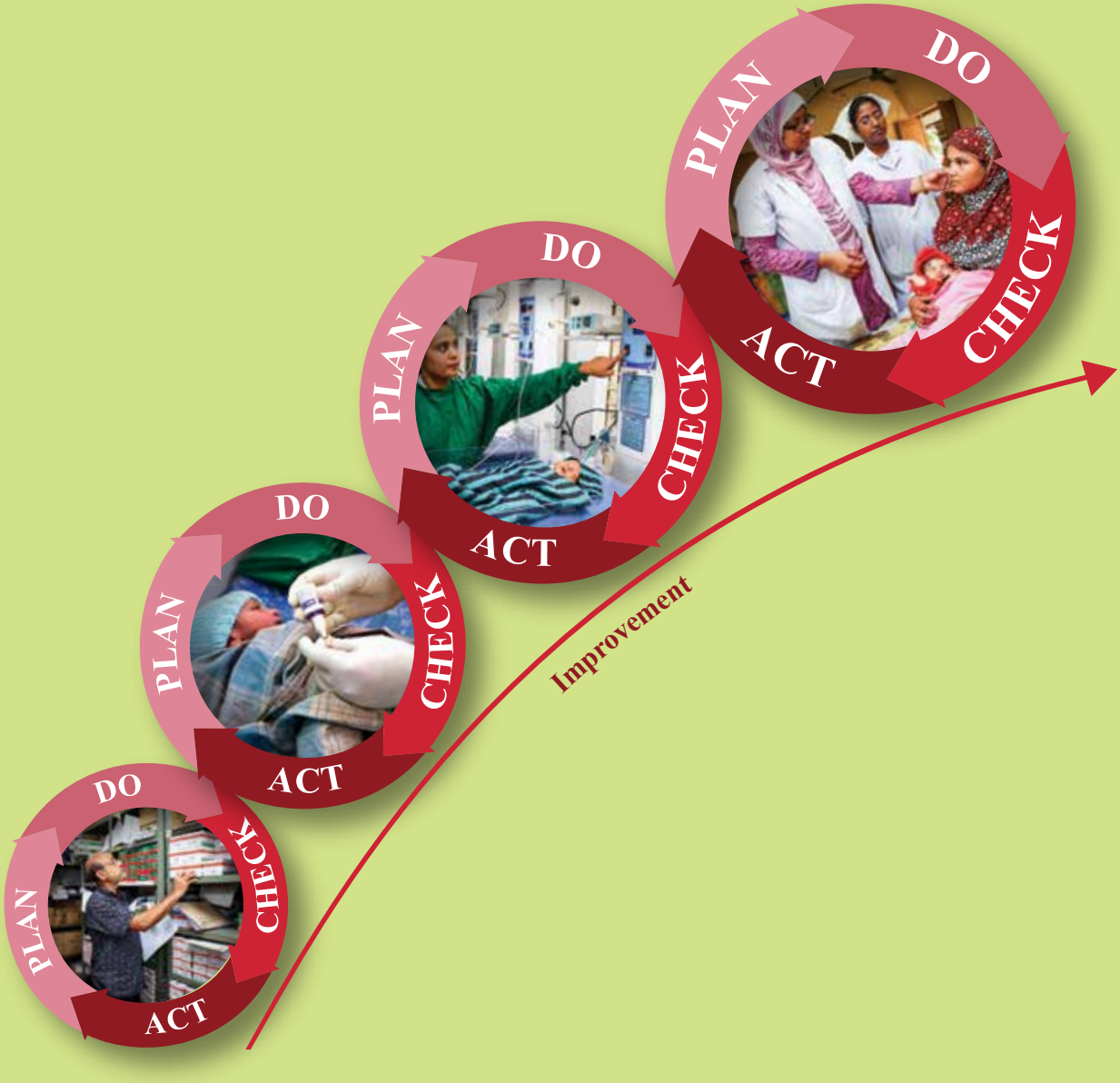
PDCA Manual
for Quality Improvement



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Health Economics Unit
Health Services Division
Ministry of Health & Family Welfare
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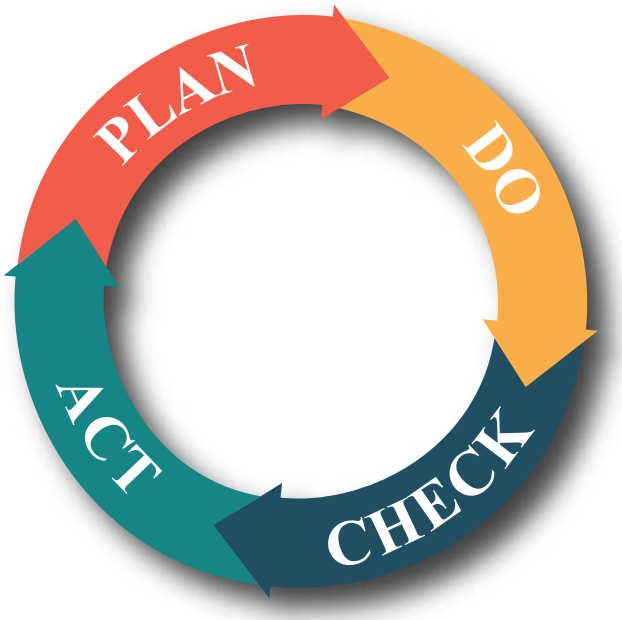
PDCA Manual
for Quality Improvement
Trainer's Guide



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PDCA manual for quality improvement

Developed by
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Drafted by
Md. Lutfor Rahman, Consultant

List of contributors
Dr. Mohammad Nazmul Haque, Medical Officer, QIS
Dr. Pranab Kumar Roy, Medical Officer, QIS
Dr. Tonamy Chakma, Medical Officer, QIS
Dr. Pushpita Samina, Clinical Services Lead, OPHN, USAID Bangladesh
Joby George, Chief of Party, MaMoni HSS
Dr. Shumona Shafinaz, Senior Advisor, Program Management, MaMoni HSS, Save the Children
Dr. Najmus Sahar Sadiq, Senior Advisor, Clinical & Quality Improvement, MaMoni HSS, Jhiepgo
Dr. Mamun M. Bhuiyan, Manager, QA&CB, MaMoni HSS

Designed and Layout by
Kabirul Abedin

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- *WHO. Improving the quality of care for mothers and newborns in health facilities. POCQI: Point of care quality improvement. Learner manual; 2017.*
- *WHO. Standards for improving quality of maternal and newborn care in health facilities; 2016.*
- *USAID ASSIST/URC Project. Training materials for capacity development of the National Resource Pool on Quality Improvement, Dhaka, Bangladesh; 2017.*
- *Evidence Based Practice for Improving Quality (EPIQ): Flipchart of CIHR MICare Team, 2017.*
- *Directorate General of Health Services. TQM Unit of Hospital Services Management. MOH&FW. Total quality management in hospital services. ISBN: 978-9987-737-10-9*
- *Ministry of Health and Social Welfare, Tanzania. KAIZEN Handbook for Health Facility: Pocket guide for Facilitators. ISBN: 978-9987-737-10-9*

Preface

Quality is integral part of health care in every country and it is one of the key components of Universal Health Coverage. Quality Improvement Secretariat (QIS) of MOH&FW has started its journey to assist in achieving the objectives of universal coverage of quality healthcare, the main sector goal. As part of its efforts, QIS has developed the National QI Strategic Plan, National Health Care Standards and National QI Framework for ensuring the quality of care across the country. It has taken the 5S-CQI-TQM approach for quality improvement, which will be implemented in phases throughout the country both in public and private facilities. By now QIS has directly introduced 5S in 64 District Hospitals, some selected Medical College Hospitals and Upazila Health Complexes. The 2nd step of QI framework (CQI), it has decided to develop the Plan-Do-Check-Act (PDCA) manual for the service providers, especially for the trainers.

This manual presents a step-by-step approach for improving processes and for solving problems related to health care quality. As such, the approach can be applied to any level of health system.

This PDCA manual is a comprehensive guideline on how to use PDCA approach to identify problems, analyze the root causes of the defined problems, develop and implement the action plan and monitor progress of quality of care.

This manual is divided into two cross-reference parts. The first part describes in details how to implement each step and suggests appropriate modality. The second part (reading materials within the same section) presents the tools/modalities in details, explaining how and when to apply each and providing step-by-step instructions.

I hope that this document will help the service providers for development of their capacity on Quality Improvement, especially for problem identification in clinical areas and development of necessary action.

Md Ashadul Islam
Director General
Health Economics Unit
Ministry of Health and Family Welfare

Acknowledgement

Bangladesh has achieved commendable progress in health and economic sectors. There is significant reduction of maternal, neonatal and child mortality over the last decades. Utilization of health services has also increased. To further improve the health situation and achieve the targets of the current sector program, we need to concentrate our efforts on quality improvement of hospital services. The manual "PDCA Manual for Quality Improvement" is designed for the hospital managers, trainers and Work Improvement Team (WIT) members for quality improvement by implementing continuous PDCA cycles. This manual describes the PDCA cycle, an evidence-based problem solving approach for quality improvement, in a simple and understandable manner. Each step of the PDCA is described with examples, which makes the manual user friendly.

PDCA is not a new approach for problem solving. This methodology is being used in many countries and is recommended by WHO. The Government is currently implementing the national strategic plan for quality improvement of health care services. PDCA is the tool for Continuous Quality Improvement. This approach is particularly suitable for the countries with limited resources.

This manual is developed with the financial and technical assistance of USAID-supported MaMoni Health Systems Strengthening Project, led in Bangladesh by Save the Children International. We express our thanks and gratitude to USAID's MaMoni HSS Project for their generous support. We also acknowledge and appreciate the contributions of all those who reviewed and provided their thoughtful inputs in finalizing this user friendly document.

I believe this manual would be helpful to the hospital managers, trainers and staff to enhance the culture of quality in health service provision.

Dr. Md. Aminul Hasan, PhD
Deputy Director and Focal Person
Quality Improvement Secretariat

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Acronyms list

CQI	Continuous Quality Improvement
EOC	Emergency Obstetric Care
ENT	Ear, Nose & Throat
GOB	Government of Bangladesh
HEU	Health Economics Unit
HPNSP	Health, Population and Nutrition Sector Program
IEC	Information, Education & Communication
KMC	Kangaroo Mother Care
LBW	Low Birth Weight
M&E	Monitoring & Evaluation
MLSS	Member of Lower Subordinate Staff
MO	Medical Officer
MOH&FW	Ministry of Health and Family Welfare
OPD	Outpatient Department
OT	Operation Theatre
PDCA	Plan-Do-Check-Act
POCQI	Point of Care Quality Improvement
PP	PowerPoint
QI	Quality Improvement
QIC	Quality Improvement Committees
QIS	Quality Improvement Secretariat
QoC	Quality of Care
SCANU	Special Care Newborn Unit
SDG	Sustainable Development Goal
SOP	Standard Operating Procedure
SSN	Senior Staff Nurse
STS	Skin-to-Skin
TQM	Total Quality Management
UHC	Universal Health Coverage
WIT	Work Improvement Team
WHO	World Health Organization

Introduction

Quality of care is an integral part of Universal Health Coverage. Deficiencies in quality can be found in any health care setting, from the most sophisticated hospital to the most basic community clinic. Delivery of poor quality health services reduces client benefits, frustrates health care providers, and wastes limited health resources. A systematic ongoing process for ensuring and improving quality is an essential component of an effective, efficient, and responsive health care system. In Bangladesh, initial quality assurance processes were piloted through a government project in 1994. This pilot project was included in the Health and Population Sector Program from 1998-2003 and continued in the subsequent sector programs. The Government of Bangladesh (GOB) remains committed to improving the quality of healthcare services nationwide, as reflected in the 4th Health, Population and Nutrition Sector Program (HPNSP 2017-2022). In 2015, a Strategic Planning document for the Quality of Care for Health Service Delivery in Bangladesh was developed by the Quality Improvement Secretariat (QIS) functioning under the Health Economics Unit (HEU) of the Ministry of Health and Family Welfare (MOHFW). This plan chalked out the Quality Improvement (QI) structure for the Bangladesh health sector. This structure included Quality Improvement Committees (QIC) at all levels, national to upazila, creating necessary QI leadership, a necessary first strategic step as indicated in the WHO implementation approach. The National QI Committee has two supporting committees at both the divisional and district levels. The QI secretariat is housed within the HEU of the MOHFW and serves as the formal management body of the National QIC. The Secretariat provides support to all QI initiatives across the country, strengthening and coordinating QI activities within the health sectors, both private and public.

Considering the existing health infrastructure in Bangladesh, the next step for continued improvement is to build the capacity of health service providers and managers using the Plan-Do-Check-Act process (PDCA). This PDCA Trainer's manual is a tool that will equip the health service providers and managers to conduct the PDCA Approach at different facilities within the country.

Recommendations before undertaking PDCA approach in a health facility setting:

a. Formation of a work improvement team (WIT) at the facility level

Formation of Independent Work Improvement Teams (WIT): The PDCA involves a team approach to problem solving. To begin, designate a team leader and team members who jointly will think about the following:

- Are the QICs and WITs sensitized to the approach?
- Does the team include the right people (i.e. are those participating in the WIT directly involved in the area needing improvement?)
- Does the team need improved capacity to address the process?
- Who will facilitate the team and the process?

b. **Development of a team charter** with defined roles and responsibilities for the PDCA project, which serves to provide focus and clarity regarding the team's work.

c. **Development of a communication plan,** which will be used to inform the key players and those impacted by the QI work of changes and the overall status of the quality improvement project. It is important to establish a communication plan at the outset of the improvement effort, and to communicate and post progress on a regular basis, in a highly visible location, for all to see. Storyboards offer a clear picture of key benchmarks within the PDCA cycle, and can be an effective way to display the story as it unfolds.

Suggested team composition for WIT

POSITION	POTENTIAL WIT CANDIDATE
1. Facilitator	MO and above
2. Team Leader	Nursing supervisor/ SSN/ any one suitable for the section
3. Member Secretary	SSN/ any one suitable for the section
4. Member	MLSS
5. Member	Cleaner

The composition may vary depending on the department/ section involved in the process.

Roles and responsibilities of the WIT

- Improve the quality of services at their respective health facility
- Identify problems
- Problem-solving
- Implement the 5S and PDCA approach
- Hold regular meetings
- Prepare the PDCA Action Plan using innovative ways to reorganize
- Present/ share the PDCA Action Plan at the QIC meeting
- Implement the PDCA Action Plan to solve QI problems using existing resources
- Take pictures to demonstrate changes (before and after) in their respective sections
- Seek support from the QIC for problems that they cannot solve

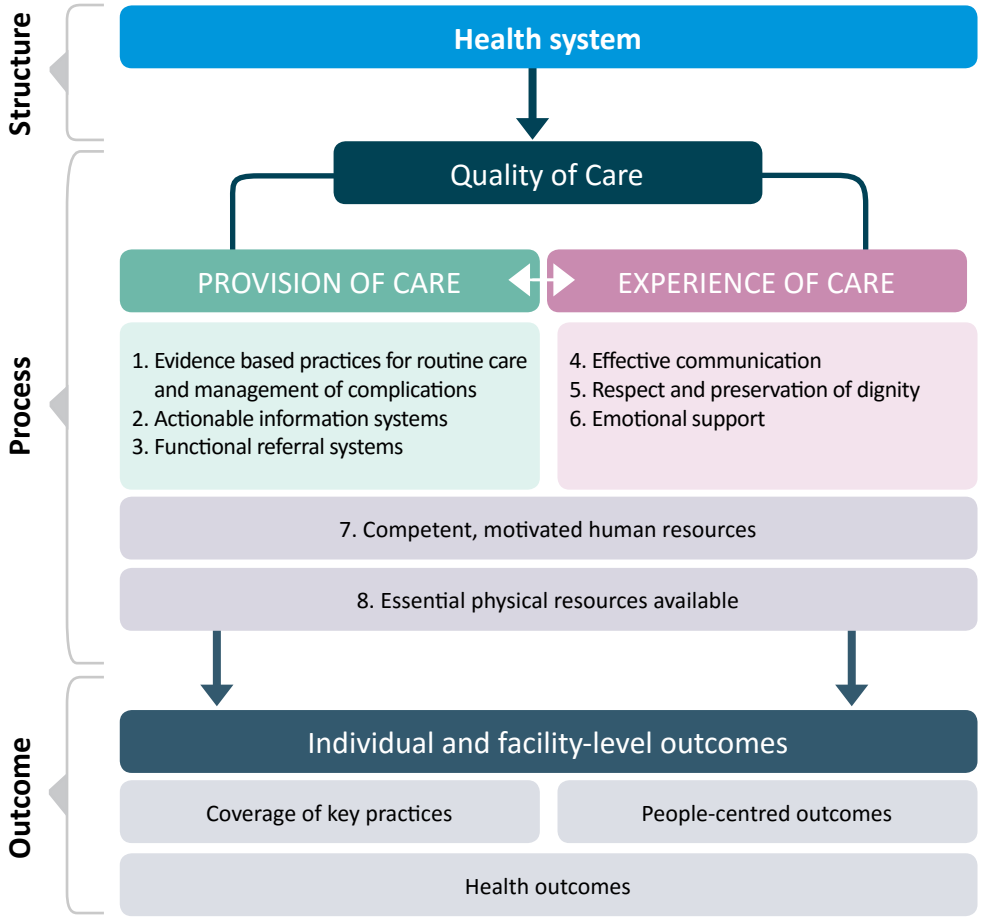
Opportunities for improvement can be found at every level of the health system. Individuals or teams (WITs) may find QI opportunities in their regular day-to-day activities, in the work of supervisees, or at the district, regional, or national levels. Solving problems and improving processes require more than intuition and judgment. In order to achieve the desired outcome, health care must be safe, effective, timely, efficient, equitable, and people-centered.

Possible WITs for a District Level Hospital	Possible WITs in an Upazila Health Complex
• Outpatient Department • Emergency • Office rooms and store • Premises (outside hospital building) • Pathology, X-ray, Blood Bank • EOC (labor room, Gynae & Obs ward) • Female Surgery, Female Ortho, Female Eye and Female ENT • Male Surgery, Male Ortho, Male Eye and Male ENT • Female Medicine and Cardiology • Male Medicine and Cardiology • Operation Theatre • Pediatric ward • Other locations as needed	• Outpatient Department • Emergency • Office rooms and corridors • Premises (outside hospital building) • Pathology and X-ray • EOC (labor room, Gynae & Obs ward) • Female ward • Male ward • Operation Theatre • Pediatric ward • Pharmacy and store • Other locations as needed • MCH Unit of Family Planning

WHO framework for quality of care

The WHO defines Quality of Care as "the extent to which health care services provided to individuals and populations improve desired health outcomes." Various health care models were developed based on this definition, which led to the creation of a framework for providing quality care. For example, in the area of maternal and newborn care, the WHO Quality of Care framework has eight dimensions within the overall health system. Within this framework, both the provision of care and the experience of care have been given equal importance. The framework emphasizes the role of the community and service users to identify their needs and preferences in managing their own health. The perspectives of the community, family, and/ or women play an important role in the decision to seek care and demand creation. The domains of effective communication with the service users and the community while maintaining respect and preserving user's dignity and providing emotional support to them has an important role. The framework also focuses on the use of evidence-based practices for all kinds of care, information systems in which record keeping is used for upgrading services and a strong referral system, which allows patients access to appropriate health centers. The cross-cutting area focuses on the need to have adequate, competent staff and physical infrastructural support which are prerequisites for providing good quality of care.

Figure 1: WHO framework for the quality of maternal and newborn health care



Ref: Standard for Improving Quality of Maternal and Newborn Care in Health Facilities, WHO, 2016.

Implementation of this framework requires 1) Establishing functional leadership structures, 2) Adaptation of standards of care, 3) Conducting situation analysis/ assessment, 4) Ensuring essential infrastructure to get started, 5) Building capability and implement interventions, and 6) Continuously measuring quality of care & outcomes through the Plan-Do-Check-Act (PDCA) approach. PDCA is the tool used to ensure that facilities gain the capacity to identify problems and resolve them through a systematic process.

This PDCA presents a step-by-step approach for improving processes and for solving problems related to health care quality. As such, the approach applies to any level of the health system. A quality related problem has been described as the gap between what 'is' and what 'is desired'. Quality improvement, problem solving, and process improvement are not solely the domain of the central ministry of health. Quality improvement is everyone's business. QI can be adopted and applied by an individual to his/ her own work, or by a district team in the services, it provides. Many health care providers and managers hesitate to tackle quality problems because they do not feel they have the resources, knowledge or skills to complete the desired improvements. Yet improving quality may not require additional resources. Progress can often be accomplished simply by making adjustments to existing processes. The problem-solving process may assist in improving quality even in the face of serious resource constraints. If problem solving is carried out effectively, it can even heighten the efficiency of health service delivery, making better use of existing resources.

How to use this manual

This manual is a comprehensive guide on how to use the PDCA cycle to identify problems, analyze root causes, develop and implement action plans, and to monitor the progress of quality improvement. This manual was developed for use by PDCA approach trainers (i.e. doctors, nurses, or public health professionals) who are involved in the PDCA training. This manual can also be used by PDCA practitioners (i.e. managers, doctors, and nurses) at the facility level. The targeted audience for the PDCA training is health care facility staff at all levels, specifically the members of the Work Improvement Teams (WIT) and Quality Improvement Committees (QIC).

This manual is broken down into 13 learning sessions, with each session divided into two cross-referencing sections, 1- A Facilitator's Outline and 2- Reading Materials section. The first section, the Facilitator's Outline describes in detail how to conduct each step of the training and offers suggestions on the appropriate modality. The second section, Reading Materials, presents the tools/ modality in detail, explaining how and when to apply each and providing step-by-step instructions. Throughout the manual, case studies have been developed to illustrate the problem-solving process and tools in action. The duration of this training is 3 days in length, and it is recommended to be held locally. The number of trainees in each session should not exceed 30, as this training is designed in such a way that participants learn by doing.

Guidance for facilitators

This training enables participants to complete Quality Improvement (QI) exercise that can be used to improve overall care in their facility. As the Training Facilitator, your role is to teach and guide participants. Be enthusiastic and positive throughout the course.

In each session, there should be two lead facilitators. The facilitator should be someone who has previous experience conducting participatory trainings, and who is familiar with the different concepts regarding the quality of care. Ideally, there should be 5-6 facilitators to oversee and help the different working groups. In case 5-6 facilitators are not available, then the lead facilitator(s) should try to identify potential group facilitators from within the participants. Often six participants per table with one facilitator will allow for the best format for discussion. Try to mix groups with different levels of participants. At the beginning of the course, all participants should be provided with a copy of the trainee module and the facilitator himself should have a copy of this training manual.

The room set up is an important element of the PDCA training. Instead of a conference type arrangement, a group-work setting is preferred, with one table per group of participants.

Recognize that change can be difficult but is a necessary step for growth and development. Accepting the need to change and the motivation to do so are key for the PDCA cycle to succeed. Most QI processes involve good teamwork to select and implement changes. Facilitators should feel confident in helping their teams rather than simply providing information. The facilitator should convey enthusiasm and give participants time for reflection. For the trainer's own preparation, it is suggested that he or she go through all "Reading Materials" provided in this manual prior to the course, in order to better understand its contents so that he/ she may better explain the materials during the PowerPoint presentations and correlating group work sessions.

Training materials and equipment

- Computer, projector and screen
- Presentation in PP slide (softcopy provided in CD and hardcopy as annexed in this manual)
- Whiteboard or paper flipchart on an easel with markers (at least 2 different colors)
- Paper & Pen/ pencils for each participant
- Microphone (if required)
- Trainee's guide for each participant
- Name tag for each participant and the facilitators
- Knowledge checks and course evaluation forms for each participant

A few hints to get started!

