projects may have both, some might only have a process indicator, some might only have an outcome indicator. The type of indicators for each project will depend on the type of problem and the context.



Case scenario 2.4

Learner's manual
page no. 15

The team decides to use the following indicators for tracking uterotonic administration:

- Percentage of women who received a uterotonic within one minute of delivery
- Percentage of women with post-partum hemorrhage

The team looks at their data for these indicators for the past 16 weeks (Table 2). They then plot the data on a graph to make it easier to review.

Discussion 2.4 - 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.

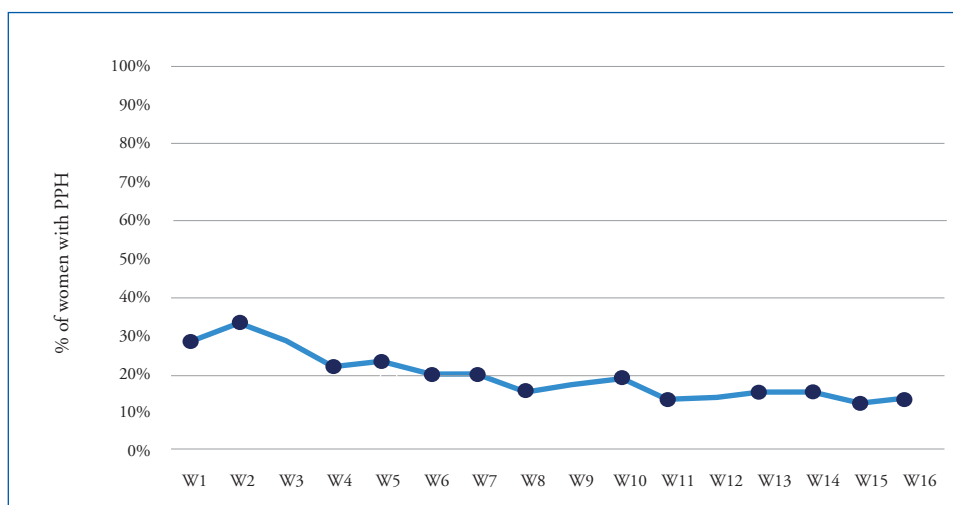
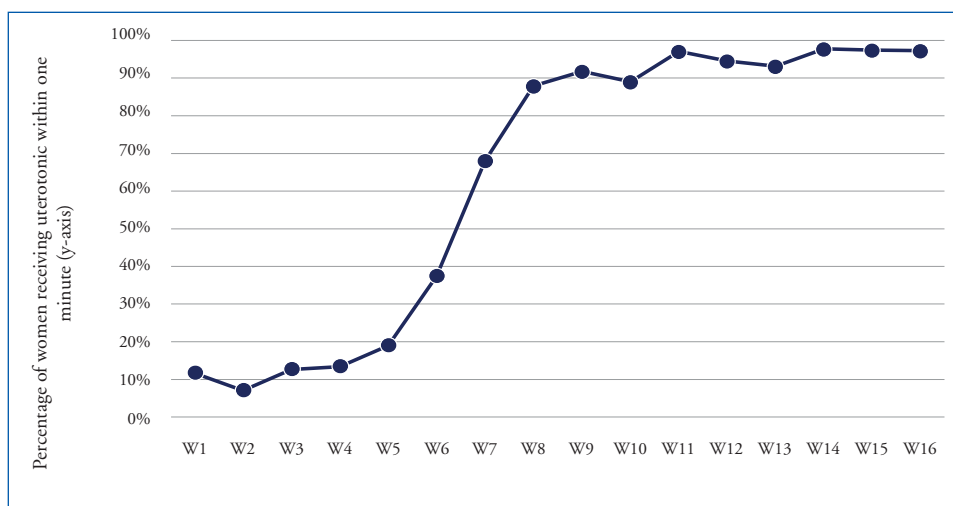




Table 2: Maternal health data

Indicator	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	
Women receiving oxytocin in 1 minute	Numerator	4	3	6	5	8	15	34	36	33	40	32	34	40	41	36	34
	Denominator	34	42	47	37	42	40	50	41	36	45	33	36	43	42	37	35
	Percent	12%	7%	13%	14%	19%	38%	68%	88%	92%	89%	97%	94%	93%	98%	97%	97%
Women with PPH	Numerator	5	7	7	4	5	4	5	3	3	4	2	2	3	3	2	2
	Denominator	34	42	47	37	42	40	50	41	36	45	33	36	43	42	37	35
	Percent	15 %	18 %	15 %	11%	12%	10%	10%	7%	8%	9%	6%	6%	7%	7%	5%	6%



Summarize step 2

After the groups have completed Discussions 2.1 - 2.4. Ask participants:

- 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?
- Examples of a 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.

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.



STEP: 3



Developing and testing changes

Learning objectives

You will learn:

1. How to come up with ideas about what to change to reach your aim
2. How to plan a plan-do-study-act (PDSA) cycle to test change ideas
3. What to do as you learn from PDSA cycles
4. How to test multiple change ideas to achieve your aim

Facilitation instructions

Presentation (Slides 40 to 55)

- The lead facilitator will present the slides 40 – 55 from the POCQI powerpoint presentation.
- The presenter can use the explanations provided with each slide in section 4 of the facilitator's manual.
- Inform participants that these slides are available in the learner's manual in section 4 along with space to take notes.

Group work instructions

- Explain that step 3 has two sections
 - Maternal health scenario (section M) and
 - Newborn health scenario (section N).
- Each group should choose which scenario they want to focus on.
- If time permits, the group can do the other scenario as well.
- Ask participants to individually read Case scenario 3.1 of their selected section and to discuss how the analysis tools helped them identify possible changes that could improve care.

Maternal health scenario



Case scenario 3.1M

Learner's manual
page no. 16

The facility team reviews the flowcharts and fishbone diagrams to gain a better understanding of what was causing them to deliver suboptimal care.

This helps them to come up with some ideas about changes to make that could help to provide the uterotonic in time.

Discussion 3.1M - Developing change ideas

Ask participants 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 help 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.

Based on the analysis, list some ideas that might help improve uterotonic administration.

Sample Answers:

Change	Why do you think this will improve care?
1. Pre-load the syringes with oxytocin oxytocin before delivery	The nurses will not have to spend time loading the syringes at the time of delivery
2. Keep oxytocin and syringes together	Reduce the time it takes to load the syringes



Case scenario 3.2M

Learner's manual
page no. 17

The team discusses that they should try to make sure there is a pre-loaded syringe of oxytocin available at the labour table for each delivery. They discuss some of the challenges with this:

- 1. Who will prepare the syringe?*
- 2. When should it be prepared?*
- 3. Where will it be kept after preparation?*
- 4. Where will it be kept during delivery?*

The nurses on the team say that they can prepare the syringe. One of them (nurse A) thinks it will be easiest to prepare the syringe when a new woman comes in labour to the labour room and the other one (nurse B) thinks that they should prepare a few syringes at the start of each new shift.

Because the facility does not have a fridge in the labour room, both nurses decide to keep the syringes on a cold pack.

The team discusses that both ideas seem reasonable and that there are pros and cons to both of these options.



	Pre-load one syringe when woman comes into the labour room	Pre-load a few syringes at the start of each shift
Pros	There will be no waste of oxytocin You will not run out of oxytocin	There will always be enough time to do this
Cons	Some women are already pushing when they arrive so there will be no time	We may under- or over-estimate the need for oxytocin and end up wasting it or running out

Discussion 3.2M - Planning a PDSA cycle to test a change idea

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.

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

- Because some of the group members 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 pre-loading the syringe with oxytocin when the woman comes into the labour room (“what”) for all the women who come to the labour room for delivery during her next shift (“when”) in the labour room (“where”). Similarly, Nurse B will test pre-loading 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.

Plan	What change will you make?	Pre-loading the oxytocin syringe when the woman comes into labour
	Who will test the change?	One of the enthusiastic nurses will test the change (Nurse A)
	Where will the test 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 pre-loading the syringe at the start of her shift.

Note: Two key things to highlight in the PDSA cycle

1. It is important to decide which specific person will test the change idea, otherwise it might not happen. Select someone who is enthusiastic about the project and is willing to try out the change idea.
2. A PDSA is done to show whether the proposed way of working is feasible or not. A PDSA cycle should be done at a small scale, only for a few deliveries or shifts. This is usually enough time to know whether an idea is useful or not. Doing the same test for too long, like for a whole month does not yield useful information and slows down improvement.

After discussing the PDSA cycles, ask participants to read **Case scenario 3.3M** and start **Discussion 3.3M** about what they should do after these PDSA cycles.



Case scenario 3.3M

Learner's manual
page no. 18

The team agrees that the two nurses should try their own preferred method during their next shift and to learn:

- *Is there enough time to do this when a woman comes into the delivery room?*
- *If they pre-load at the start of a shift, do they run out of or waste oxytocin?*
- *In both cases, where should they keep the pre-loaded syringe after preparation and during delivery?*

The two nurses work in different shifts and test their preferred method the next time they work.

- *The nurse who is testing pre-loading one syringe when the mother comes into the labour room delivers three babies.*
- *The nurse who is testing pre-loading multiple syringes at the start of the shift delivers two babies.*

From these tests, the team learned that:

- *Pre-loading one syringe when women come into the delivery room*
 - *This worked well for two of the deliveries but one woman came into the delivery room in advanced labour and there was no time to draw up the syringe.*
- *Pre-loading multiple syringes at the start of the shift*



- *The nurse who wanted to try this method remembered that the most babies she had ever delivered in a shift were five. So, she pre-loaded five syringes and kept them on an ice pack in the emergency tray kept at the side of the labour table.*
- *This system worked well although the tray was rather crowded with five syringes.*
- *She delivered two babies in the shift. At the end of the shift, she told the next nurse about the three remaining pre-loaded syringes and suggested pre-loading two more syringes (to keep five available). The other nurse did not want to do this because there were no more cold packs.*

Discussion 3.3M - What to do as you learn from a PDSA cycle

Which change idea should be abandoned?	Pre-load one syringe when woman comes into the labour room
Which change idea should be adapted?	Pre-load a few syringes at the start of each shift

The participants may have various ideas about what to do next, 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

Ask participants to read Case scenario 3.4M.



Case scenario 3.4M

Learner's manual
page no. 19

The team agrees that pre-loading syringes at the start of the shift is a good idea but realizes they still have some details to work out:

- *How many syringes to pre-load at the start of the shift?*
- *What to do with the leftover syringes at the end of the shift?*
- *How to make sure there are enough cold packs?*

The team decides:

- 1) *that five pre-loaded syringes are too many and that three will be enough as it is rare to have more than three deliveries.*
- 2) *to keep the unused syringes for the next shift and that the incoming nurse will pre-load more to bring the total to three.*
- 3) *to get an extra cold pack from the pharmacist and to always keep one in the freezer so that there is always one available.*



They decide to test these changes for the next shift. During that shift, two babies were born and the system worked well.

At the end of the shift, the incoming nurse wanted to throw out the pre-loaded syringe because she thought it would get mixed up with the syringes she was going to pre-load.

Instead, the two nurses decided that they would add the date and time to the syringe label when it was drawn up so that the nurse would know which one to use first. In the next shift, four babies were born.

After the third baby was born, the nurse pre-loaded three more syringes to keep the total at three syringes. The team met again to discuss what they had learned from these changes and PDSA cycles.

The team decides that:

- 1) they would add the date and time to the syringe label when it was drawn up so that the nurse would know which one to use first*
- 2) after the third baby was born in any shift, the nurse would pre-load three more syringes in her shift to keep the total at three pre-loaded syringes*

Discussion 3.4M - Testing changes

List all the changes that the team has tested so far:

The team has tested three changes:

Change 1 - Pre-load syringe when the woman enters labour room

Change 2 - Pre-load syringe at start of shift

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

List all the PDSA cycles that the team has done so far:

Change 1: Pre-load syringe when the woman enters labour room

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

Change 2: Pre-load 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 pre-loaded syringes 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: Pre-load three syringes once all previously pre-loaded syringes have been used

PDSA 1: this worked well.



Ask participants to read Case scenario 3.5M. 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 testing it on more shifts and then making it the norm for all deliveries in the hospital.



Case scenario 3.5M

Learner's manual
page no. 20

The team decides to ask the nurses on duty for the next three shifts to get their feedback on this new approach and their suggestions for improvement.

Eight babies were born during those shifts. All of them got oxytocin in the first minute after delivery. This is much better than the baseline data.

At the end of these three shifts, they decide that this approach is feasible.

The team members hold a series of meetings for other labour room staff who have not been involved in the project to discuss the new way of working, showing them how to pre-fill the syringes in advance and share the data showing improvement.

Other staff start administering oxytocin in this manner as well. Data continues to be monitored and it shows that women are getting oxytocin in a timely manner now.



Newborn health scenario



Case scenario 3.1N

Learner's manual
page no. 21

Reducing neonatal hypothermia

The team reviews their process flowchart and realizes that they are providing care in the bassinet rather than following the evidence-based practice of starting skin-to-skin care immediately after delivery.

Part of the reason for this is that some nurses are not aware of the importance of skin-to-skin care.

Another reason is that nurses are following the steps in the flowchart because that is the easiest way to provide care given the current way the room is set up and how supplies are kept.

Discussion 3.1N: Developing change ideas

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.

Reducing neonatal hypothermia at one hour:

Change?	Why do you think this will improve care?
Reorder the steps of care.	

Ask the group to read Case scenario 3.2N.



Case scenario 3.2N

Learner's manual
page no. 21

One of the team members is aware of the evidence that skin-to-skin contact is beneficial for both mother and baby. She convinces everyone that it will be possible and beneficial to do this.

The team discusses how to change the order of activities after birth to ensure that skin-to-skin care happens immediately and is not interrupted. They decide to follow the new steps of care:



1. *put the baby on the mother's chest immediately after delivery and keep the baby there while doing the other activities*
2. *dry the baby and clean his or her eyes (as per national guidelines) and cover with a dry towel*
3. *cut the cord after 1-3 minutes*
4. *encourage breastfeeding as soon as possible*
5. *leave the vitamin K and weighing until after breastfeeding has started*

Now that the team has decided that they are going to use skin-to-skin care as the process to reduce hypothermia, they realize that they need to measure this.

They develop a new process measure: the percentage of babies getting skin-to-skin contact at birth for at least one hour.

Not everyone in the group is convinced that this will be feasible. Different people raise possible objections, which include:

- *mothers will not want to put the baby skin-to-skin right after delivery because they are tired and because the baby is wet*
- *it will be hard for nurses to dry and clean the baby and cut the cord while the baby is with the mother*
- *if the babies do not get weighed and receive vitamin K immediately, then nurses will forget to do this later*

Discussion 3.2N - Planning a PDSA cycle to test changes

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

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

- because some in the group are sceptical, 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 test the change?	One of the enthusiastic nurses will test the change
	Where will the test 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		

Note: Two key things to highlight in the PDSA cycle

1. It is important to decide which specific person will test the change idea, otherwise it might not happen. Select someone who is enthusiastic about the project and is willing to try out the change idea.
2. A PDSA is done to show whether the proposed way of working is feasible or not. A PDSA cycle should be done at a small scale, only for a few deliveries or shifts. This is usually enough time to know whether an idea is useful or not. Doing the same test for too long, like for a whole month does not yield useful information and slows down improvement.

After discussing the PDSA cycle, ask participants to read Case scenario 3.3N.



Case scenario 3.3N

Learner's manual
page no. 23

The team decides to try using the new order of care for all babies born in a single shift and to learn:

- *How do mothers feel about starting skin-to-skin immediately?*
- *How easy is it to provide care on the mother's chest?*



- *Do nurses still remember to weigh the baby and give vitamin K?*

One of the nurses who is enthusiastic about this new idea volunteers to test it during her next shift. She delivers two babies. From this test, the nurse learned that:

- *Both the mothers were happy to receive the baby right after delivery*
- *Drying the baby on the mothers' chest was more difficult than doing this in the bassinet because the towels and other supplies were by the bassinet and the nurse had to walk over to get them*
- *The nurse remembered to weigh the baby and give vitamin K because they had to be recorded on the medical record which she had to fill out before transferring the baby to the ward*

At the end of the shift, members of the team who are there meet to discuss what to do next.

Discussion 3.3N - What to do as you learn from PDSA cycle

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:

What should the team do next?

1. place the baby care trolley with 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
3. continue to learn if women are happy to receive their baby on their chest immediately after delivery
4. do nurses continue to remember to weigh the baby and give vitamin K.

Ask the team to read Case scenario 3.4N.



Case scenario 3.4N

Learner's manual
page no. 24

The team agrees that reordering the steps of care is a good idea and should keep babies warm. They feel that the way the room is currently organized makes it difficult.

They decide to move the supply table from the bassinet to the bedside to make it easier to care for babies on the mother's chest.

As a group, they go to the labour room and move the supplies closer to the labour table.

They try two options until they have a set-up that people think will work.

They then decide to test for one shift if the new organization of the room makes it easier to provide immediate care to babies while they are in skin-to-skin contact with their mother.

In the next shift, the nurse delivers two babies. She had to reorganize the room again after the first delivery and found that this made caring for the babies much easier.



Discussion 3.4N - Testing multiple changes

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.

List all the changes that the team had tested so far.

The team tested two changes:

- Changing the order of steps of caring for newborns
- Re-organizing the labour room

List the PDSA's that the team has done.

The team did four PDSA cycles:

- 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 3.5N 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.



Case scenario 3.5N

Learner's manual
page no. 25

The team decided to ask the nurses on duty for the next three shifts to get their feedback on the new room set-up and get their suggestions for improvement.

At the end of the three shifts, they have made a few more small changes in the room set-up and also involved the cleaning and maintenance staff so that they also know about how the room should be set up. Eight babies were born in those shifts. Six of them had normal temperatures at 60 minutes. This is much better than the baseline data.

The team members hold a series of meetings for other labour room staff who have not been involved in the project to discuss the new way of working, showing them how to care for babies on the mother's chest after delivery and sharing the data showing improvement.

Other staff members start delivering babies in this way as well. Data continues to be monitored to ensure that the improvement is sustained.



STEP: 4



Sustaining improvement

Learning objectives

You will learn:

1. How to build enthusiasm, motivate team, recognition by certificates and celebration
2. How to share the results and successful projects widely
3. How to make policy with new ways to work
4. How to hardwire the gains by making system change

Facilitation instructions

Presentation by lead facilitator (Slides 56 to 62)

- The lead facilitator will present the slides 56 – 62 from the POCQI powerpoint presentation.
- The presenter can use the explanations provided with each slide in section 4 of the facilitator's manual.
- Inform participants that these slides are available in the learner's manual in section 4 along with space to take notes.

Group work instructions

- After you finish the presentation ask the participants to move to step 4 in the learner's manual
- After completing the discussion on step 4 participants will read the case scenario summary and then do the knowledge assessment.

Discussion 4.1 – Sustaining successful changes

After testing ideas and finding ones that work, you will want to implement them so that the changes are permanent and consistently applied in all situations.

This involves:

1. Making the change the new standard process across the unit/department
2. Taking specific steps to prevent from slipping back to the old ways of working. (Hardwiring through job descriptions, protocols, etc.)
3. Keeping an eye on key indicators to ensure improvement is sustained
4. Forming structures and systems across all levels of the health system to support Point of Care Quality Improvement work.

These actions ensure hardwiring of the system so that improved way of working is sustained until a still better way is found.



Examples of actions the team can take to prevent them from slipping back into old ways of working

1. Documenting the flow of the new process and placement of equipment/materials
2. Brief new staff during the routine orientation program regarding the new way of working
3. Assign responsibility to one of the team members to continue to track the indicator and bring to the teams attention if there is any fall
4. Revise job descriptions to include new tasks
5. Include indicator review in departmental meetings

Discussion 4.2 – Building enthusiasm for quality improvement

It very important to build more enthusiasm among health-care teams for quality improvement

Some ways to build enthusiasm for quality improvement at a facility or region.

1. Celebrate success
2. Share results of successful QI projects with others in the health facility and beyond
3. Publish case reports about their work
4. Manager of the health facility should continuously encourage the health-care team to improve quality of care
5. Rewarding people who are involved in QI efforts
6. Build multiple teams in the health facility so that they can learn and support each other
7. The health-care team should keep higher-ups in the system informed, tell them about your success and build a case for additional resources, as required and notify the new improved process as a facility wide policy

It is also important to build structures and systems in the health facility and at higher level to support Point of Care Quality Improvement. More guidance on this is given in Appendix 2 of this manual. This information is relevant for managers and leaders at district, state or national levels.