Here are three hints that may help in using this manual's content for your own problem-solving efforts:

1. After becoming acquainted with the PDCA cycle, think about the logic of its steps. Think about a problem you recently encountered and reflect on how you could apply the PDCA steps to this problem.
2. Practice using some of the steps to solve problem encountered at your workstation. In this way, you will become more comfortable with the steps and tools. The process may take time and you should not feel pressured to solve the issue quickly. The learning process and quick results do not always go hand-in-hand.
3. Start at first with a simple problem and then go for the more complex ones.

Think of problem solving not as a chore, but rather as a challenge, like unraveling a mystery.

SAMPLE TRAINING SCHEDULE

PDCA Manual for Quality Improvement

Sessions	TOPIC	TIME	FACILITATOR
DAY-1			
Session 1	Welcome, introduction, objectives and group formation	08:30-09:15	
Session 2	Overview of quality improvement	09:15-10:30	
Tea break		10:30-10:45	
Session 3	Introduction to the PDCA cycle and its steps	10:45-11:30	
Session 4	Selection and prioritization of the problems: presentation	11:30-12:00	
Exercise	Selection and prioritization of the problems	12:00-13:00	
Lunch break		13:00-14:00	
Session 5	Situation analysis and writing the aim statement: presentation	14:00-15:00	
Tea break		15:00-15:30	
Exercise	Situation analysis	15:30-17:00	
DAY- 2			
Session 6	Root cause analysis: presentation	08:30-09:15	
Exercise	Fishbone analysis	09:15-10:30	
Tea break		10:30-11:00	
Session 7	Identification of interventions: presentation	11:00-11:30	
Exercise	Identification of interventions	11:30-12:30	
Session 8	Implementation of interventions: presentation	12:30-13:15	
Lunch break		13:15-14:15	
Exercise	Implementation of interventions	14:15-15:00	
Tea break		15:00-15:15	
Session 9	Checking effectiveness of interventions: presentation	15:15-16:00	
Exercise	Checking effectiveness of interventions	16:00-16:45	

Sessions	TOPIC	TIME	FACILITATOR
DAY-3			
Session 10	Standardization of effective interventions: presentation	08:30-09:15	
Exercise	Standardization of effective interventions	09:15-10:00	
Session 11	PDCA project presentation by the groups (15 min tea break in between)	10:00-12:15	
Session 12	Development of action plan/ QI initiative for the health facility	12:15-12:45	
Lunch break		12:45-13:45	
Session 13	Monitoring and evaluation of PDCA activities	13:45-14:30	
Session 14	Training evaluation and closing	14:30-15:00	

Session 1
Welcome, introduction, objectives and group formation

SESSION OBJECTIVES			
At the end of the session participants will be able to: 1. Explain the training objectives 2. Understand the methodology and their roles in the training			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
• Inauguration, introduction & ice breaking • Objectives of the training • Group formation	- Power point presentation - Participatory discussion	- Power point	45:00 minutes

Session facilitation process

Inauguration

- Facilitate the inaugural session; the organizer should welcome all participants, recognize the special guests, and provide a brief overview of the necessary background information for the event (use the background information provided in the introduction section of this manual).

Introduction and ice breaking

- Divide the participants into pairs. Ask each pair to exchange information about each other (e.g. name, title, occupation, workplace and one thing they would like to change in life, be it personal or work related) and allow 3-5 minutes for discussion amidst pairs.

- Invite each pair to come to the front of the room and ask them to introduce one another. Facilitators will also participate in this process. After the introduction session, mention that “most of us want to bring some changes to our lives, as changes are necessary for improvement, be it personal or professional. When we identify something that needs to be changed, we try to find a way to change it. Once we solve one issue, we find another issue to work on. Through this workshop, we will learn how we can systematically bring changes to our workplace in order to improve the quality of health services.”

- If time allows, continue the ice breaking session by using another game or energizer exercise.

Objectives of the training

- Discuss the objectives of the training using PP slide 1.1. Review the overall plan for the next 2 days and establish any ground rules. Make sure that all participants understand the training objectives and also their expected roles during and after the training.

- Briefly explain the prerequisites necessary to begin the PDCA QI process within a health facility setting and the necessary roles and responsibilities of the WITs using PP: 1.2 and 1.3. Check if the facility participating in this training has already formed functional WITs. If not—proceed to form groups.

Formation of groups

Divide the participants into four or five groups. Explain that these groups will be engaged in group exercises throughout the training program. In every session, after the facilitator's presentation is completed, the participants will work within these groups to brainstorm jointly and complete the correlating exercises.

Reading materials

Session 1: Welcome, introduction, objectives and group formation

Training objectives

The purpose of the training is to enhance the capacity, knowledge, and skills of all participants regarding the PDCA approach in order to improve the overall quality of health care services. At the end of the training, the participants will be able to:

- Explain the PDCA approach and its application for quality improvement of health care services
- Practice the PDCA approach, including the use of appropriate tools (e.g. matrix diagrams, patero charts, fishbone diagrams, flow charts and run charts) to solve facility problems and improve the quality of services
- Based on the PDCA's steps, design a draft quality improvement plan to be implemented by the participants in their respective facilities and develop a work plan for implementation

Through this training, the participants will also learn to work as a team and will commit to collaborating to reach their common goal of improving the quality of health care services.

Training objectives by session

SESSION	OBJECTIVES
Session 1: Welcome, introduction, objectives and group formation	• Participants will be able to explain the training objectives and methodology and they will understand their roles in the training
Session 2: Overview of quality improvement	• Explain the quality improvement process, describe the basic concepts of the 5S approach and its linkage with 5S, CQI (PDCA) and TQM
Session 3: Introduction to the PDCA cycle and its steps	• Describe the purpose and the steps of the PDCA cycle.
Session 4: Selection and prioritization of the problems	• Describe how to select problems and use the matrix diagram to prioritize problems
Session 5: Situation analysis and writing the aim statement	• Describe the process of situation analysis, develop cumulative frequency tables & Pareto charts and write aim statements

SESSION	OBJECTIVES
Session 6: Root cause analysis	• Conduct root cause analysis using Fishbone diagram
Session 7: Identification of interventions	• Identify interventions for the root causes using tree diagram
Session 8: Implementation of interventions	• Develop an action plan for the interventions and the action plan-monitoring checklist
Session 9: Checking effectiveness of interventions	• Check the effectiveness of interventions and identify effective interventions for standardization using a Run chart
Session 10: Standardization of effective interventions	• Be able to explain the importance of standardization of effective interventions
Session 11: PDCA project presentation by the groups	• All the groups will be able to present their PDCA project
Session 12: Development of action plan/ QI initiatives for the health facility	• Be able to develop an action plan to carry out PDCA activities
Session 13: Monitoring and evaluation of PDCA activities	• Be able to use M&E tools for monitoring & evaluation of PDCA activities
Session 14: Training evaluation and closing	• Evaluation of the training course

Session 2
Overview of quality improvement

SESSION OBJECTIVES			
At the end of the session participants will be able to: 1. Describe what is quality of care and its dimensions 2. Describe the basic concepts of 5S approach 3. Describe the linkage between 5S, CQI (PDCA cycle) and TQM for quality improvement			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
▪ Dimensions of quality improvement and recent initiatives of MOH&FW ▪ Overview of 5S and its relationship with CQI (PDCA cycle) and TQM	▪ Power point presentation ▪ Participatory discussion	▪ Power point ▪ Flip paper ▪ Marker ▪ White Board	75:00 minutes

Session facilitation process

Quality improvement

- Ask the participants, "How do you define quality of care (QoC)?". During the brainstorming session, ask one of the participants to volunteer to write down the points told by the other participants on the flip chart. The facilitator should then proceed to read out the points.
- Show PP slide 2.1 and share the objectives of the session.
- Describe quality of care and quality improvement for hospital services by using PowerPoint (PP: 2.2, 2.3 & 2.4) and discuss the dimensions of quality of care (PP: 2.5), including: Effectiveness, Efficiency, Accessibility, Patient centeredness, Equity & Safety.
- Explain the WHO framework for QoC and the importance for QI through the framework using power points (PP: 2.6).
- Try to determine via question/ answer if the participants clearly understood the concept of Quality of Care (QoC) and its different dimensions.

The 5S approach

- Ask if the participants have ever heard about or practiced the 5S approach in their health facilities. If yes, ask what the 5S approach entails. Ask what benefits they noticed after using 5S. Note the responses on the flip paper or whiteboard
- Explain the 5S using PP: 2.7 (Sort, Set, Shine, Standardize, Sustain)
- Introduce the concept of PDCA using PP: 2.8
- Explain the linkage between 5S, CQI (PDCA) and TQM to the participants using PP: 2.9
- Try to determine via question/ answer sessions if the participants clearly understand the concept of 5S approach, PDCA & the linkages between 5S-CQI (PDCA)-TQM

Reading materials

Session 2: Overview of quality improvement

Quality of care (QoC) in health care

WHO defines Quality of Care (QoC) as "the extent to which health care services provided to individuals and population improve desired health outcomes." Quality in healthcare depends on the outcomes one values as an individual. For example, a mother could value maintaining skin-to-skin (STS) contact with her baby, while a nurse could value facilitating breastfeeding during STS contact.

Quality improvement (QI) is a management approach that health care providers can use to organize patient care at their level to ensure that patients receive quality health care. While QI primarily focuses on reorganizing care using the existing resources, it can also contribute to addressing related issues. Quality improvement helps to identify weaknesses in the quality of care but is not a fault-finding exercise. It is a problem-solving approach within the context of the health facilities and may or may not require additional resources.

Health facilities should take the initiative to improve six areas or dimensions of quality. According to the WHO QoC framework healthcare should be: **Effective, Efficient, Accessible, Patient-Centered, Equitable and Safe** *(WHO. Quality of Care: A process of making strategic choices in health systems; 2006).*

Quality dimensions

- **Effective:** providing services based on scientific knowledge and evidence-based guidelines;
- **Efficient:** delivering health care in a manner that maximizes the use of available resource and avoids waste;
- **Accessible:** delivering health care that is timely, geographically reasonable, and provided in a setting where skills and resources are appropriate to medical need;
- **Patient-centered/ Acceptable:** delivering health care which takes into account the preferences and aspirations of individual service users and the cultures of their communities;
- **Equitable:** delivering health care which does not vary in quality because of personal characteristics such as gender, race, ethnicity, geographical location, or socioeconomic status;
- **Safe:** delivering health care which minimizes risks and harm to service users.

The importance of quality of care

- The Government of Bangladesh intends to achieve Universal Health Coverage (UHC). The objectives of UHC are to:
  - Increase accessibility to the poor
  - Improve the quality of care
  - Remove the financial barriers

Improvement of the quality of care is an important issue to achieve the other two objectives of UHC. On the other hand, the government is committed to achieve all the SDGs and to achieve these goals, health service facilities need to improve the quality of care, so that they are: cost effective, efficient and provide better outcomes. The quality of care also improves the client satisfaction, communities' confidence and trust in the health care providers and system.

Core responsibilities of health service providers

- To ensure that the services they provide are of the highest possible standard
- To meet the needs of individual service users, their families, and communities

The 5S approach

The 5S Approach is based on Japanese words those begin with the letter 'S'. The term "5S" refers to the five elements of this approach: Sort, Set, Shine, Standardize and Sustain.

5S approach	
Sort	The first step of the 5S approach is to "Sort." This involves removing all unnecessary items from the workplace. The most common and effective way of doing this is to attach Red Tags to the items that may no longer be needed. Review the items that are needed, and ask whether they need to be stored here. Everything that remains tagged is moved to a designated area (unwanted item storage). Finally, the irreparable/unusable items are disposed by the facility manager, as per policy.
Set	The second step of the 5S approach focuses on, "Setting things in Order" or ensuring efficient storage and location methods. In simplest terms "a place for everything and everything in its place". To effectively set things in order the staff can use marking tape, labeling systems, bins, magnets, pouches, trash barrels, brooms, peg boards, clips, hangers and signs. The result of this step is a much more organized workplace where staff know exactly where to find what they need, saving time and increasing productivity.
Shine	The third step, "Shine," focuses on cleaning up the place once all of the clutter has been removed. A clean workplace provides an environment which is safer and more enjoyable to work in. It also helps ensure that everything is working properly and is ready to use when needed. Cleaning needs to become a part of daily work habits, which allows tools, equipment and work areas to continually be ready for use.
Standardize	By implementing the fourth step of 5S, "Standardize", one can make sure that the first three steps are maintained. By implementing standardized processes, one ensures that ineffective conditions of the past do not resurface. One common solution for standardizing the process is to develop a solid 5S audit program where expectations and responsibilities are made clear.
Sustain	The fifth step in the 5S journey, "Sustain," is considered by many to be the most difficult. This is the step required to make the other four steps a part of the facility culture for continuous quality improvement.

Continuous Quality Improvement (CQI)

Continuous Quality Improvement is an approach to quality management that builds upon traditional quality assurance methods by emphasizing the organization and systems. It is a set of concepts, principles and methods developed from quality principles proposed by early quality gurus, W. Edwards Deming, Joseph Juran, Philip Crosby, Brian Joiner, and others. These CQI principles, tools, and techniques have been found to work effectively in manufacturing industries. They have recently been found to be effective in human service industries, including healthcare. PDCA (Plan-Do-Check-Act) is one of the most commonly used method of CQI.

Total Quality Management (TQM)

Total Quality Management has been accepted as a major long-term strategic initiative towards continuously improving quality of health care. Key concepts of TQM start with top management leadership with emphasis on process and customer focus. Implementation of TQM in service hospitals will require Quality Management awareness, training and framework development as well as the development of customer awareness. TQM has been widely applied in the clinical field with a successful outcome. TQM is not a short-term solution, it has to be understood and practised as a long-term strategic commitment.

Session 3

SESSION OBJECTIVES			
At the end of the session participants will be able to: 1. Describe the purpose of PDCA cycle 2. Describe the steps of PDCA cycle			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
▪ Introduction of PDCA cycle (Plan, Do, Check, Act) ▪ Steps of the cycle	▪ PowerPoint presentation ▪ Participatory discussion	▪ PowerPoint ▪ Flip paper ▪ Marker	45:00 minutes

Session facilitation process

PDCA cycle and its steps

- Describe session objectives using PP: 3.1.
- Ask one or two participants about their real-life experiences in solving problems in the work setting. Relate their responses to PDCA cycle and explain the PDCA cycle (Plan, Do, Check, Act).
- Using Powerpoint 3.2 to 3.5, discuss the PDCA cycle, its 7 steps, and how to utilize it to solve health care problems and improve the quaility of health care services
- Check if they are clear about the cycle and its steps. Try to evaluate through question & answer.

Reading materials

Session 3: Introduction to the PDCA cycle and its steps

What is PDCA?

PDCA is an evidence-based participatory approach for problem solving and is found to be an effective tool for quality improvement. PDCA is conducted using the existing resources at the facilities to solve problems continuously and to make the things better day-by-day. The target for the PDCA cycle is the working places of the WITs. PDCA approach is also known as the PDSA (Plan-Do-Study-Act) cycle.

What is the PDCA cycle?

The PDCA cycle is a continuous quality improvement model consisting of a logical sequence of four repetitive stages for continuous improvement and learning: Plan, Do, Check and Act. This is a four-step cycle that allows changes in implementation, solving problems, and continuously improving the work processes. Its cyclical nature allows it to be utilized for continuous improvement. It is a participatory approach where all staff participate in the process. Continuous data collection is needed to monitor progress and to generate evidence. This approach is suitable for countries where there are resource constraints. PDCA cycle needs to be rotated continuously to make the things (quality of care) better day-by-day. These repeated small changes add up to a significant change in the way we work.

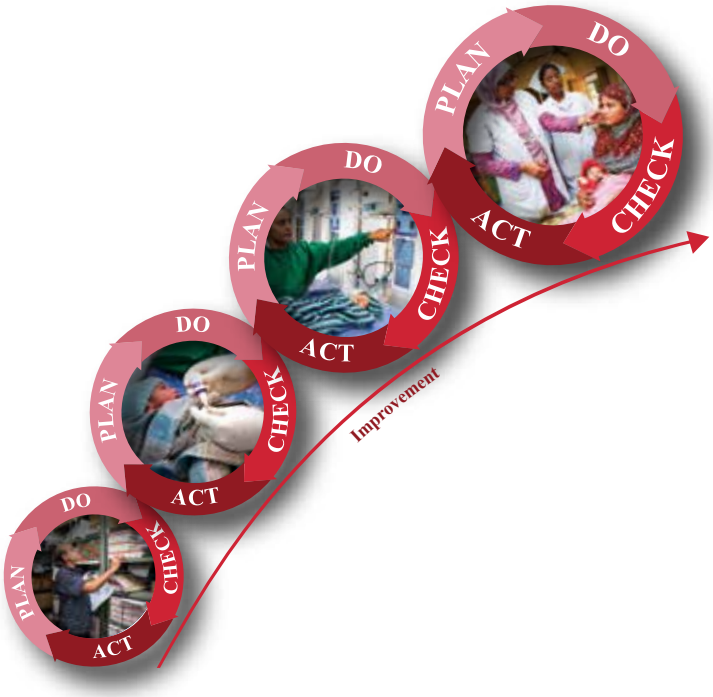


Figure 2: PDCA cycle

Ref: Evidence Based Practice for Improving Quality (EPIQ): Flipchart of CIHR MICare Team, November 2017

The 4 stages of a PDCA cycle

1 - PLAN

Planning is the stage where we identify and analyze the problems that we want to solve, according to the following order:

- Select and prioritize the problems to be analyzed
- Clearly define the problem and establish a precise problem statement
- Situation analysis (will be used as baseline data)
- Setting a measurable goal
- Root cause analysis (identify potential causes of problems)
- Identification of intervention(s) that will address the root causes of problems
- Selection of an intervention and development of an action plan

2 - DO

At this stage an action plan is implemented by the staff which was developed in the previous stage to make the desired changes.

- Execute the action plan on trial or pilot basis
- Practice the proposed method(s)
- Make the changes
- Don't need to strive for perfection, just look for what can be done in a practical way

3 - CHECK

At this stage data is collected once again to measure if the actions taken have improved the situation.

- Measure the indicator and compare with baseline. Record the results
- Check whether the standard is being followed
- Check what is working and what is not working
- Identify systematic changes
- Practice and improve the activities as per defined method

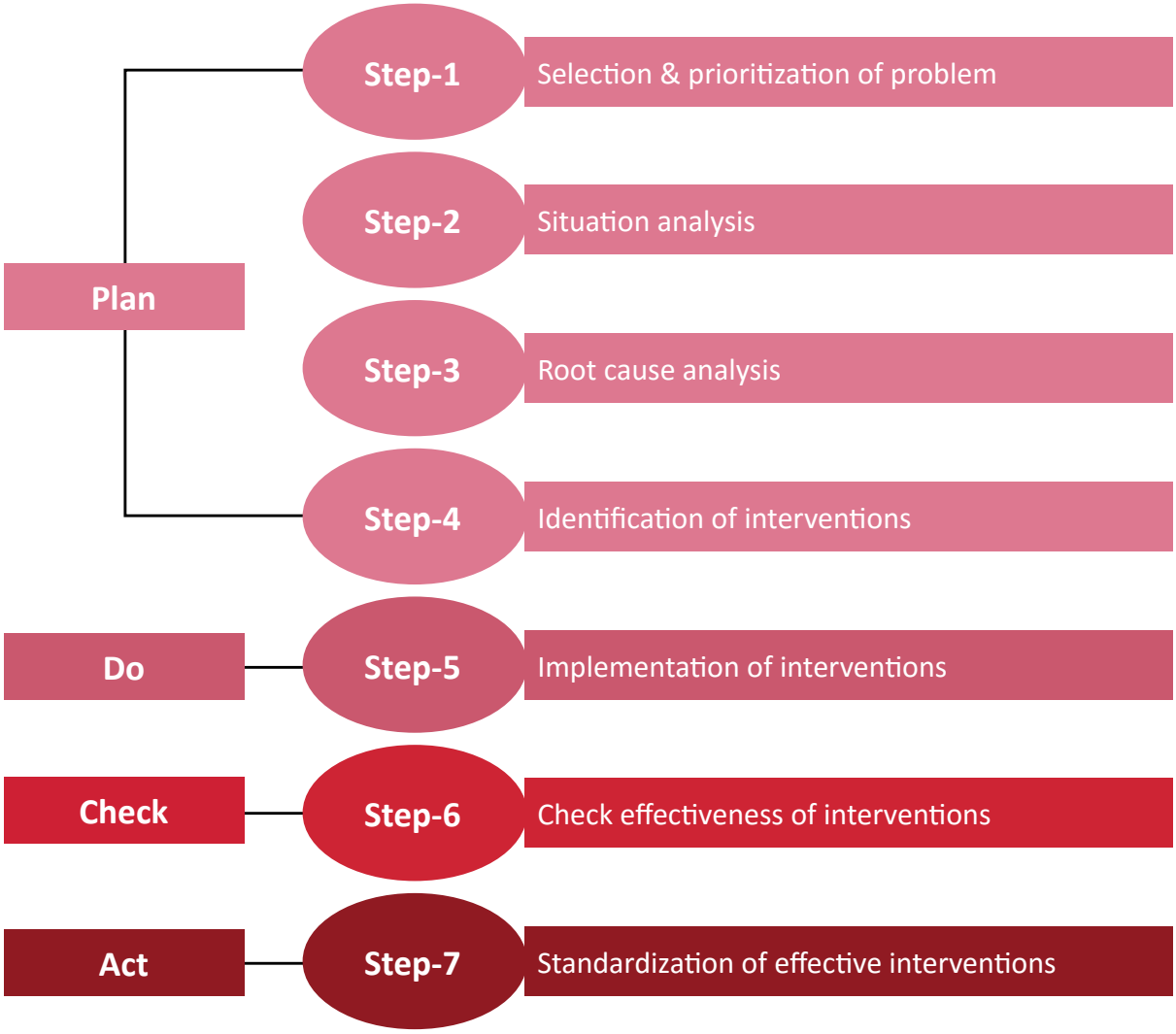
4 - ACT

The interventions which are found to be effective, standardize them through development of standard operating procedure (SOP). Ensure that all the staff follow the SOP.

- Activities going as planned and found effective, continue with those activities
- Activities which are not effective, review them (why) and propose new activities
- Adopt the intervention(s)/ solution(s) as standard (standardize)
- Plan ongoing monitoring of the intervention(s)/ solution(s)
- Continue to look for incremental improvements to refine the intervention(s)/ solution(s)
- Look for another improvement opportunity

At the end of the fourth stage, the PDCA approach suggests that the cycle restarts with the aim to solve another problem (or further improve the same problem), to achieve a continuous and uninterrupted improvement (CQI). If a problem is solved, then the team can start another PDCA cycle to solve a new problem.

The 7 steps of the PDCA cycle



Session 4
Selection and prioritization of the problems

SESSION OBJECTIVES			
At the end of the session participants will be able to: 1. Describe how to select problem 2. Use matrix diagram to prioritize problem			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
• Selection of problems • Use of matrix diagram to prioritize the problems	- Power point presentation - Group exercise - Participatory discussion	- Matrix Diagram	Presentation: 30:00 minutes Exercise: 1:00 hour

Session facilitation process

- Explain session objectives using PP: 4.1.
- Ask the participants how they identify problems. Try to listen to their experiences. Ask them to share both positive and negative past experiences related to the care of their patients.
- Discuss what we mean by "problem" in a workplace setting and how we prioritize them using PP: 4.2 & 4.3.
  - Problem is something your section/ department wants to improve
  - Problems you are facing at your workplace
  - Things you want to improve to make your work effective and efficient
  - Issues come from observation(s) of supportive supervision and monitoring
  - An unsatisfying issue raised by the staff or clients/ community
- Show powerPoint 4.4 to describe the four steps to problem selection.

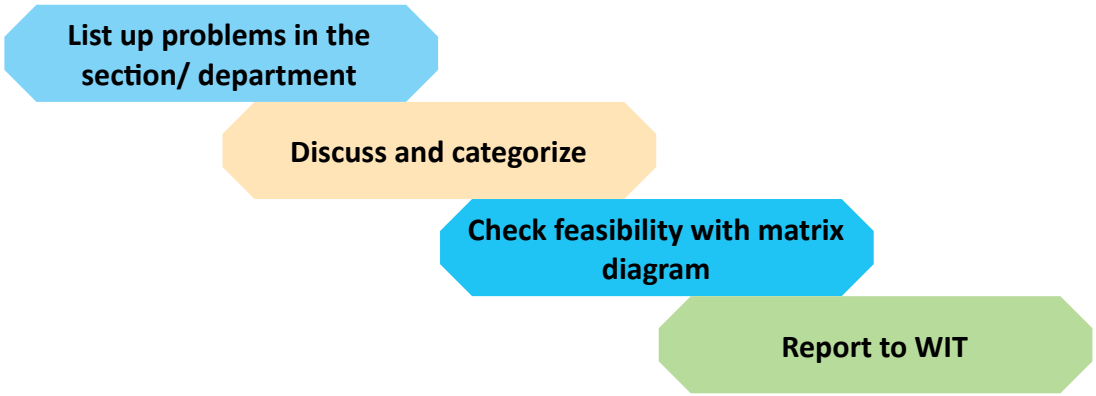


Figure 3: Problem selection flow

- Discuss how the problems are selected and proritized (PP: 4.5-PP: 4.7) in health facilities.

Process of problem selection is:

- The WIT members sit together in a meeting and brainstorm to identify problems in their own section/ department
- The team then uses the matrix diagram to assess the feasability of the listed problems to be solved and prioritize the problems to be solved

Some tips to prioritze problems

- Possible to carry out within own department (comparatively easy to solve)
- Can be solved through mobilizing internal resource, no additional external resource required
- Possible to solve within 3-6 months
- Beneficial to own section/ department and its clients

(It's better not to select long term, complex problems at the beginning, those can be done later when the groups are more skilled on PDCA)

- Present the case study and describe the matrix diagram using PP: 4.8

Exercise (PP: 4.9 & 4.10)

Tell the participants to:

- Brainstorm in groups and identify some problems in a section/ department of the hospital to improve quality of services
- List all the problems identified by the group members; the problems should be real, not hypothetical
- Once the problems are identified and listed, classify them as small problems or big problems
- Use the matrix diagram to select one big problem (out of all big problems); This is the problem which will be solved on a priority basis using PDCA approach
- Ask the participants to work in their own groups to prioritize one problem using the matrix diagram (PP: 4.10). Allow 60 minutes to work in a group

Group presentation

In this part, every group will present their group work. Initiate discussion on each presentation to clarify the issue and understanding.

Reading materials

Session 4: Selection and prioritization of the problems

Problem selection

Problem

Improving the quality of health services begins with identifying problems related to QoC and finding ways for improvement. Problem is something your section wants to improve. It can be an unsatisfying issue raised by staff or claimed by clients.

The objective of this step is to select a specific problem or process on which to focus. It is important to select carefully where to focus quality improvement efforts. Quality improvement is most attainable when those involved are enthusiastic about it and when it has a positive impact(s) on patients and their community. Accordingly, managers, clients, and staff should select a problem which is important.

Pre-requisites for selecting a problem or an area of improvement

The process of identifying and selecting a problem or an area of improvement can be thought of as a cyclic process with two (or more) stages, where each stage comprises of three sub-steps:

Stage one

- Review the area/ services that the team are presently providing
- Agree on the criteria for selecting an area on which to work and the process for making the choice
- Select an area on which to concentrate

Stage two

Within the area of concern, select a specific problem or opportunity for improvement

- Identify specific problems or improvement opportunities
- Agree on criteria for selecting a problem on which to work and the process for making the choice
- Select a problem or specific process on which to work

Problems come from

- Problems you are facing in your work place
- Things you want to improve to make your work effective and efficient
- Issues come from observation(s) of supportive supervision and monitoring
- Issues raised by the staff or clients/ community

Process of problem selection

1. Identify potential areas for improvement

To identify potential areas for improvement, it is essential to consider the source of information that can explain the current situation. Several sources can be used to identify specific areas for improvement. It should not be limited to a single source or method for finding potential areas for improvement. An effective, ongoing quality system depends on a management and health information system that routinely monitors important service quality indicators. Examples of different sources are:

a. Routine monitoring system (reviewing records, reports, service statistics, conducting observations using checklists using survey questionnaires)
b. Surveys or sampling of existing records
c. Staff concerns (brainstorming at a meeting, discussion, interviewing)
d. Feedback from clients (conducting informal conversations, using a suggestion box, conducting surveys or focus group discussions)
e. Personal observation

2. Agree on criteria to define and operationalize a problem

When selecting potential focus areas, list all the gaps or problems to be addressed. In identifying and selecting issues on which to focus, it is natural to think about causes and remedial action(s). A problem statement will clarify which targets of quality improvement to focus on. To identify a problem it is important to determine the boundaries of the problem, especially where it begins and ends. The problem statement should not assign blame or include an implied cause and solution.

3. Create a list of issues and problems

The problem identification should be led by the work improvement team (WIT), who are staff members of the hospital as members of the hospital. The WIT should list as many problems of the work areas as possible. All the WIT members should be allowed to speak freely and share their opinion to identify the problems and come to a consensus. The staff should not place The staff should not blame anyone for the problem. to anyone for the problem. redundant, already mentioned before.

4. Discuss and categorize the problems

Discuss among the WIT and classify the problems into: a) small problems (problems which can be solved easily and quickly), and b) big problems (problems that require further analysis and time to resolve). An initiative should be taken to solve small problems immediately by the WIT. For big ones, the priority problem should be selected for the PDCA approach, as it is not possible to solve all the big ones together at the same time.

5. Prioritization of problems

Managers often think that they can work on different problems at the same time. When several problems have been identified, they must be prioritized based on clear reasoning. It is essential

that the criteria in the problem prioritization is clearly stated. In order to prioritize one from among the big problems identified, use the matrix diagram. The objective of prioritization is to select one problem which is the most feasible to solve using the PDCA approach.

Case study:

The 'X District Hospital' is a 250 bed hospital with SCANU and Kangaroo Mother Care (KMC) units, established in order to provide evidence-based newborn health interventions. The KMC unit is in the pediatric ward of the hospital and is composed of 2 beds. The average bed occupancy rate of the pediatric ward is more than 100%. Usually, the ward is managed by 4-6 nurses during the morning shift. Two staff nurses manage the ward during the evening and night shift. There is no assigned nurse for the KMC unit. There is also no dedicated cleaner for the pediatric ward. The pediatric ward activities are supervised by a Nursing Supervisor under a Consultant. The Consultant is always under pressure to serve all of the children. The staff nurses also work very hard but they realize that the services they provide are not of of the highest quality.

The hospital has a Quality Improvement Committee (QIC). As per meeting minutes, a work improvement team (WIT) for the pediatric ward has been formed. This WIT was involved in implementing '5S' in the ward. As a part of the TOR of the WIT, all the members visited the pediatric ward and sat together to discuss the overall performance (i.e. coverage and quality of care) of the ward. The team understood the various problems and decided to fix a problem that was easier to address but would have bigger impacts on the beneficiaries.

During the discussion the team members identified several problems that they encountered during their regular activities and reviewed all the documents (treatment files, records & reports) of the ward. The team had detailed discussions and observations that supported their views:

1. Excessive workload
2. Ward environment is unhealthy & dirty
3. Nursing station is not organized and attendants' movement is high
4. Window glasses are broken
5. Toilet door locks don't work
6. The ward is overcrowded
7. No security guard for patients and the attendants
8. Low Birth Weight (<2000gm) babies are not receiving KMC service as per protocol
9. Facility Death Review (FDR) is not carried out within 3 days of death notification

After identification of the problems, they tried to sort the small problems (requiring little effort & doable by local resources) and the big problems (requiring much time, effort, budget etc). The team identified no 3, 4 & 5 as small problems and the rest as big problems. As all the big problems listed can't be addressed at one time, the team tried to prioritize the problems using prioritization matrix. The team chose to increase the coverage of the KMC unit of the facility by using the simple PDCA approach.

How to prioritize and select a potential problem for PDCA

Once problems are listed, prioritize the problem that needs to be solved. Prioritization is done using the following indicators in the matrix diagram:

- Importance to patient outcome (how the issue is affecting people, mothers and their children? 1 denotes 'not important' and 5 denotes 'vitally important')
- Affordable in terms of time and resources (do we have enough time and resources to solve it? 1denotes 'not affordable' and 5 denotes 'easily affordable')
- Ease of measurements (can we measure the changes? 1 denotes 'very difficult to measure' and 5 denotes 'very easy to measure')
- Extent of control of team members (are we capable of changing the situation? 1 denotes 'not at all under control and 5 denotes 'entirely under control')

Prioritization of a problem

Matrix diagram

This is one of the quality improvement tools. This tool is used to clarify problems by thinking in a multidimensional way. The relationship between different elements is also clarified.

Matrix diagram example

Problems	Important to patient outcomes (1-5)	Affordable in terms of time and resources (1-5)	Easy to measure (1-5)	Extent of control of team members (1-5)	Total score (4-20)
Excessive workload	5	1	4	1	11
Ward environment is unhealthy & dirty	4	4	4	1	13
The ward is overcrowded	4	2	5	1	12
No security of the patients and the attendants	1	2	5	1	09
Low Birth Weight (LBW) babies are not receiving KMC service as per protocol	5	5	4	5	19
Facility Death Review (FDR) is not carried out within 3 days of death notification	3	3	5	4	15

Fill out the prioritization matrix based on your experience in your facility. Assign points for each indicator from 1 to 5 (1 is for the lowest priority and 5 is for the highest priority). The indicators considered for prioritization are:

- Important to the patient outcome: How important it is to solve the problem to have a better patient outcome? Put 1 if it is least important (lowest score), 5 if it is very important for patient outcome.

- Affordable in terms of time and resources: How easy it is is it to fix this problem? Do we have adequate money (small amount of money, if needed) and human resources to solve the problem? Put 1 if there is resource constraint (i.e. it is not affordable or takes lots of time). Put 5 if there are available resources and is very much affordable).

- Easy to measure: PDCA is an evidence-based approach, and requires data. It is therefore important to measure (quantify) the problem. How easy will it be to measure the problem you are trying to fix? Put 5 if it is easy to measure, and 1 if it is very difficult to measure.

- Extent of control of the team members: Will the staff in the unit be able to fix the problem themselves? If so, put 5. If it is not at all under the control of the team members, put 1.

- Finally, select the problem that obtained the highest score for PDCA.

While putting scores in this matrix, objectivity should be maintained. Scores should be based on known scientific knowledge, not on personal opinion. In the above table the number five problem is the most important for patient outcome, giving it the highest score. It scores high as it is 'under control' of the team members also. The scoring for these problems, therefore should be based on facts and not tilted towards what the team wants to do.

In the case study above, the WIT used the matrix diagram and selected the problem "Low Birth Weight (LBW) babies are not receiving the KMC service as per protocol" as it obtained the highest score.

Session 5
Situation analysis and writing the aim statement

SESSION OBJECTIVES			
At the end of the session participants will be able to: 1. Describe the process of situation analysis 2. Identify factors contributing to the problem 3. Develop cumulative frequency table and Pareto chart 4. Write the aim statement			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
▪ Identification of contributing factors for the problem selected through brainstorming of the WIT members ▪ Development of cumulative frequency table and Pareto chart ▪ Writing the aim statement	▪ PowerPoint presentation ▪ Group exercise ▪ Participatory discussion	▪ Flip paper ▪ Plain sheet	**Presenta-tion**: 1:00 hour **Exercise**: 1:30 hour

Development of cumulative frequency table and Pareto chart is optional. These can be practiced at higher level facilities when the staff are well experienced in the PDCA approach. Instead, a line diagram (flow chart) could be used to see the trend of improvement through periodical data collection.

Session facilitation process

- Present objectives of the session using PP:5.1.
- Ask participants, what is the situation analysis of a problem? Explain that in this step of the PDCA cycle, contributing factors are identified for the problem selected earlier. Contributing factors are the factors that are altogether responsible for the overall problem. The big problems usually have more than one contributing factors. Contributing factors are not the causes of the problem. Causes of the problem are identified through root cause analysis using a Fishbone diagram. Explain the process of situation analysis using PP: 5.2 to 5.5.

Example

The problem identified in the previous step is “Low Birth Weight (LBW) babies are not receiving KMC service as per protocol”. Contributing factors for the problem could be the following:

- Eligible newborns are not referred from OBGYN ward
- Eligible newborns are not referred from SCANU
- Eligible newborns are not admitted from the outpatient department
- Refusal of/ resistance to referral by the family

These factors contribute to the bigger problem of "Low Birth Weight (LBW) babies are not receiving KMC service as per protocol." This leads to underutilization of the service as well as put babies at risk of hypothermia and further complications. To improve the overall situation, we need to improve these factors related to newborn infection prevention.

Explain the following steps of contributing factors identification. Some participants may find this difficult. Use simple language, check their understanding and allow them to ask questions. In addition to the power point presentation, use flipcharts/ whiteboard to explain the cumulative frequency table and Pareto chart.

Once the contributing factors are identified

Identify data and measurable information for each of the contributing factors. To collect such data, the methodology of data collection must be specified, including:

- **Data source:** Which data will be collected from available sources (such as registers, record sheets, etc.). Data may be collected retrospectively (e.g. data of previous 3 months from record review) or prospectively (e.g. data will be collected from record review of the following 3 months).
- **Period of data collection:** Data of how many months or days will be collected for the contributing factors.
- **Data collection method:** State the method of data collection. For example, through observation, interview, or record review.
- Conduct data collection according to the methodology. Develop a frequency table. Explain that "frequency is the number of times something happens within a particular period".
- The frequency table should be developed in descending order of frequency (highest to lowest). Calculate the cumulative frequency and cumulative percentage (accumulation ratio) of the data collected. State that "Cumulative frequency is the summation of previous event(s) and the current event." Explain clearly how cumulative frequency is calculated by giving simple examples. You may use the following table to explain the relation of different issues. Find one or two participants at each table who can facilitate the process.

Contributing Factors	Frequency (A)	Cumulative frequency (B)	Cumulative percentage (C)
Newborns meeting the criteria are not referred from OBGYN ward	(A1)	B1=A1+0	C1=B1/B4 x 100
Newborns meeting the criteria are not referred from SCANU	(A2)	B2 (=B1+A2)	C2=B2/B4 x 100
Newborns meeting the criteria are not admitted from outpatient department	(A3)	B3 (=B2+A3)	C3=B3/B4 x 100
Refusal of/ resistance to referral by the family	(A4)	B4 (=B3+A4)	C4=B4/B4 x 100

Developing the Pareto chart

The Pareto chart is a useful tool to understand the contributing factors. The Pareto principle states that 80 percent of a problem is due to 20 percent of the causes. The principle helps to look for the causes that account for most of the problems and to prioritize the ones that can be addressed efficiently. Explain the pPareto chart using PP: 5.6 & 5.7.

Writing the aim statement

- Use "SMART" to write the aim statement, where S stands for "Specific", M stands for "Measurable", A stands for "Achievable", R stands for "Relevant", and T stands for "Timely".
- Aim statement should answer the question: what, who, how much, and by when
  - "what" describes the outcome or the 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 when you plan to achieve your desired goal
- We aim to *(what do you want to achieve)* in *(which patient group or area)* from *(what is the current performance)* to *(what is the desired level of performance)* by *(how long)*.
- Aim statement of this project may be: We aim to improve the *percentage of eligible newborns referred from OBGYN and SCANU to KMC corner increased from 42 percent to 85 percent in the next 3 months.*
- Explain the whole process using PP: 5.8 & 5.9.

Exercise (PP: 5.10 & 5.11)

Ensure group-wise sitting arrangement. Provide data sheets to make cumulative frequency tables and Pareto charts. Allow 90 minutes to work in groups.

- Ask the participants to brainstorm in groups to identify the contributing factors for the problem they have identified. Big problems are usually composed of several contributing factors.
- Once contributing factors are identified, decide what data is needed to quantify the contributing factors. Write down the methodology of data collection.
- Use hypothetical data for the contributing factors.
- Develop the cumulative frequency table, and calculate the cumulative frequency and cumulative percentage of the data collected.
- Develop Pareto chart (optional).

Reading materials

Session 5: Situation analysis and writing the aim statement

Situation analysis

A. Identify the contributing factors for the problem "Low Birth Weight (LBW) babies are not receiving KMC service as per protocol".

The factors contributing to improper implementation of the referral protocol may be due to:

1. Newborns meeting the criteria are not referred from OBGYN ward
2. Newborns meeting the criteria are not referred from SCANU
3. Newborns meeting the criteria are not admitted from outpatient department
4. Refusal of/ resistance to referral by the family

B. Collect data on each of the identified contributing factors.

To collect such data we need to specify the methodology of data collection, such as:

- Data source: which data will be collected from which available sources (such as registers, record sheets, etc.). Data may be collected retrospectively (e.g. review of records of the previous 3 months).
- Period of data collection: Data will be collected for a defined calendar timeframe (bi-monthly, quarterly, half-yearly etc.) for the contributory factors to be monitored.
- Identify the data collection method. For example, through observation, interview, or record review.

C. Develop a frequency table (as shown below) using the collected data (in descending order of frequency). Frequency is the number of times something happens within a particular period.

D. Calculate the cumulative frequency and cumulative percentage of the collected data using the following table. Cumulative frequency is the summation of previous event(s) and the current event.

Contributing Factors	Frequency (A)	Cumulative frequency (B)	Cumulative percentage (C)
Newborns meeting the criteria are not referred from OBGYN ward	(A1)	B1=A1+0	C1=B1/B4 x 100
Newborns meeting the criteria are not referred from SCANU	(A2)	B2 (=B1+A2)	C2=B2/B4 x 100

Contributing Factors	Frequency (A)	Cumulative frequency (B)	Cumulative percentage (C)
Newborns meeting the criteria are not admitted from outpatient department	(A3)	B3 (=B2+A3)	C3=B3/B4 x 100
Refusal of/ resistance to referral by the family	(A4)	B4 (=B3+A4)	C4=B4/B4 x 100

Example of cumulative frequency distribution table:

Data on contributing factors have been collected from the records of OBGYN ward and SCANU of previous one month and displayed in the following table:

Contributing Factors	Frequency	Cumulative frequency	Cumulative percentage
Newborns meeting the criteria are not referred from OBGYN ward	16	16	41.02%
Newborns meeting the criteria are not referred from SCANU	10	26 (=16+10)	66.67%
Newborns meeting the criteria are not admitted form outpatient department	8	34 (=26+8)	87.18%
Refusal of/ resistance to referral by the family	5	39 (=34+5)	100%

Pareto chart

According to the 'Pareto Principle' in any group of things that contribute to a common effect, relatively few contributors account for the majority of the effect. A Pareto chart is a type of bar chart in which the various factors that contribute to an overall effect are arranged in order according to the magnitude of their effect. This arrangement of the contributing factors in order of their impact helps identify the 'vital few' (the factors that warrant the most attention) from the 'useful many' (factors that have a relatively smaller effect). Pareto charts help teams concentrate their efforts on the factors that have the greatest impact. It also helps a team communicate the rationale for focusing on certain areas.

Directions

1. Collect data about the contributing factors of a particular effect (for example, the types of gaps discovered during reviewing KMC corner utilization status).
2. Order the categories according to magnitude of effect (for example, frequency of gaps). If there are many insignificant categories, they may be grouped together into one category labeled 'other'.

3. Write the magnitude of contribution (for example, frequency of gaps) next to each category and determine the grand total. Calculate the percentage of the total that each category represents.

4. Working from the biggest to the smallest, calculate the cumulative percentage for each category with all of the previous categories.

5. Draw and label the left vertical axis with the unit of comparison (for example, 'Number of Occurrences of gaps', from 0 to the grand total).

6. Draw and label the horizontal axis with the categories (for example, 'Type of gaps'). Arrange the biggest to smallest from left to right.

7. Draw and label the right vertical axis 'Cumulative Percentage', from 1 to 100 percent, with the 100 percent value at the same height as the grand total mark on the left vertical axis.

8. Draw a line of the cumulative percentage. Beginning with the lower left corner of the largest category (the '0' insert space point).

9. Analyze the diagram to indicate the cumulative percentage associated with the 'vital few' (for example, two-gaps types account for about 80 percent of all gaps).

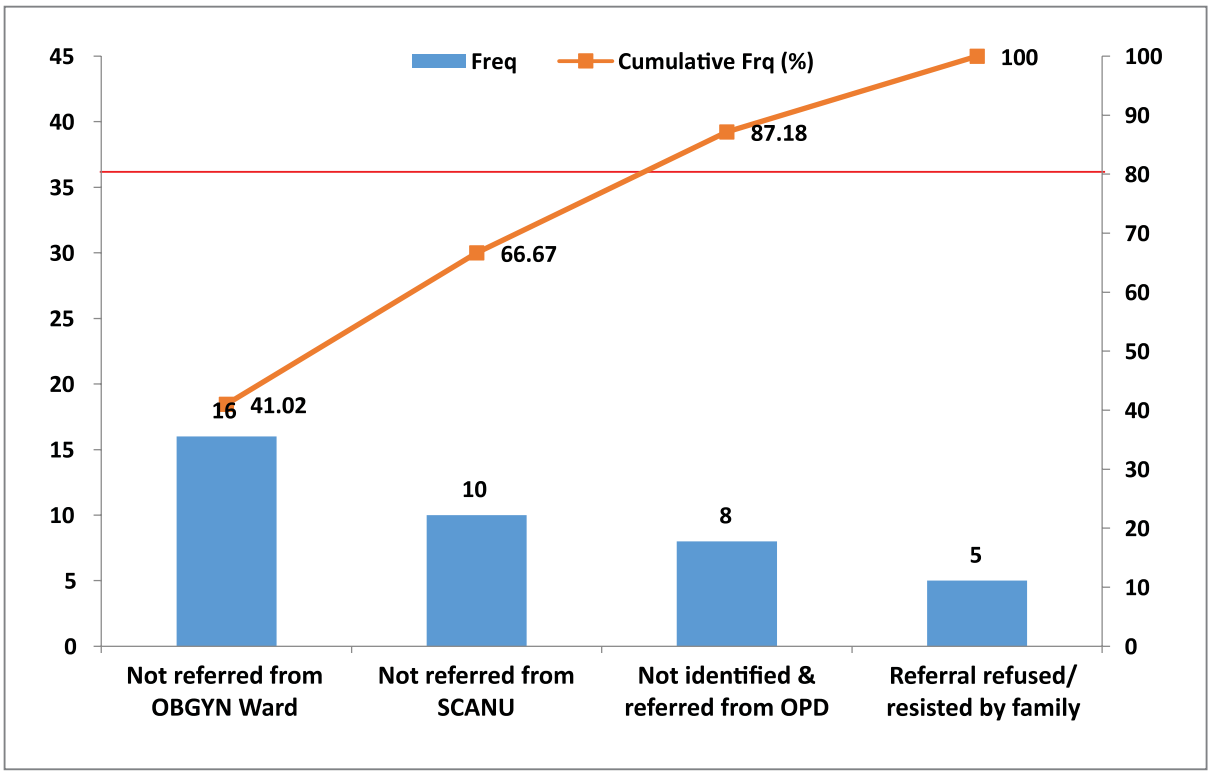
Sample Pareto chart: Low Birth Weight (LBW) babies are not receiving the KMC service as per protocol

The team used a Pareto chart to identify the 'vital few' factors that contributed to improper implementation of the protocol for referring LBW babies to KMC unit. This deprives the LBW babies of an essential intervention. The team identified four contributing factors for the problems, which are: a) Newborns meeting the criteria are not referred from the OBGYN ward; b) Newborns meeting the criteria are not referred from SCANU; c) Newborns meeting the criteria are not admitted from outpatient department; d) Refusal of/ resistance to referral by the family. The team collected data on frequency of these contributing factors over a period of 3 months and displayed the data in the cumulative frequency table (see table of page: 32).