Facilitator instructions:

After completing this section ask participants to read the **case scenario summary** and to review the run charts in the Summary.

After the participants have finished reading the case scenario summary, they can complete and **the knowledge assessment**.



Case scenario summary

Learner's manual
page no. 27–29

Summarize the four-step approach of POCQI model with the group.

Step 1: Identifying a problem, forming a team and writing an aim statement

Staff 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 2: Analyzing the problem and measuring quality of care

The team used **flowchart** and **fishbone** diagrams to **analyze** the problems and identify key issues that they needed to address to reach these aims.

They realized that their main problems were 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 3: Developing and testing changes

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 4: Sustaining improvement

Once they identified successful change ideas, they also involved all the other staff, nurses and cleaners so that they all understood the new way of working. They made new protocols based on the successful change ideas and all new staff are now routinely briefed about this way of working. The figures below show the progress of the team.



Figure 4: Percentage of women receiving a uterotonic within one minute and women with post-partum hemorrhage

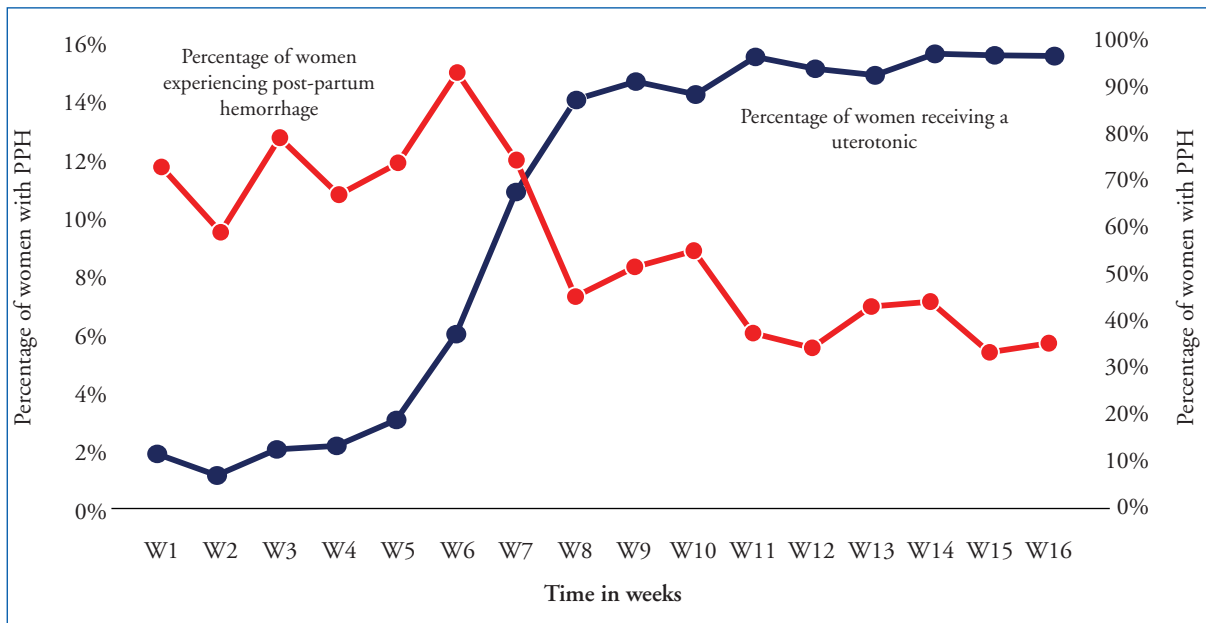


Figure 5 : Annotations show the relationship between various PDSA cycles and improvement in the indicator

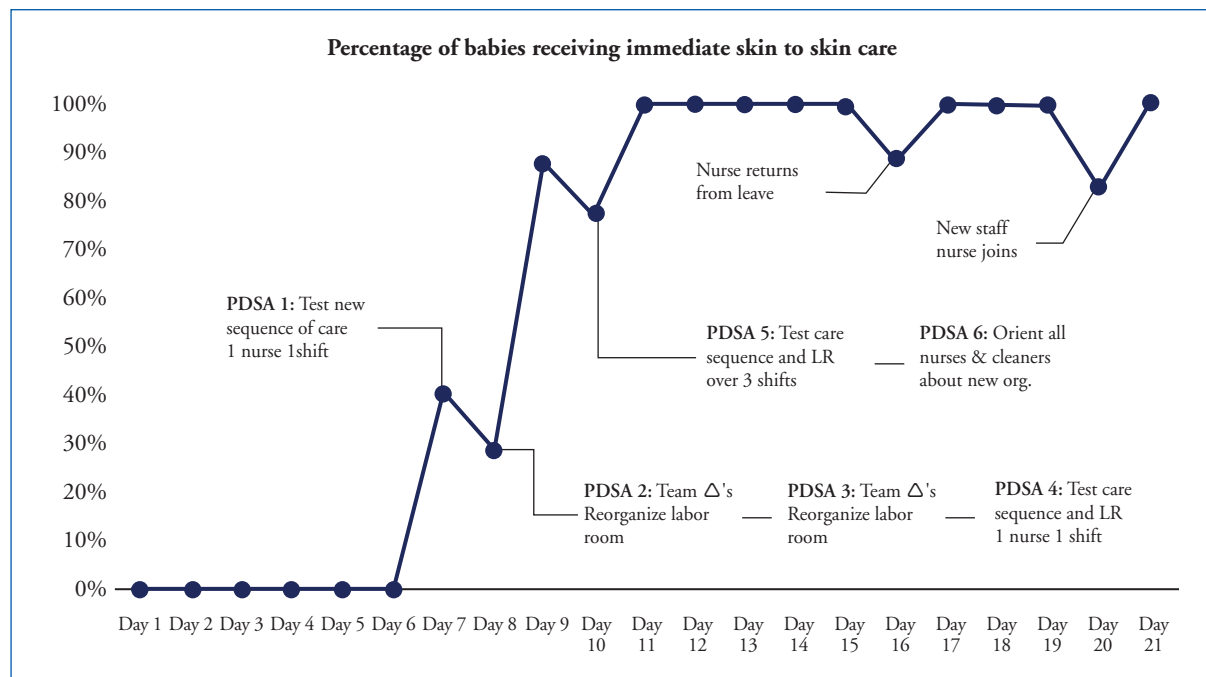
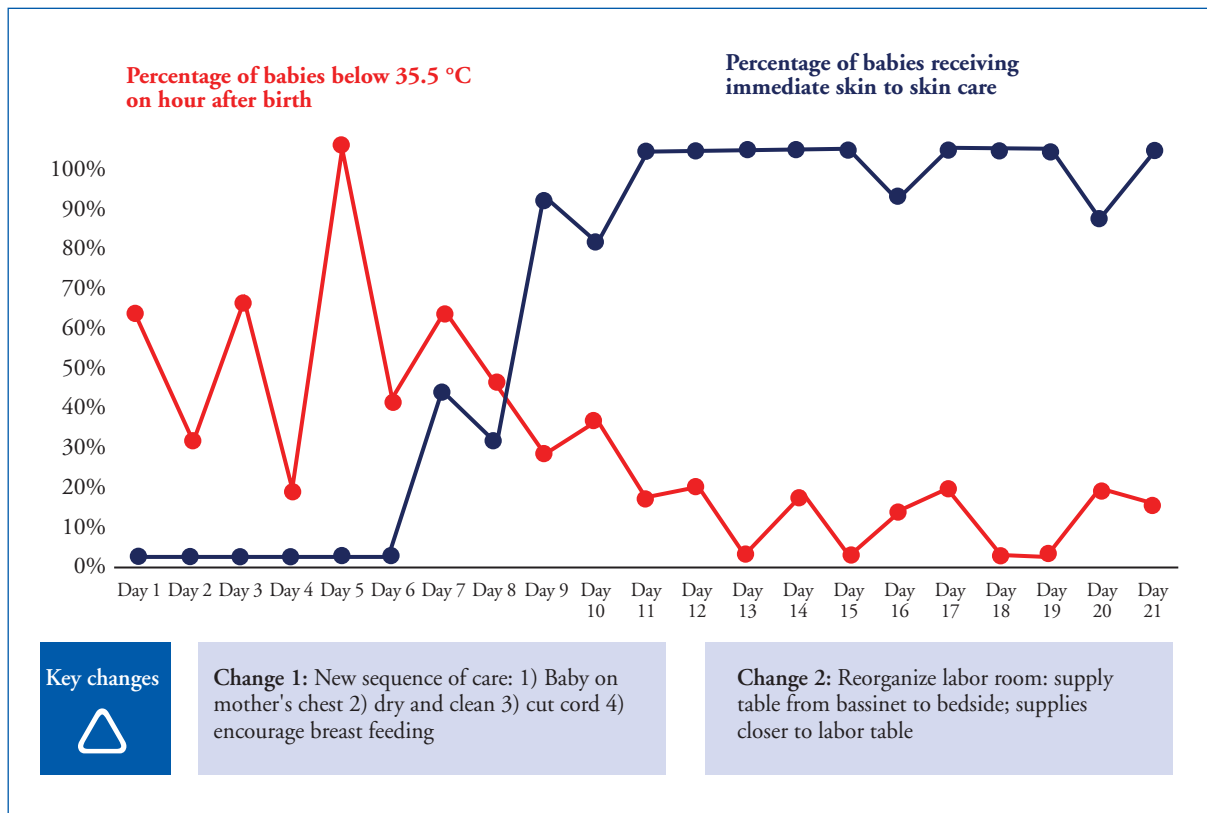




Figure 6: Percentage of babies with hypothermia and percentage of babies receiving skin-to-skin care





Knowledge assessment – Answer key

Request participants to do the knowledge assessment exercise. After the participants have finished the knowledge assessment exercise, provide feedback. Feedback can also be provided in plenary rather than in groups.

Correct answer is in bold with a tick mark.

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. 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
5. 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
6. 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



7. 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
8. PDSA is:
- a. Plan, Do, Say, Act
 - b. Plan, Do Study, Act ✓
 - c. Program, Do, Study, Accurate
 - d. Program, Do, Study, Act
9. 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 ✓
10. 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
11. 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.



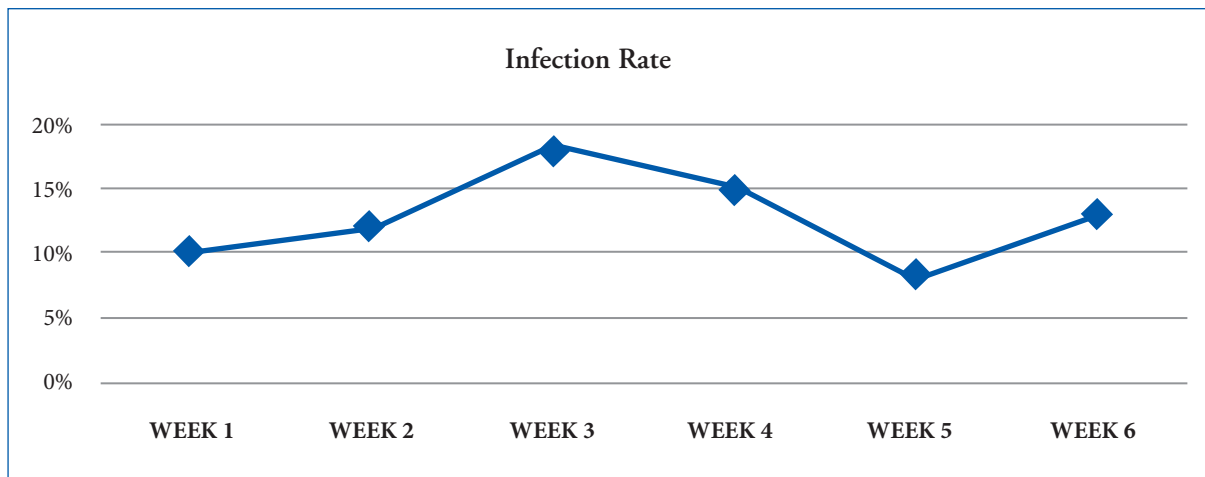
12. A newborn care doctor wants to decrease the time it takes to get an X-ray done for a baby with respiratory distress. What changes will lead to achieving this objective?
- a. Buying and placing an X-ray machine within the unit
 - b. Recruiting and placing an X-ray technician at the unit
 - c. Outsourcing X-ray services
 - d. First understanding various steps (processes) that are needed to get the X-ray done. ✓
13. 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
14. 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
15. 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
16. 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



17. 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 ✓

18. This type of chart is called:



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

19. 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 ✓

20. 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 ✓



Facilitator instructions to wrap up Day 1

After the groups are finished, review the following points with participants:

- Why do we need quality improvement?
- What are the four steps of quality improvement?
- Why is it important to form teams?
- Why is data needed?
- What does PDSA stand for?
- Why do we need to test changes?
- How will we know a change is working to produce the desired results?

At the end of the discussion congratulate participants for their work during the day.

Inform participants about any relevant meeting logistics for the next day.

After participants have dispersed all facilitators should meet for a debriefing session to review how the sessions during the day went and plan for Day 2.





SECTION 3

Day 2: Developing
your own quality
improvement project



Day 2 - Instructions for facilitators

Objective of Day 2

- Learn how to draft a QI project.
- Develop a Plan of Action listing specific tasks that the participants will carry out on returning to their facility
- Participants will share their QI project and Plan of Action in plenary with all attendees and get feedback.

Instructions for lead facilitators

On Day 2, you will guide participants to develop a QI project (one project per hospital team) that they can start at their health facility when they return after the workshop.

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.
- Once they have drafted their projects ask participants to complete the plan of action – listing specific tasks they will do when they go back to the facilities
- Walk around the room to clarify any questions and support the group facilitators
- After they have drafted their projects and their plan of action, each hospital team presents to the whole group of participants in a plenary session.
- During the presentations the lead facilitator will provide feedback and facilitate discussions among the teams.

Instructions for group facilitators

Group facilitators will guide their respective groups at each table and:

- Help the teams to use the QI Project Template in refining their project design.
- After they fill in each step of the template ask them to respond to the questions on the QI Project Review Sheet and reflect on their planned project.
- Help the teams put their project on the PPT Template in the afternoon to prepare a 10 minute presentation.

All facilitators should review the key points to emphasize while developing QI projects. These will help you guide participants in refining their projects and also help identify some common reasons for why QI projects fail.



Quality improvement project template

STEP: 1



Identifying a problem, forming a team and writing an 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 1 - Project review checklist

Why is this a good aim?

Can you get results quickly?	
How important is the aim to the QI team - has the team used the prioritization matrix?	

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



Analysing the problem and measuring the quality of care

What tools will you use for the analysis?

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

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 2 - Project review checklist

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?	

Why is this the right measurement plan?

How difficult will it be to collect the data?	
Is this data already being collected or will new data collection be required?	
Can you review these data frequently?	

*A simple MS Excel file is provided in the USB flash drive for analyzing data and making time-series charts (run charts).



STEP: 3



Developing and testing changes

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?

Test Changes: Planning and initial PDSA 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 and initial PDSA changes

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 3 - Project review checklist

Will these changes address the root causes of the problem?

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

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: 4



Sustaining improvement

What steps will you take to sustain the improvements?

Step 4 – Project review checklist

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

Each group will prepare a powerpoint presentation to share their QI project.

In the plenary session, all groups will make the presentation one by one. They will receive feedback from the other groups based on which the project could be modified and improved.



Plan of action for the team

Learner's manual
page no. 43

After the session, hospital teams will prepare a plan of action that they would like to undertake upon return to their hospitals.

By this time, participants will have understood the basic steps of quality improvement and drafted a simple QI 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's manual in the corresponding section in which they can fill in the details.

Activity to be undertaken immediately	When (Start date)	Why are we doing this / what output is expected?	Responsible person	By when (End date)	Comments	Status of progress (Not started, In progress, Completed)

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, obstetrics and gynaecology)
 - 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 that has been drafted 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:** Specific person(s) responsible for carrying out each specific activity. Mention by name to ensure accountability.
- **Column 5:** Timeline by when each activity is expected to be completed
- **Column 6:** Comments. Any additional points of note can be mentioned here. Such as any anticipated obstacles or supporting factors for each planned activity. Mention if any extra resources will be required.
- **Column 7:** Current status of the activity. This column can be periodically updated as the project progresses. (Not to be filled now)



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.

Appendix 1 gives a generic outline of activities that are usually carried out by QI teams upon returning to their facilities. Specific details of each activity will vary according to the facility type and the nature of the project.

Facilitator instructions to wrap up Day 2

- By now participants will have shared their QI project and plan of action.
- Congratulate participants for all their hard work over the two days.
- Inform participants about the following contents of their learner's manual
 - Section 5 – List of Successful QI Case Studies
 - Appendix 3 - Frequently Asked Questions about quality improvement
 - Appendix 4 – Resources for further reading on quality improvement
- Ask participants to fill in the workshop feedback form at the end of the learner's manual in appendix 5 and collect the forms.
- Social media group for ongoing sharing and learning
 - Discuss with the participants and if there is agreement then consider creating a social media group.
 - For example, a Facebook page or a WhatsApp / 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.
- Facilitators to provide their contact information to participants for any future information and technical needs.





SECTION 4

Powerpoint slides



POCQI - Point of Care Quality Improvement

Steps in QI

- **Step 1: Identifying a problem, forming a team and writing an aim statement**
- Step 2: Analyzing the problem and measuring quality of care
- Step 3: Developing and testing changes
- Step 4: Sustaining improvement



Highlight that this course is designed to teach a new skill – how to use quality improvement methods to improve service delivery at the point of care in your health facility

- We will spend Day 1 working through the four steps of QI using a hypothetical example
- On Day 2 we will help plan an initial QI project that you can carry out in your facility
- The first step is to pick something specific to work on, form a team and develop a precise aim statement to guide your efforts.

Review the learning objectives for the first step, together we will learn:

- How to review data to identify problems
- How to prioritize which problems to work on
- How to form a team to work on that problem
- How to write a clear 'aim statement'



POCQI - Point of Care Quality Improvement

Step 1 : *Learning objectives*

You will learn:

- How to review data to identify problems
- How to prioritize which problems to work on
- How to form a team to work on that problem
- How to write a clear aim statement





03

POCQI - Point of Care Quality Improvement

Identifying a problem to solve

- **Data-based decision:** Review local health facility data and identify gaps related to quality of care
- **Simple**, easy to fix & amenable to change
- **Value** for patient outcomes
- Does not need many **new resources**
- **Short turn-around time:** early success is motivating
- **Avoid long-term projects** initially
 - Decreasing maternal mortality in a small facility:
 - Decreasing hemorrhagic disease in newborn (vitamin K related): since onset is late follow up after discharge is required to capture this



Use the local data (from your workplace) to identify problems related to quality of care. You may be able to identify several problems.

Since QI is a new skill for many people it is important to think of the first improvement project as an opportunity for learning.

Because of this, new teams should work on QI projects which:

- Are easy to solve
- Do not need many additional resources
- Have a fast turn-around time (so you can get results quickly)
- Is crucial for good outcome of patient care
- You can leave more complex, long-term projects for later, when you have built stronger skills in using QI methods

Once you have picked an aim, you need to pick a team of people who can work on this together. Look for people who are:

- Enthusiastic – try to get members who want to work on this aim and have ideas for how to reach it . Look for Volunteers– people who are interested in making changes and are self – motivated
- Involved – make sure most of the people on the team are doing the hands-on work that needs to change. People do not like being told to change but they like changing and improving themselves. Having more workers rather than managers will make it easier to change practice.
- Influential – look for team members who are able to involve and influence other people

04

POCQI - Point of Care Quality Improvement

Select your team

Look for volunteers who are:

- **Enthusiastic** - they want to make changes
- **Involved** - they are already doing the work that needs change
- **Influential** - others people listen to them and they can get things done





05

POCQI - Point of Care Quality Improvement

Select your team

Identify who should be in the team:

- Need people from every level: from administrators to cleaners
- From all involved departments
- Assign some key roles
 - Leader
 - Recorder
 - Communicator



- Healthcare is delivered by a range of people. Healthcare workers who will have to change how they work (their existing practices) should be in the team
- Involving different cadres will lead to a wider range of ideas for how to fix problems, thus increasing chances of success
- Involving people in the process of change early reduces resistance to change
- 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

- You should have a diverse range of people on the team – staff such as cleaners and janitors can also contribute depending on the identified problem.
- Similarly, you may need to include community members (e.g. people accompanying the patients).
- Titles and hierarchy should not matter
- You want people who understand the problem and have the ability to change how care is delivered

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

06

POCQI - Point of Care Quality Improvement

Why is teamwork important for improvement ?