From the Pareto chart given below, it can be understood that Newborns who meet the protocols are not referred from the OBGYN ward or from SCANU, which accounted for 67 percent of the whole problem. Instead of working on all the factors, the team has decided to focus its efforts on these two factors to increase utilization of KMC services.

The Pareto chart is developed based on the data in the cumulative frequency table.

Pareto Chart



Writing an aim statement

Use the "SMART" approach to write the aim statement, where S stands for "Specific", M stands for "Measurable", A stands for "Achievable", R stands for "Relevant", and T stands for "Timely". The aim statement should answer the question: what, who, how much, and by when.

- "what" describes the outcome or the 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 when you plan to achieve your desired goal

The aim statement should be made as follows:
We aim to ***(what do you want to achieve)*** *in* ***(which patient group or area)*** *from* ***(what is the current performance)*** *to* ***(what is the desired level of performance)*** *by* ***(how long)***.

The aim statement of this project may be: *We aim to increase the* ***percentage of eligible newborns referred from OBGYN and SCANU to KMC ward from 42 percent to 85 percent in next the 3 months.***

More examples of aim statements

The aim statement should describe "when, who, how much and by when." Generally, a timeline between 2 weeks to 3 months is a reasonable time for QI projects. Less than 2 weeks is unrealistic and more than 3 months may be too long to maintain motivation for solving the problem. The target should not be too low or too high.

Example 1

We aim to increase the percentage of women having a vaginal delivery in the labor room who receive a uterotonic within one minute after delivery from 51% to 100% by 1st June.

- “What" : receiving uterotonic within one minute after delivery
- “Who" : women having vaginal deliveries in the labor room
- “How much" : from 51% to 100%
- “By when" : by 1st June

Example 2

We aim to increase the percentage of postpartum woman who delivers in the hospital that receive FP counseling before leaving the hospital from 12% to 40% by 31st August

- “What" : receive FP counseling before leaving the hospital
- “Who" : postpartum woman who deliver in the hospital
- “How much" : from 12% to 40 %
- “By when" : by 31st August

Note: *Development of cumulative frequency table and the Pareto chart is optional. These can be practiced at higher level facilities when the staff are well experienced with the PDCA approach. Instead, a line diagram (flow chart) could be used to see the trend of improvement through periodical data collection (see the next section).*

Session 6
Root cause analysis

SESSION OBJECTIVE			
At the end of the session participants will be able to: Conduct root cause analysis using the Fishbone diagram			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
▪ Introduce the Fishbone diagram as the tool for root cause analysis ▪ Explain the "Why- Because" method to identify the root causes of the contributing factors	▪ Power point presentation ▪ Group exercise ▪ Participatory discussion	▪ Fishbone diagram ▪ Flip paper	**Presentation**: 45:00 minutes **Exercise**: 75:00 minutes

Session facilitation process

Understanding the contributing factors

- After introducing the objectives of the session using PP: 6.1, explain the process of root cause analysis and develop a Fishbone diagram using subsequent PowerPoint slides.
- In the previous session, we discussed how to identify contributing factors of a problem. Contributing factors are the small problems, several of which lead to a big problem.
- This discussion will focus on root cause analysis of the contributing factors. Ask one/ two participants how they deal with a problem. Use P.P: 6.2 & 6.3.
- Brainstorm around:
  - Contributing factors
  - Root causes of the contributing factors
- The Fishbone diagram is a tool to analyze the root causes of a contributing factor. Introduce the fishbone diagram for root cause analysis. Show the Fishbone diagram on the PowerPoint slides and discuss how to use it by using P.P: 6.4 to 6.15

The root causes are identified through brainstorming in the group. Once the root causes are identified, they are grouped under **People, Place, Procedure, and Policy.**
Use the **"why-because"** method to identify the root causes.

Exercise: (PP: 6.16, 6.17 & 6.18)

- Ensure that participants are sitting in groups. Each group will work with one of the contributing factors identified in the previous session. The participants will brainstorm to identify the root causes using the "why-because" method and will group the root causes under People, Place, Procedure, and Policy as shown in the Fishbone diagram. Allow 75 minutes for the group work.
- At the end, each group will present their work. Initiate discussion to clarify the root cause analysis process.

Reading materials

Session 6: Root cause analysis

Low Birth Weight (LBW) babies are not receiving KMC service as per protocol.

Root cause analysis

Find the root causes of the contributing factors that were identified in the previous session:
"Eligible newborns are not referred from OBGYN ward"
"Eligible newborns are not referred from SCANU"

Introduction to the Fishbone diagram

- The Fishbone is a tool to identify the root causes of a contributing factor
- It connects effects and causes systematically and clarifies the relationship between effects and causes
- The root causes are identified through brainstorming in the group. Once the root causes are identified, group them under broader categories according to the work experience, such as **People, Place, Procedure, Policy (4P).**
    - **People:** Compile root causes related to staff knowledge and skills under this category
    - **Place:** Root causes related to physical environment (such as physical condition, water supply, electricity, smell, humidity) and working environment (workspace, accessibility to materials, arrangement)
    - **Procedure:** Put root causes related to the system of work, methodologies, and mechanisms under this category
    - **Policy:** Root causes related to the supply of materials, equipment, furniture and tools

Steps to analyze the root causes

- First, identify possible causes for the effect
- Classify the primary causes into the 4P categories
- Identify the secondary causes
- Avoid "resource shortage (money and manpower)" while analyzing the root cause

Way to find the root causes

Identify the root causes by asking, "Why is it happening?" Ask this question several times (5 times is recommended) for each possible cause listed on the primary branch, and branch them into secondary and tertiary causes.

Remarks on the development of the Fishbone diagram

If two contributing factors account for about 80% of problems, it is necessary to develop two Fishbone diagrams, one for each of the contributing factors.

- When initiating "Why–Because" 5 times, the current workplace needs to be considered

before searching the cause of others.

- While analyzing root causes, it is necessary to avoid blaming staff or other departments.
- Avoid stating "shortage of resources", such as "No money", "No staff", "No material" etc.
- Your experiences, knowledge, and information should be considered when identifying the root causes.

Fishbone diagram

The Fishbone diagram is one of the seven basic QoC tools. It is used to identify root causes. It clarifies cause and effect relationships with logical thinking by asking "why-because". By asking "why-because", one may reach the root causes.

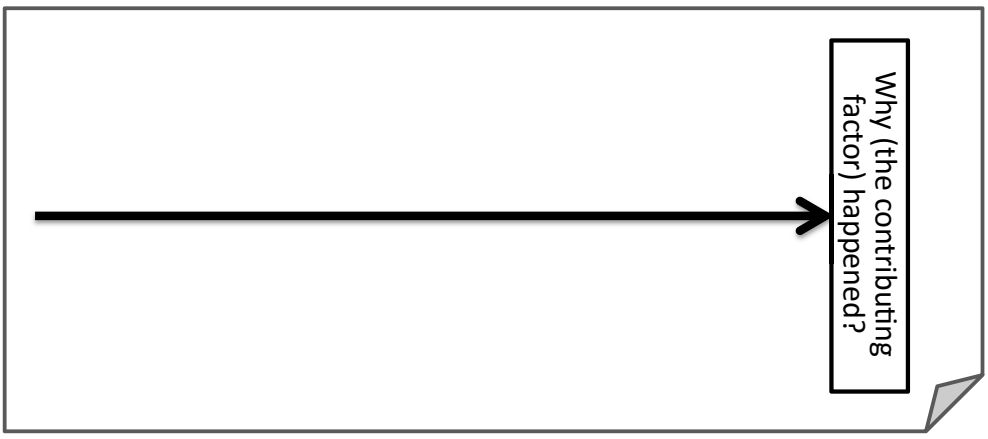
In the Fishbone diagram, the head of the 'fish' is the 'effect or contributing factor' that is identified from the situation analysis and Pareto chart. The effect in this case is one of the contributing factors responsible for the problem.

For example, the delivery room WIT selected the problem **"Low Birth Weight (LBW) babies are not receiving KMC service as per protocol".** First, they identified the "vital few" contributing factors eligible newborns are not referred from the OBGYN ward and the SCANU, this is responsible for 67% of the problem. As these two factors were identified, the fishbone analysis must be done for these two factors separately to find the root causes.

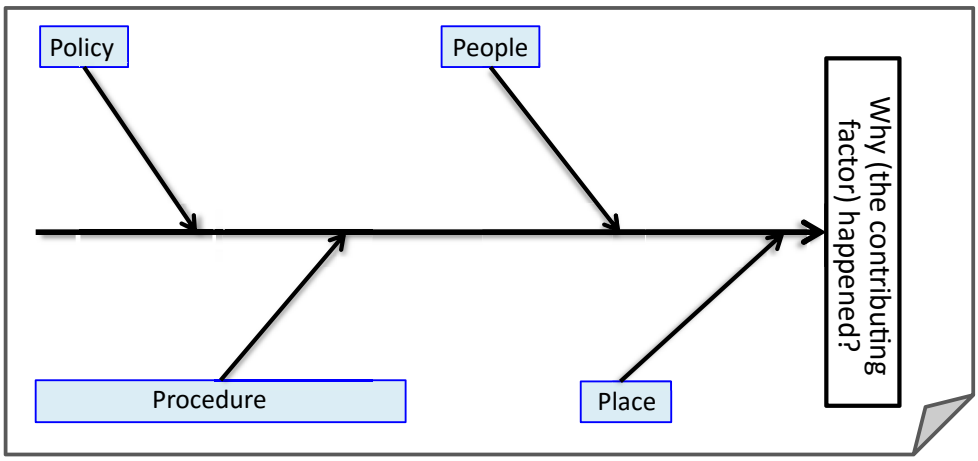
How to draw the Fishbone diagram

The Fishbone diagram looks like the skeleton of a fish. The process of identifying root causes through the Fishbone diagram is as follows (WHO. Improving the quality of care for mothers and newborns in health facilities. POCQI: Point of care quality improvement. Learner manual; 2017):

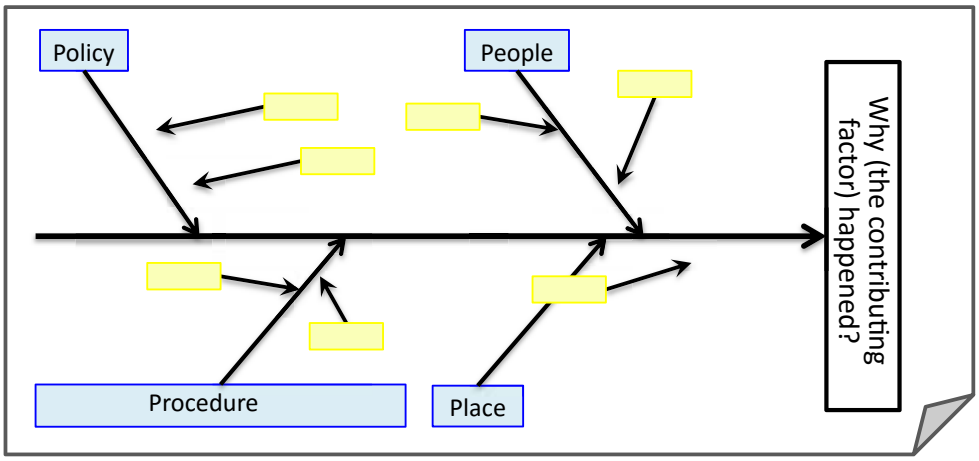
- Write the contributing factor previously identified in a box on the right-hand side of a large sheet of paper, and then draw a line across the paper horizontally from the box so that it looks like the head and spine of a fish.



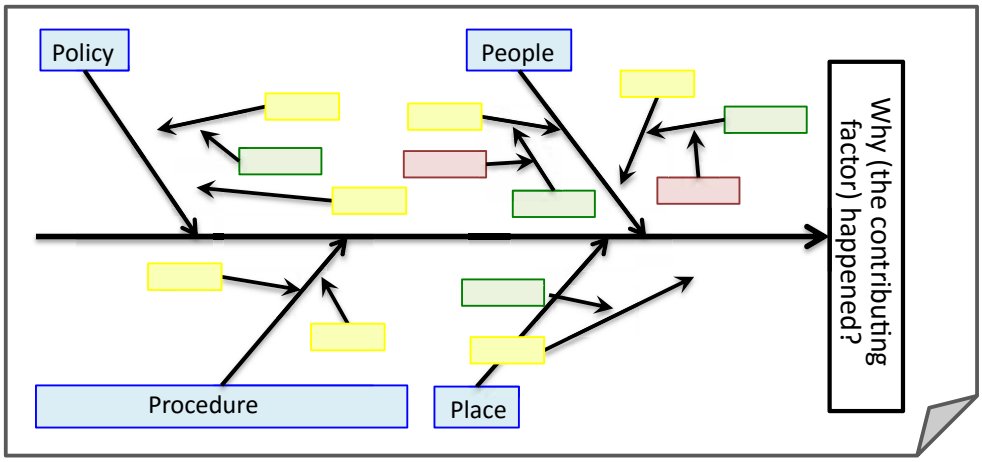
- Next, draw a line off the 'spine' of the fish and write down the factors. The factors may be different levels of the health system or building blocks of the system such as people (staffing), place (equipment), procedures, or policies.



- For each of the 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, it may be best to break it down into sub-causes. Show these as lines coming off each cause line.



- At this stage, the diagram would show several possible causes of the contributing factor.



- From here, the team should be able to develop actionable solutions. There may be many solutions. 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 systematic change.

Root cause analysis

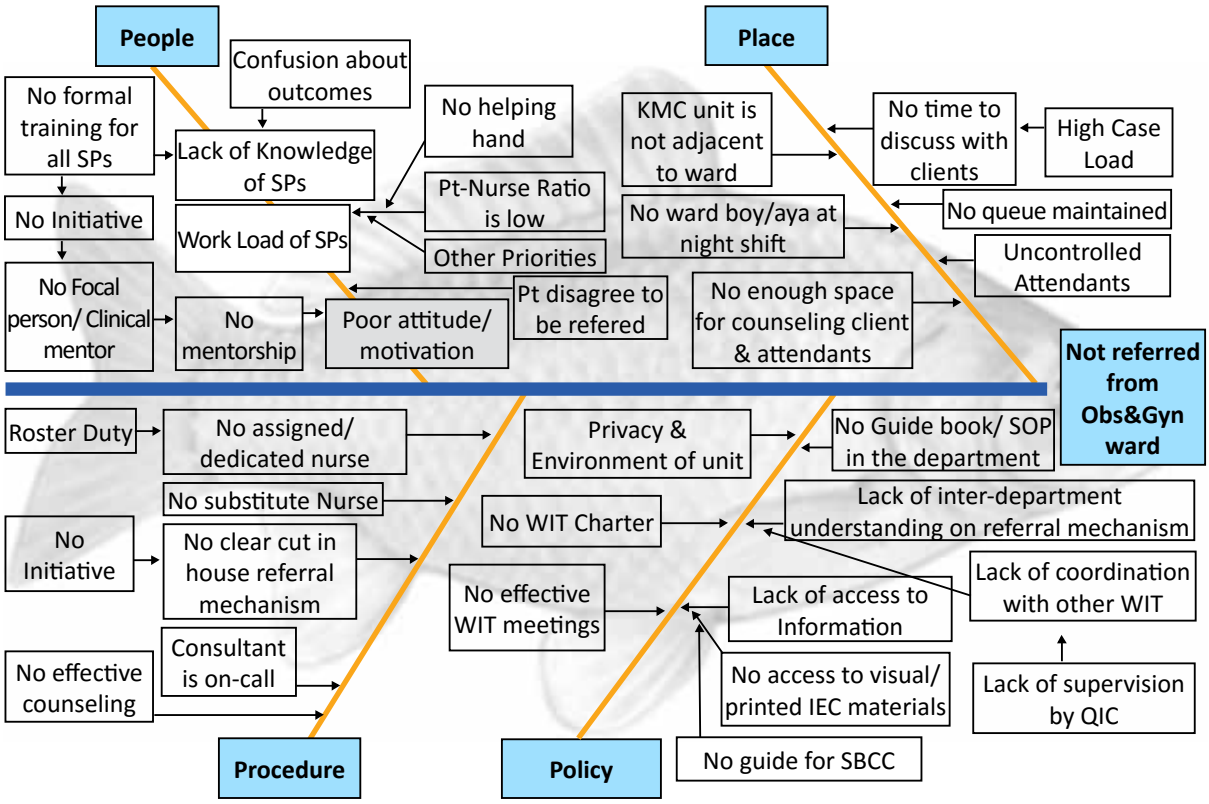


Figure 4: Fish bone diagram

Five whys

'Five whys' is also a tool to identify the root causes. Five whys involve asking 'why' a problem exists and then continuing to ask 'why' after each answer until a possible solution is identified.

Example

Suppose the pediatric WIT would like to bring more newborns under KMC services by increasing the referral number of eligible newborns from the Obs and Gyn ward to the KMC unit. Using the five "Whys" the team was able to understand that eligible newborns are not referred to the KMC unit because of lack of knowledge on KMC intervention. While analyzing the root causes, it was revealed that the only one Medical Officer and two Staff Nurses were trained on KMC intervention of the pediatric unit. The Nurse-in-charge and Gynae consultant were not trained in KMC intervention, thus the selection criteria and referral procedure are not known to them. The pediatric consultant did not address the problem as there was no mentor or focal point. The team members decided on a solution by nominating a focal point to orient the doctors and nurses of the Obs and Gynae WIT, so that they would be able to select eligible newborns and refer them to the KMC unit.

"Five whys"

- Staff do not refer eligible newborns to the KMC unit – why?
- They do not know why or how to refer to the KMC unit – why ?
- They do not know about the KMC intervention – why?
- They are not trained on KMC – why?
- A certain number of staff are capacitated on KMC. A good number of staff are beyond capacity – why?
- There is no focal point of the intervention to take initiative to sensitize nurses and doctors on KMC intervention

Session 7
Identification of interventions

SESSION OBJECTIVE			
At the end of the session participants will be able to: Identify interventions for the root causes using the tree diagram			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
How to identify the interventions by using the tree diagram	- PowerPoint presentation - Group exercise - Participatory discussion	- Flip paper - Marker - White board	**Presentation** 30:00 minutes **Exercise** 1:00 hour

Session facilitation process

- Introduce the objective of the session through slide 7.1. Once the root cause is identified, the interventions or countermeasures should be identified.
- Show slide 7.2 and 7.3 to discuss the ways and tips. Mention that the tree diagram is a tool to list interventions but a simple table to list the primary, secondary and tertiary interventions can also be used.
- Discuss interventions and introduce the tree diagram using power point, 7.4 to 7.8

Exercise (PP: 7.9)
Identification of interventions

- Participants will sit in groups. Each group will identify the interventions and present them in a tree diagram or simple table. Each group will be given 60 minutes to work.

Group presentation

- Each group will present their interventions either in the tree diagram or in a simple table. Afterwards, a discussion should be initiated to clarify the issues and processes.

Reading materials

Session 7: Identification of interventions

Most team members or individuals are eager to reach this step: the solution! This is the entire reason for the quality improvement effort – to make things better. The objective of this step is to develop a solution that solves the problem by eliminating its causes. Developing solutions is not always a straightforward task, and many solutions fail because they were not carefully through before implementation. This is not the time to rush to a solution given all the effort that has been invested in selecting and analyzing the problem. The best approach is to be open and think creatively.

Identify interventions to solve the root causes by using the tree diagram

How to make a tree diagram

1. Write all the identified root causes on the left
2. Brainstorm the root causes individually in order to identify the best interventions
3. State the solution in a practical, feasible manner

Some possible criteria for choosing a solution or an intervention:

- Affordable to implement
- Free from conflict with other processes or activities
- Feasible to implement
- Have management support
- Efficient
- Addresses root causes
- Timely

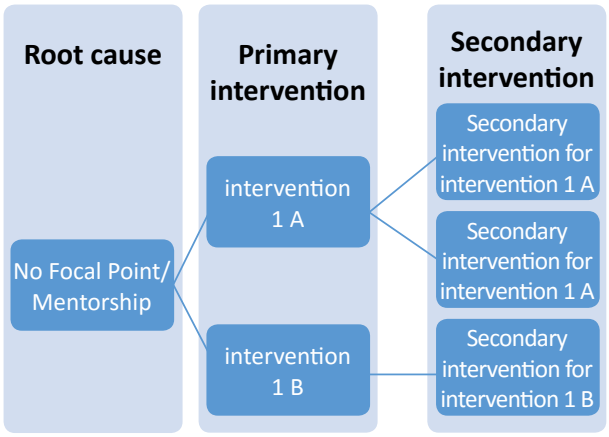


Figure 5: Sample of a Tree Diagram

Primary line interventions

- Clarify ideal situation towards root cause
- Connect the line with each root cause systematically

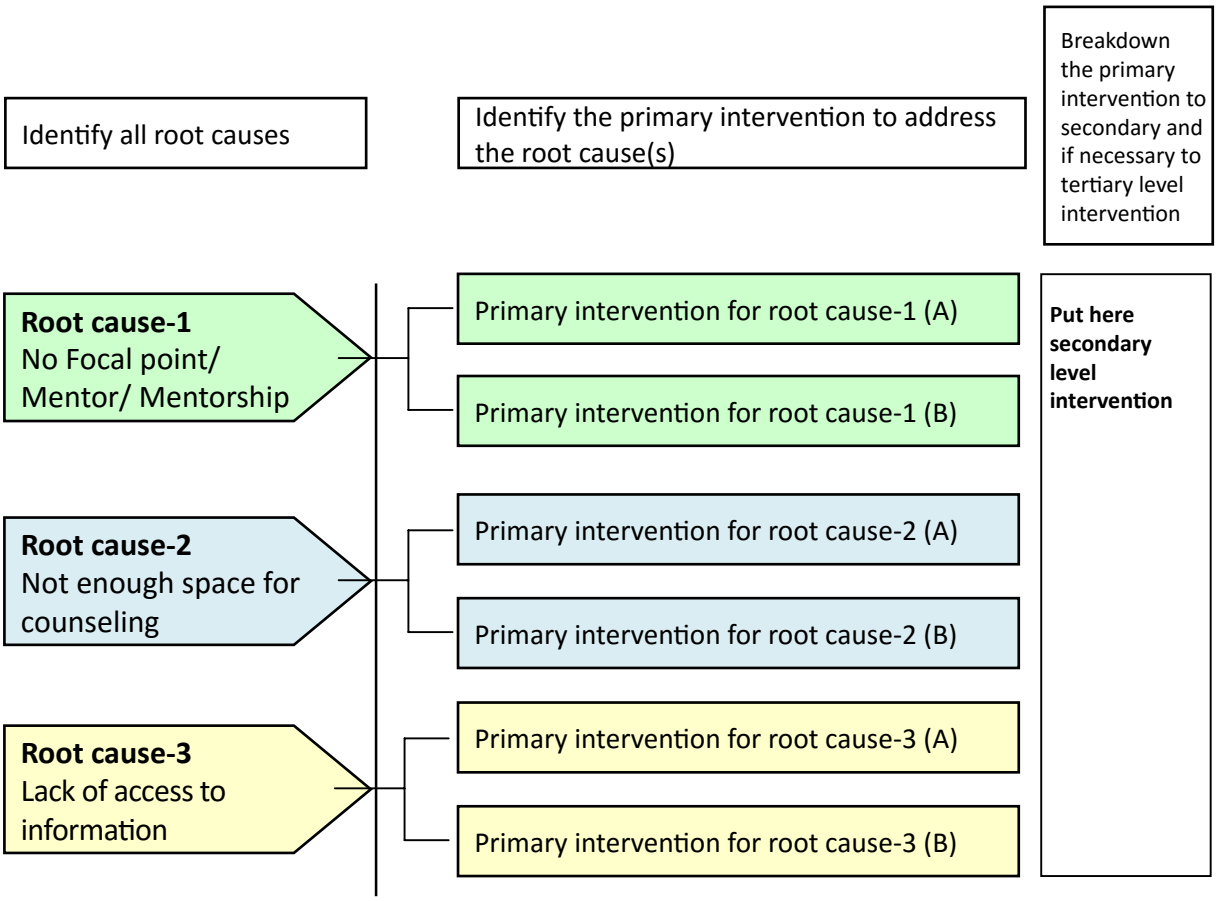
2nd line interventions

- Discuss in detail activities to achieve the primary interventions

If the identified interventions are not clear, they can be broken into 3rd line interventions

- Consider the effective use of available resources; avoid interventions that require many resources
- Discuss interventions that can be implemented by your own department

Tree diagram: Identification of interventions



Root cause(s)

Formal training is absent due to an unidentified focal point in the pediatric ward

Interventions

Primary: Formal training will be conducted

Secondary: The focal point will be identified by the WIT in the QIC meeting and the QIC will monitor and supervise this process

Root cause(s)

There is not enough space for counselling in the ward

Interventions

Primary: Initiative will be taken to find space

Secondary:

- '5S' will be applied to find space
- A coordination meeting will be held with store WIT
- A table, chairs and IEC materials will be arranged for counseling at the chosen site

Session 8
Implementation of interventions

SESSION OBJECTIVES			
At the end of the session participants will be able to: 1. Develop an action plan based on interventions identified 2. Develop the monitoring checklist for the action plan to measure the progress			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
▪ Develop an action plan for implementation of interventions ▪ Action plan monitoring check list	- Power point presentation - Group exercise - Participatory discussion	- Checklist - Flip paper - Marker	**Presentation:** 45:00 minutes **Exercise:** 45:00 minutes

Session facilitation process

- Explain the objectives of the session using PP: 8.1.
- Ask the participants how they develop & use action plan as they have WITs & QICs.