- Healthcare is delivered by a range of people in the hospital
- Given the opportunity, staff can identify problems and generate ideas to resolve them
- Participation improves ideas, increases buy-in, and reduces resistance to change
- Accomplishing things together increases the confidence of each member





07

POCQI - Point of Care Quality Improvement

Aim statement

Characteristics of a good aim statement

- States a clear, specific aim – '**what**' are we improving
- Linked to specific patient population – '**who**' will be affected
- Should include a goal – '**how much**' will we improve
 - Neither too difficult nor too long to achieve
- Includes a timeline – '**by when**' will the goal be achieved



Once your team is formed, jointly develop a precise aim statement that clearly states what needs to be achieved. Review the characteristics of a good 'aim statement'. It should:

- Be linked to a particular patient group – e.g. newborns, women in labour
- Include what needs to change/be achieved
- Should be measurable and include a clear achievable target/goal: e.g. increase coverage from 20% to 80%
- Include a definitive timeline

- When you develop an aim statement just think of the word SMART.
- Any aim you develop should be as per the SMART criteria:
- Review the SMART criteria from the slide

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POCQI - Point of Care Quality Improvement

SMART Aim

-  Specific
-  Measurable
-  Achievable (but challenging)
-  Relevant and recorded
-  Timely



09

POCQI - Point of Care Quality Improvement

Aim statement

Problem: All babies are not dried immediately after birth

We will increase immediate drying at birth in all 100% of births from current 60% within 4 weeks, from May 1st to June 1st.

- **Who** (which patients)- Newborn
- **What** (the process)- Immediate drying
- **How much** (the amount of desired improvement)- from 60% to 100%
- **By when** (time over which the improvement will occur)- within 4 weeks



Example 1: Go through the example of the aim statement and highlight how it has all the essential elements



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POCQI - Point of Care Quality Improvement

Aim statement

Problem: Babies are cold at one hour following birth

We will reduce the percentage of newborns with low temperature (<36.5 C) from current 50% to <10% within 6 weeks, from 15th June to 30th July.

- Who (which patients) - Newborns
- What (the outcome) - Hypothermia (<36.5 C)
- How much (the amount of desired improvement) - from baseline of 50% to <10%
- By when (time over which improvement will occur)- within 6 weeks



Example 2: Go through the example of the aim statement and highlight how it has all the essential elements

Discuss how the first aim statement

- is not specific (does not define what is meant by skin-to-skin contact)
- is not measurable (does not have a target) and
- does not have a timeline.

The second aim statement is good. It provides:

- a clearer definition of what is meant by skin-to-skin contact
- a target – “from 0% to 25%”
- a timeline – “within 2 weeks”

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Is this a good aim statement

To establish skin to skin contact after delivery in low risk mothers admitted in Labour Room



To establish skin to skin contact immediately after delivery for at least one hour from 0% to 25% within two weeks for newborns of low risk mothers admitted in Labour Room



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POCQI - Point of Care Quality Improvement





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POCQI - Point of Care Quality Improvement

Steps in QI

- Step 1: Identifying a problem, forming a team and writing an aim statement
- **Step 2: Analyzing the problem and measuring quality of care**
- Step 3: Developing and testing changes
- Step 4: Sustaining improvement



Now that you have selected a problem to work on, formed a team and developed a clear aim statement it is time to move to the second step:

Analysing the problem and measuring quality of care

- In step 2 you will learn how to identify the causes for the selected problem and to develop indicators to measure progress in reaching your aim.
- Read the four learning objectives from the slide.

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POCQI - Point of Care Quality Improvement

Step 2

Learning objectives

You will learn

- Tools for understanding processes and systems of healthcare
- How using these tools can help identify possible solutions to reach your aim
- How to develop indicators for process and outcome of care
- How to use indicators to track progress of improvement



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POCQI - Point of Care Quality Improvement

Step 2: Importance of Analysis

- Explore **in detail possible causes** of a problem
- Helps focus on things that are within our **control**
- Gives an **opportunity for everyone** to give their insights based on their role in the process
- Helps us **understand what is happening in the system** at present and thus identify possible solutions



Review some key reasons why analysis is important in quality improvement.

When you see a patient, you are not interested in just treating the symptoms; you also want to identify the real cause of the symptoms so that you can treat appropriately. The same applies when you are working on a problem in the health facility.



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POCQI - Point of Care Quality Improvement

Tools for analysis

Why might a problem be happening?

1. Fishbone
2. Five Why's
3. Pareto Principle
4. Process Flowchart



We will cover four tools for problem analysis in this Step.

We are going to discuss options for identifying possible causes of the problem that you have decided work on. By broadening the understanding of all underlying main causes you will come up with appropriate solutions that are likely to succeed.

One way to determine the possible causes of the problem is to draw the Fishbone Diagram. (a completed diagram looks like the skeleton of a fish!).

In general, there are four broad categories of causes for any observed problem.

- PEOPLE – people may not know what to do or how to do it
- PLACE – the place you are doing the work may make it hard to do the work. For example, there may be no equipment or equipment is kept too far from where it is needed
- PROCEDURE – the way work is done may be contributing to the problem. For example, tasks are being done in the wrong order or at the wrong time
- POLICY – there may be no policies, or policies may be wrong or non-specific

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POCQI - Point of Care Quality Improvement

1. Fishbone : Identify all possible contributing factors

Why might a problem be happening?

- People
- Places
- Procedures (practices)
- Policies
- anything else

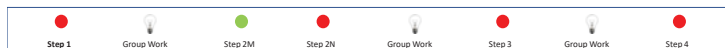
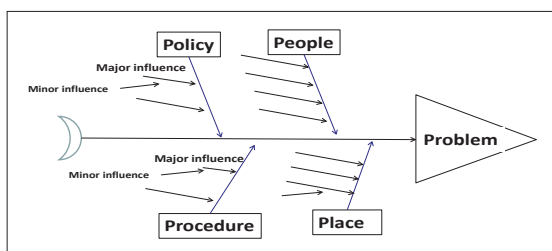




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POCQI - Point of Care Quality Improvement

1. Fishbone : Identify all possible contributing factors



Another tool is the 'Five Why's' - this is used to identify 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

For example: A hospital is trying to increase the number of women who start early breastfeeding within the first hour of birth. Using the five whys analysis the team was able to understand that the type of gowns that they are giving the women in labour make it difficult for the women to breastfeed.

Continuing to ask 'why' helps the team identify why they have that type of gown (because no one had ever asked for a different type of gown) and to come up with a solution (ask the store keeper to order another type of gown for breastfeeding mothers)

Steps to draw a fishbone with your team:

- Write the problem in a box on the right-hand side of a large sheet of paper, and draw a line across the paper horizontally from the box so that it looks like the head and spine of a fish.
- Next, draw a line off the "spine" of the fish and write down contributing factors. These may be different levels of the health systems, or building blocks of the system, such as people (staffing), place (equipment), procedure, policies (guidelines) etc.
- Now, for each of the contributing factors, identify possible causes. Show these possible causes as shorter lines coming off the "bones" of the diagram.
- Where a cause is large or complex, then it may be best to break it down into sub-causes. Show these as lines coming off each cause line.
- By this stage, the fishbone should show several possible causes of the problem.

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POCQI - Point of Care Quality Improvement

2. "Five whys"

Understanding why something is the way it is

Alternative Scenario

- Mothers are not breastfeeding – **Why?**
- They feel uncomfortable taking their gown off **Why ?**
- There is no privacy to breast feed, so they feel exposed. **Why** is there no privacy to breastfeed?
- They are in a common ward. There are no curtains or separate covered space for privacy for breastfeeding





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POCQI - Point of Care Quality Improvement

2. "Five whys"

Understanding why something is the way it is

Alternative Scenario

- Mothers are not breastfeeding – **Why?**
- They feel uncomfortable taking their gown off **Why?**
- There is no privacy to breast feed, so they feel exposed. **Why** is there no privacy to breastfeed?
- They are in a common ward. There are no curtains or separate covered space for privacy for breastfeeding



There is no one perfect answer to a Five Why's analysis. It is not necessary to ask Why 5 times. It can be less or more.

Additionally you might get a different chain of answers depending on the perspective of various people on the team.

The key is to understand better why things are the way they are and reach to an actionable cause for the problem.

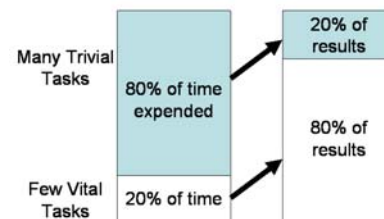
The Pareto Principle states that 80% of a problem is due to 20% of the causes. This principle helps you to look for the causes that account for most of the problem and to prioritize the ones that you can address efficiently.

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POCQI - Point of Care Quality Improvement

3. Pareto Principle

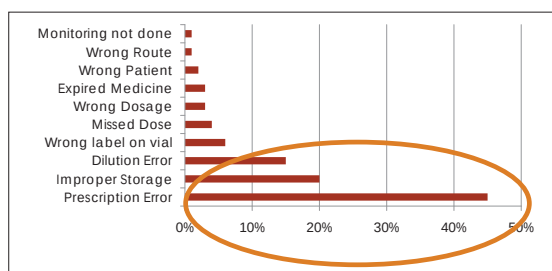
80% of the problem is due to 20% of the causes



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POCQI - Point of Care Quality Improvement

Pareto Principle Example: Medication error



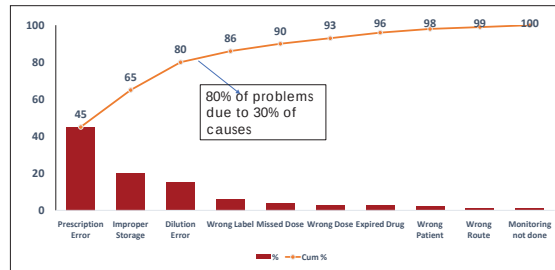
In this problem of medication errors, there are 10 reasons for the error but only three causes account for 80% of the errors. Working on these three causes will be more efficient than working on the other, less frequent causes.



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POCQI - Point of Care Quality Improvement

Pareto Chart Example: Medication Error



This is another way of displaying the Pareto Principle and determining which causes account for most of the problem.

The process flow chart describes all the steps in a process. For example, how essential newborn care is provided immediately after the delivery.

Flow charts can help identify problems in the process, e.g.

- Steps that are being done in the wrong order
- Unnecessary or repetitive steps
- Steps that are contributing the most to the problem

Creating a flow chart involves

- Deciding on the beginning and end of the process you are trying to explain. For example, delivery of a baby (start) to baby leaving the labour room (end).
- All the steps between those points. For example, baby being dried, skin-to-skin care, starting breast-feeding etc.
- Linking the steps together with arrows
- Reviewing the whole sequence to check if this is really what happens

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4. Process flowchart

How to develop a process flow chart

1. Decide the **beginning** and **end** points of the process
2. Identify the **steps** of the process as these are done at present
3. Link the steps with **arrows** showing direction
4. Now **Review** the chart to see whether the steps are in their logical order to achieve the end point efficiently: Is the order wrong, are some steps unnecessary?



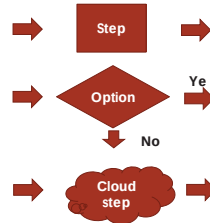


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How to create a process Flow chart

- 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



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

Emphasize that we have learnt four tools – Fish Bone, “Five Whys”, Pareto Principle, and Process flow chart.

These tools can help identify appropriate solutions to address the main causes of the problem that you are trying to solve.

Show the Pareto chart video

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POCQI - Point of Care Quality Improvement

Key tips

- Analysis helps **identify several causes** of the problem
- Focus on causes that are within our **control** and possible to remedy
- Try to find **few barriers** that account for most of the problem
- Use these tools to **stimulate discussion** among team members
- Involve** all team members in the analysis
- Think about how **re-organization** can help with fixing the problem
- [Video on Pareto chart](#)





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POCQI - Point of Care Quality Improvement

Step 2: Analyzing and measuring quality of care

- How to develop indicators for process and outcome of care
- How to use indicators to progress of track improvement

We have used the diagnostic tools to learn what the most important causes of the problem are.

We now need to develop indicators so we can learn if we are making progress in solving our problem



Discuss the importance of measurement in quality improvement.

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.

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Why measure?

- To know whether or not we have an improvement
- Helps us know how we are progressing in achieving our aim
- Data is objective – helps communicate with others and among the team
- Helps us to compare how we are doing over time
- Data allows us to make comparisons with other units / facilities





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POCQI - Point of Care Quality Improvement

Process and outcome indicators

An indicator defines a rate/ratio or an event

- Measure of Process – actions that are taken in delivery of care
 - Washing hands to prevent infections
- Measure of Outcome (“the result of the actions taken...”)
 - Incidence of infection in the patients



Review what is a Process and what is an Outcome. For example, a QI team may try to reduce the incidence of infection (an outcome) by improving hand washing (a process)

- Process indicators measure actions that health workers or others carry out to achieve something. Process measures let you know if you are putting into practice the process or not.
- For example, the % of health workers washing their hands tells you how effective the team is at improving hand-washing behavior
- Outcome indicators measure what health workers are trying to achieve (clinical outcome). Outcome measures let you know if you are actually getting the result that you want.
- For example, the % of newborns with infection tells you if hand washing is working or not.

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

It is possible that there are other processes that need to be addressed. If the hand washing indicator shows good performance and there is still a high rate of infection, the team would need to look for other causes of infection.

Emphasize that while you want answers to both of these questions you should look for the **easiest way** of getting data.

It may not always be feasible to have both process and outcome indicators for a QI project.

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Process and outcome indicators?

- If you don't measure process

How will you know whether the action you want done is really happening or not

- If you don't measure outcome

How will you know whether you are making progress towards your aim or not?

How will you know whether the action is really leading to the desired outcome or not





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Qualities of a good indicator

- Clear and unambiguous (teams will not confuse what is meant by a particular indicator)
- Should be linked to aims
- Should be used to test change and guide improvement
- Should be integrated into team's daily routine



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

To start developing an indicator the first step is to understand what is happening in the system.

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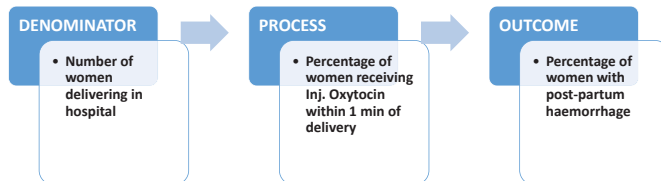
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Developing indicators

Patients in hospital

Patient gets treated

Result



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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.

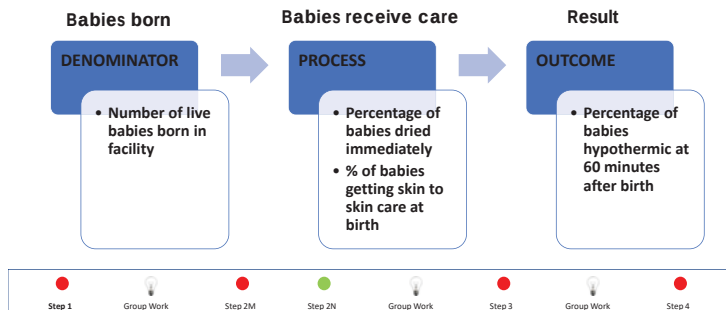
It would be good to highlight here that monthly data review is okay for outcome indicators but you should look at process indicators daily or weekly to speed up the learning process.



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Developing indicators



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Example of good indicator

Indicator: Percentage of babies being dried immediately after birth

- Numerator: # of babies dried immediately after birth
- Denominator: # of normal vaginal live births
- Source: Labour Room Register
- Person responsible: Delivery room nurse
- Frequency: Review at the end of every shift





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Plotting a time series chart

- **Title:** Clear and well defined title that includes what and when
- **X and Y axis** have clear scale and include indicator label
 - X axis: Time period - days/weeks/months
 - Y axis: measurement in %, proportion
- Annotation
- Numerator and denominator values are shown



A good way to review data is to plot the it on a time series chart (or a run chart). Time-series charts allow you to see how the data are changing over time.

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
- They 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.

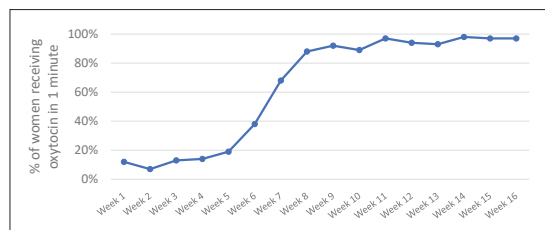
Explain from the example of run chart in this slide. Something happened at week 5. Process of care was changed

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Time-series chart:

Percentage of women receiving uterotonic within one minute





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Key tips

- Looking at data overtime is crucial
- Frequent measurement (daily or weekly) is better than less frequent (monthly)
- Only collect data what you are going to use
- Don't overburden with endless data collection
- If possible, try to use data that are already recorded in your health facility or that will be easy to collect



Summarize the use of indicators:

- As far as possible, try to use data that are already collected in your health facility. This saves time and you can spend more time testing changes to improve care rather than collecting data
- Only collect what you are using. We are collecting data to use it to learn. If you are not using it or not learning from it – do not collect it. Save the effort!
- Also, we will learn faster if we review the data frequently. Every day or every week is much better than every month. As mentioned earlier, outcome indicators can be monitored once a month.

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Steps in QI

- Step 1: Identifying a problem, forming a team and writing an aim statement
- Step 2: Analysing the problem and measuring quality of care
- **Step 3: Developing and testing changes**
- Step 4: Sustaining improvement



We are at step 3 now. By this time health facility teams have decided what they want to improve, formed a team, identified some of the causes for poor care and developed some measures to indicate how our project is progressing.

After diagnosing the problem the team now must take action/s to correct it.

This involves developing ideas about what to change to fix the problem.

We will also discuss how to test these ideas in our own work place to learn if they work and to adapt them to your setting

State the learning objectives

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Step 3

Learning objectives

You will learn:

- How to come up with ideas about what to change to reach your aim
- How to plan a plan-do-study-act (PDSA) cycle to test change ideas
- What to do as you learn from a PDSA cycle
- How to test multiple change ideas to achieve your aim





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Develop changes

- Determine possible change ideas that may lead to improvement
- Ask your **team**.
 - **Based on the analysis** what changes can we make?
 - **Why** will this change result in an improvement?
 - **How** will it work?
 - **What will we expect** to see as a result of this change?
- Organize changes according to **importance and practicality**
- Test **one change at one time**



To find a solution for the identified problem the health facility team needs to:

- Identify some changes (ideas) that they think will work in their situation
- Review the possible change ideas if these are important for patient care and are likely to be effective and feasible at their workplace
- Test the idea/s to learn if these work and to adapt them for your setting, as required

There may be many problems and solutions that can be explored, but teams may choose to focus on solutions that are actionable within their sphere of influence in the short term, while advocating for more long-term systemic change

There are several types of changes that you can make in your health facility. Some of the main categories include:

- Eliminate waste by stopping unnecessary treatments or steps of care – stop doing harmful or useless (even if harmless) practices
- Reorganizing the sequence of tasks or reassigning tasks to different staff.
- Improve the patient relationship and communication - her experience of the care received – listen to what patients want
- Manage variation in the existing treatment and care practices – make work (process of care) more standard and predictable

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Some categories of changes

Category	Meaning
Improve knowledge or skills of workers	Training or standards
Eliminate waste	Stop doing useless or harmful things
Reassign tasks	Change who does what
Reorganize tasks	Do tasks in different order or different location
Improve patient relationship	Listen to what patients want
Reduce variation	Do things to make work more standard





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Some categories of changes

Category	Examples
Improve knowledge or skills	Teach about the importance of skin-to-skin care to keep babies warm
Eliminate waste	Have equipment closer to hand to reduce time getting it
Reassign tasks	Share work between staff members
Reorganize tasks	Start skin to skin and dry babies before cutting the cord
Improve patient relationship	Learn from mothers how they would like care to be provided during delivery
Reduce variation	Triage new admissions in the labour room

Examples of each category of changes are given.



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 important to test the new ideas to learn how they work and to adjust them .