Action plan

- Discuss the action plan and how one is prepared to implement the interventions using PP: 8.2 to 8.5

Development of monitoring checklist

- Ask the participants how implementation is monitored.
- Discuss the checklist and how it is developed and used by using PP: 8.6
- Participants should develop a checklist.

Exercise (PP: 8.7 to 8.9)

- Participants will sit in previous groups. Each group will develop an action plan and monitoring checklist using the following format. Allow 45 minutes for group work.

Group presentation

- Each group will present their action plan and monitoring checklist. Initiate discussion on presentations for more clarification.

Action plan format

Sl no.	Interventions	Who	When	Where

Reading materials

Session 8: Implementation of interventions

Putting the implementation plan into action involves carrying out the ordered steps outlined below, implementing the change itself, and collecting the information that will indicate success. Teams should establish check points periodically to verify that implementation is going as planned and to communicate progress to all those involved. Teams should also be ready to provide encouragement and assistance as needed.

Initiatives for this step

- Review the objectives of the solution(s)
- Develop an action plan
- Share the action plan with section staff (including WIT) and QIC
- Identify the potential resistance
- Determine the prerequisite(s) of the implementation
- Develop a step-by-step guide to implement the action plan (time for implementation is about 2 to 3 months, while the total time for one PDCA cycle is about 6 months)
- Assign responsibility for each activity
- Determine what information is needed to monitor progress of implementation using a checklist

Ways to enhance progress

Display the action plan on a notice board to:

- Remind staff of implementation
- Promote participation
- Conduct periodic monitoring with the checklist

Example of an action plan

Sl no.	Interventions	Who	When	Where
	Formal training to be conducted • Focal point will be identified by the WIT in the QIC meeting. Agenda will be set accordingly • Periodic monitoring and supervision by the QIC	Nursing supervisor By QIC focal point	15-25 January	In Obs & Gyn ward At monthly QIC meeting
	Staff space for counseling • '5S' will be conducted • Coordination meeting with store WIT • Arrangement of furniture & IEC materials	WIT members	1 - 28 February	Obs & Gyn nurse station

Monitoring progress of implementation

- Develop monitoring checklist with:
  - Date of monitoring
  - Name of the person responsible for monitoring
  - Progress of monitoring

- Use the checklist for monitoring

- Utilize results of monitoring:
  - Continue proper implementation
  - Re-plan and implement any delays in implementation
  - Clarify reason(s) for difficulties in implementation

Example of a monitoring frame

Sl. no	Action plan				Monitoring		
	Interventions	Who	When	Where	Date of monitoring	Who	Progress
	Formal training to be conducted: ▪ Focal point will be identified by the WIT in the QIC meeting; agenda will be set accordingly ▪ Periodic monitoring and supervision by the QIC ▪ Periodic refresher for staff on KMC	Nursing supervisor	15-25 January Periodic Need based	In Obs & Gyn ward At monthly QIC meeting In Obs & Gyn ward			
	Staff space for counseling: ▪ '5S' will be conducted ▪ Coordination meeting with store WIT ▪ Arrangement furniture & IEC materials	WIT members	1 - 28 February	Obs & Gyn nurse station			

Session 9
Checking effectiveness of interventions

SESSION OBJECTIVES			
At the end of the session participants will be able to: 1. Check the effectiveness of interventions 2. Develop a run chart 3. Identify effective interventions for standardization			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
▪ Check effectiveness of interventions using a run chart ▪ Identify effective interventions for standardization	▪ PowerPoint presentation ▪ Group exercise ▪ Participatory discussion	▪ Flip chart paper ▪ Marker ▪ White board	**Presentation:** 45:00 minutes **Exercise:** 45:00 minutes

Session facilitation process

- Explain the objectives of the session using PP: 9.1.
- Ask the participants how they monitor the action plan they have developed.
- Explain the evaluation process of the effectiveness of the interventions using PP: 9.2 to 9.5.

Check effectiveness of interventions using PP: 9.2

The effectiveness of the intervention should be checked by tracking indicators. For measuring progress:

- Review data collection methods in Step 2 under PDCA
- Collect data according to methodology: same data, same data source, same methodology, same period of data collection
- Compare frequency before and after PDCA and calculate incremental reduction/ increase rate
- Make a run chart to see the trend over time
- Check achievement against the target set earlier in the aim statement

Data were collected after implementation of interventions using the same methodology that has been used in step 2 and is displayed in the following table:

Development of monitoring table (Frequency table):

Contributing factors	Frequency
Newborns meeting the criteria are not referred from the OBGYN ward	4
Newborns meeting the criteria are not referred from SCANU	5
Newborns meeting the criteria are not admitted from the outpatient department	4
Refusal of/ resistance to referral by the family	2

Now compare the data before and after PDCA

Example: Effectiveness of interventions (situation before and after PDCA)

Sl no.	Contributing factors	Frequency (Not Refer)		Frequency reduction	% Reduced
		Before PDCA (b)	After PDCA (a)		
1	Newborns meeting the criteria are not referred from the OBGYN ward	16	4	12	75%
2	Newborns meeting the criteria are not referred from the SCANU	10	5	5	50%
3	Newborns meeting the criteria are not admitted from the outpatient department	8	4	4	50%
4	Refusal of or resistance to referral by the family	5	2	3	60%
	Total:	**39**	**15**	**24**	**61%**

Exercise (PP: 9.6 & 9.7)

Participants will sit in previous groups. Each group will have hypothetical data for the exercise (for this exercise only. Participants will go back to the facility and will collect actual real time data) in the shared format. Participants will be allowed 45 minutes for group work.

Group presentation

Each group will present their respective plan to the bigger audience and explain their achievement.

Reading materials

Session 9: Checking the effectiveness of interventions

- Review data collection method in Step 2
- Collect data according to methodology:
  - Same data
  - Same data source
  - Same methodology
  - Same period of data collection
- Compare frequency before (b) and after (a) PDCA as shown in the table and figure below
- Calculate incremental reduction/ increase rate
- Create a run chart to see the trend over time
- Check achievements against the target set earlier in the aim statement

Example: Effectiveness of interventions (situation before and after PDCA)

Sl no.	Contributing factors	Frequency (Not Refer)		Frequency reduction	% Reduced
		Before PDCA (b)	After PDCA (a)		
1	Newborns meeting the criteria are not referred from the OBGYN ward	16	4	12	75%
2	Newborns meeting the criteria are not referred from SCANU	10	5	5	50%
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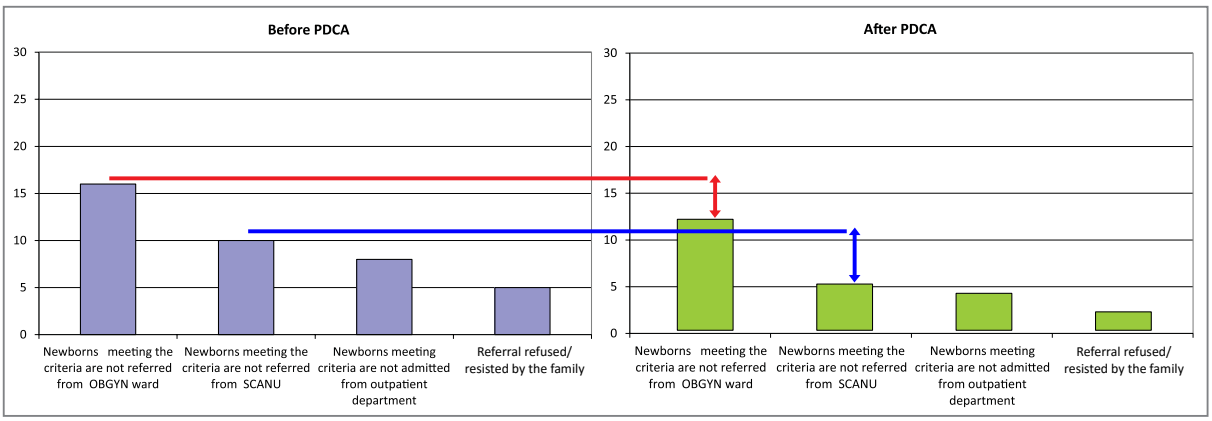
4	Refusal of or resistance to referral by the family	5	2	3	60%
	Total:	**39**	**15**	**24**	**61%**

The situation before and after PDCA can also be portrayed using a graph.



Development of a run chart

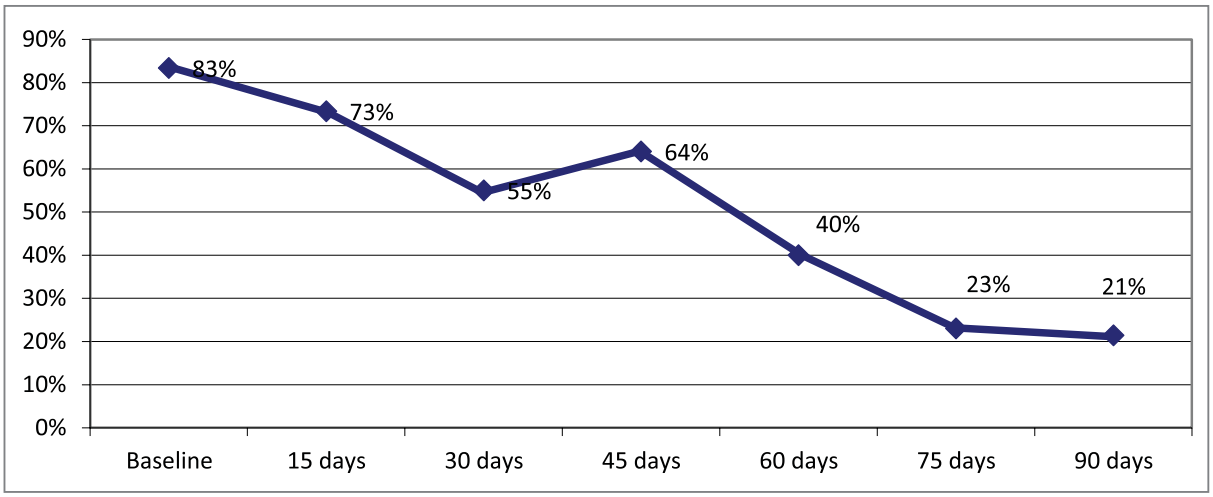
A run chart is a line diagram. To make a run chart, data should be collected repeatedly and the indicator calculated over a specific time interval (e.g. every 7 days or every month) to see the achievement.

Example: suppose the WIT decided to collect data on referral cases every 15 days to monitor the progress. They collected data from delivery registers & KMC registers on a periodic basis and calculated the percentage where eligible newborns were not referred. The results are provided in the following table:

Time of data collection	Total no. of eligible newborn	No. of eligible newborns not referred to KMC	% of eligible newborns not referred to KMC
Baseline	12	10	83.33%
15 days after intervention	15	11	73.33%
30 days of intervention	20	11	55.00%
45 days of intervention	25	16	64.00%
60 days of intervention	10	4	40.00%
75 days of intervention	13	3	23.00%
90 days of intervention	14	3	21.42%

Based on the above information, a run chart is developed (below). The run chart shows that the percentage of time staff did not refer to the KMC unit declined from 83.33% to 21.42% over a period of 3 months. If we compare with the target (to achieve 50% referral), we have achieved 78% (as 22% still didn't refer to the KMC unit).

Run Chart to show reduction of problem



Session 10
Standardization of effective interventions

SESSION OBJECTIVES
At the end of the session participants will be able to: 1. Describe the importance of standardization of effective interventions 2. Develop a standardized procedure table and a progress checklist

DISCUSSION POINTS	METHODS	MATERIALS	DURATION
▪ Discuss the importance of standardization of effective interventions ▪ Discuss the progress checklist	▪ PowerPoint presentation ▪ Participatory discussion	▪ Power Point	**Presentation:** 45:00 minutes **Exercise:** 45:00 minutes

Session facilitation process

Standardization of effective interventions

- Explain the objectives of the session using PP: 10.1.
- Ask the participants: how they maintain standards.
- Discuss standardization by using the PowerPoint (PP: 10.2 & 10.3). Objectives of standardization are to maintain the "good effects" in the workplace and eliminate waste continuously in terms of cost and workload.
- Two parts of standardization (use PP: 10.3):
  - Development of an implementation plan and checklist
  - Practice standardized activities for sustainability
- Discuss the benefits of standardization (use PP: 10.4)
  - Reduces variability & easier to train new staff
  - Reduces strain and injuries (ensures safety for internal/ external clients)
- Discuss the process of standardization (use PP: 10.5 to 10.10)
  - List all effective interventions identified in the previous step
  - Adaptation of successful intervention(s) as standard to replicate where needed after proper documentation
  - Develop a checklist to assess the progress of implementing standardization activities
  - Share the plan and checklist with all staff in the department
- Participants will do exercise for fixing standard interventions (use PP: 10.11 to 10.13)

Action plan format

Sl no.	Interventions	Who	When	Where

Reading materials

Session 10: Standardization of effective interventions

Objectives of standardization

- Maintain the "good effects" in the workplace
- Eliminate waste continuously in terms of cost and workload

Standardization

Standardization is the process of making something conform to a standard. At this stage we want to adapt the activities which were found to be effective in reducing or eliminating the problems. Standardization is done in two steps:

- Development of an implementation plan and a checklist
- Practice standardized activities for sustainability

Discipline is the key for successful standardization of effective interventions

Benefits of standardization

- Reduces variability
- Easier to train new staff
- Reduces strain and injuries (ensures safety for internal/ external clients)
- Easier to continue the practice that has been identified
- Reduces time for completing task
- Increases the confidence of the staff to make positive changes
- Increases staff motivation

Process of standardization

1. List all the effective interventions identified in the previous step
2. Adaptation of successful intervention(s) as standard to replicate where needed after proper documentation
3. Develop a checklist to assess the progress of implementing standardized activities
4. Share the plan and checklist with all staff in the department

Some important points for successful standardization

- Share the standardized procedures and its checklist with all staff in the department. If necessary, provide orientation on new systems during the WIT meetings.
- Consider effective ways of sharing the Standard Procedure:
    - Display the standardized procedures on a commonplace in the department (e.g. notice board)
    - Disseminate how to use the checklist
    - Keep the documents (e.g. strategy, guidelines) in the workplace where the procedures are practiced
    - Remind staff about strategies or guidelines periodically (e.g. during the WIT meetings)
    - Orient new staff on standardized procedures

Action plan format for interventions implementation:

Sl no.	Interventions	Who	When	Where
1.	Display the inclusion & exclusion criteria for KMC interventions	Delivery room in-charge	Immediately	Delivery room (newborn resuscitation area)
2	Discuss the importance of KMC and how to disseminate information in WIT meetings	WIT leader	Every alternative meeting	Meeting room
3.	Conduct a periodic refresher for staff on KMC protocol	Focal Point	Every 6 months	Training room

Checklist for monitoring progress

Standardized Interventions	Progress		Date of checking	Checked by	Remarks
Display the inclusion & exclusion criteria for KMC intervention	□ Sustained □ Not sustained	□ Followed Standards □ Did not follow Standards			
Discuss the importance of KMC and how to disseminate information in WIT meetings	□ Sustained □ Not sustained	□ Followed standards □ Did not follow standards			
Conduct a periodic refresher for staff on KMC protocol	□ Sustained □ Not sustained	□ Followed Standards □ Did not follow Standards			

Session 11
PDCA project presentation by the groups

SESSION OBJECTIVE			
At the end of the session participants will be able to: Present their PDCA project to other participants			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
▪ PDCA project presentation	▪ Group presentation	▪ PowerPoint/ flip paper	2 hours 15 min

Session facilitation process

Presentation by the groups

- Participants will work in the same group, which was formed on the first day. Each group will compile the exercises that they have done in the training. The problem that they have selected will be their own PDCA project after going back to their own facility. Groups can use any material for presentation of their PDCA project (flip paper or PowerPoint presentation).

- Each group will prepare their project involving the group members. Allow one hour for preparing the presentation. Ensure necessary logistics, such as flip paper, marker, or laptop for group presentation.

- After completion of group work, each group will present their project. Duration of each presentation is 15 minutes. After the presentation of a group, initiate discussion for clarification.

- After the presentation of all groups, encourage questions from the participants. Then, respond and close the session.

Session 12

Development of action plan/ QI initiative for the health facility

SESSION OBJECTIVE			
At the end of the session participants will be able to: Develop their action plan for implementation of a PDCA project developed during the training			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
▪ Develop an action plan for implementation of the PDCA project ▪ Action plan presentation	▪ Group work	▪ Action plan format	30:00 minutes

Session facilitation process

Develop an action plan

Example of an action plan

Action plan by the participants/ hospital

Action Plan by the participants/ hospital	
Name of Hospital:	'**X**' district hospital
Problem identified/ PDCA theme:	Waste disposal is improved in OGBGYN ward
Indicator:	Percentage of times (observed) waste was disposed inappropriately (no segregation at source) in the OBGYN ward

Activity	Who	When	Where
Data collection & development of Pareto chart	Ward in-charge	April '17	OBGYN ward
Root cause analysis	WIT	Done	OBGYN ward
Identification of interventions & action plan development	WIT	Done	OBGYN ward
Implementation of the plan	WIT, Focal person	May-June '17	OBGYN ward
Data collection after intervention	Ward in-charge	July '17	OBGYN ward
Calculate effectiveness and develop run chart	Consultant, MO, Ward in-charge	July '17	OBGYN ward

Session 13
Monitoring and evaluation of PDCA activities

SESSION OBJECTIVES			
At the end of the session participants will be able to: ▪ Monitor and evaluate their PDCA activities ▪ Use M&E tools for PDCA activities			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
▪ Discussion on importance of monitoring & evaluation. ▪ Discussion on M&E tools & its use	▪ Power point presentation ▪ Participatory discussion	▪ PowerPoint	**Presentation:** 25:00 minutes **Discussion on M&E tools:** 20:00 minutes

Session facilitation process

- Ask the participants whether there is any M&E system in their facility
- If 'yes' then how is it done? Listen to them
- If they do that, ask them whether it is important and what its end product is
- Discuss the monitoring & evaluation process for the PDCA process of a facility by using PP: 13.1 to 13.5
- Discuss the roles & responsibilities of the QIC & WIT regarding M&E using PP: 13.6 to 13.8
- Share the M&E format using PP: 13.9

Reading materials

Session 13: Monitoring and evaluation of PDCA activities

What is monitoring ?

Monitoring is a process to assess the advancement and constraints of work process. It should be conducted in a regular manner with standardization. Various checklists can be utilized for this purpose. The information obtained from the monitoring is used in the decision-making process amendment and/ or adjustment of the resource input for the smooth implementation of the work.

What is evaluation ?

Evaluation is generally an activity to review the entire process of the work for extracting lessons learnt both on positive and negative outcomes. The outcomes are thereafter analyzed to formulate a better plan of action in the forthcoming phase of the work. In the context of hospital management, in general, a quarterly review of the management targets such as productivity, quality of service, cost control, delivery of services, safety issues and morale of the workforce is considered as the evaluation activities.

Objectives of M&E

Objectives of monitoring and evaluation is to unearth some answers:

(1) Is the taken project moving well?
(2) Are the planned interventions delivered in the right intensity and in the right way
(3) Are the interventions effective in improving the quality of health care?
(4) What are the determinants to affect the effectiveness of interventions?
(5) What type of resources and support are needed?

Monitoring and evaluation is important in assuring the delivery of interventions and generating lessons for improving the performance of concerned team.

Importance of M&E

Monitoring and Evaluation (M&E) is crucial in QI programs/ approaches. It is particularly so due to the fact that it:

- Assists health managers, directors, program managers/ staff, and others in the health sector in performing the day-to-day management of health facilities and programs.
- Provides information for strategic planning, design and implementation of health interventions and programs.
- Assists in making informed decisions on the prudent use of meager resources.
- Helps to improve performance by identifying those aspects that are working according to plan, and those aspects which need a mid-course correction.
- Tracks changes in services provided and in the desired outcomes.

- Assists to better the human condition in terms of providing a safe working environment, and improved health status.
- Puts up a system for transparent accountability.

The tasks associated with monitoring and evaluation include:

- Determining quality indicators that must be in line with the specific objectives of the interventions and are measurable and meaningful
- Developing measurements that gauge the intensity and coverage of interventions
- Identifying hypothetical factors that may influence the effectiveness of interventions in improving healthcare quality
- Designing tools for collecting data associated with the project, and influencing factors
- Specifying methods of data gathering (e.g. periodic vs. routine or using existing health information system vs. program specific information system)

It is important to note that there is not a clear-cut boundary among planning, implementation and evaluation. Any program or project starts from planning, but once the plan gets implemented, monitoring and evaluation should be activated and conducted along with the implementation thereafter; once the overall plan gets implemented, sub-planning activities follow, and they are continuous activities throughout the program implementation.

Interaction between PDCA implementation and M&E

There are two things depicted here, which needs to be focussed on. Firstly, M&E is a continuous process; and secondly, PDCA is a continuous process and not a one of activity and should be done on a daily basis.

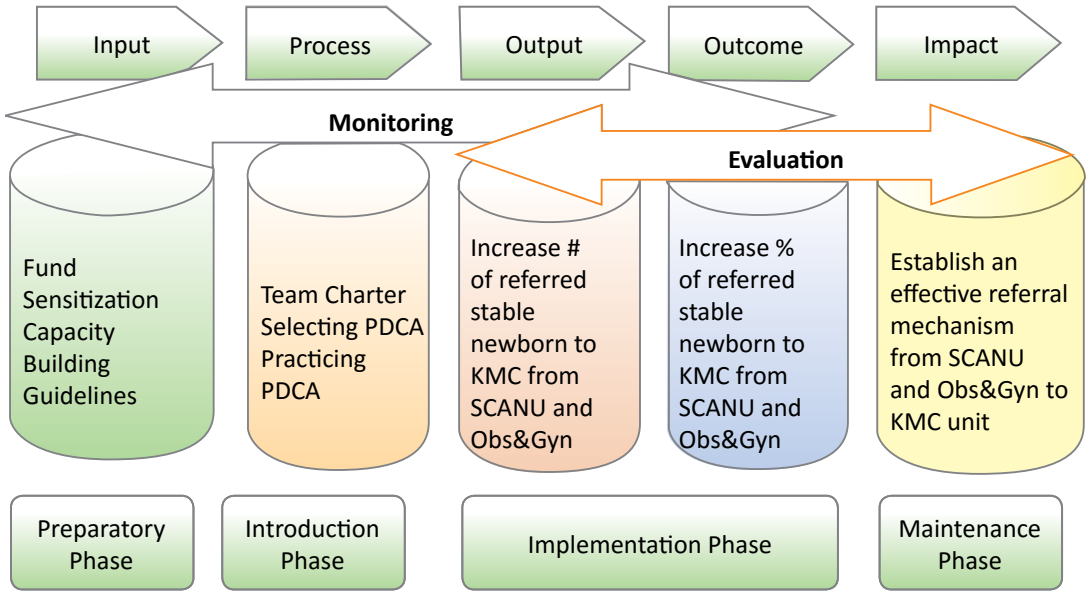


Figure 6: Interaction between PDCA Implementation and M&E

The most important input for PDCA activities is health workers that practice PDCA activities. PDCA starts from a clear understanding of health workers. Thus, sensitization/ orientation/ training and teaching materials are considered as input. After "Input" resources are established,

it is necessary to build the capacity of health workers/ managers. Then, PDCA activities need to be practiced in the health facility. Due to the practice of PDCA activities, it is expected that there will be an improvement of referral number of stable low birth weight newborn to KMC unit from Obs & Gyn wards and from SCANU. Therefore, in expected output is an increase of the number of referred newborns to KMC unit due to the PDCA project. Afterwards, continuation of the project will increase the number of referral of low birth newborn from Obs & Gyanae ward to SCANU. This will establish an effective referral mechanism from the Obs & Gynae wards to SCANU and KMC unit at the health facility. To achieve this set goal, regular monitoring, mentoring and recognition of health workers and evaluation of PDCA project activities are essential.

Who will monitor and evaluate the PDCA activities:

- Hospital Management
- Quality Improvement Committee (QIC)
- Work Improvement Team (WIT)

Levels of monitoring and evaluate the PDCA activities:

Internal monitoring and evaluation by the Quality Improvement Committee (QIC)

QIT is responsible for conducting and evaluating PDCA activities within the health facilities. QIT monitors and evaluates its own activities and visits sections/ departments periodically that are implementing PDCA activities. Visit sections/departments and provide technical advices, through coaching and mentoring, to Work Improvement Teams (WITs). During the monitoring of PDCA activities at section or department level, the QIC needs to observe the following issues:

- Performance of the WITs
- Leadership
- Team charter
- Tools appropriateness
- Record keeping (pictures, minutes of meeting etc.)
- Progress of PDCA activities
- Feedback
- Necessary response to WIT

Self-monitoring by Work Improvement Team (WIT)

Work Improvement Team (WIT) has a responsibility to monitor the day-to-day PDCA activities practiced within its work place.

- Time frame of PDCA cycle implementation
- Action plan (developed in step 5) implementation status
- Achievement (improvement, situation before and after PDCA in step 6)
- Sustainability of standardized activities (Step 7)
- Progress of PDCA activities must be documented and the results must be shared within the department/sections. The WIT also needs to communicate the results to the QIC and develop its own checklist.

Monitoring and evaluation in PDCA cycle

- M&E is already in the PDCA process
- M&E of these steps should be led by WITs

Step 5 : Checking the progress of implementation of identified Interventions

Step 6 : Measuring the effectiveness of interventions before and after implementation

Step 7 : Checking sustainability of effective interventions

Tools used for monitoring and evaluation of 5S-CQI-TQM

To ensure effective implementation of the PDCA approach, useful tools are required. Tools developed by the QIS are:

- Facility assessment tool for 5S: Baseline and progress of 5S implementation
- WIT performance monitoring tool in regards to 5S implementation
- Facility level indicators (FLI) for input and process: Baseline and further
- Key performance indicators (KPI) for selective outcomes: Baseline and further

Session 14
Training evaluation and closing

SESSION OBJECTIVES			
At the end of the session participants will complete evaluation of the training course.			
DISCUSSION POINTS	**METHODS**	**MATERIALS**	**DURATION**
▪ Form filled up ▪ Discussion	- Form filled up	- Form	30:00 minutes

Session facilitation process

Training evaluation

- Distribute the evaluation form to the participants, explain what will be done with the information, and ask them to complete it. Allow 15 minutes time, then collect the forms.
- Close the training program as per plan of the organizer.

Training Course Evaluation Form (To be filled up by the trainees)

Name of the Training Course : _____

Date : _____

Instructions: Please rate your level of agreement with each of the following statements. 5 is the highest level of agreement.

Course		1	2	3	4	5
■	The objective of the training was clearly defined	❑	❑	❑	❑	❑
■	The course content met my expectations	❑	❑	❑	❑	❑
■	Participation and interaction were encouraged	❑	❑	❑	❑	❑
■	The topics covered were relevant to me	❑	❑	❑	❑	❑
■	The contents were organized and easy to follow	❑	❑	❑	❑	❑
■	The training experience will be useful in my work	❑	❑	❑	❑	❑
Training Process						
■	Training received was adequate for my position	❑	❑	❑	❑	❑
■	Instructional methods used during mentoring were effective	❑	❑	❑	❑	❑
■	Provided training materials were clearly and accurately written	❑	❑	❑	❑	❑
■	Training was provided in a timely manner	❑	❑	❑	❑	❑
Structure of the training						
■	The usefulness of the information received in training	❑	❑	❑	❑	❑
■	The structure of the training session(s).	❑	❑	❑	❑	❑
■	The pace of the training session(s)	❑	❑	❑	❑	❑
■	The convenience of the training schedule	❑	❑	❑	❑	❑
■	The usefulness of the training materials	❑	❑	❑	❑	❑
Trainer/ Mentor						
■	How knowledgeable was the facilitator on the subject matter?	❑	❑	❑	❑	❑
■	Did the facilitator explain the concepts clearly and in an understandable way?	❑	❑	❑	❑	❑
■	How did the facilitator handle questions that were asked?	❑	❑	❑	❑	❑
■	How would you rate the facilitation skills overall	❑	❑	❑	❑	❑
Overall						
■	How do you rate the training overall ?	❑	❑	❑	❑	❑
■	**Your suggestions**					
■	**Additional Comments**					

References

- MOH&FW. Strategic Planning on Quality of Care for Health Services Delivery in Bangladesh; 2015.
- WHO. Improving the quality of care for mothers and newborns in health facilities. POCQI: Point of care quality improvement. Learner manual; 2017.
- WHO. Standards for improving quality of maternal and newborn care in health facilities; 2016.
- USAID ASSIST/URC Project. Training materials for capacity development of the National Resource Pool on Quality Improvement, Dhaka, Bangladesh; 2017.
- Directorate General of Health Services. TQM Unit of Hospital Services Management. MOH&FW. Total quality management in hospital services
- Ministry of Health and Social Welfare, Tanzania. KAIZEN Handbook for Health Facility: Pocket guide for Facilitators 978-9987-737-10-9

Power point slides

PDCA Manual for Quality Improvement

Quality Improvement Secretariat
Health Economics Unit
Health Services Division
Ministry of Health & Family Welfare
www.qis.gov.bd

USAID
আমেরিকার জনগণের পক্ষ থেকে

MCHIP Maternal and Child Health Integrated Program

SESSION 1

Welcome, introduction, objectives and group formation

Objectives of the training

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

- Explain PDCA approach for improvement of quality of hospital services
- Practice PDCA approach including the use of appropriate tools (matrix diagrams, Pareto charts, fishbone diagrams, flowcharts and run charts) to solve hospital problems to improve quality of services
- Based on the steps of the PDCA approach, design a draft quality improvement initiative to be implemented by the participants in their respective hospitals and develop a work plan for implementation
- Through this workshop, the participants will also learn to work as a team and will commit together to work for a common goal for improving the quality of health care

PP:1.1

Prerequisites of undertaking the PDCA approach in a health facility setting

- Formation and activation of Quality Improvement Committee (QIC) at the facility level
- Formation of independent Work Improvement Teams (WIT): PDCA approach involves a team approach to problem solving. To begin, designate a team leader and team members and think about the following:

  - Are the QICs and WITs sensitized to the approach?
  - Does the team have the right people (i.e. those who are directly involved with the area needing improvement)?
  - Does the team have the capacity to address the process?
  - Who will facilitate the team and the process?

PP:1.2

Roles and responsibilities of the WITs

- Improving the quality of care at their facility
- Problem identification
- Problem solving
- 5S/ PDCA implementation
- Holding regular meetings
- Identifying problems in their sections
- Preparing PDCA action plan using innovative ways to reorganize
- Presenting the PDCA action plan that they are going to take up at the QIC meeting
- Trying and solving the problem using the action plan and existing resources
- Taking pictures to demonstrate changes (before and after) in their respective sections
- Seeking support from the QIC for problems the WIT cannot solve

PP:1.3

SESSION 2

Overview of quality improvement

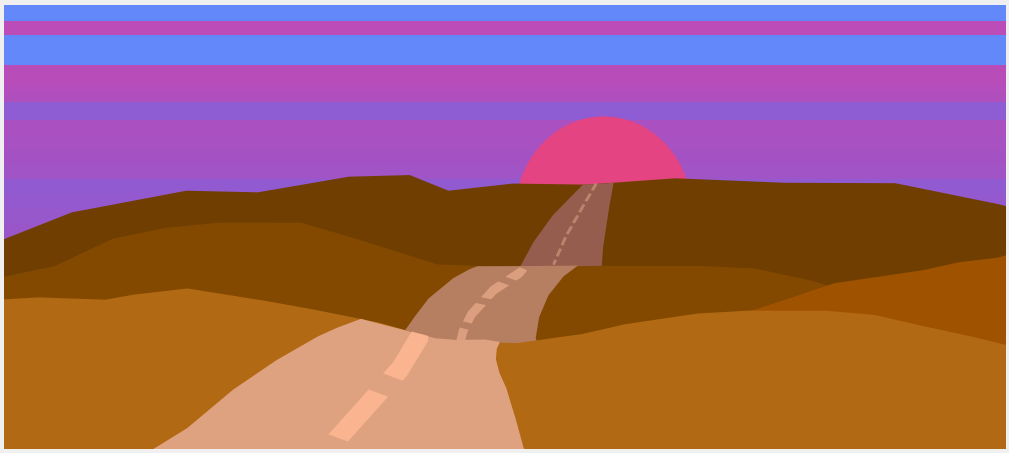
Objectives of the session

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

- Describe what quality of care and its dimensions are
- Describe the basic concepts of 5S approach
- Describe the linkage between 5S approach, CQI (PDCA cycle) and TQM for quality improvement

PP:2.1

Quality is a journey, not a destination



PP:2.2

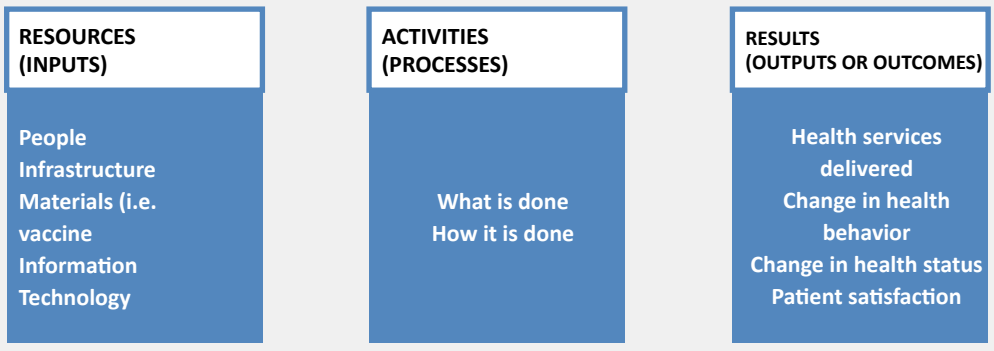
Definition of quality of care

Quality of care is defined as the extent to which health services provided to individuals and populations improve desired health outcomes. In order to achieve this, health care needs to be safe, effective, timely, efficient, equitable, and people-centered.

PP:2.3

Quality improvement

Quality improvement (QI) consists of systematic and continuous actions that lead to measurable improvement in health care services and the health status of targeted patient groups.



Source: Donabedian (1980) Input/Structure –Processes –Outcome/Output

PP:2.4

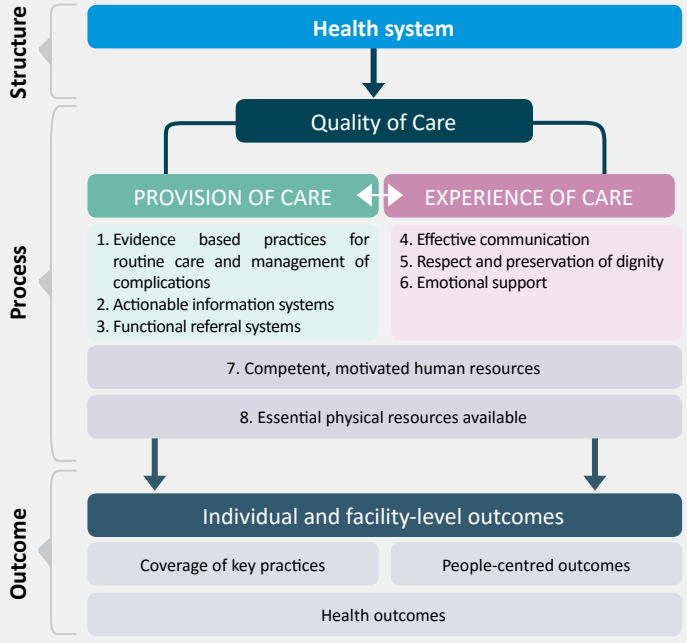
Quality dimensions

- **Effective:** providing services based on scientific knowledge and evidence-based guidelines
- **Efficient:** delivering health care in a manner that maximizes the use of available resource and avoids waste
- **Accessible:** delivering health care that is timely, geographically reasonable, and provided in a setting where skills and resources are appropriate to the medical need
- **Patient-centered/ Acceptable:** delivering health care which takes into account the preferences and aspirations of individual service users and the cultures of their communities
- **Equitable:** delivering health care which does not vary in quality because of personal characteristics such as gender, race, ethnicity, geographical location, or socioeconomic status
- **Safe:** delivering health care which minimizes risks and harm to service users

Ref: Quality of care; A process for making strategic choices in health systems; WHO 2006

PP:2.5

WHO framework for the quality of maternal and newborn health care



Ref: Standard for Improving Quality of Maternal and Newborn Care in Health Facilities, WHO, 2016.

PP:2.6

What is the 5S approach?

- 5S approach is a way of organizing and managing the workspace to improve efficiency and by reducing/ eliminating waste
- The result is an improvement of the:
  - working environment
  - staff satisfaction
  - mindset
- 5S stands for Sort, Set, Shine, Standardize and Sustain

PP:2.7

What is PDCA approach?

The PDCA approach is an evidence-based participatory approach to problem-solving and is found to be an effective tool for quality improvement.

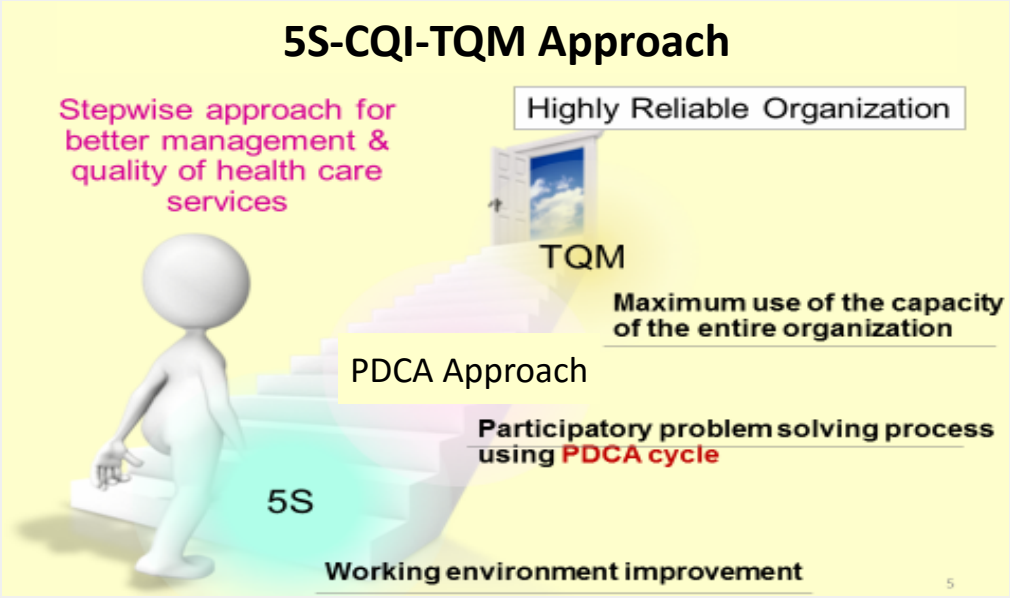
PDCA is conducted using the existing resources at the facilities to solve problems continuously and to make the things better day-by-day.

The target for PDCA approach is the working places of the WITs.

PDCA is also known as PDSA (Plan-Do-Study-Act).

PP:2.8

5S-CQI-TQM approach



PP:2.9

SESSION 3

Introduction to the PDCA cycle and its steps

Objectives of the session

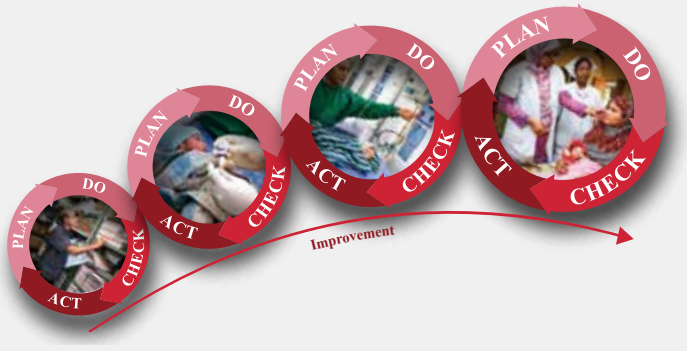
At the end of the session participants will be able to:

- Describe the purpose of PDCA cycle
- Describe the steps of PDCA cycle

PP:3.1

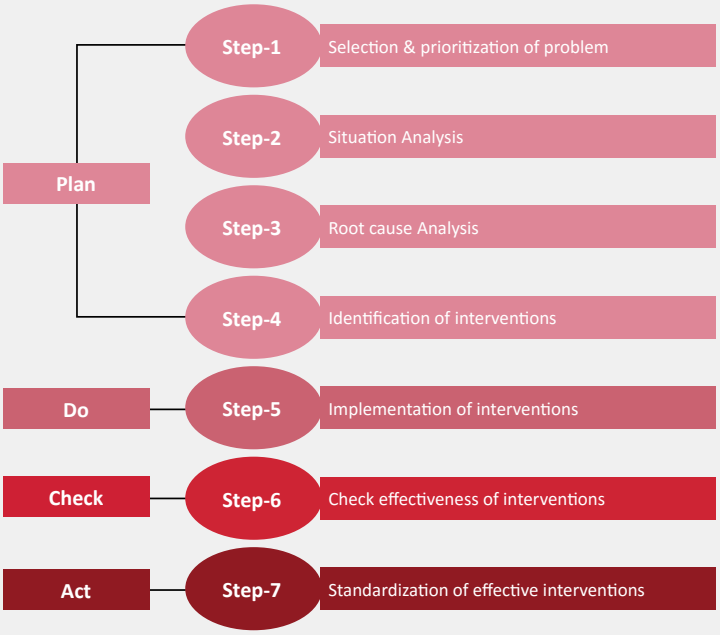
What is PDCA approach?

The PDCA approach is a continuous quality improvement model consisting of a logical sequence of four repetitive stages for continuous improvement and learning: Plan, Do, Check and Act. This allows changes in implementation, solving problems, and continuously improving the work processes. Its cyclical nature allows it to be utilized in a continuous manner for ongoing improvement.



PP:3.2

PDCA steps



PP:3.3

Improve quality of care

PP:3.4

Strengthen team work

PP:3.5

SESSION 4

Selection and prioritization of the problems

Objectives of the session

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

- Describe how to select problems
- Prioritize problems by using Matrix diagram

PP:4.1

Problems

Problems come from:

- Problems you are facing in your workplace
- Things you want to improve to make your work effective and efficient
- Issues arising from observation(s) of supportive supervision and monitoring
- Any unsatisfying issue raised by the staff or clients/ community

PP:4.2

Who should select problem?

- PDCA approach is for solving problems in the hospital
- Problems are identified and selected by the staff (WIT members), who know what is happening on the section

WIT working in the section where there is problem

PP:4.3

Four steps of problem selection

List up the problems in the section/ department

Discuss and categorize

Check feasibility with matrix diagram

Report to the WIT

PP:4.4

Listing problems

- The problem selection should be led by the work improvement team (WIT) working in a section/ department of the hospital
- List all the problems of the working areas as much as possible
- All the WIT members should be allowed to speak freely and give their opinions to identify the problems
- A consensus must be there to prevent future resistance
- The staff should not blame other staff for the problem
- List all the problems the WIT members have identified

PP:4.5

Categorizing problems

Discuss within the WIT and classify the problems into:

- Small problems (problems which can be solved easily and quickly); and
- Big problems (problems that require further analysis and time to resolve)
- An initiative should be taken to solve the small problems immediately by the WIT
- From the big problems, select one (through prioritization)
- Select one prioritized problem for the PDCA approach as it is not possible to solve all the problems together at a time

PP:4.6

Prioritization of problems

- The objective of prioritization is to select one problem which is most feasible to solve using the PDCA approach
- Prioritization is done using the following indicators in the matrix diagram:
  - Important to the patient outcome (how the issue is affecting people, especially mothers and their children? 1 denotes 'not important', and 5 denotes 'vitally important')
  - Afforadbility in terms of time and resources (do we have enough time and resource to solve it? 1 denotes 'not affordable', and 5 denotes 'easily affordable')
  - Easy to measure (can we measure the changes? 1denotes 'very difficult to measure', and 5 denotes 'very easy to measure')
  - Extent of control of team members (are we capable of changing the situation? 1 denotes 'not at all under control', and 5 denotes 'entirely under control')

PP:4.7

Matrix diagram

Write down the date of feasibility analysis

Date of analysis: 30th October 2015

Problems	Importantto patient outcomes (1-5)	Affordability in terms of time & resources (1-5)	Ease of measurement (1-5)	Extent of control of team members (1-5)	Total score (4-20)
Excessive workload	5	1	4	1	11
Ward environment is unhealthy & dirty	4	4	4	1	13
The ward is overcrowded	4	2	5	1	12
No security of the patients and the attendants	1	2	5	1	09
Low Birth Weight (LBW) babies are not receiving the KMC service as per protocol	5	5	4	5	19
Facility Death Review (FDR) is not carried out within 3 days of death notification	3	3	5	4	15

PP:4.8

Group work

- Select a section of a hospital
- Group members brainstorm and identify a few problems in the section/ department; the problems should be real, not hypothetical
- List all the problems
- Classify the problems as 'big' and 'small' problems
- Among the big problems, use the matrix diagram to select one big problem; this is the problem which will be solved on a priority basis using PDCA approach
- Ask the participants to work in their own groups to select and prioritize one problem using a matrix diagram

PP:4.9

Matrix diagram (For group work)

Write down the date of feasibility analysis

Date of analysis: 30th October 2015

Problems	Important to patient outcomes (1-5)	Affordability in terms of time & resources (1-5)	Ease of measurement (1-5)	Extent of control of team members (1-5)	Total score (4-20)

Score scale: 5=high priority, easy to implement; 1=Low priority, difficult to implement

PP:4.10

SESSION 5

Situation analysis and writing the aim statement

Objectives of the session

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

- Describe the process of situation analysis
- Identify factors contributing to the problem
- Develop cumulative frequency table and Pareto chart
- Write an aim statement

PP:5.1

Process of situation analysis

A. Identify the contributing factors to the problem "Low Birth Weight (LBW) babies are not receiving the KMC service as per protocol".