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

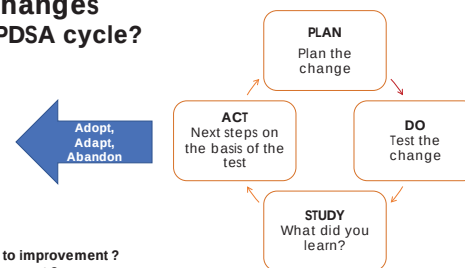
Study – the team reviews whether the desired change has been carried out as planned ; what they learned from the test; whether it was a success or a failure based on the collected data

Act – the team decides what to do next depending on the experience and result of implementing the change idea.

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Testing Changes What is a PDSA cycle?



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





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Plan the test

What will your team do ?

Discuss and document the details for:

- **What** change idea will you test
- **Who** will make the change
- **Where** will this test be done
- **When** will the test be started
- **For how long** will this test be done
- **How will we know** whether this test happened as planned
- **What do we expect to learn** from this test?



Step 1 Group Work Step 2M Step 2N Group Work Step 3 Group Work Step 4

Planning a test:

Who will test the change/new idea?

What they will do?

When they will do it?

What you want to learn from the test?

It is important to emphasize that a team can do small scale PDSA cycles very quickly.

For example, when someone is cooking and they decide to add salt and see if it tastes better they are doing a PDSA. Teams can do short PDSA cycles as well to learn how new ideas are working and to adapt them.

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Planning Example

What change will you test?	New protocol for post-partum assessment to pick up PPH earlier
Who will make the change?	Two of the nurses involved in developing the protocol
Where will they do it?	They will test the protocol in the post-partum ward
When will they test?	They will test it on their next shift
How long will they test?	They will test on one shift only
What do you want to learn?	• Is it feasible to follow the protocol? • Do we need to adapt the protocol? • Do we need to change anything on the ward to make it easier to follow the protocol?

Step 1 Group Work Step 2M Step 2N Group Work Step 3 Group Work Step 4

Plan step of the PDSA cycle:

Share the example from the slide

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Do the test

- Sometimes the plan might not happen exactly as envisioned.
- Make sure you **document exactly what happens** as there is valuable **learning** happening while carrying out a test



Step 1 Group Work Step 2M Step 2N Group Work Step 3 Group Work Step 4

Do:

In this step the assigned persons in the team tests the change as per the plan developed in the previous step.

Often things do not happen as planned. It is important in the 'Do' step to document any challenges or deviations from the original plan.



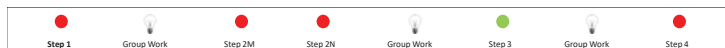
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Study the learning from the test

After testing the change you need to think about:

- Was the test carried out as planned?
 - If not why?
 - What else needs to be done so this change can happen
- Is this change feasible in our setting
- Do we think it will solve the problem
- Does the change improve our indicator



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

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Act – Take action based on how the test went

- After reviewing the results of the test the team decides whether the change should be:
 - **Adopted** – The change worked well and led to improvements in the data and is feasible and acceptable to do.
 - **Adapted** – The change idea worked partially but needs some modifications and further testing. This is usually the most common scenario.
 - **Abandoned** – The change idea did not work at all.





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Testing Changes

- 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)



Testing on a small scale means that there won't be any harm and provides an opportunity to learn. It also allows you to make modifications to your idea before you apply it at a large scale.

As much as possible, it is good to test each change idea individually otherwise you won't know which idea worked and which one did not.

It is also important to highlight that some of your change ideas will not work. That is expected.

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 when there are fewer staff.

No QI project will reach its aim with only one PDSA. You will need to do multiple PDSA's depending on your analysis and identified causes and change ideas.

In this example multiple change ideas were tested to reduce hypothermia in newborn babies. Some of these change ideas were abandoned (Ziploc bags), some were adapted or adopted.

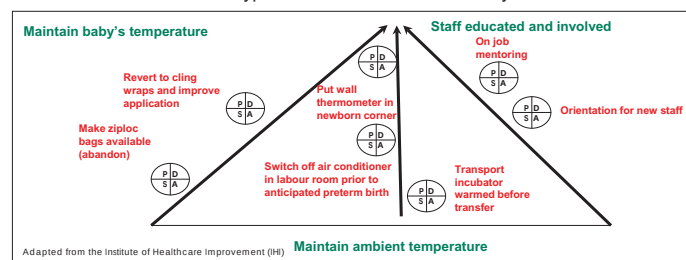
Try to test one change at a time. The changes in the illustration can happen at different times in the health facility

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Multiple 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)





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What to do after identifying successful change ideas?

Testing changes

- Few people are involved
 - less resistance
- Rapid cycles
 - take less time
- Support needed low
 - Testers do not yet intend changes to be permanent
- Tolerance for failure : A failed test is an opportunity to learn
- Low level of certainty that the idea will work

Implementing changes

- More people involved
 - expect more resistance
- More time, people, resources needed.
- More support needed from all levels
- Tolerance for failure is less
- **Implement only those changes that have been tested and show improvement in indicators**



Once you have identified a successful change idea by doing PDSAs you can then 'implement' the change across the unit or ward or health facility.

In quality improvement the term 'implement' refers to applying a successful change idea to a larger scale. You should only implement changes that have been shown to be successful in PDSA's.

Changes will lead to improved care if

- They are the right changes (you may have made the wrong diagnosis of the problem when you analyzed it and therefore picked the wrong change idea)
- They are put into action - if the team members including front line workers do not want to make the change or do not know how to test it then the change will not work. It is crucial to involve front- line workers in all steps.
- They are adapted to the local context. Ideas from other settings may be good in theory but need to be tested to make sure that they work properly in the local setting and will many times need to be adapted

PDSA cycles (testing) are invaluable for making sure that:

- You selected the right change
- That the change is put into action after right planning
- That the effect of the change is studied.
- Changes that are successful are scaled up and those that fail are abandoned

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Key tips

- **Change ideas will improve care, if**
 1. They are based on analysis
 2. They are actually carried out and tested!
 3. Adapted to the local context by testing
- **Testing is important to make sure that:**
 - You selected the right change
 - That the effect of the change is studied on a small scale
 - Change ideas that are successful can be made routine practice and those that fail are abandoned





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Steps in QI

- Step 1: Identifying a problem, forming a team and writing an aim statement
- Step 2: Analysing the problem and measuring quality of care
- Step 3: Developing and testing changes
- **Step 4: Sustaining improvement**

After fixing the problem the final step is to make sure that the improvement is sustained over time.



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Step 4

Learning objectives

You will learn:

- How to build enthusiasm, motivate team, recognition by certificates and celebration
- How to share the results and successful projects widely
- How to make policy with new ways to work
- How to hardwire the gains by making system change

Review the learning objectives



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Take specific actions to sustain improvement

- **Documenting the flow of the new process** — the new way of doing things
- **Teaching people new skills** that might be required of them
- Making changes in **job descriptions, policies, procedures**
- Addressing **supply and equipment issues**
- Assigning day-to-day **ownership** for the **maintenance** of the new process
- Having **senior leaders remove any barriers** that might allow slippage back to the old process

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.

Use the points from the slide to explain the elements that ensure the change becomes the standard way of working.





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Tinkering vs System Change

Problem	Tinkering	System change
Physicians orders are illegible, causing medication errors	Encourage Physicians to write more clearly	Pre-printed standardized order sets to minimize need for hand writing
Oximeter alarms not set as ordered	Penalize nurses who are non compliant	Modify alarm defaults
Breast milk use is low for premature babies	Suggest hospital to hire lactation consultants	Create process to improve use of breast pumps



To ensure that a change is sustained one has to ensure that it is a system change and not just a minor tinkering of the process.

Tinkering is reacting to the problem rather than looking for the root-cause and addressing that

Tinkering usually relates to trying to get health care workers to change only their immediate behavior rather than changing the system so that it becomes a norm for them to provide good quality care. Examples are given in the slide.

It is important to think of sustainability from the beginning. If the changes that you have tested require hard work and make things more burdensome for the staff or patients then they will not be sustained over a long time. Changes that make things easier and better for the staff and for the patients are likely to be sustained. Doing improvement work together as a team of frontline staff ensures ownership and ensures that the right change ideas are developed. Leadership support is important to sustain the gains and their support may be needed to make the new way of working the norm across the unit/facility. Although skills to improve care at the frontline are the cornerstone for quality improvement, we need to over time develop structures and systems at an organizational level to support quality improvement work and make things easier for the QI teams at the frontline.

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Improvement is more likely to be sustained when:

The new way of working	Is easier Is obviously better Can be adapted as needed Is easy to measure and monitor
Front line workers	Were involved and allowed to develop the new way of working Have skills to monitor and adapt the new way of working
Unit and facility leadership	Are involved in the developing and sustaining the new way of working
Organization	Has structures and systems to support quality improvement Has structures and systems to support the new way of working





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Building Enthusiasm for Improvement

- Be **SMART** about choosing your first project
- **CARRY OUT THE PROJECT!**
- Build your **TEAM**. Do not work alone.
- **Keep higher ups informed.**
- **Seek guidance** from QI mentors / continue **self-learning**
- **DOCUMENT** your work so you can **share** it
- **DISPLAY** up your progress in the department on notice boards.
- **Involve new members** and **Teach** others the basics of improvement



It is critical to maintain momentum for quality improvement.

- The most important way is to experience a successful quality improvement project. To achieve success in your project you have to be **SMART** about selecting your aim.
- Also, there can be no improvement if you don't carry out what you plan! So do the work and carry out your project.
- Don't try to do everything alone, the success of quality improvement depends on teamwork.
- Keep seniors informed about your work and seek guidance from any available QI experts. There is lots of information online on quality improvement to build your own knowledge
- Document your work in Word or Powerpoint in a timely manner so that you are later able to share it with others.
- Display your successes prominently in your unit / ward to motivate your staff and team members.
- Form multiple teams in the health facility so that they can learn and support each other



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Key to success

- **Local champion:** A leader who respects others, is a keen listener, uses collective wisdom of the team rather than being directive, identifies & harnesses key strengths of members, sets example
- **Incentives:** System **rewards successful teams** – certificates, 'QI star of month'. Provides **opportunities to disseminate and share successes**
- **Personal aspirations:** Most of us entered medical profession to reduce suffering and help society
- **Positive attitude:** Being positive and prepared to address barriers, challenges which prevent us achieving the aim.



A champion is someone who takes ownership and leads the QI initiative in the health facility or in the health system.

Manager of the health facility should continuously encourage the health care team to improve quality of care by rewarding people who are involved in QI efforts and giving them opportunities to share their work.

Focus on the big picture. The point is not to mechanically pick aims, do fishbone exercise, draw charts and undertake PDSA cycles but to ensure **best health outcomes** for the patients.



SECTION 5

Successful case studies



A Quality Improvement Initiative Breast feeding practices among mothers of infants admitted in Neonatal Intensive Care Unit



All India Institute of Medical Sciences, New Delhi

Background

- Breast milk is unquestionably the best milk for a baby.
- Ideally all babies should get mother's milk from day 1 till 6 months (WHO recommendation)
- Late expression of milk ultimately leads to inadequate milk resulting in lactation failure
- Formula feeding has been identified as one of the risk factors for the development of Necrotizing Enterocolitis (NEC) in low birth weight sick neonates
- Practice in Neonatal Intensive Care unit at AIIMS:
 - Neonates are fed with other mother milk (with consent) or formula feed intermittently till the time their mothers can produce sufficient own milk for exclusive maternal milk intake
 - This period of formula /other mother milk feeding may vary from 6-7 days after birth.

Problem Identified

- Mothers whose babies are admitted in NICU start expressing milk only after day 3
- The frequency of milk expression in these mothers is limited to two to three times in a day including the night expression of breast milk

"This problem was bigger than we thought"

Aim

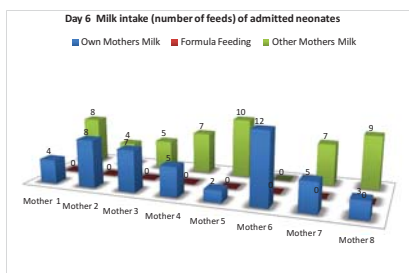
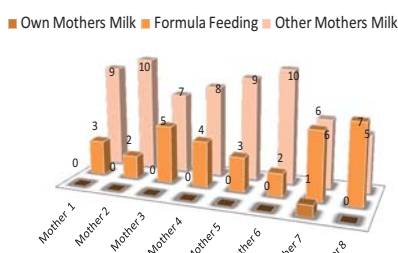
- To increase the amount of breast milk intake in admitted neonates from 5% to 30% over six weeks

Baseline Data Collection

- To evaluate if the mother has received antenatal counseling related to BF
- To evaluate if the mother received post natal counseling related to BF issues
- Identified barriers related to early expression of breast milk/BF as reported by mother

Mother	D1 (mL)	D2 (mL)	D3 (mL)	D4 (mL)	D5 (mL)	D6 (mL)
M1	0	0	0	20	50	100
M2	0	0	0	15	35	110
M3	0	0	2	20	60	75
M4	0	0	15	20	40	133
M5	0	0	10	50	75	100
M6	1	0	30	40	80	235
M7	0	0	10	35	68	90
M8	0	0	0	10	50	95

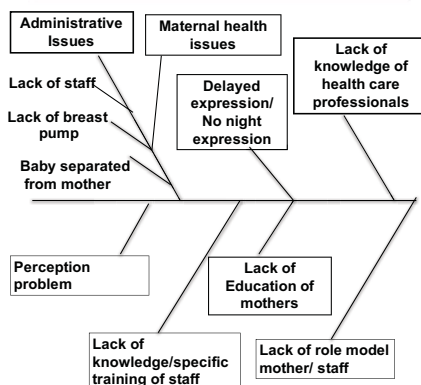
Day 1 (Milk intake of admitted neonates)



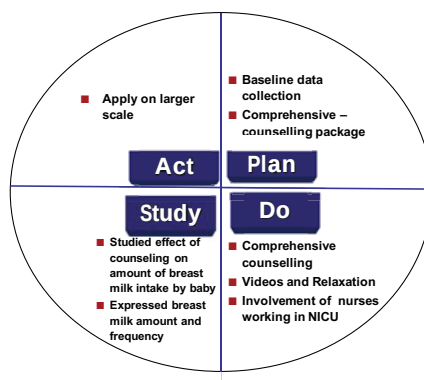
Postnatal - feeding counseling

- Current status of counseling prior to implementation
 - Two lactation counsellors are posted in postnatal and their target is only the mother newborn dyads in postnatal wards
 - No separate counseling of mothers whose infants are admitted in NICU

Root cause analysis (Fish bone)



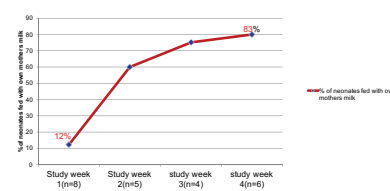
PDSA Cycle



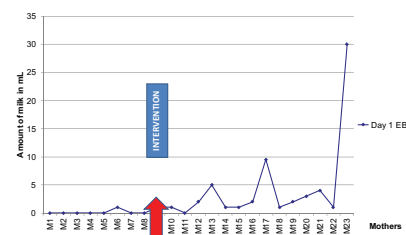
Results

- Frequency of expression of milk including night also increased from 2-3 times to 5-6 times/day
- Amount of EBM increased by 50%
- Intake of breast milk by neonates increased by D7 from 1/8 (12.5%) to 5/6 (83%).

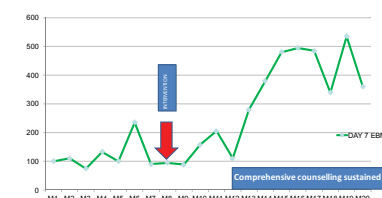
Proportion of neonates fed with own mothers milk



Quantity of breast milk expressed on day 1



Quantity of breast milk expressed on day 7



Conclusions

- Expressed breast milk (EBM) output increased following postnatal counseling
- Early and frequent expression day and night helped mother to express more milk
- These two changes resulted in early substitution of other mothers milk and formula milk by own mother's milk



Establishing Skin to Skin Contact as a standard of care in Labour ward

K Aparna Sharma, Seema Singhal, Rajesh Kumari, Philomina Thomas, L. Levis Murry, Shilin Sunny, Suman
Dept of Obstetrics and Gynaecology and College of Nursing
All India Institute of Medical Sciences, New Delhi



To establish mother to child skin to skin contact immediately after delivery and before clamping the cord as a standard procedure for low risk mothers admitted to the Labour Room at AIIMS, New Delhi



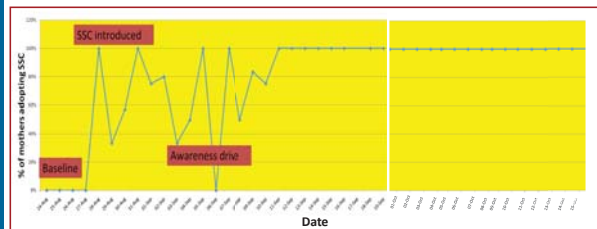
Background

- Definition of Skin to Skin Contact (SSC): Placing the naked baby, covered across the back with a warm blanket, prone on the mother's bare chest.
- Advantages: SSC through sensory stimuli such as touch, warmth, and odor is a powerful vagal stimulant. This releases maternal oxytocin, which provides warmth, decreases maternal anxiety and improves parenting behaviour.

Moore et al. Cochrane Systematic Review, 2012



Progress in implementation of SSC at Labour Room, AIIMS between 24 August 2015 and 19 September 2015 as measured by percentage of eligible mothers (normal baby cases) adopting SSC



Team members and role

Staff nurses/Doctors on Duty

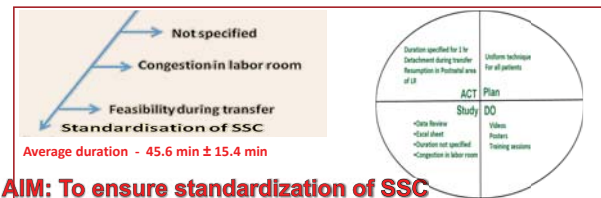
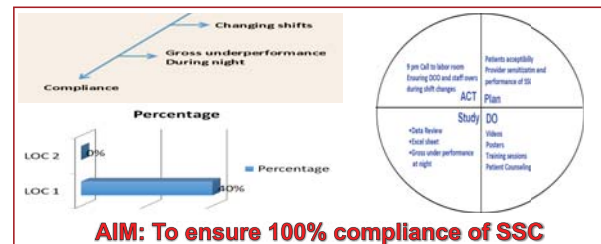
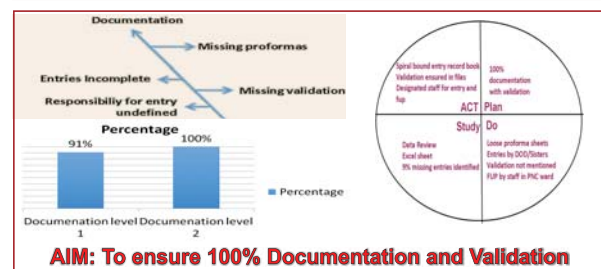
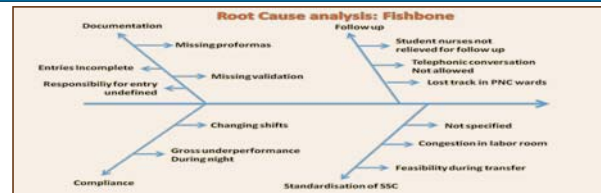
- Counsel in labor regarding SSC
- To encourage mother to perform SSC
- To assist the SSC on delivery table
- To maintain SSC in post partum room
- To document the SSC

Student Nurses:

- Follow up of mothers in PNC

Administrator:

- To sensitize staff for SSC (benefits and technique)
- To standardize the SSC practice
- Monitoring (process standardization, Documentation)
- Trouble shooting
- Analysis



Conclusion: Skin to Skin Contact established in 100% cases in 2 weeks

Next Steps.....

- SSC as a standard of care for all eligible deliveries
- Planned learning sessions and frequent monitoring to establish and maintain SSC
- Structured patient counselling during antenatal period as well
- Target the ultimate aim of establishing exclusive breast feeding at the time of discharge.



Latest situation

- SSC has become a standard practice in the Labour Room at AIIMS for all normal babies.
- Periodic follow-up studies have also indicated that SSC has helped in ensuring 100% exclusive breast feeding at the time of discharge. Breast feeding is started between 30 and 60 minutes of birth.

Message

- Planned Group effort has helped to bringing about a highly useful change in the Labour Room at AIIMS



A NICU quality initiative to improve admission temperature of preterm neonates < 32 weeks gestation

Sindhu S, Jeeva Sankar M, Ramesh Agarwal, Ashok Deorari, Vinod Paul
Division of Neonatology, All India Institute of Medical Sciences, New Delhi



Background

- Preterm neonates are prone to very rapid **heat** loss due to their higher body surface area, immature skin and poor sub cutaneous fat
- Hypothermia is associated with increased morbidity like hypoglycemia, respiratory distress, more oxygen needs, metabolic acidosis.
- For every 1 C decrease in admission temperature the odds of late onset sepsis increases by 11% and odds of death increases by 28%

Problem identified

Among 8 neonates < 32 weeks gestation born in the year 2015, whose charts were reviewed retrospectively, the mean admission temperature was 35.5 C and only 12.5% had admission temperature in normal range 36.5-37.5 C

SMART AIM

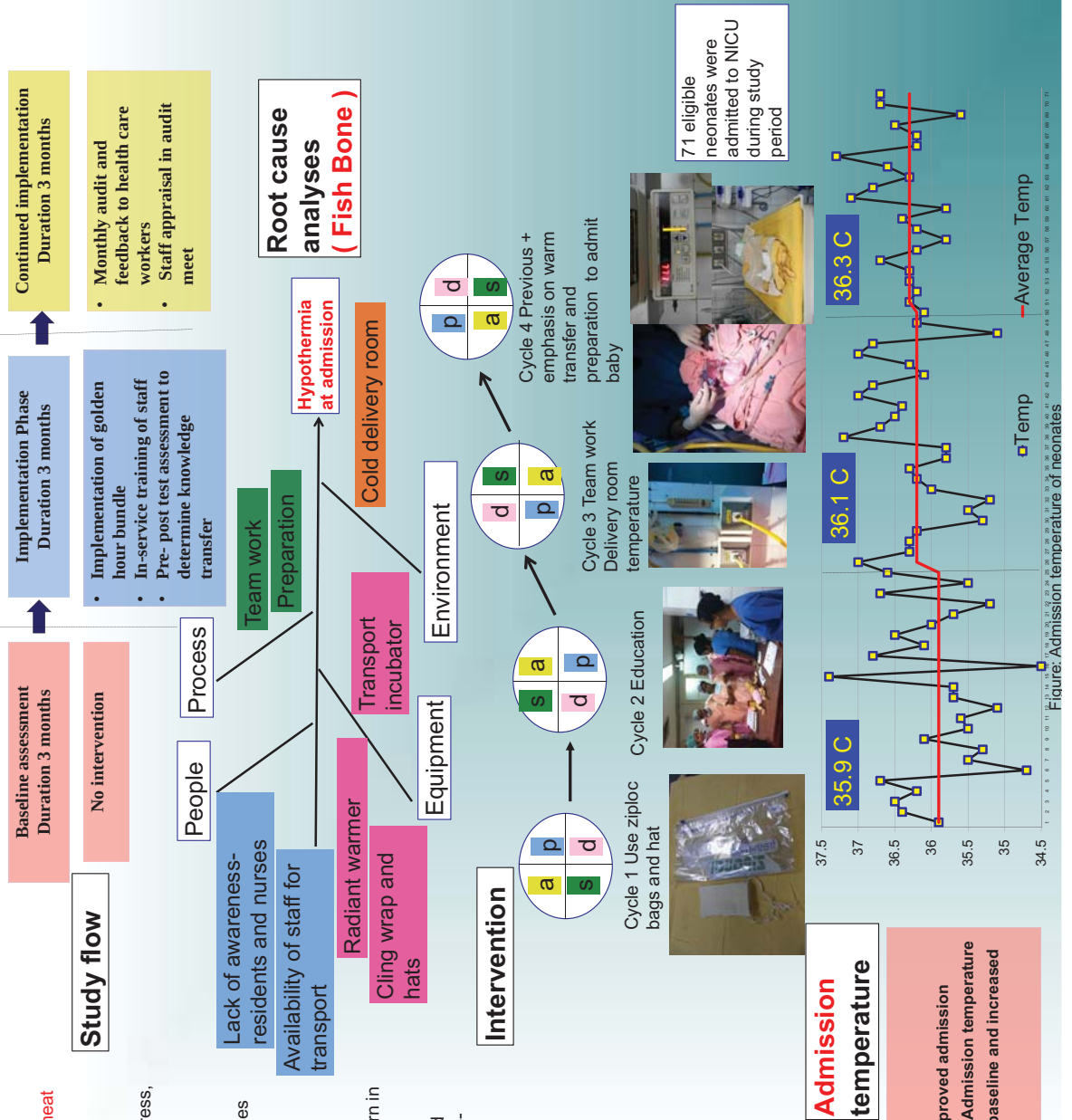
To achieve an admission temperature of 36.5-37.5 C in ≥ 80 % of babies < 32 weeks gestation born at AIIMS over a period of 6 months by implementing a "golden hour bundle" through staff education and **multiple** PDSA cycles

Golden hour bundle focuses on thermoregulation, delayed cord clamping and gentle ventilation



Conclusion

Implementation of golden hour bundle led to improved admission temperature of neonates < 32 weeks gestation. Admission temperature of 36.5-37.5 C was noted in 28% of neonates at baseline and increased to 35% after intervention.





Quality improvement initiative in Kangaroo Mother Care Practices in NICU



Background

- Kangaroo mother care (KMC) is a safe and alternative method of providing care for low birth weight (LBW) babies. This includes early, continuous and prolonged skin to skin contact of baby with the mother or any caregiver from the family.
- Ideally KMC should be practiced uninterruptedly for 24 hours/day (WHO recommendation)
- Our unit practice is to give KMC for minimum an hour and gradually increased to as long as possible up to 24 hours, as any session of KMC lasting less than an hour could be stressful for the baby
- Benefits of KMC include
 - Increased breast feeding rates
 - Better thermal control
 - Less morbidity and mortality and
 - Early discharge from neonatal intensive care unit (NICU)

Status of KMC in our Nursery

- KMC is initiated for all preterm and LBW babies as soon as they become hemo-dynamically stable and for initially hemo-dynamically unstable babies, on ventilatory support or having shock, receiving inotropes etc., it gets delayed for days to weeks before their condition allows for the same

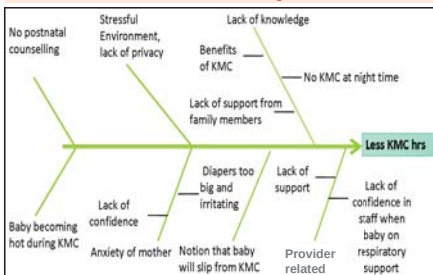
Aim

- To increase the durations of KMC practice of LBW infants from the current baseline value (current average 3 hours/day) by 3 hours (minimum 6hours duration/day) our 2 months

Baseline Data Collection Plan

- Baseline data collection of eligible babies who were initiated KMC during the study period was collected in a predesigned performa which included:
 - Demographic profile related to mother and baby
 - The weight and gestational age at birth of the baby
 - Age at which KMC was initiated for the baby
 - Average duration of KMC per day
 - Questionnaires for mother for identifying barriers from mother
- Team member: Nurse Educator, 4 Nurses, Resident doctor, Faculty Incharge NICU, Mothers

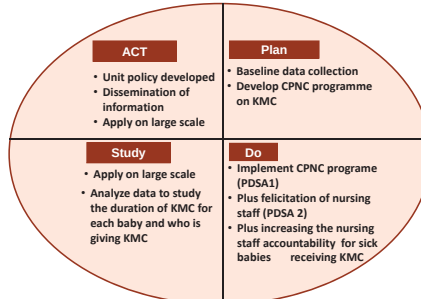
Problem analysis



Main barriers of KMC

- Lack of support from health care team
- No proper counseling, lack of privacy for mothers.
- Lack of accountability of assigned Nurse.
- Lack of initiative by other family members for KMC (lack of knowledge, support to the mother, lack of confidence)
- Lack of knowledge and confidence among the mothers and family members in providing KMC due to absence of counseling sessions related to KMC
- No KMC paretic at night
- Mothers spending more time in milk expression and feeding the baby.

PDSA Cycles



Comprehensive postnatal counselling (CNPC): PDSA cycle week 1

- By a team of 4 dedicated nursing staff working in NICU in different shifts, which includes
- Showing video shows on KMC for the mother and 2-3 family members, explaining benefits of KMC, duration, involvement of family members in KMC in 1 to 1 basis
- Motivating mothers and family for increasing the duration of KMC.
- Motivating other family members for participating providing KMC where mother is the sole provider for KMC

Comprehensive Postnatal Counseling



PDSA cycle week 2

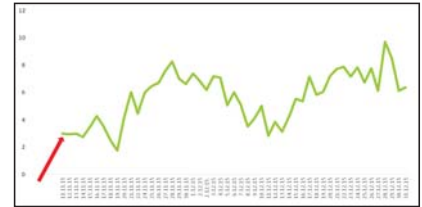
- Encouraging nurses for ensuring KMC for at least 2 hours per shift
- Felicitation and provision of certificate of appreciation to staff nurses responsible for ensuring maximum KMC hours in their shifts on weekly basis in periodic meetings.
- Promoting supportive environment in NICU for KMC.
- Mothers and the family members involved in KMC were also encouraged and acknowledged for doing KMC.



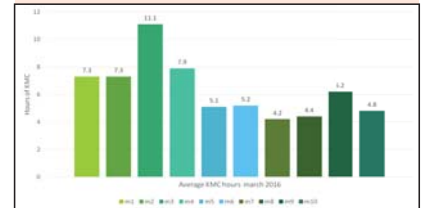
PDSA cycle week 3

- Round the clock availability of nursing staff for babies on KMC with some kind of respiratory support like oxygen therapy. This decreased anxiety and fear of KMC provider due to occasional desaturation at the time of KMC Resulting in better compliance

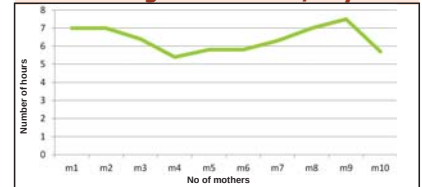
Average KMC hours/day



70% of our mothers are doing KMC for more than 5 hours



Average KMC hours/day



Longest hour of KMC achieved in a day



Steps for sustaining KMC in post implementation phase

- Allowing father and other close relatives for doing KMC even in night
- Assigning responsibility of assigned nurse for ensuring KMC at least 2 hours in her shift
- Making it as a part of doctors daily treatment order.
- Continuing on going CPNC in the unit.
- Constant positive reinforcement and encouragement for KMC in the unit by HCP

Lessons Learned

- The simple measures like active participation of family members and continuous positive reinforcement from treating team resulted in improving current existing KMC duration significantly.
- This will ultimately result in decreasing infection rate, better growth of preterm babies and early discharge



Conclusion

- Average duration of KMC increased from 3 hours to 6 hours within a span of 8 weeks
- Almost all mothers were doing KMC > 6 Hours
- Longest duration of KMC is up to 16 hours/day
- Active involvement of mother as well as all other relative for KMC resulted in sustained increased duration of KMC practice implementation



A Quality Improvement Initiative Breast feeding practices among mothers of infants admitted in Neonatal Intensive Care Unit



All India Institute of Medical Sciences, New Delhi

Background

- Breast milk is unquestionably the best milk for a baby.
- Ideally all babies should get mother's milk from day 1 till 6 months (WHO recommendation)
- Late expression of milk ultimately leads to inadequate milk resulting in lactation failure
- Formula feeding has been identified as one of the risk factors for the development of Necrotizing Enterocolitis (NEC) in low birth weight sick neonates
- Practice in Neonatal Intensive Care unit at AIIMS:
 - ❖ Neonates are fed with other mother milk (with consent) or formula feed intermittently till the time their mothers can produce sufficient own milk for exclusive maternal milk intake
 - ❖ This period of formula /other mother milk feeding may vary from 6-7 days after birth.

Problem Identified

- Mothers whose babies are admitted in NICU start expressing milk only after day 3
- The frequency of milk expression in these mothers is limited to two to three times in a day including the night expression of breast milk

"This problem was bigger than we thought"

Aim

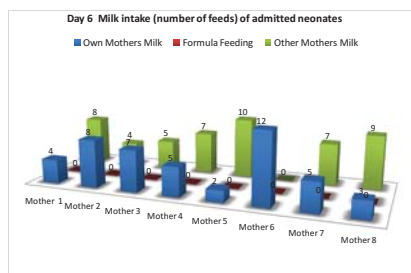
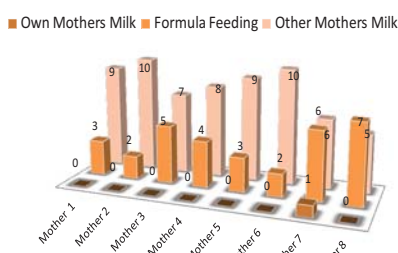
- To increase the amount of breast milk intake in admitted neonates from 5% to 30% over six weeks

Baseline Data Collection

- To evaluate if the mother has received antenatal counseling related to BF
- To evaluate if the mother received post natal counseling related to BF issues
- Identified barriers related to early expression of breast milk/BF as reported by mother

Mother	D1 (mL)	D2 (mL)	D3 (mL)	D4 (mL)	D5 (mL)	D6 (mL)
M1	0	0	0	20	50	100
M2	0	0	0	15	35	110
M3	0	0	2	20	60	75
M4	0	0	15	20	40	133
M5	0	0	10	50	75	100
M6	1	0	30	40	80	235
M7	0	0	10	35	68	90
M8	0	0	0	10	50	95

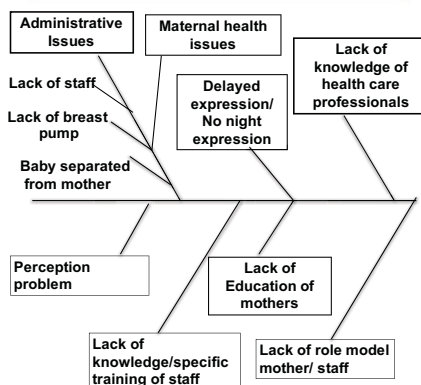
Day 1 (Milk intake of admitted neonates)



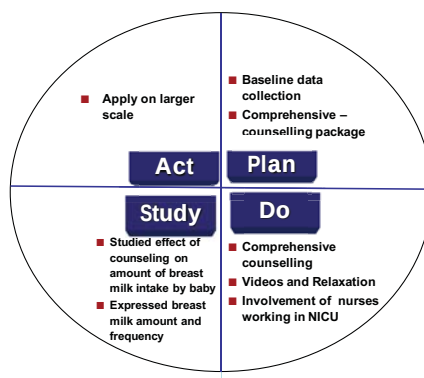
Postnatal - feeding counseling

- Current status of counseling prior to implementation
 - ❖ Two lactation counsellors are posted in postnatal and their target is only the mother newborn dyads in postnatal wards
 - ❖ No separate counseling of mothers whose infants are admitted in NICU

Root cause analysis (Fish bone)



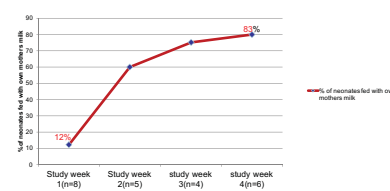
PDSA Cycle



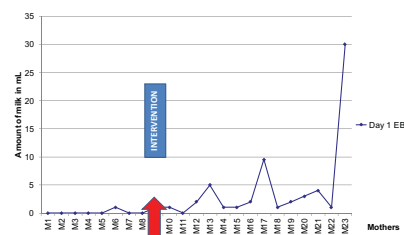
Results

- Frequency of expression of milk including night also increased from 2-3 times to 5-6 times/day
- Amount of EBM increased by 50%
- Intake of breast milk by neonates increased by D7 from 1/8 (12.5%) to 5/6 (83%).

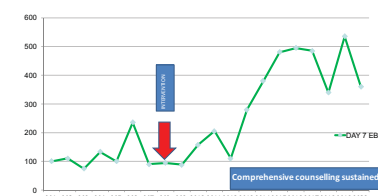
Proportion of neonates fed with own mothers milk



Quantity of breast milk expressed on day 1



Quantity of breast milk expressed on day 7



Conclusions

- Expressed breast milk (EBM) output increased following postnatal counseling
- Early and frequent expression day and night helped mother to express more milk
- These two changes resulted in early substitution of other mothers milk and formula milk by own mother's milk



A Quality Improvement Initiative in NICU

Improving the life of radiant warmer temperature probe Involving mothers



All India Institute of Medical Sciences, New Delhi

Background

Radiant warmer (open care system)

- Provides warm micro-environment to maintain stable body temperature
- Especially essential in very low birth weight babies using servo or manual mode of heating
- Application of temperature probe on the skin of the baby helpful in number of ways
 - Servo mode : Temperature probe plays a crucial role in controlling heater output as per baby's temperature
 - Manual mode : Helps in monitoring baby's temperature
- Temperature probe is delicate, likely to break if not handled carefully and a costly accessory (INR 3000)
- Dislodgment of probe was reported as a balancing outcome while promoting Kangaroo mother care

Problem Identified

The frequent breakage of radiant warmer temperature probe in NICU for babies undergoing KMC.

Baseline life of the probe was reported to be 10 days.
Frequent breakage of probe was adding to the cost factor involved in newborn care.

Team Members for QI

Nurse Educator, 2 nurses, Resident doctor and mothers

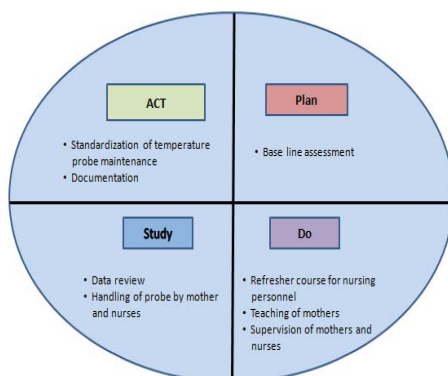
Aim

To increase the life of the temperature probe by 50% in 8 weeks by reducing the breakage of the temperature probe in NICU.

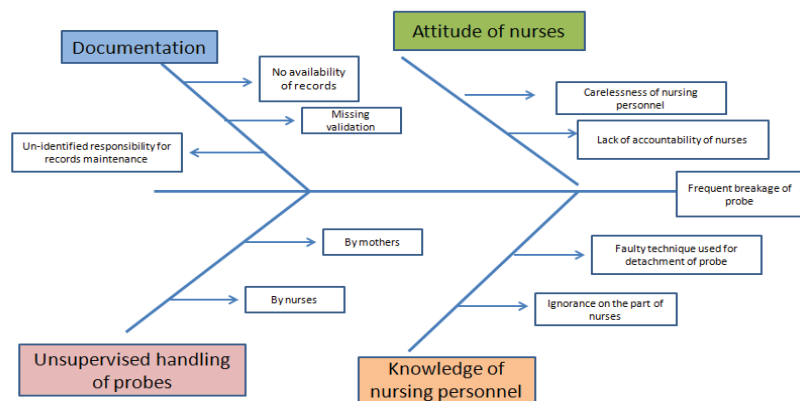
Baseline Data Collection

Data collection related to breakage of the probe in 3 radiant warmers over 2 weeks time revealed the average life of the probe to be 9+ _5 days.

PDSA Cycles



Root cause analysis (Fish bone)



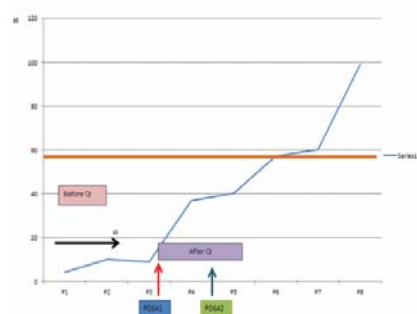
Identified causes

- Unsupervised handling of baby and the temperature probe by mothers and nurses
- Lack of knowledge of nursing personnel
 - Faulty technique used for removing the temperature probe (pulling out the delicate portion of the probe).
- Attitude
 - Carelessness on the part of nursing personnel.
 - Unsupervised handling of the probe by the mothers.
- No documentation
 - Non-availability of register/ records.
 - Undefined responsibility for record maintenance.
 - Missing validation.
 - Lack of accountability of nurses.

Sensitisation of mothers by nursing staff



Life of temperature probe (days) before and after QI



PDSA Cycle 1

- Sensitization of nurses through a refresher's course
- Supervisory check of probe handling of nurses, by the sister in-charge of NICU.
- Documentation of the temperature probe breakage in temperature probe maintenance register by the nurse educator and Sister in-charge (date of issue of probe, date of breakage and the number of days probe remained functional).
- Responsibility and accountability among the nursing personnel

PDSA Cycle 2

- Mothers' teaching promoted by the assigned nurse at least 3 times during the baby's stay in NICU about the handling of probe and detaching it from the side panel of radiant warmer.
- Supervised handling of mother by the assigned nurse.

conclusions

This QI initiative involving mothers as team member improved the life span of probes nearly ten times. Parents involvement in adding value to context specific care in NICU need further evaluation.