The factors contributing to not following the referral protocol may be due to:

- Newborns meeting the criteria are not referred from the OBGYN ward
- Newborns meeting the criteria are not referred from the SCANU
- Newborns meeting the criteria are not admitted from the outpatient department
- Refusal of/ resistance to referral by the family

PP:5.2

Process of situation analysis (Contd.....)

B. Collect data on each of the identified contributing factors.

- To collect such data we need to specify the methodology of data collection, such as:
  - Data source: whether data will be collected from available sources (such as registers, record sheets, etc.). Data may be collected retrospectively or prospectively.
  - Period of data collection
  - Identify the data collection method i.e., observation, interview, record review etc.

C. Develop a frequency table (as shown below) using the data collected (in descending order of frequency). Frequency is the number of times something happens within a particular period.

D. Calculate the cumulative frequency and cumulative percentage of the data collected using the following table. Cumulative frequency is the summation of previous event(s) and the current event.

PP:5.3

Cumulative frequency table

Low Birth Weight (LBW) babies are not receiving KMC service as per protocol

Contributing Factors	Frequency (A)	Cumulative frequency (B)	Cumulative percentage (C)
Newborns meeting the criteria are not referred from the OBGYN ward	(A1)	B1=A1+0	C1=B1/B4 x 100
Newborns meeting the criteria are not referred from the SCANU	(A2)	B2 (=B1+A2)	C2=B2/B4 x 100
Newborns meeting the criteria are not admitted from the outpatient department	(A3)	B3 (=B2+A3)	C3=B3/B4 x 100
Refusal of/ resistance to referral by the family	(A4)	B4 (=B3+A4)	C4=B4/B4 x 100

PP:5.4

Example of cumulative frequency table (before PDCA)

Contributing Factors	Frequency (A)	Cumulative frequency (B)	Cumulative percentage (C)
Newborns meeting the criteria are not referred from the OBGYN ward	16	16	41.02%
Newborns meeting the criteria are not referred from the SCANU	10	26 (=16+10)	66.67%
Newborns meeting the criteria are not admitted from the outpatient department	8	34 (=26+8)	87.18%
Refusal of or resistance to referral by the family	5	39 (=34+5)	100%

Descending order

PP:5.5

Pareto principle

Vilfredo Federico Damaso Pareto, an Italian economist, developed this concept

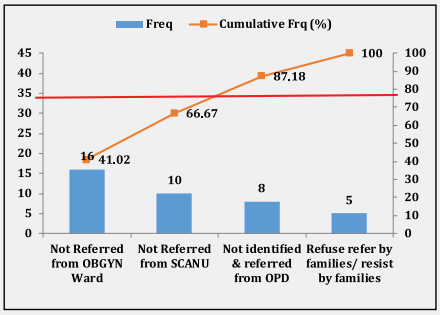
- It is also known as “80:20 rule”
- This technique helps to identify the top 20% of the causes responsible for 80% of the problems

PP:5.6

Pareto chart

Develop "Pareto chart" based on the data table to identify factor(s) contributing to ~80% of the problems

Contributing factors	Freq	Cum Freq	Cum. %
Newborns meeting the criteria are not referred from the OBGYN ward	16	16	41.02%
Newborns meeting the criteria are not referred from the SCANU	10	26	66.67%
Newborns meeting the criteria are not admitted from the outpatient department	8	34	87.18%
Refusal of or resistance to referral by the family	5	39	100%



PP:5.7

Writing aim statement

- Use **"SMART"** to write the aim statement, where S stands for **"Specific"**, M stands for "**Measurable**", A stands for "**Achievable**", R stands for "**Relevant**", and T stands for "**Timely**".
- Aim statement should answer the question: *what, who, how much, and by when*
  - "what" describes the outcome or the 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 when you plan to achieve your desired goal

PP:5.8

Aim statement (example)

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

- **Aim statement of this project may be:** We aim to improve the ***percentage of eligible newborns referred from OBGYN ward and SCANU to KMC corner from 42 percent to 85 percent in the next 3 months.***

PP:5.9

Group work

- Ask the participants to brainstorm in groups to identify the contributing factors for the problem they have identified. A Big problem is usually composed of several contributing factors.
- Once contributing factors are identified, decide what data is needed to quantify the contributing factors. Write down the methodology of data collection.
- Use hypothetical data for the contributing factors (but you shall have to collect real data after returning from training)
- Develop the cumulative frequency table; calculate the cumulative frequency and cumulative percentage of the data collected.
- Develop Pareto Chart (optional).
- Write the aim statement

PP:5.10

Cumulative Frequency Table to identify big contributing factors (group work format)

Contributing Factors	Frequency (A)	Cumulative frequency (B)	Cumulative percentage (C)

PP:5.11

SESSION 6

Root cause analysis

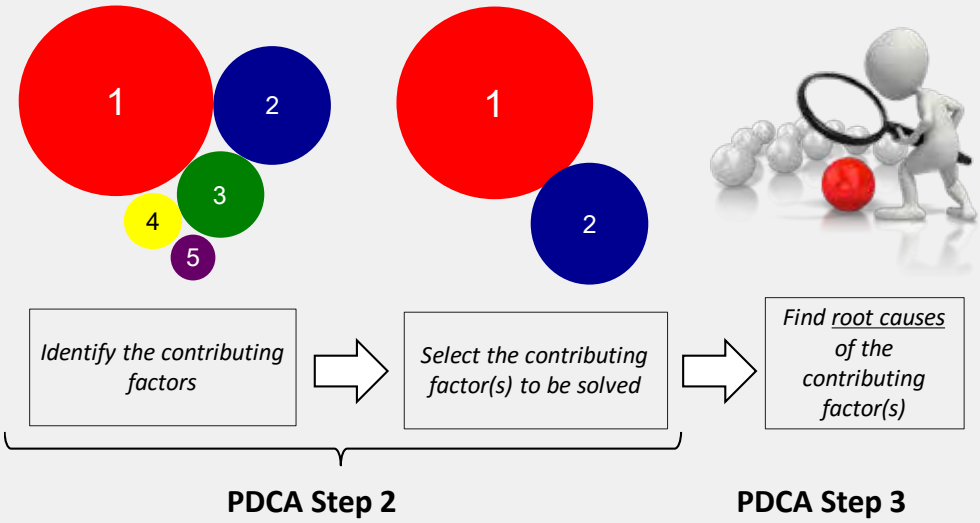
Objective of the session

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

Conduct root cause analysis using Fishbone diagram

PP:6.1

Finding the root cause



PP:6.2

Root cause analysis

Contributing factor: Newborn meeting the criteria are not referred from the OBGYN ward.

"Five Whys"

- Staff do not refer eligible newborn to KMC unit – why?
- They didn't know why & how to refer to the KMC unit – why ?
- They don't know about the KMC intervention – why?
- They are not trained/ oriented on KMC – why?
- Certain number of employees are trained on KMC. A good number of staff are beyond coverage – why?
- There are no mentor/ focal point of the intervention to take initiative to sensitize/ orient/ train nurses and doctors on KMC intervention

PP:6.3

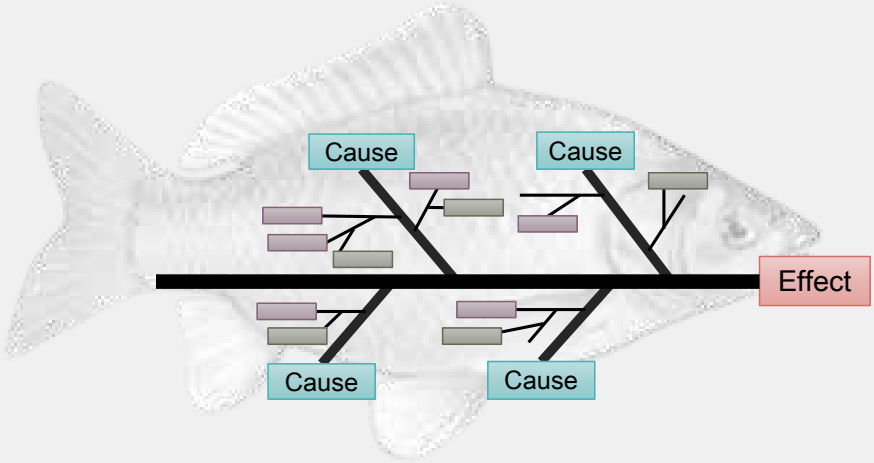
Fishbone diagram (Cause - Effect Diagram)

Fishbone diagram for problem solving:

- It is aimed to find root causes of a problem
- It is developed based on data and information obtained in the previous step
- Identify root causes that are affecting the major contributing factor(s)

PP:6.4

Fishbone diagram (Cause - Effect Diagram)



- It connects “effect” and “cause(s)” systematically with the line
- Clarification of relations between effect and cause(s)

PP:6.5

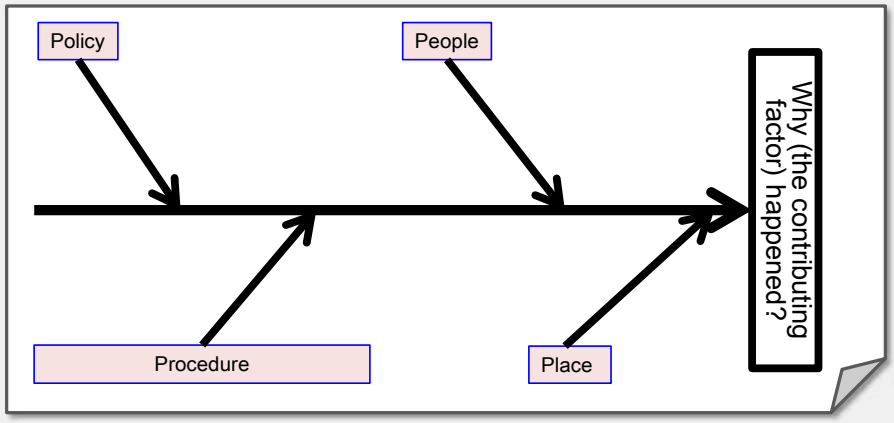
Fishbone diagram : Step 1

- Put effect (the contributing factor) as "head of fish".
- Draw heavy line from left to the effect through the center- "Backbone of fish"

PP:6.6

Fishbone diagram : Step 2

- Determine the causes under broader categories according to your work experience
  - **4P group:** People, Place, Procedure, Policy



PP:6.7

Fishbone diagram : Step 2

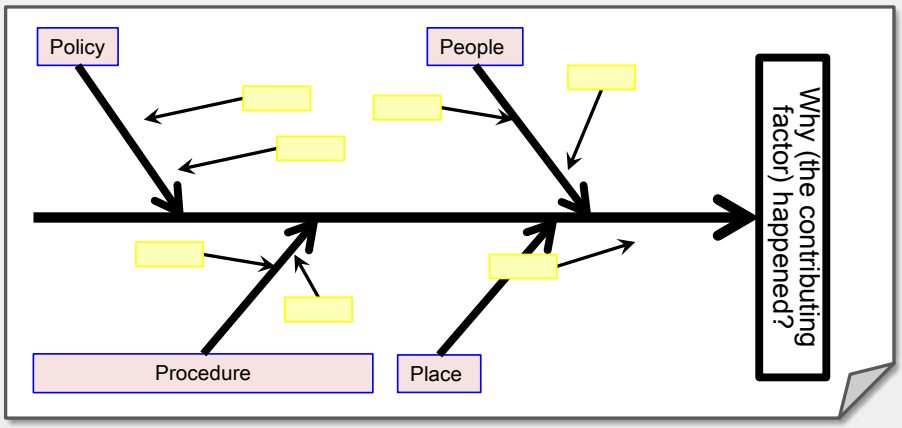
Example of catagories of causes

- **People:** knowledge, skills, physical conditions etc.
- **Place:** facility environment (water supply, electricity, smell, humidity etc.), working environment (work space, accessibility to materials, arrangement etc.)
- **Procedure:** system, methodologies, mechanism etc.
- **Policy:** supply of material, equipment, furniture, tools etc.

PP:6.8

Fishbone diagram : Step 3

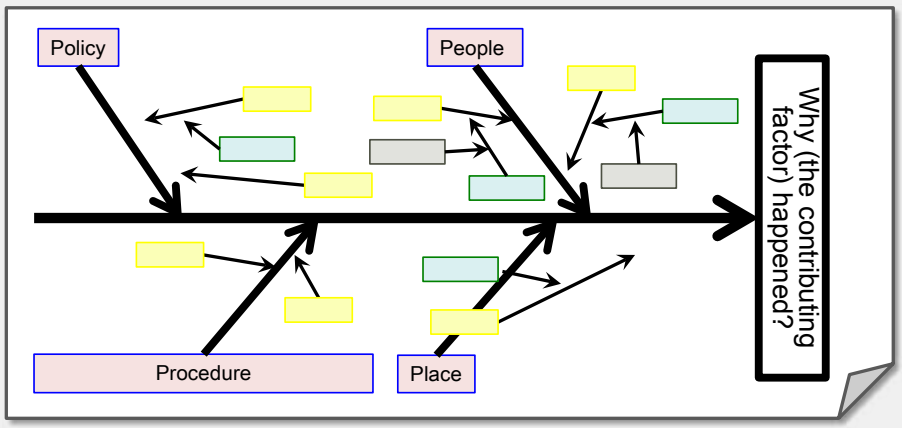
- First, identify possible causes for the effect (the primary cause)
- Classify the primary causes into categories (4P)
- Avoid “recourse shortage (money and manpower)” while analyzing the root cause



PP:6.9

Fishbone diagram : Step 4

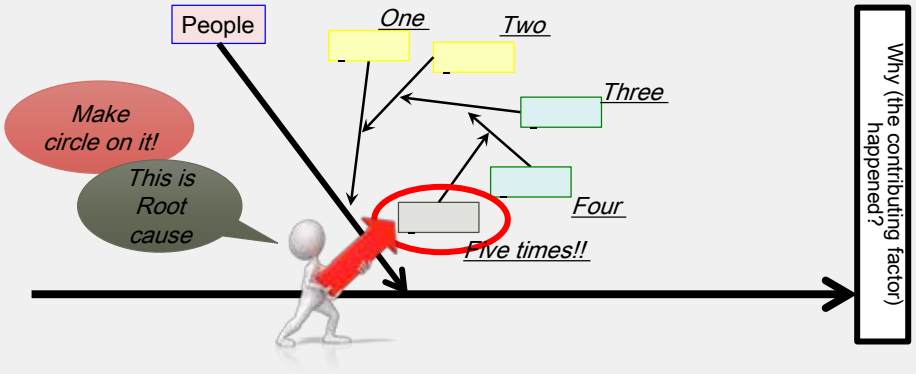
- Identify secondary causes of each primary cause
- Avoid “resource shortage (shortage of money and manpower)”



PP:6.10

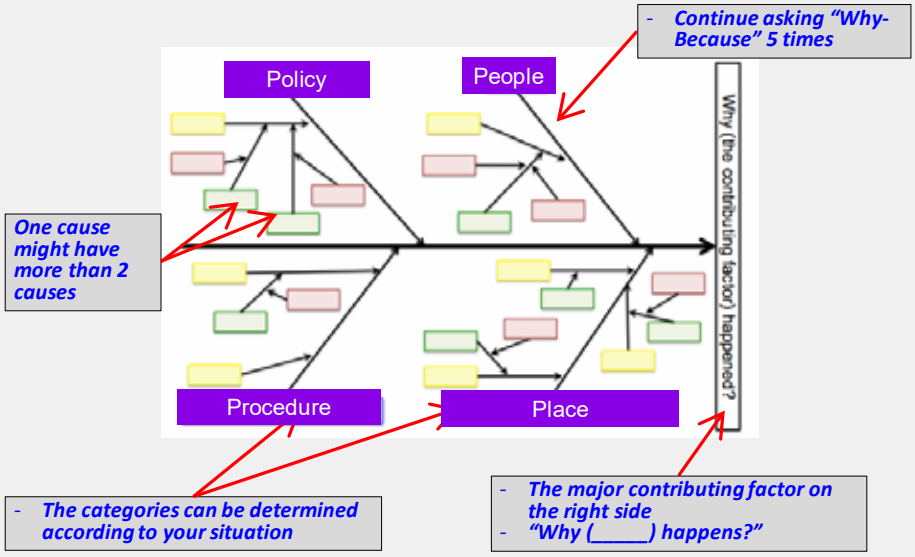
Fishbone diagram : Step 5

- Find out “root causes” by asking “Why is it happening?”
- Ask this question enough times (recommended 5 times) for each possible cause listed on the primary branch, and branch them into secondary, tertiary etc.



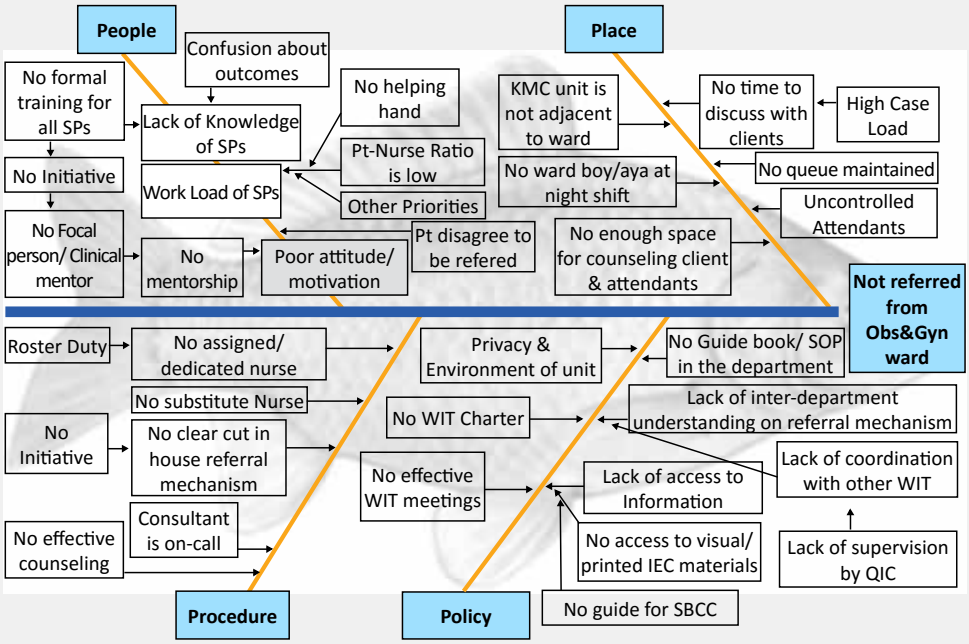
PP:6.11

Fishbone diagram : Step 6



PP:6.12

Example of fishbone analysis (Diagram)



PP:6.13

Remarks on the development of the Fishbone diagram

- If two contributing factors account for 80% of the problems, it is necessary to develop two fishbone diagrams
- While repeating “Why~? – Because~” for 5 times, the situation of one's own workplace need to be considered before searching the cause of others
- While analyzing root causes, it is necessary to avoid blaming other sections; PDCA is for one's own workplace
- Avoid stating “shortage of resources”, such as “No money”, “No human resource”, “No material” etc.
- Your experiences, knowledge, and information should be considered while finding the root causes

PP:6.14

Steps of root cause analysis

PP:6.15

Group work (Part: A)

- In step 2 of the PDCA (under section: 6) you have identified the big contributing factors and listed the contributing factors that contribute to about 80% of the problem
- Use the Fishbone diagram to identify the root causes of contributing factors listed
- Write down one contributing factor at the head of the fish
- Group members should brainstorm to identify the root causes by asking "why is the problem happening, is it happening because of ….." – at least for 5 times".
- List all the primary causes
- Categorize the causes as People, Place, Procedure and Policy (4P)

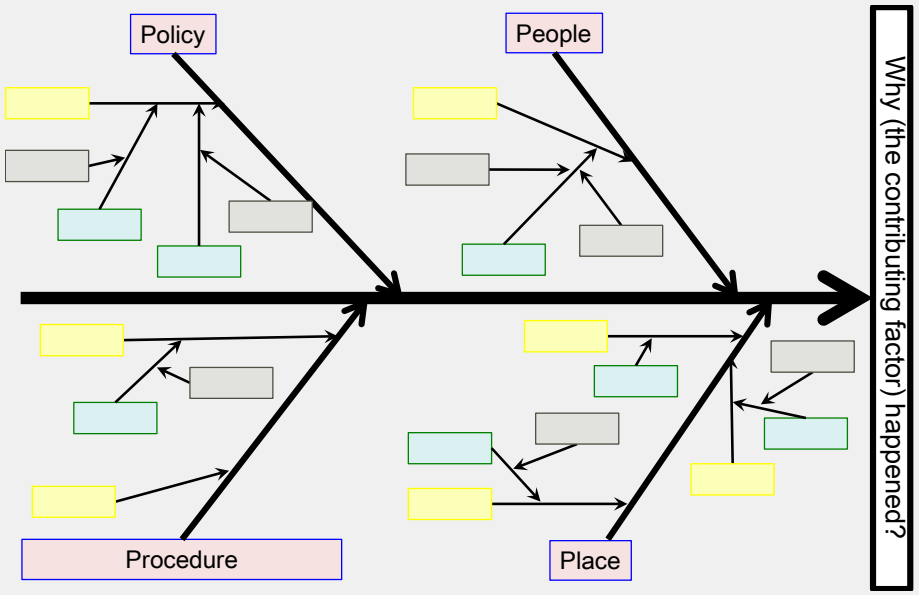
PP:6.16

Group work (Part: B)

- Identify secondary and tertiary causes of each primary cause by asking the same question “why-because”
- While analyzing the root cause – consider the situation at your own workplace and experience, not a hypothetical situation
- Avoid lack of resources, such as “No money”, “No human resource”, “No material” etc. as the root cause
- Assemble the Fishbone diagram by pulling all the information in the Fishbone diagram and display it to a larger audience to share and obtain feedback for remodelling (if necessary)

PP:6.17

Example of Fishbone diagram



PP:6.18

SESSION 7

Identification of interventions

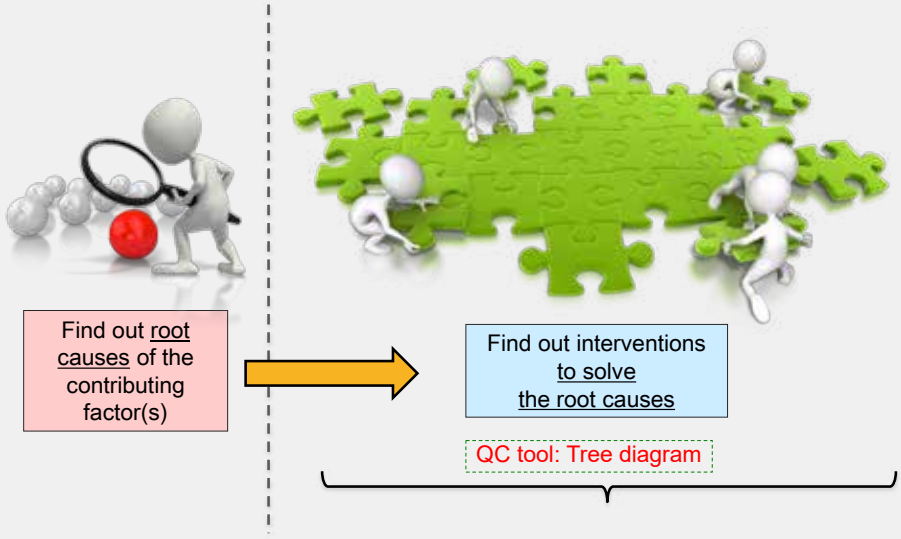
Objective of the session

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

Identify interventions for the root causes by using a tree diagram

PP:7.1

PDCA approach



PP:7.2

Tips for identifying interventions

- Consider effective use of available resources
- Avoid the interventions that require big resources

Discuss interventions that can be implemented by your own section

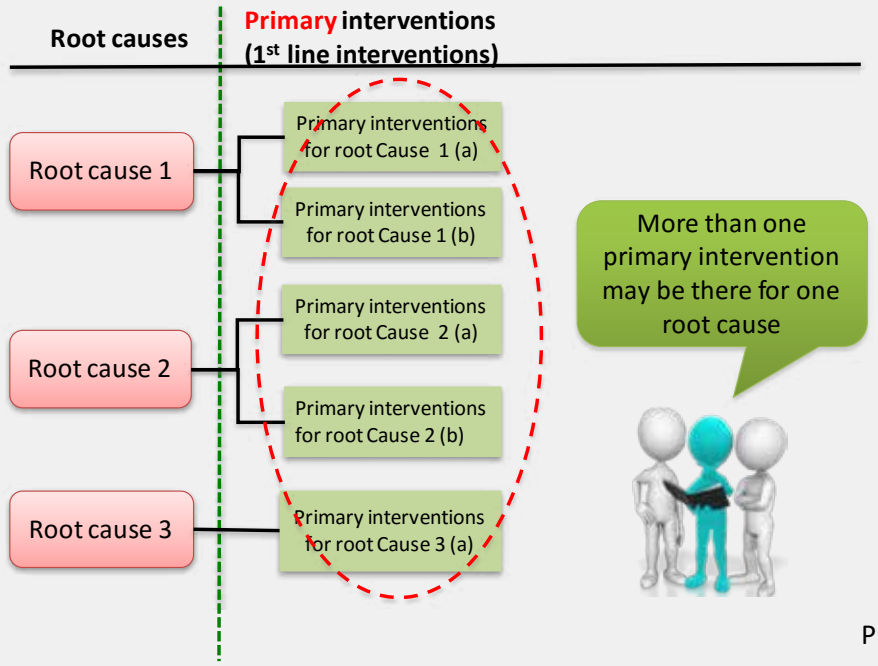
PP:7.3

How to make a tree diagram

1. Write all the identified root causes on the left
2. The team members should brainstorm the root causes one by one to identify interventions
   - Primary interventions
     - Clarify ideal situation towards the root cause
     - Connect the line with each root cause systematically
   - Secondary interventions
     - Discuss detailed activities to realize the primary intervention(s)
   - If identified interventions that are not clear, we can break them to tertiary interventions

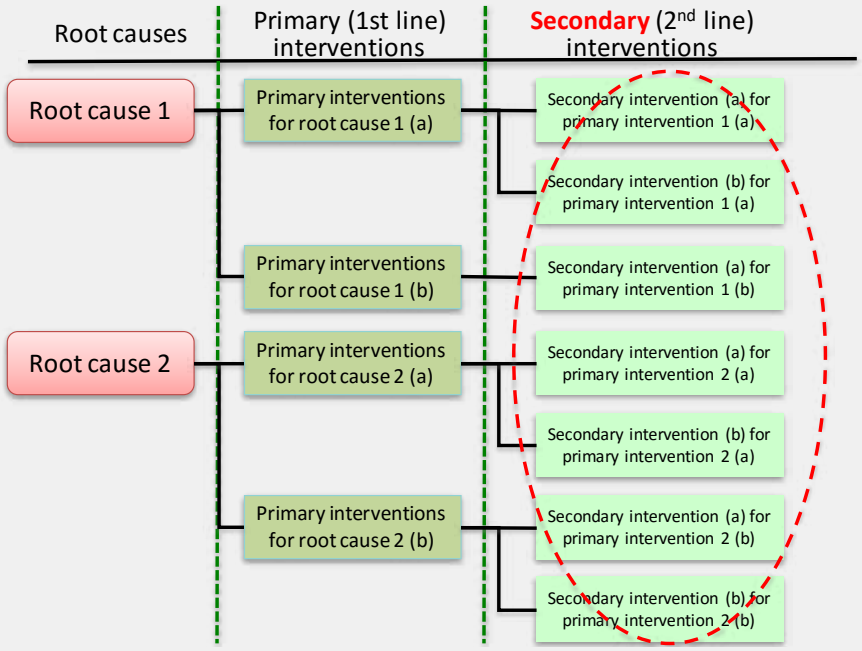
PP:7.4

How to make a tree diagram (Contd.....)



PP:7.5

How to make a tree diagram (contd.....)



PP:7.6

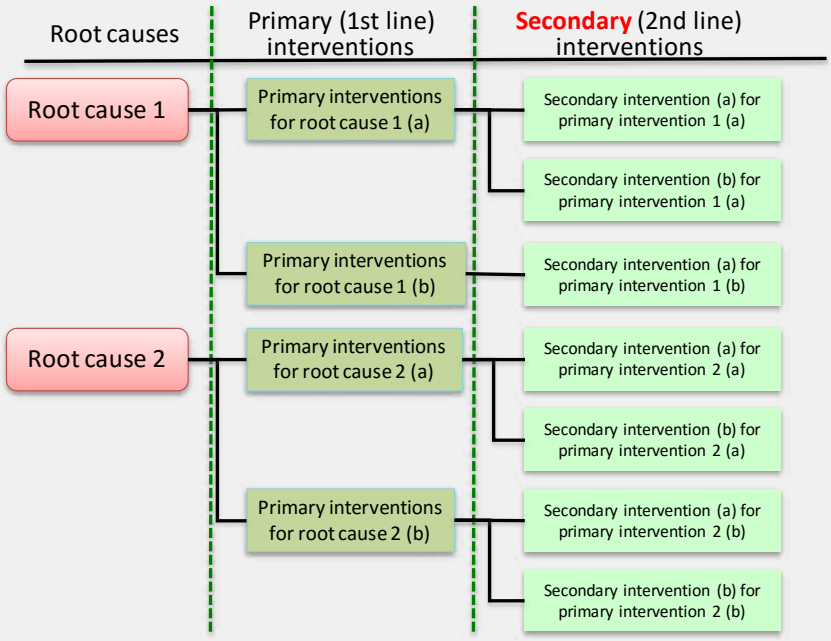
Group work

Identification of interventions

- List all the root causes identified in the previous step
- The group members should brainstorm to identify the interventions for each of the root causes one by one
- Use a tree diagram for this exercise
- List the interventions against the root causes; classify interventions as first and second line interventions
- Put them in the tree diagram or a flow chart or simple table

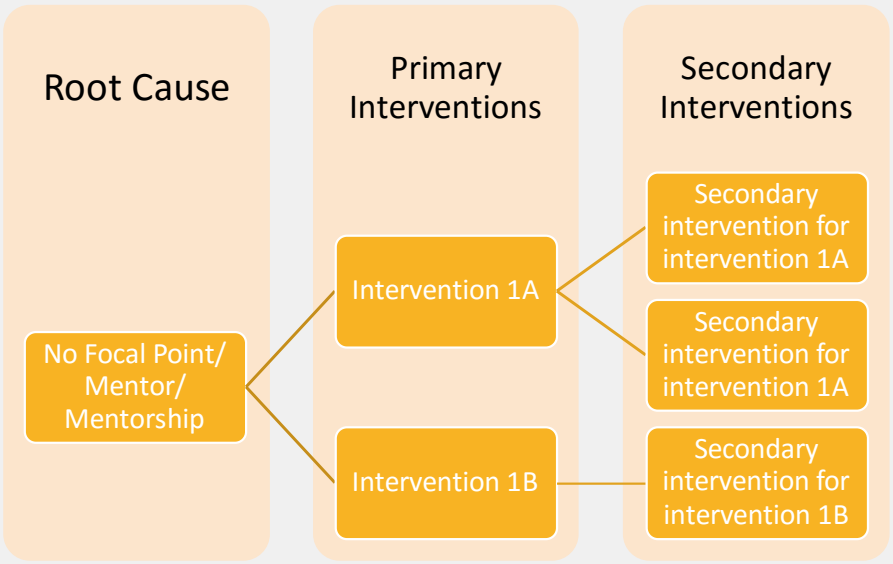
PP:7.7

Example of tree diagram (for group work)



PP:7.8

Identifying interventions



PP:7.9

SESSION 8

Implementation of intervention

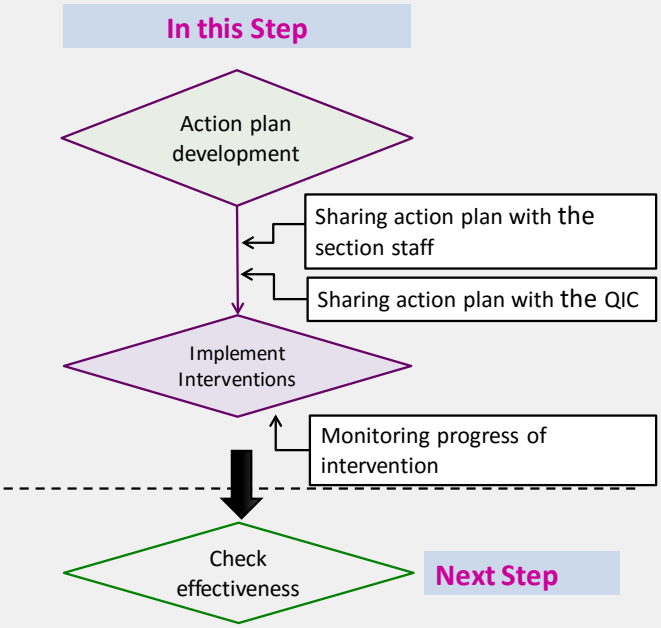
Objectives of the session

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

- Develop an action plan based on the interventions identified
- Develop the monitoring checklist for the action plan to measure the progress

PP:8.1

Implementation of interventions



PP:8.2

Implementation of interventions

In this step:

- Action plan is developed
- Plan is shared with:
  - Section staff (including WIT) and
  - QIC
- Implement the action plan
- Time for implementation is 2-3 months (total time for one PDCA cycle is 6 months)
- Monitor the progress of implementation using a checklist

PP:8.3

Action plan format

Sl. no	Interventions	Who	When	Where
1				
2				
3				
4				

PP:8.4

Implementation of interventions

- Display the action plan on the notice board
  - To remind staff of the implementation
  - To promote participation
- Conduct periodical monitoring with a checklist

PP:8.5

Monitoring progress of implementations

- Develop monitoring checklist with:
  - Date of monitoring
  - Name of monitor
  - Progress of monitoring
- Use the checklist for monitoring
- Utilize results of monitoring:
  - Proper implementation: continue
  - Delays in implementation: re-plan and implement
  - Impossible to implement: clarify the reasons

PP:8.6

Group work

Monitoring checklist development

- Add 3 additional columns in the action plan format
- Add monitoring part in the action plan with date, name of monitor and progress

PP:8.7

Action plan format

Sl. No.	Interventions	Who	When	Where
1				
2				
3				
4				

PP:8.8

Action plan & progress monitoring checklist

Sl. No.	Action plan				Monitoring		
	Interventions	Who	When	Where	Date of monitoring	Who	Progress
1							
2							

Progress:
G: Good, according to the plan
D: Delayed
N: Not implemented

PP:8.9

SESSION 9

Checking effectiveness of the interventions

Objectives of the session

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

- Check the effectiveness of interventions
- Develop run charts
- Identify effective interventions for standardization

PP:9.1

Checking effectiveness of interventions

- Review data collection method in Step 2 of PDCA
- Collect data:
  - Same data
  - Same methodology
  - Same period of data collection
- Compare frequency (before and after PDCA)
- Calculate reduction rate
- Use a run diagram to see the trend over time
- Check achievement of target (aim statement)

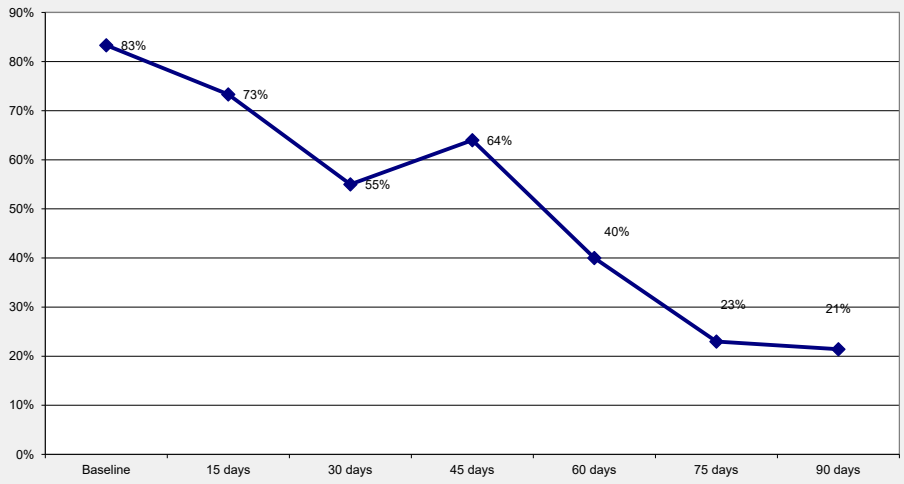
PP:9.2

Example: effectiveness of interventions

Sl. No.	Contributing factors	Frequency (Not refer)		Frequency reduction	% Reduced
		Before PDCA (b)	After PDCA (a)		
1	Newborns meeting the criteria are not referred from OBGYN ward	16	4	12	75%
2	Newborns meeting the criteria are not referred from SCANU	10	5	5	50%
3	Newborns meeting criteria are not admitted from the outpatient department	8	4	4	50%
4	Refusal of/ resistance to referral by the family	5	2	3	60%
	Total:	39	15	24	61%

PP:9.3

Use of run chart/ diagram



PP:9.4

Use of run chart/ diagram

1. Measure the effectiveness of each intervention
2. Review interventions that were not effective
3. The interventions that were effective will be standardized in the next step
4. The interventions may cause bad effects; if bad effects are greater than effectiveness, it is necessary to review the interventions

PP:9.5

Group work

- At this step we need to collect data on contributing factors, once again, as we did in step 2, applying the same methodology
- Use hypothetical data for the exercise (for time being, but you have to collect real data going back to facilities)
- Put data in the frequency table under the categories of 'before PDCA intervention' and 'after PDCA intervention'
- Calculate the frequency reduction and reduction rate
- Check achievement of target (aim statement)
- Develop a bar graph to visualize the impact
- Display your group work

PP:9.6

Effectiveness of interventions

Sl. No.	Contributing factors	Frequency		Frequency reduction	% reduced
		Before PDCA	After PDCA		
1					
2					
3					
4					
5					
	Overall (Total)				

$$\% \text{ reduced} = \frac{\text{\# before - \# after}}{\text{\# before}} \text{ X } 100$$

PP:9.7

SESSION 10

Standardization of effective interventions

Objectives of the session

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

- Describe the importance of standardization of effective interventions
- Develop a standardized procedure table and its progress checklist

PP:10.1

Standardization

- Standardization is done for the interventions/countermeasures if:

  expected outcome is fully or partially achieved

PP:10.2

Standardization of effective interventions

- It is the final step of a PDCA cycle
- Objectives of standardization
  - Maintain the “good effects” in the workplace
  - Eliminate waste continuously in terms of cost and workload
- Two parts of standardization:
  - Development of an implementation plan and its checklist
  - Practice standardized activities for sustainability
- Discipline is the key to successful standardization of effective measures

PP:10.3

Benefits of standardization

- Reduces variability
- Easier to train new staff
- Reduces strain and injuries (ensures safety for internal/ external clients)

PP:10.4

Process of standardization

1. List-up all the effective interventions identified in the previous step
2. Develop standard procedure (s) (SOP) and action plan for implementation
3. Develop a “checklist” to assess the progress of implementation of standardization activities
4. Share the plan and checklist with all the staff in the section

PP:10.5

Action plan format

Sl. No.	Standardized Interventions	Who	When	Where
1	Display the inclusion & exclusion criteria for KMC interventions	Delivery room in-charge	Immediately	Newborn resuscitation area
2	Discuss the importance of KMC & how to disseminate information in WIT meetings	WIT Leader	Every alternative meeting	Meeting room
3	……			
4	……			

PP:10.6

Progress checklist

Standardized interventions	Progress		Date of checking	Checked by	Remarks
Display the inclusion & exclusion criteria for KMC interventions	☐ Sustained ☐ Not sustained	☐ Followed Standards ☐ Did not follow standards			
Discuss the importance of KMC & how to disseminate information in WIT meetings	☐ Sustained ☐ Not sustained	☐ Followed standards ☐ Did not follow standards			

PP:10.7

Action plan and monitoring checklist

Standardized interventions	Who	When	Where	Progress		Date of checking	Checked by	Remarks
Display the inclusion & exclusion criteria for KMC interventions	Delivery room in-charge	Daily	Delivery room	☐ Sustained ☐ Not sustained	☐ Followed Standards ☐ Did not follow Standards			
Discuss the importance of KMC & how to disseminate information in WIT meetings	Delivery room in-charge	Daily	Delivery room	☐ Sustained ☐ Not sustained	☐ Followed Standards ☐ Did not follow Standards			
.....								
.....								

PP:10.8

Tips for successful standardization

- Remember that PDCA is not an individual issue, it is an issue of the section/ workplace
  - Try to avoid the situation of “only in-charge knows”
  - Clarify roles and responsibilities of all the section staff in the implementation plan
- Emphasize benefits of standardized work process

PP:10.9

Contd.....

- Share the standardized procedures and its checklist with all the staff in the section
- Consider effective ways of sharing:
  - Display the standardized procedures in a common place in the section (e.g. notice board)
  - Disseminate how to use the checklist
  - Have documents (e.g. SOPs) in the workplace where the procedures are practiced
  - Remind the staff about SOP periodically (e.g. during WIT meeting)
  - Orient the new staff on standardized procedures

PP:10.10

Group work

- List all the effective interventions
- Adaptation of successful intervention(s) as standard to replicate where needed after proper documentation
- Develop an action plan with who, when and where
- Use action plan format

PP:10.11

Action plan format for standardization

SL.no.	Standardized interventions	Who	When	Where
1				
2				
3				
4				

PP:10.12

Action plan and monitoring progress checklist

Standardized interventions	Who	When	Where	Progress		Date of checking	Checked by	Remarks
				☐ Sustained ☐ Not sustained	☐ Followed Standards ☐ Did not follow standards			
				☐ Sustained ☐ Not sustained	☐ Followed standards ☐ Did not follow standards			

PP:10.13

SESSION 11

PDCA project presentation by the groups

SESSION 12

Development of an action plan/ QI initiative for the health facility

SESSION 13

Monitoring and evaluation of PDCA activities

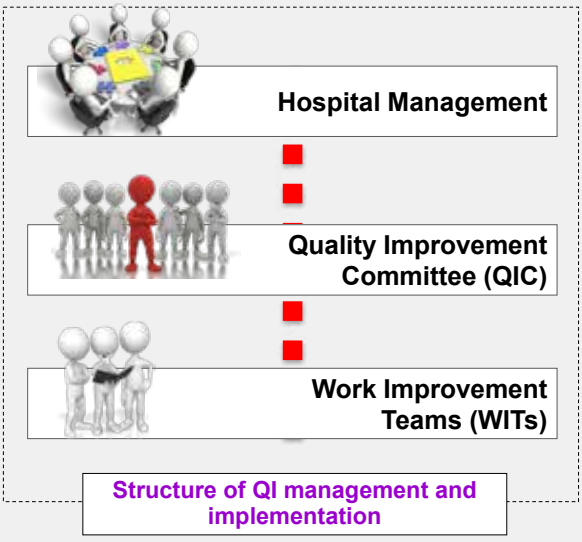
Objectives of the session

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

1. Describe how to monitor and evaluate the PDCA activities
2. Use M&E tools for PDCA activities

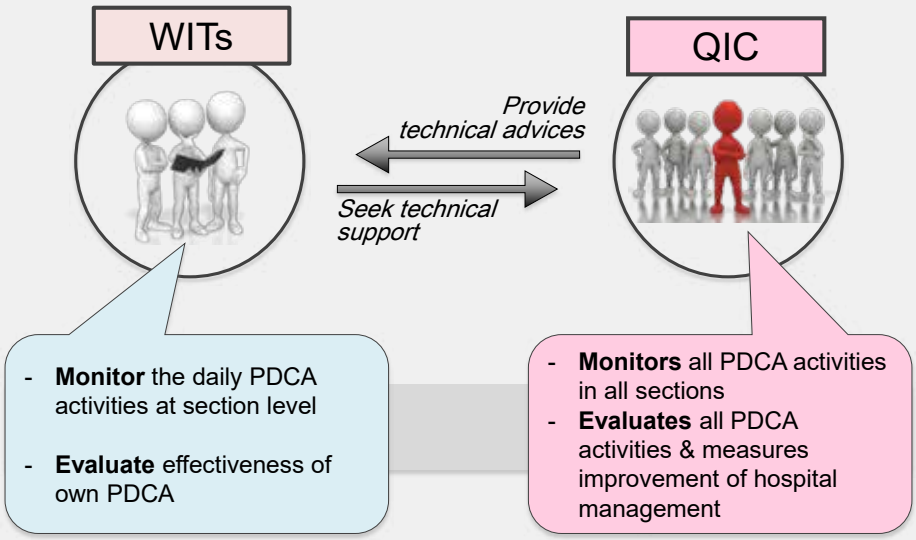
PP:13.1

Who will monitor and evaluate PDCA activities?



PP:13.2

Levels of monitoring and evaluation of PDCA



PP:13.3

Monitoring and evaluation by WITs

PP:13.4

Monitoring and evaluation in PDCA cycle

- M&E is already in the PDCA process
- M&E of these steps should be done by the WIT
  - Step 5: Checking the progress of implementation of identified interventions
  - Step 6: Measuring effectiveness of interventions before and after implementation
  - Step 7: Checking sustainability of effective interventions

PP:13.5

What WIT would monitor and evaluate?

- Time frame of PDCA cycle implementation
  - One PDCA cycle takes about 6 months and it is necessary to monitor time spent in each step
- Action plan (developed in Step 5) implementation status
- Achievement (improvement, situation before and after PDCA in Step 6)
- Sustainability of standardized activities (Step 7)

PP:13.6

Monitoring and evaluation by QIC

PP:13.7

What QIC would monitor & do

- Whether PDCA/ WIT Teams are functioning
- Monitor all WITs' activities
  - Check whether each PDCA step is being followed correctly
  - Check whether appropriate tools are used properly or not
  - Check whether record keeping is done properly or not
- Support WITs
- Develop a presentation to give feedback on PDCA activities
- Feedback the results to all PDCA teams

PP:13.8

Monitoring progress checklist (for group work)

Standardized interventions	Who	When	Where	Progress		Date of checking	Checked by	Remarks
				☐ Sustained ☐ Not sustained	☐ Followed standards ☐ Did not follow standards			
				☐ Sustained ☐ Not sustained	☐ Followed standards ☐ Did not follow standards			

PP:13.9

Thank You

Design: Kabirul Abedin

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MCHIP Maternal and Child Health Integrated Program