Reducing General Anaesthesia Waiting Area Time In Eye OT by 87% : R.P. Centre QI Initiative



All India Institute of Medical Sciences, New Delhi

BACKGROUND

Only 1 case is operated in single general anaesthesia (GA) OT at any time, but a large number of children are present in GA waiting area. This leads to unnecessary crowding, chaos, with many patients sitting on floor! Moreover, there is difficulty in coordination, increased risk of infection, and prolonged long fasting period for small babies. It adds to the anxiety of child and attendant.

AIM

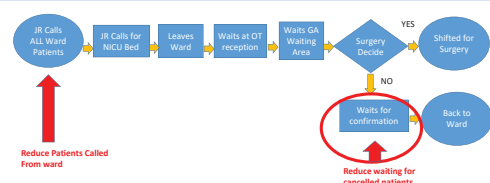
To reduce average waiting time in GA (general anaesthesia) waiting area for admitted patients by 50% in 4 weeks in a single retina unit eye operation theatre of Dr R.P. Centre, AIIMS.

DATA COLLECTED

- Time Junior Resident (JR) calls to ward
- Time patient moves out of ward
- Time patient reports to OT reception
- Time patient seated in GA waiting area
- Time patient shifted for surgery
- Time patient shifted out after surgery

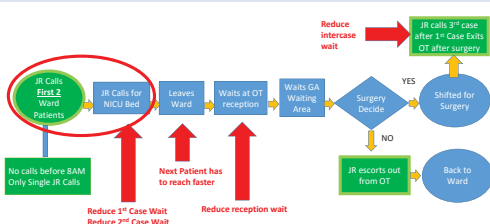


BASELINE FLOWCHART & QUALITY ISSUES



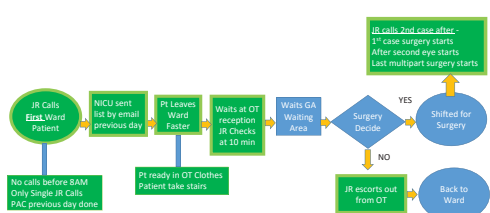
- All 8/8 patients called before 8:30 AM
- Of these 6/8 patients called before 8 AM !! – OT team comes at 8:30 AM
- 2 patients cancelled after 5 hours of waiting in OT
- For a 5 min intravitreal injection, an infected case waited 6.30 hrs
- Average Waiting Time: 221 min (~3½ hrs)
- Maximum Waiting Time: 390m (6½ hrs)
- WAITING TIME = Time of entry to OT reception to shifting for surgery

QUALITY IMPROVEMENT (QI) PHASE 1



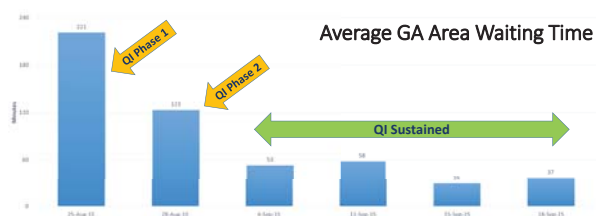
- Only single JR will call ward – prevents multiple calls
- Do not call patient from ward before 8AM, as OT does not start till 8:30
- Call ward for 1st & 2nd case at 8AM to shift to OT [In case 1st case cancelled, 2nd should be ready]
- 3rd case call when 1st case comes out after surgery and so on ...
- JR will physically escort cancelled patient out of OT – No cancelled patient needs to wait

QUALITY IMPROVEMENT (QI) PHASE 2



- PAC clearance ensured for all patients previous day
- Cases informed to NICU previous day by email > No morning NICU calls
- Only one patient called by JR at 8AM
- Sister keeps patients ready in OT clothes at 8AM
- Sister advises patients to take stairs, to reach OT faster
- JR checks after 10 min in OT reception, brings patient inside
- JR calls second case when: 1st case surgery starts (opside cut) / Bilateral surgery when 2nd eye surgery starts / Multipart surgery, last part starts

RESULTS



Average Waiting Time Reduced by 87% [221min (3½hr) → 29min (< ½hr) max]



Maximum Waiting Time Reduced by 87% [390 min (6½ hr) → 52 min (< 1 hr)]

Conclusions: QI Significantly Reduced GA Waiting Area Times and Single JR Could Sustain QI Changes



SECTION 6

Newborn unit case
scenario



Newborn unit case scenario

Facilitator guidance

- This case scenario is based in the Special Newborn Care Units or Neonatal Intensive Care Unit (NICU)
- This scenario is useful if participants in the training session are mainly from newborn care units such as special newborn care units or newborn intensive care units.
- This scenario focuses on a problem that is mostly within the control of the newborn care unit team and does not require much coordination with the labour room or other departments.
- Although inter-departmental team work and coordination is encouraged in most quality improvement work, people who are new to quality improvement might find it difficult to do projects that need a lot of coordination with other departments.



STEP: 1



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

Learning objectives

You will learn:

1. How to review data to identify problems
2. How to prioritize which problem to work on
3. How to form a team to work on that problem
4. How to write a clear aim statement



Case scenario 1.1

Learner's manual
page no. 78

You work at the newborn unit of a hospital in which around 500 babies are born monthly. The newborn unit has 16 beds. It is a very busy unit with about 120 newborn unit admissions per month. In addition to this the newborn unit staff also sees neonates who may not need full admission but need a few hours of evaluation and observation.

The following staff work at the newborn unit.

Staff	Total	In one shift
Doctor	6	2
Staff Nurse	21	6
Nurse in charge	2	1
Data entry operator	1	1 (daytime only)

The staff work hard but they believe that they can provide even better care.

They try to figure out what they can improve upon. Some of the staff get together to have a discussion to identify problems. During the discussion the staff members bring up several concerns

- Some of the staff are really concerned about delay to start emergency management of sick babies. Last week there was a baby with respiratory distress that received treatment after waiting for 60 mins! Thankfully the baby is recovering well but such a delay is not acceptable.
- Some of the staff share that there are problems with hand washing compliance and it is difficult to maintain hand hygiene.



The facility has an electronic database for patient data. One of the nurses suggests looking at the facility database to identify gaps in care. The facility database (Table 1) shows:

- Main causes for babies dying in the facility are birth asphyxia, sepsis and complications due to prematurity or low birth weight.

Many newborn units maintain a manual register that has similar information. In addition to this, one of the nurse reviews patient files from the last week and determines that only 20% of babies coming to the newborn unit received emergency management during admission within 30 mins.

The staff realizes that some of the issues they have discussed are processes of care and some are outcomes of care. Processes are activities that health workers carry out and outcomes are the end result of those activities.



Table 1: Selected data collated from newborn unit database system

S.No case record	Admission date	Gestational Age (weeks)	Age at admission (days)	Time to first assessment (minutes)	Weight at admission (gms)	Temp °C on admission **	KMC received in eligible LBW babies	Antenatal corticosteroids	Diagnosis	Discharge/ Referral Date	Discharged/ Died / Referred
1	15.06	34	10	20	1680	36.6	No	No	LOS	28.06	Died
2	15.06	36	4	50	2300	35.8	Yes	NA	PM, CM	17.06	Refer
3	16.06	33	1	80	1600	36.9	Yes	No	RD	29.06	Home
4	16.06	37	1	50	2600	36.5	NE	NA	Asp	22.06	Died
5	17.06	38	1	70	2760	36.8	NE	NA	Asp	20.06	Home
6	17.06	33	10	60	1600	35.6	No	No	RD	19.06	Died
7	18.06	34	2	18	1800	36.2	Yes	Yes	LBW	25.06	Home
8	18.06	36	2	100	2390	35.9	No	NA	PM	24.06	Home
9	19.06	40	15	38	3010	37	NE	NA	LOS	30.06	Home
10	19.06	39	20	50	3260	38	NE	NA	LOS	30.06	LAMA

*CM = Congenital malformations; RD = Respiratory distress; LBW = Low birth weight (<2500 gms); PM = Premature (<37 completed weeks of gestation); Asp = Asphyxia; KMC = Kangaroo mother care; LAMA = Leaving against medical advice; LOS = late onset sepsis; NE = Not eligible; NA = Not applicable

**Normal axillary temperature is 36.5-37.5°C. In hypothermia the temperature is below 36.5°C. Cold stress 36.0°C to 36.4°C. Moderate hypothermia 32.0°C to 35.9°C. Severe hypothermia <32°C



Discussion 1.1: Identifying problems

Based on the given scenario and data discuss the following:

A) What problems in care were identified based on **staff experiences**?

Problems identified based on staff experiences
Delay in emergency management of sick babies
Problems with hand washing / hand hygiene

B) What problems in care were identified from the **data review**?

Problems identified based on data review
Birth asphyxia , Sepsis , Prematurity, Low birth weight, Hypothermia

C) What are the various outcomes of care in the newborn unit?

Outcomes of care
Hypothermia at admission
Duration of hospital stay
Died / referred or LAMA

D) What are the various **processes** of care in the newborn unit?

Processes of care
Hand hygiene / washing hands
Time taken for management of sick babies
Kangaroo mother care in eligible babies
Antenatal corticosteroids used in eligible babies



E) Calculate the percent **performance** of **two processes of care** from the database or staff experience?

Process of care	Performance
1. KMC in eligible babies	50%
2. Babies seen within 30 mins	20%
3. Received antenatal corticosteroids for eligible mothers	25%

F) Calculate the percent performance of two outcomes of care from the database

Outcome of care	Performance
1. Discharged home	50%
2. Hypothermia at admission	40%



Case scenario 1.2

Learner's manual
page no. 83

The staff realizes that they cannot fix everything at once so decide to prioritize one or two problems to work on. They are required to fill in a prioritization matrix.

Discussion 1.2: Prioritizing the problem

Fill out the prioritization matrix. Based on your experience in your facility, assign points from 1 to 5 for each factor (process or outcome):

- *Important to patient outcomes* – how important is this factor for better patient outcomes? 1 is not important (lowest score), 5 is vitally important (highest score).
- *Affordable in terms of time and resources* – how easy do you think it will be to fix this problem? 1 is not affordable (it will take a lot of time or resources), 5 is very affordable.
- *Easy to measure* – how easy will it be to measure the problem you are trying to fix? 1 is very difficult, 5 is very easy.
- *Under the control of team members* – will people in the unit be able to fix this themselves? 1 is not at all under the control of the team members, 5 is entirely under the control of the team members.

Sample prioritization:

<i>Possible aim</i>	<i>Important to patient outcomes (1-5)</i>	<i>Affordable in terms of time and resources (1-5)</i>	<i>Easy to measure (1-5)</i>	<i>Under control of team members (1-5)</i>	<i>Total score (4-20)</i>
<i>Reducing delay in emergency management of sick babies</i>	4	5	4	5	18
<i>Improving respiratory distress management by improving use of antenatal corticosteroids in preterm babies</i>	5	4	3	3	15
<i>Reducing sepsis (early onset sepsis within 72 hours of birth)</i>	5	3	3	4	15
<i>Ensuring KMC in eligible babies</i>	4	3	4	4	15
<i>Reducing congenital malformations</i>	5	2	4	1	12
<i>Reducing low birth weight babies (<2500 grams)</i>	5	2	5	2	14
<i>Reducing asphyxia</i>	5	3	4	2	14



Important note

Sometimes participants may give 5 points to all the criteria. This defeats the purpose of the prioritization exercise and will not help them determine which aim to select. For example, if someone gives 5 points to all aims under the column 'important to patient outcomes', then you can ask them to compare the options.

What is worse from the point of view of patient outcome?

- An eligible baby does not get KMC

OR

- A baby who has hypothermia at admission

A baby who has hypothermia at admission, since this increases the risk of death.

Such comparisons will help give the various problems different scorings and help guide participants towards doing a useful prioritization.

Based on prioritization, choose a gap in quality that you think the staff should focus on.



Delay in management of sick babies

Eligible babies getting KMC

Important note

Teams should avoid selecting reducing congenital malformations and prematurity/LBW as these are out of their control

- Also as the newborn unit staff is not usually involved in care in the labour room it will be difficult for them to decrease asphyxia unless they include staff from the obstetrics team in their work.

Delay in management is very important to patient outcomes as it also impacts co-morbid conditions like hypothermia, hypoglycemia, worsens sepsis and respiratory distress thus increases mortality.



Case scenario 1.3

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page no. 84

The staff has now figured out which of the problems in the care of newborns they should prioritize and tackle first. They now need to form a team to address these gaps.

Discussion 1.3: Forming a team

Discuss how you would organize a team to improve care of mothers and babies in this facility. Determine how many people should be on the team, and who the members might be. Consider the roles of members on the team. Choose and describe an ideal team leader.



Team members	Roles
Doctor	Nurse-in-charge – Team Leader
Nurse (2)	Nurse A – Data collection
Nurse-in-charge	Doctor – Communicator
Data Entry Operator	Data operator - Recorder
	There can be additional roles too.

Team leader	Characteristics of a good team leader?
It is better if the nurse or nurse-in charge are the team leader as they are the ones most familiar with the situation and are at the newborn unit most of the time.	• 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



Case scenario 1.4

Learner's manual
page no. 85

Now that a team is in place to address the problem they all need to develop a clear aim statement. This is important to do so that all of them have the same common understanding of what needs to be achieved.

Discussion 1.4: Writing an aim statement

The aim statement should follow the structure:

We aim to (what do you want to achieve) **in** (which patient group) **from** (what is the current performance) **to** (what is the desired level of performance) **by** (how long).

Write an aim statement related to the quality gap that you think is most important.

We aim to: Initiate emergency management within 30 minutes of being received at newborn unit

In: in neonates requiring emergency management at admission to newborn unit

From: 20% to 80%

By: 8 weeks



STEP: 2



Analysing the problem and measuring the quality of care

Learning objectives

You will learn:

1. Tools for understanding processes and systems and how to use them
2. How using these tools can help identify possible solutions to reach your aim
3. How to develop indicators for process and outcome of care
4. How to use indicators to track progress of improvement



Case scenario 2.1

Learner's manual
page no. 86

The team decides on the problem they want to fix and develop the following aim statement

“We aim to initiate emergency management of sick newborns within 30 minutes of being received at newborn unit triage, within 8 weeks from current of 20% to 80 %”

The current Emergency Triage and Treatment protocol is to do the following assessment on arrival to determine whether the baby needs emergency management. The following things are checked to exclude the main emergencies in all neonates reporting to the newborn unit reception.

- *breathing rate*
- *heart rate*
- *temperature*
- *blood sugar*
- *oxygen saturation*
- *bleeding from any site*
- *abnormal movement*

Based on above assessment the newborn unit team decides to admit the baby and start management.

The admitting nurse also records the time at which the baby reached the newborn unit triage and also the time at which the emergency management and decision to admit / discharge is done is recorded.



Discussion 2.1 – Selecting tools for analysis

What tools can the team use for analyzing this problem?



Flowchart

Fishbone

5 Why's

Pareto

Any or all of the above options are correct. This exercise merely serves to help participants recall the tools for analysis.



Case scenario 2.2

Learner's manual
page no. 87

To gain a better understanding of what is happening at the newborn unit triage the team uses the following analysis tools:

- The team develops a process flowchart in order to understand what happens when the baby comes to the newborn unit
- They also use a fishbone diagram to identify the reasons for late treatment

Figure 1: Fishbone diagram to identify various causes for late treatment

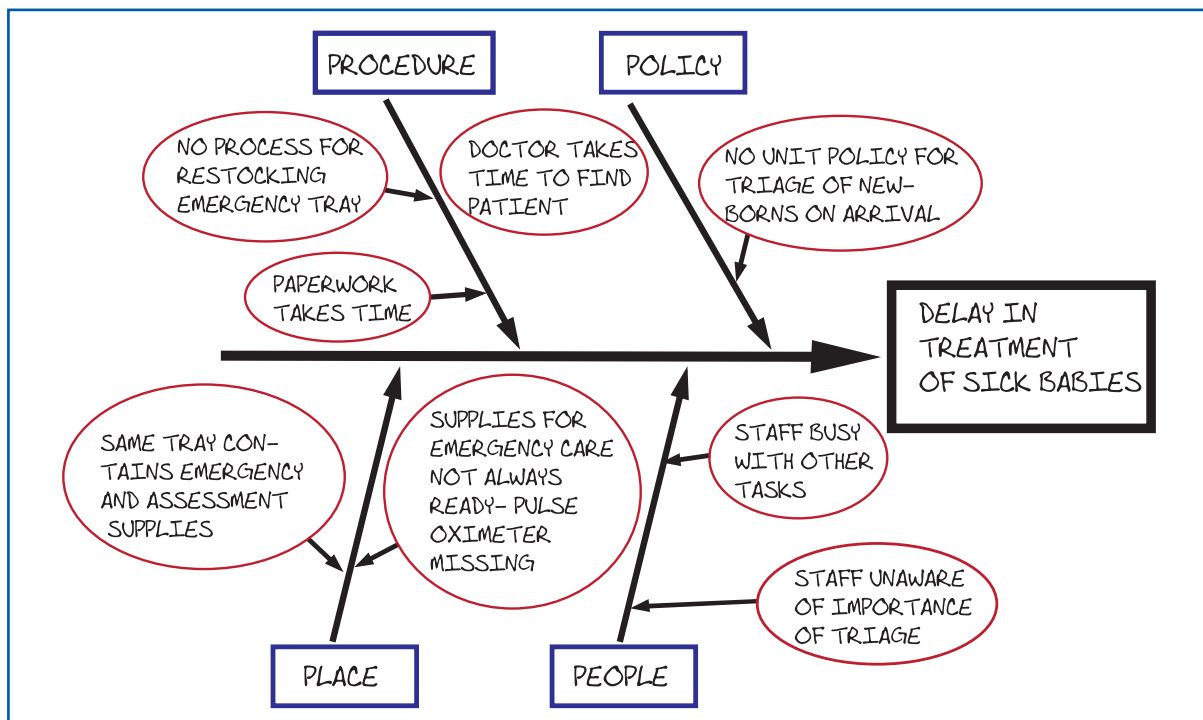
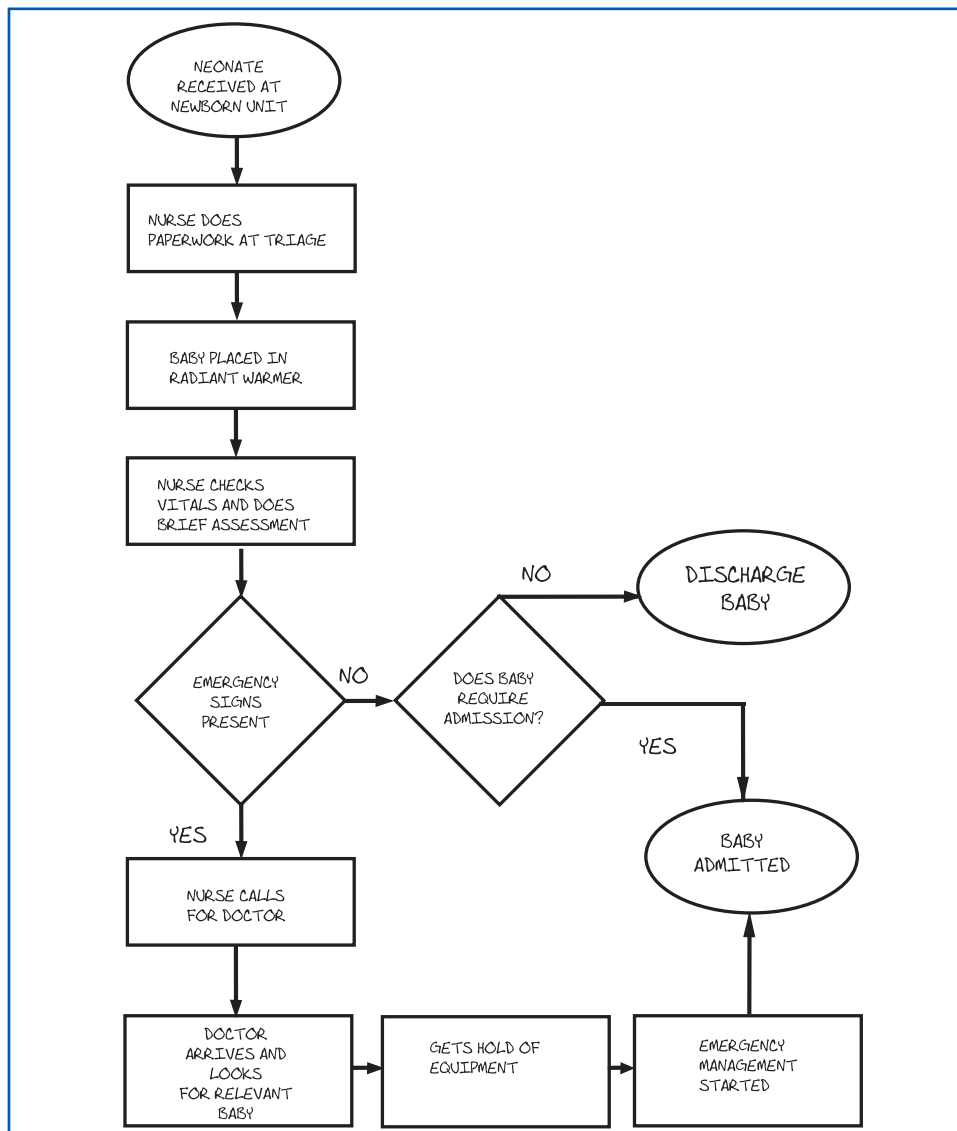




Figure 2: Process flowchart of steps that take place at the newborn unit triage area



Discussion 2.2: Identifying causes based on analysis

Based on the **flowchart** and **fish bone diagram**, what do you think could be some of the problems contributing to delays in triage?

Procedure: There is no process for refilling supplies in tray; Doctor takes time to find the patient;

Place: Same tray contains assessment & emergency materials and sometimes equipment goes missing from the tray and time is wasted looking for it.

Important note

Encourage participants to move away from the 'People' component of the fishbone. If the participants are only focused on identifying people related causes such as training, attitude and motivation - tell them that the purpose of the fishbone is to make them think more broadly and about issues other than these. **Encourage them to think about place and procedure because these are usually within the control of the team members and can be fixed.**



Case scenario 2.3

Learner's manual
page no. 89

The team now discusses what indicators to use to measure progress.

Discussion 2.3: Developing indicators

Define indicators to monitor progress in achieving the aims.

Teams might come up with either of the options below. Either one is correct.

Process measure:	% of sick babies in which emergency management was initiated within 30 mins of being received at newborn unit
Numerator	Number of sick babies in which emergency management was initiated within 30 mins of being received at newborn unit
Denominator	Total number of neonates getting emergency management at newborn unit
Data source	Patient file. For the denominator – Include all babies who received emergency management at triage For the numerator – For all babies who received emergency management at triage note the time difference between being received at the newborn unit and the start of emergency management. Count the number of babies who got emergency management within 30 mins. This number is your numerator.
Person responsible	Nurse
How frequently	Collected on a daily / weekly basis

OR

Process measure:	Average time taken to initiate emergency management of sick babies
Numerator	Sum of time taken for initiation of emergency management of sick babies after being received at the newborn unit (in selected sample)
Denominator	Total sample size
Data source	Patient file. Note the time the baby is received in newborn unit and note the time emergency management is started.
Person responsible	Nurse
How frequently	Collected on a daily / weekly basis



Case scenario 2.4

Learner's manual
page no. 90

The team decides to use the following indicator

% of sick neonates in which emergency management was initiated within 30 mins of being received at newborn unit

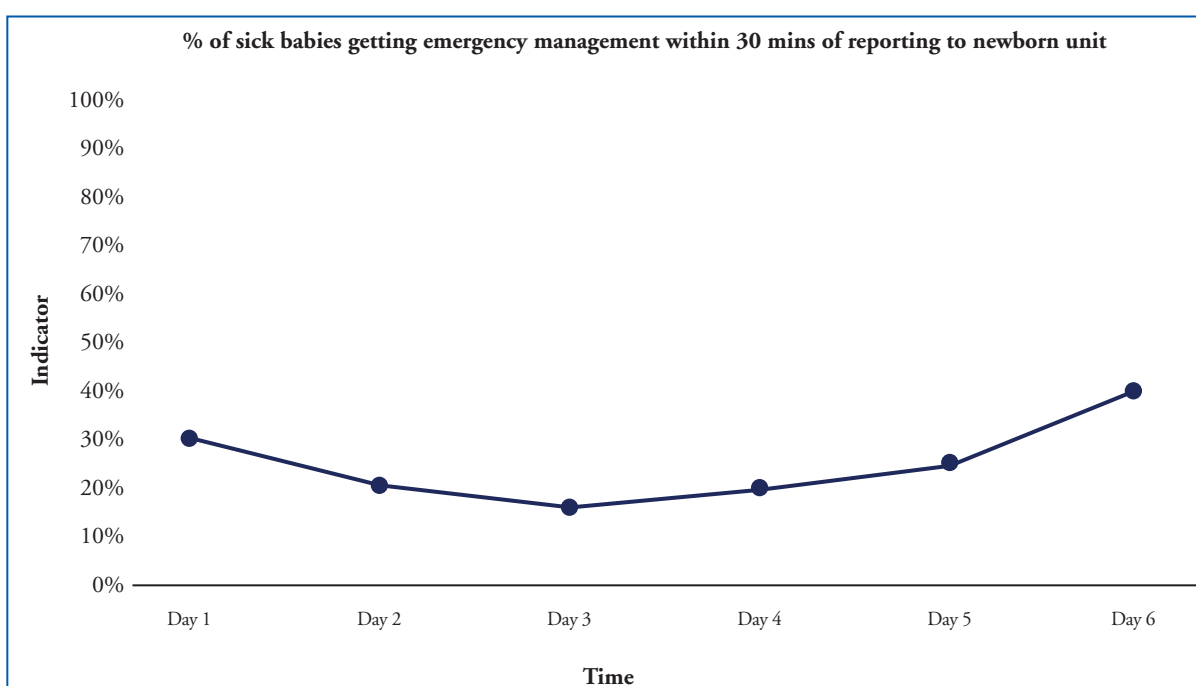
The team looks at their data for this indicator for the past 6 days from the register.

Discussion 2.4: Plotting data over time

A) Calculate the indicator for each day

	Number of sick babies in which emergency management started within 30 mins	Total number of neonates who received emergency care	% of sick babies getting emergency management within 30 mins
Day 1	3	10	30%
Day 2	2	10	20%
Day 3	2	13	15%
Day 4	2	10	20%
Day 5	4	16	25%
Day 6	6	15	40%

B) Draw a time series chart using above data:





STEP: 3



Developing and testing changes

Learning objectives

You will learn:

1. How to come up with ideas about what to change to reach your aim
2. How to plan a plan-do-study-act(PDSA)cycle to test change ideas
3. What to do as you learn from PDSA cycles
4. How to test multiple change ideas to achieve your aim



Case scenario 3.1

Learner's manual
page no. 91

The facility team reviews the flowcharts and fishbone diagrams to gain a better understanding of what was causing them to deliver suboptimal care.

This helps them to come up with some ideas about changes to make that could help to provide the emergency management to the sick newborn in a timely manner.

Discussion 3.1: Developing change ideas

Based on the analysis using the fishbone and the flowchart, list some ideas that might help improve triage. Use the suggestions in the first column of the table to come up with ideas.

Possible ideas:

Type of change idea	Change idea	Why do you think this will improve care?
Eliminating wastage of time	Assigning responsibility for ensuring that all equipment (including glucometer, thermometer, pulse oximeter) is available at triage Make the bed with baby easy to identify	These three tests (blood sugar, temperature and oxygen saturation) are needed for all babies reporting to triage .Easy accessibility with supplies will reduce time to act.
Reorganization of supplies	Making a separate triage assessment tray	Having only one tray for both assessment and emergency management makes it hard to find the equipment when a sick baby comes.



Rearranging the process steps	Inform doctor and then do paperwork	Speeds up arrival of the doctor
Rearranging the workplace	Fix place for triage and emergency management of sick babies	Saves time looking for the beds with sick babies
Improving the environment to make it easier to work	Make it easier to identify beds with sick babies by writing on board	Saves time
Other ideas	Team members might come up with other ideas	

Important note

Remind the participants that these are only ideas, **we don't know yet whether these are useful ideas or not.**

In order to know whether an idea will actually lead to reduction in triage time we have to test it with a few patients or for a short time to see the impact. Often ideas may seem very logical but when you try to test time during actual work, various challenges come up.

On the other hand sometimes an idea may not seem appropriate to some members of the QI team but if it is tested for a short time, it might end up being feasible and also improve care. The only way to know which of the ideas the team has come up are useful, the team will now test them one by one.



Case scenario 3.2

Learner's manual
page no. 92

The team members have a lot of ideas for improving the triage time.

- *Assigning responsibility for ensuring that all equipment (including glucometer , thermometer, pulse oximeter) is available at triage*
- *Making a separate emergency management tray*
- *Inform doctor and then do paperwork*
- *Fix place for emergency management of sick babies*
- *Make it easier to identify beds with sick babies by writing on board*

The team decides that the first thing they are going to try is to ensure that the triage equipment is readily available. The team discusses that they should separate the contents required for assessment of babies at triage from those that are required for emergency management and put in different trays.

The nurses on the team say that they can ensure that the tray is ready. One of them (nurse A) thinks it will be easiest to ready the tray in the morning when the shift starts and she says she will try this idea out and see whether it helps reduce triage time or not in her next shift.



Discussion 3.2: Planning a PDSA cycle to test a change idea

Plan	What change will you make?	Make a separate triage assessment tray
	Who will make the change?	Nurse A
	Where will this take place?	Morning shift
	How will they test the change?	Nurse A will prepare a separate emergency management tray which will be used for assessment of babies at triage, an equipment checklist is made and checked at the start of each shift
	For how long will the change be tested?	One or two shifts
Do		
Study	What do you want to learn from this test?	Does the tray have all the needed contents? Did we put it in the right place? Is anything else needed to make this idea successful?
Act		

This PDSA can be done for one or two shifts. In one shift we come to know whether it helps or not. If we do this for two or three consecutive shifts then we can come to know whether refilling / rechecking at the start of a new shift works or not.



Case scenario 3.3

Learner's manual
page no. 93

A separate emergency management tray is prepared for the next shift. Three sick newborns are seen during this shift. When the first baby comes it still takes time to find the tray as it was not marked clearly and was placed inside the main newborn unit hall and not in the triage area.

Discussion 3.3: What to do as you learn from a PDSA

What should the team do next?



Change the placement of the triage assessment tray.

Try out the remaining ideas



Case scenario 3.4

Learner's manual
page no. 94

After the first baby is assessed, the nurse on the shift relocates the emergency management tray and places it in the triage area for faster access.

In the next baby requiring emergency management, the doctor is able to start treatment within 30 minutes because she does not waste time looking for equipment. One of the nurses suggests marking the triage assessment tray with red tape to make it more visible. The team decides that this change idea was successful and adopts it.

The doctor still had problems identifying which bed the baby was on. The team then decides that they will assign specific beds in the newborn unit for management of sick babies so that the staff does not have to waste time looking for these babies. So they block two beds for emergency management of sick babies. They try this for one shift. They realize that this does not work as it leads to overcrowding in the triage area while the reserved beds remain empty.

Discussion 3.4: What to do as you learn from a PDSA

The team tried to reserve two beds for emergency management of babies at triage to reduce the time it takes doctors to find the sick babies.

Based on the learning from this PDSA cycle should they adopt, adapt or abandon this idea?



Abandon

Some participants might suggest adapting the idea and changing the number of reserved beds to one bed only. This option is also acceptable and the staff can do another PDSA on the same change idea to see if reserving only one bed helps or not.



Case scenario 3.5

Learner's manual
page no. 94

The team decides that it is impractical to block beds for neonates requiring emergency management as their number varies. This leads to unnecessarily empty beds and overcrowding at triage so they abandon this idea

It is then decided that they will mark the beds with babies requiring emergency management with red triage stickers. They try out this idea for one shift and two sick babies are seen in this shift. This idea is approved by everyone as the doctors and nurses are quickly able to get the baby's bedside.



They then do the next change idea. They decide that they will first evaluate the baby for emergency signs and then do paperwork. One nurse objects to this saying that there will be babies who will not be admitted to newborn unit and their paperwork will get forgotten if paperwork is done after assessment. The other nurse on the team volunteers to try doing this on her shift and they can assess whether such a process will cause them to forget paperwork for non-emergency cases.

In the next morning shift the nurse tests doing assessment before paperwork. Four babies come to triage during the shift. The nurse does not miss any paperwork even for babies who are not admitted because she still had to write the patient notes in the patient file for all patients.

Discussion 3.5: Testing multiple changes

List the changes tested by the team and the PDSA cycles carried out for each change.

Change idea	PDSA
Making a separate emergency assessment tray	1. Tray was placed in an inconvenient location 2. Tray put in a convenient location Additional task - Labelling the tray with red tape.
Fix place for emergency management of sick babies	3. Two beds assigned – leads to over-crowding in triage – abandoned.
Place sticker on beds requiring emergency management	4. Nurses put stickers on the beds requiring emergency assessment & management
Change the order of steps – Call for the doctor and then and then do paperwork	5. Nurses worried that babies which are examined but not admitted – we will miss their paperwork. They do not forget to do paperwork so idea is adopted



Case scenario 3.6

Learner's manual
page no. 95

The team members hold a series of meetings for other newborn unit staff who have not been involved in the project to discuss the new way of working, showing them how this new way of working leads to faster assessment of babies.

The remaining staff is willing to support the work to reduce triage time and starts working in the new way. All the staff starts working in the new way – by ensuring a separate triage assessment tray is checked at the start of each shift, by calling for the doctor before doing paperwork and placing a sticker on beds with babies requiring emergency management.

Data continues to be monitored and it shows that almost all sick newborns are getting emergency management in a timely manner now (Figure 3). This is very satisfying to all the staff.



Figure 3: Time series graph showing how more babies are now getting emergency management within 30 minutes of reporting to the newborn unit



Note: Day 1 – 6 was the data prior to the improvement work. Day 7 onwards is the data being collected while changes were being tested and implemented to improve care.



STEP: 4



Sustaining improvement

Learning objectives

You will learn:

1. How to build enthusiasm, motivate team, recognition by certificates and celebration
2. How to share the results and successful projects widely
3. How to make policy with new ways to work
4. How to hardwire the gains by making system change

Discussion 4.1 – Sustaining successful changes

After testing ideas and finding ones that work, you will want to ensure that these changes become permanent and consistently applied in all situations.

Examples of actions the team can take to prevent them from slipping back into old ways of working

1. Documenting the flow of the new process and placement of equipment/materials.
2. Brief new staff during the routine orientation program regarding the new way of working
3. Assign responsibility to one of the team members to continue to track the indicator and bring to the teams attention if there is any fall.
4. Revise job descriptions to include new tasks.
5. Include indicator review in departmental meetings

Discussion 4.2 – Building enthusiasm for quality improvement

It very important to build more enthusiasm among health-care teams for quality improvement

Some ways to build enthusiasm for quality improvement at a facility or region:

1. Celebrate success
2. Share results of successful QI projects with others in the health facility and beyond
3. Publish case reports about their work
4. Manager of the health facility should continuously encourage the health-care team to improve quality of care
5. Rewarding people who are involved in QI efforts.
6. Build multiple teams in the health facility so that they can learn and support each other
7. The health-care team should keep higher-ups in the system informed, tell them about your success and build a case for additional resources, if required.

It is also important to build **structures and systems to support quality improvement**. More guidance on this is given in Appendix 2 of this manual. This information is relevant for managers and leaders at district, state or national levels.



APPENDICES



Appendix 1 – Actions to take upon return to the facility

What to do when you go back to your facility?

In this workshop, you have been through a case study which describes the four steps of quality improvement and gives an example of how one facility used this method to improve care.

You have also used the QI project template to draft a QI project at your facility. However, what we draft during a workshop is not the final QI project. QI you will learn by actual practice in the facility. This template is a starting point and you can modify it, when you go back to your facility.

Here is a suggested list of actions you will have to take when you go back to your facility. Depending on your aim, the context and your position in the facility you might decide to take different actions. Suggested timeline for these actions will vary

	Actions	Details	Suggestions
	Schedule a meeting with the head of the hospital and department.	Brief them on what you learnt during the workshop • You attended a workshop on improving quality of care for mothers and newborns at health facilities • You have decided to work on this selected area • For this you would like the senior person's support and guidance	Sometimes the person you are briefing may not be familiar with QI and might ask why you have selected a particular aim. You may have to explain the criteria for selecting the particular aim – easy to fix, within control of the team, relevant to patient outcomes and measurable.
	Schedule a meeting with staff in your unit (the units/ departments directly affected by your QI project)	Discuss the workshop you attended • Briefly share the 4 steps of the POCQI model • Share a successful case study • Share a draft of the QI project you have started to design • Encourage discussion and feedback • Ask for people who would be interested in working together on this project.	Sometimes the selected project may not be ideal and you might have to design another one based on input from other staff. Be open to their suggestions. Although it is important to select an area of work that people on your team consider relevant you have to make sure you use the prioritization matrix and prevent the selection of aims that are outside the control of the team members or will take too much time or resources.



Form a team	Form a team for your QI project. Make sure you include at least one representative from all the staff cadres who are involved in the various steps of the process you want to improve. You can also form a WhatsApp group or other means of communication for the team members.	Some facilities have a lot of staff changes. Try to include people in your team who will be at the facility/ unit for the next 2 – 3 months, and also include some permanent staff. Ideal team size should be 5-7. It can be challenging to recruit members to join a new QI team. Try to get your local ward leadership involved by seeking support from the nurse-in-charge or the medical officer leading the clinical unit.
Review the indicators and data collection system	Try out the planned measurement system and check if it is feasible and simple to do. See if you have any baseline data already available in routine registers/case files.	You might realize collecting data is cumbersome and time consuming or the data doesn't actually exist. Don't collect extra data that you don't need for your QI project. Ensure that the people who are collecting the data know the purpose of your project and are on the QI team.
Do proper analysis of the problem and also discuss any challenges which can affect this QI project	• Teach your team members the problem analysis methods - fishbone, flowchart, Pareto and 5 whys. • Do not explain all four methods at one go. Usually it is good to start with a fishbone and have everyone share their inputs on the reasons why a problem exists. • Openly discuss in the team what might be some of the challenges in carrying out the QI project and come up with ways to address them.	Remember often the process flow will need to be redrawn based on new inputs.
Come up with change ideas with your team and test your first idea	• Using the analysis, come up with ideas to improve care • Choose the idea that is easiest to test and plan and carry out a small scale PDSA (just a few patients or just a few hours in a shift)	



	Continue with the QI project and keep higher-ups informed	• Continue to test change ideas and keep an eye on the data for improvement. • Continue collecting data until you have achieved your aim. Keep your seniors informed of your activities. • Display your successes openly in the unit on the notice board or whiteboard, this will motivate your team.	This may involve drawing a run chart with annotation, displaying on a prominent place for everyone to see.
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- Regularly inform your progress to the head of department and hospital.
- You can reach out to facilitators/coaches in your district/state/province/country for problem solving or consultation.



Appendix 2 – Building systems to support improvement

This training package aims to develop skills for quality improvement at the frontline level.

Development of quality improvement skills at the frontline and the ability to make real improvements in care is the cornerstone for QI. However, the sustainability and effectiveness of quality improvement work requires additional support systems and structures from higher levels of the healthcare system.

It is important for management and leadership at district, state and national levels to develop strategies and systems to provide support to facilities doing improvement work.

Details on building systems and structures for supporting quality improvement are out of the scope of this material. However some basic guidelines are given below.

Teams usually need the following kinds of support:

1. **Support from QI coaches.** Quality improvement in a new way of working and most new facility teams require support and guidance from QI coaches in the beginning. QI coaches have prior experience in successfully carrying out QI projects and are able to mentor new teams and motivate them to do their QI projects. Coaches help build skills and troubleshoot problems faced by QI teams. Usually teams may need weekly or monthly support from coaches as they start their projects. Over time as the teams gain experience, they will need less frequent guidance. QI coaches can be from the district level staff, external consultants or from partner agencies. It is recommended that governments develop plans to build expertise in QI among their own staff so that they do not solely rely on external QI coaches.
2. **Leadership support from state and district level.** At the district level, it is ideal if there is staff with QI experience which can serve as coaches for the facilities in the district. District level leadership should also motivate facilities and create opportunities for documenting and sharing learning between facilities. District review meetings should include discussions about quality of care at facilities and progress of facilities in their improvement work. District leadership should help remove barriers for the QI teams and help address resource and skill gaps related to the improvement work. It is important in quality improvement that senior leadership does not use data for judgement and punish for poor performance but guides facility QI teams in problem-solving using quality improvement tools and methods.

With adequate frontline skills in carrying quality improvement, leadership support and problem-solving guidance from higher levels of the system; we can deliver larger scale improvements in maternal and newborn health services at health facilities.



Appendix 3 – Frequently asked questions (FAQs)

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 of QA vs. QI:

<i>Quality assurance:</i>	<i>Quality improvement</i>
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
<i>Periodically</i> monitors quality	<i>Continuously</i> 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.



Appendix 4 – Further reading

Websites:

Point of Care Quality Improvement: <http://www.pocqi.org/>
(If you are interested to share your success story or a case study on this website, please contact by email.)

All India Institute of Medical Sciences Quality Improvement: www.aiimsqi.org

USAID ASSIST Project: www.usaid-assist.org

Institute for Healthcare Improvement: www.ihl.org

The International Society for Quality in Health Care: <http://www.isqua.org/>

HealthQual International : <http://www.healthqual.org/>

NHS Scotland Quality Improvement Hub: <http://www.qihub.scot.nhs.uk/>

Global Learning Network: <http://www.qualityofcarenetwork.org/>

Publications:

Langley, Moen, Nolan, Nolan, Norman, Provost. The Improvement Guide: A Practical Approach to Enhancing Organizational Performance. 2nd edition, Jossey-Bass Pub., San Francisco, 2009

Provost, Murray. The Health Care Data Guide: Learning from Data for Improvement. 1st Edition. Jossey-Bass Pub., San Francisco, 2011.

Singh R, Singh M, Jha R, Sharma P, Livesley N. 2017. Improving Quality in Healthcare: A point of care case study. Technical Report. Published by the USAID ASSIST Project. Bethesda, MD: University Research Co., LLC (URC).

“NQC Game Guide - Interactive Exercises for Trainers to Teach Quality Improvement in HIV Care”. This guide includes 21 games for teaching QI concepts and was developed by the New York State Department of Health AIDS Institute. The games are not specific to HIV Care and can be used for any type of quality improvement training program including one focused on maternal and child health. This guide is available online: <http://nationalqualitycenter.org/files/nqc- game-guide/>

E-Learning QI course:

<https://www.usaidassist.org/resources/improving-health-care-quality-elearning-course>

Videos:

A quality improvement initiative on breastfeeding practices among mothers of infants admitted to NICU. Available at: <https://www.youtube.com/watch?v=XOEhoU2DJ6g>

Quality improvement initiative in kangaroo mother care practices in NICU at AIIMS, New Delhi. Available at :<https://www.Youtube.Com/watch?V=gondskp6mna>

NICU quality initiative to improve admission temperature of preterm neonates < 32 weeks gestation. Available at :<https://www.Youtube.Com/watch?V=knc9wokjnoo>

A quality improvement initiative in NICU -improving the life of radiant warmer temperature probe



involving mothers. Available at: <https://www.Youtube.Com/watch?V=jumhywkrkl>

Quality Improvement Initiatives in the Government of India's RMNCH+A Strategy: Lessons from Chamba, Himachal Pradesh. Available at: <https://www.usaidassist.org/resources/quality-improvement-initiatives-government-india%E2%80%99s-rmncha-strategy-lessons-chamba-himachal>

Common Pitfalls for New Improvement Teams: A Story from New Delhi, India. Available at: <https://www.usaidassist.org/resources/common-pitfalls-new-improvement-teams-story-new-delhi-india>



Appendix 5 - Introductory case study

Ideally a real case study on quality improvement project undertaken should be presented by a Facilitator. This is to motivate participants that Quality Improvement is simple, feasible and can be applied in healthcare facilities.

Here is one such example

Background

As per the WHO guidelines delayed umbilical cord clamping (not earlier than 1 minute after birth) is recommended for improved maternal and infant health and nutrition outcomes. Delayed cord clamping (DCC) after birth is safe and effective intervention for improving neonatal and maternal outcomes should be a standard practice. In a health facility while observing ten low risk mothers who had spontaneous vaginal delivery (SVD) only in 1 out of 10 babies who had spontaneous breathing cord clamping was delayed to 1 minute after birth (10%). The healthcare workers decided to improve this.

Forming a team and developing an aim statement

Obstetrician, Medical Officer and nurses posted in the labour room, and the paediatrician formed a team to ensure DCC in normal low risk mothers. The team frames the following SMART aim statement.

“Delayed cord clamping (1 minute after birth) will be improved in normal low risk SVD from a current level of 10% to 60% over a period of six weeks.”

Analysis of problem and measurement plan

The team considered that this is a simple, feasible project and decided to map the current processes of care at the time of birth by observing three consecutive births. Once the baby is born crying medical puts two cord clamps immediately and cuts the cord and hands over baby to the nurse. She takes the baby to the newborn corner, places under the warmer, dries the baby and wraps with a sheet. She comes back to delivery table to assist the medical officer.

One of the nurses volunteers to measure the cord clamping time and maintains this data on a chart.

Developing and testing change ideas

Team decided to reorganize the processes at the time of birth for normal low risk SVD.

- 1) Immediately after delivery, the medical officer will keep the baby over mother's abdomen.
- 2) Cord clamping will be delayed by at least 1 minute after birth.
- 3) Nurse will note the time of birth and watch breathing and crying of the baby.

The team decided to test the new changed process in one shift, to learn if these changes are feasible and acceptable. They first tried in three normal deliveries and succeed in delaying clamping the cord to over



1 minute. However, they realized that they needed to now dry and wrap the baby near the delivery table itself and the towels and sheets for this material need to be moved near the delivery table.

Based on this experience the team moves drying and wrapping sheets closer to the delivery table and adapts their change idea to include an additional step.

- 1) Immediately after delivery, the medical officer will keep the baby over mother's abdomen.
- 2) Cord clamping will be delayed by at least 1 minute after birth.
- 3) Nurse will note the time of birth and watch breathing and crying of the baby.
- 4) Nurse will dry the baby while over mother's abdomen using a sterile warm towel and wrap along with the mother maintaining skin-to-skin contact.

The team now tests this in the next shift and it is felt that this process is feasible, with the new placement of the drying and wrapping sheets closer to the delivery table, this task is easier to do.

One nurse in the team also suggests that the skin-to-skin opportunity should also be sure to encourage breastfeeding. The medical officer is not sure that mothers will be able to breastfeed so soon after labour but since early breastfeeding is also recommended standard of practice, she suggests to test this idea.

In the next shift, for three deliveries mothers are encouraged to initiate breastfeeding during the skin to skin contact after delivery on the abdomen. All three mothers are accepting of the idea and two out of the three mothers are able to initiate breastfeeding. Although breastfeeding did not happen in all three mothers, the team decides it is still a good idea to encourage the practice given the benefits of early breastfeeding to neonatal health.

Based on their experience of testing various ideas the team develops the new way of working

- 1) Immediately after delivery, the medical officer will keep the baby over mother's abdomen.
- 2) Cord clamping will be delayed by at least 1 minute after birth.
- 3) Nurse will note the time of birth and watch breathing and crying of the baby.
- 4) Nurse will dry the baby while over mother's abdomen using a sterile warm towel and wrap along with the mother maintaining skin-to-skin contact. These materials will be kept near the delivery table.
- 5) Mother will be encouraged to initiate breastfeeding during the skin to skin contact, within one hour of birth.

The team members continued to test this new way of working during their own shift to practice DCC over next 20 next deliveries and could achieve success in 18/20 (90%) over two weeks. Two patients did not initiate breathing at birth and hence cord was clamped immediately at birth to enable resuscitation.

Implementing and Sustaining the new way of working

Now that the team has data and experience showing that the new way of working is feasible and has improved care they decide to make it the routine way of working by taking the following actions.

1. Standard operating procedure (SOP) was made as above, that will be followed by medical officer and nurses in case of normal vaginal deliveries.
2. The team decided to share the successful experience with other staff posted in labour room.
3. Team briefed the report of quality improvement project to head of the hospital requested her to issue notice for implementation of DCC in all shifts.



4. Medical officers, obstetrician, paediatrician and nurses were oriented to the SOP.
5. Duty of noting the time of delivery and cord clamping was allotted to the nurses.
6. Data was maintained in the labour room register by the nurses.
7. The head of the facility also supported the work by putting a clock with seconds hand to make it easier for labour room staff to count the time for DCC
8. Posters displaying the changed SOP were put in labour room to educate all the staff.
9. Brief orientation program was scheduled for new team of doctors and nurses whenever they get posted in labor room.

Monitoring of data over next 3 months revealed that DCC was being sustained. This was encouraging to the entire staff felt motivated to further improve DCC and breastfeeding for cesarean born babies.



Appendix 6 - Games for teaching QI

To convey some of the concepts of quality improvement it is valuable to use some interactive exercises and games. Deciding whether and which games to use for the training will depend on the facilitator's prior experience. Other factors to consider are:

1. Time needed for the game
2. Size of the audience and number of facilitators comfortable in guiding the game
3. Availability of required materials and space needed for the game

Note:

1. All facilitators should practice and know the game well
2. The purpose of the game and the concept to be conveyed should be clear

Here we describe one game that has been used during the testing of this training package.

Helium stick game

Concept

- Learning how to work together, listen and communicate with other members of a team.
- Understanding the concept of coming up with testing creative solutions
- Understanding the concept of system-level changes vs. focusing on individuals

Group size and time

- 6 – 12 people per group depending on the length of the pole
- Time – Approximately 25-30 minutes

Materials

- Lightweight PVC pipe available at a local hardware store (or similar long, **lightweight**, thin rod)

How to play

- Line up the participants in two rows which face each other.
- Ask participants to put up their arms in front of them and point their index fingers
- Put the stick (6 feet long A PVC pipe works well) on their fingers. Everyone adjusts their finger heights till the stick is horizontal
- Make sure everyone's index fingers are touching the stick.
- The Task: Explain that the challenge is to lower the stick to the ground.
- The Catch: Each person's index fingers must be in contact with the stick at all times. Pinching or grabbing the stick is not allowed –the stick it must rest on top of the extended fingers.
- Note: the stick will usually 'float' up rather than come down, causing much laughter and frustration.



- After a few tries some groups or individuals may want to give up, believing it is not possible or that it is too hard.
- People may become frustrated with others who they feel aren't lowering their finger to let the stick go down, and often choose one person as the culprit.
- Facilitation: The facilitator can offer suggest the group stops the activity, discusses a plan, and then tests again.
- Facilitation: Less often, a group may be succeeding too fast. For these, check to make sure that fingers are constantly touching the stick and they lower the pole all the way to the ground.
- After a few unsuccessful attempts someone might suggest creative solutions to bring the stick down. Ideally teams should listen to members with such ideas and test to see whether the idea works or not. Occasionally people will be dismissive of creative ideas. Here the facilitator can reinforce the concept of listening to team members and testing a change idea.
- If no one comes up with new ideas then you can ask the group to come up with creative ideas to make the stick come down.
- **Important:** The stick in this game represents the 'system'. Facilitators should move the group from focusing on individual effort to thinking about how they can change the 'system' to achieve their objective. Allow the participants some time to come up with ideas themselves. Possible creative solutions could be:
 - To make the stick heavier by attaching/hanging available objects (bags)
 - To find something to stick or tie participants fingers to the stick (rubber, tape)
- If they decide to make the stick heavier then they will need to test various locations and weights to get the right weight and balance in order to be able to put the stick down. Encourage multiple tests.

Debrief

1. How did the exercise make them feel?
2. What led to eventual success?
3. Which solutions worked? System level changes or individual based changes?
4. What did they learn about testing ideas?

Figure 1: A group participating in the 'helium stick game' at a workshop





Appendix 7– Interpreting run charts

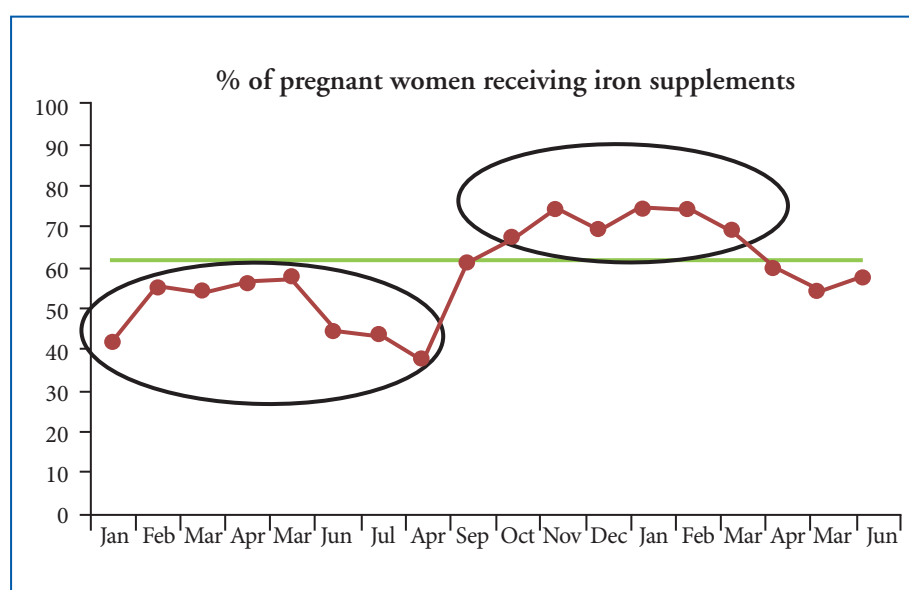
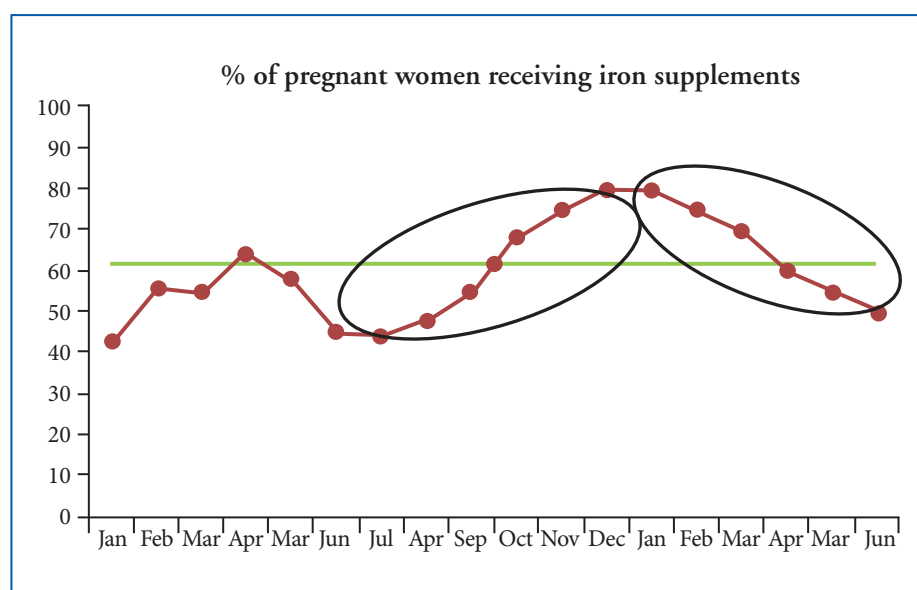
This section describes rules for interpreting run charts. This section is optional depending on the time available during the workshop and participant interest.

Show the video on run charts - <https://www.youtube.com/watch?v=A4a2BgKlnBc>

A run chart displays data over time. The first thing that we have to do in a run chart is to draw a median for the baseline values. The primary purpose of a run chart is to determine whether the change that we make has led to any improvement. Four rules can be used to identify when a change is of relevance.

Rule 1: A Trend

A trend is continued movement in a single direction, either up or down. A trend on a run chart is five or more consecutive points all going up or all going down. If the value of two or more successive points is the same, ignore one of the points when counting.



Rule 2: A Shift

A shift is a pattern indicating that a process or outcome measure in question has now moved to a different level of performance. A shift on a run chart is six or more consecutive points either all above or all below the median. Skip values that fall on the median and continue counting.



Rule 3: Runs

A run is a series of points in a row on one side of the median. If only chance is influencing a process then there should be regularity at which data points go above or below the median. If data are only affected by chance then it would move back and forth the median with a certain frequency. If the 'runs' are too few or too many then something is affecting the process.

- Count the number of runs in the chart = Number of times the line crosses the median + 1
- Count the number of data points which do not fall on the median
- Look at the statistical chart below.
- If the number of runs is out-of-range for the given number of data points (refer to table). This indicates that something of relevance has happened.

Runs: A non-random pattern is signaled by too few or too many runs, or crossings of the median line

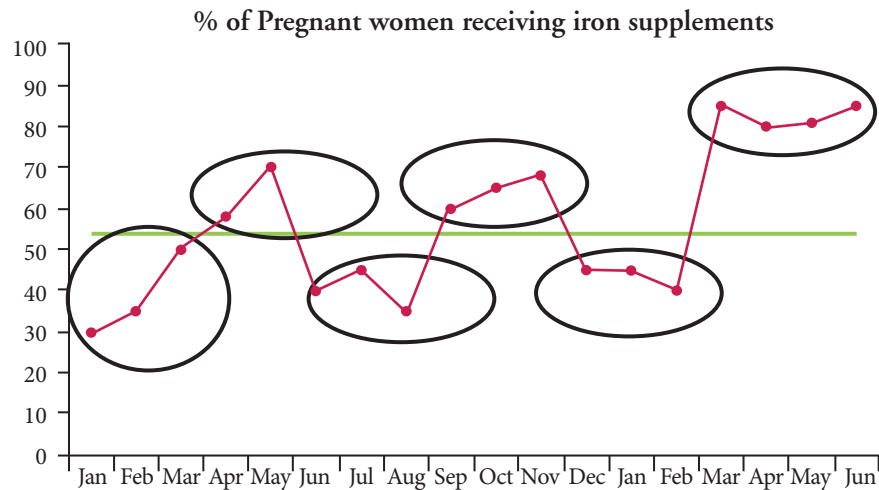
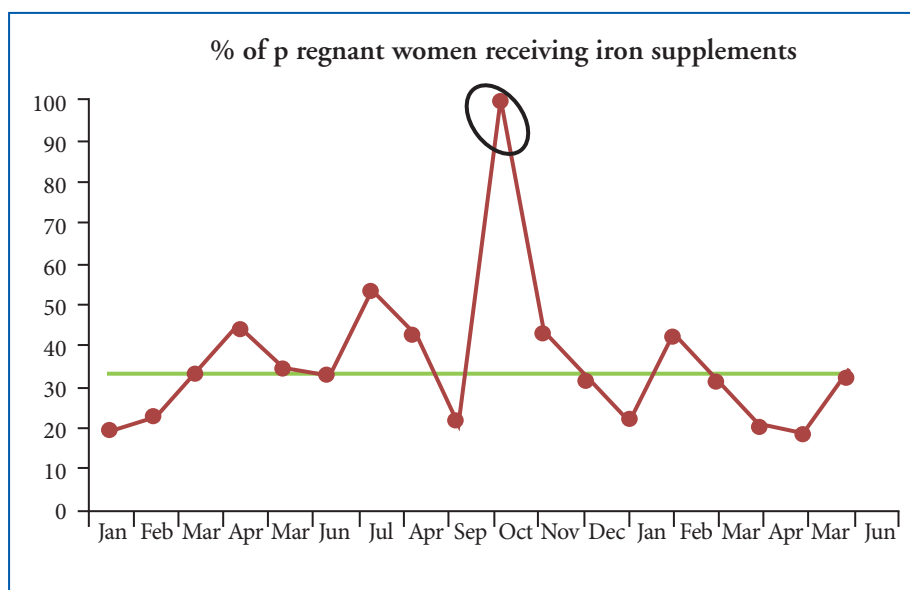


Figure 1: Table to Determine too many or too few runs⁸

Table Checking for too many or too few runs on a run chart. Table is based on about a 5% risk of falling the run test for random patterns of data

Total number of data points on the run chart that do not fall on the median	Lower limit for the number of runs (< than this number runs is 'too few')	Upper limit for the number of run(> than this number 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
21	7	16
22	7	17
23	7	17
24	8	18
25	8	18



Rule 4: Astronomical Point

An astronomical point is an unusually large or small number.

This is subjective and needs an understanding of the context to know why the astronomical point occurred.



