Improving Quality of Care for Children Under Five and Pregnant Women Presenting with Fever in Malawi

Facilitator Guide
Improving Quality of Care for Children Under Five and Pregnant Women Presenting with Fever in Malawi

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FEBRUARY 2019

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Acknowledgments

This facilitator guide was consolidated by Linley Hauya, Rachel Gutierrez, Victor Boguslavsky, Dyson Mwandama. The guide was adapted from the Improving Health Care: Training Facilitator Guide and from the Improving Health Care Quality e-learning course, Global Health eLearning Center under the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project.

The USAID ASSIST Project is made possible by the generous support of the American people through USAID's Bureau for Global Health, Office of Health Systems. The project is managed by University Research Co., LLC (URC) under the terms of Cooperative Agreement Number AID-OAA-A-12-00101.

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Recommended citation

# TABLE OF CONTENTS

I. Background ............................................................................................................................................ 1
   Purpose of the guide ................................................................................................................................. 1
   Training learning objectives ..................................................................................................................... 1
   Course format .......................................................................................................................................... 1
   Target audience ....................................................................................................................................... 2
   Duration of training ................................................................................................................................. 2
   Participants and facilitators ..................................................................................................................... 2
   Methods .................................................................................................................................................... 2

II. Introductory Module: Introductions and Training Objectives ............................................................... 2


IV. Module 2: The Issue of Quality in Health Care .................................................................................. 6

V. Module 3: What Results Are We Seeing? ............................................................................................ 8

VI. Module 4: The Model for Improvement ............................................................................................ 10
   Overview ................................................................................................................................................ 10
   Section 1: Prioritization ......................................................................................................................... 12
   Section 2: Defining Improvement Aim(s) ............................................................................................ 14
   Section 3: Forming the Improvement Team ............................................................................................ 18
   Section 4: Part 1: Understanding the Current Process ........................................................................... 21
   Section 4: Part 2: Cause and Effect Analysis ......................................................................................... 25
   Section 5: Developing Indicators .......................................................................................................... 28
   Section 6: Plotting a Time Series Chart ................................................................................................. 32
   Section 7: Developing, Testing, and Implementing Change ................................................................ 35
   Section 8: Monitoring Results and Acting on Them .............................................................................. 40

VII. Module 5: Gender Integration in Malaria Programming ................................................................. 44

VIII. Module 6: Planning For Next Steps ................................................................................................. 48
   Section 1: Flowchart the New Process .................................................................................................. 48
   Section 2: Developing Facility Work Plans ............................................................................................ 50

IX. Module 7: Leadership Skills to Support Improvement ...................................................................... 52

X. Appendices ........................................................................................................................................... 55
<table>
<thead>
<tr>
<th>Acronyms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL</td>
<td>Artemether-lumefantrine</td>
</tr>
<tr>
<td>ARVs</td>
<td>Antiretroviral drugs</td>
</tr>
<tr>
<td>ASSIST</td>
<td>USAID Applying Science to Strengthen and Improve Systems Project</td>
</tr>
<tr>
<td>DOT</td>
<td>Direct observation therapy</td>
</tr>
<tr>
<td>HCI</td>
<td>USAID Health Care Improvement Project</td>
</tr>
<tr>
<td>HIV</td>
<td>Human immunodeficiency virus</td>
</tr>
<tr>
<td>HSA</td>
<td>Health Surveillance Assistant</td>
</tr>
<tr>
<td>IOM</td>
<td>Institute of Medicine</td>
</tr>
<tr>
<td>IPTp-SP</td>
<td>Intermittent preventive treatment during pregnancy with sulfadoxine pyrimethamine</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MOPH</td>
<td>Ministry of Public Health</td>
</tr>
<tr>
<td>mRDT</td>
<td>Malaria rapid diagnostic test</td>
</tr>
<tr>
<td>MUAC</td>
<td>Mid-Upper Arm Circumference</td>
</tr>
<tr>
<td>NACS</td>
<td>Nutrition assessment counseling and support</td>
</tr>
<tr>
<td>NHS</td>
<td>National Health Service</td>
</tr>
<tr>
<td>NIH</td>
<td>National Institute of Health</td>
</tr>
<tr>
<td>PEPFAR</td>
<td>U.S. President’s Emergency Plan for AIDS Relief</td>
</tr>
<tr>
<td>QI</td>
<td>Quality improvement</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>URC</td>
<td>University Research Co., LLC</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Department</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
I. BACKGROUND

Purpose of the guide
The purpose of this guide is to help improvement advisors conduct trainings for district level malaria and/or quality improvement coordinators, health care providers and managers to improve quality of care for children under five years of age and pregnant women presenting with fever.

Training learning objectives
By the end of the training, participants will be able to:

1. Describe what is meant by quality health care.
2. Explain the fundamentals underlying the science of improvement.
3. Give examples of successful improvements from different technical areas and geographic contexts.
4. Explain how gender can be integrated in quality improvement (QI).
5. Develop the following skills:
   a. Define an improvement aim.
   b. Form improvement teams.
   c. Analyze processes of care.
   d. Develop indicators to measure improvement.
   e. Develop, test and implement changes to enable the implementation of everyday work.
   f. Monitor and evaluate results of tested change.

Course format
The course is designed around a case study about improving malaria care for febrile children under five years, and it takes the participants through exercises in an improvement journey. The fundamentals of improving health care, as well as the methods, are illustrated through a series of seven improvement modules which are listed below. The Module 7 “Skills for leading improvement” is more directed towards health care managers and malaria and improvement coordinators to help them lead activities with quality improvement in scope.

<table>
<thead>
<tr>
<th>Module</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introductory module, QI definitions</td>
</tr>
<tr>
<td>2</td>
<td>The issue of quality in health care</td>
</tr>
<tr>
<td>3</td>
<td>Overview of improving health care: Results of QI and how results were obtained</td>
</tr>
<tr>
<td>4</td>
<td>The Model for Improvement</td>
</tr>
<tr>
<td>5</td>
<td>Gender integration in QI</td>
</tr>
<tr>
<td>6</td>
<td>Planning next steps</td>
</tr>
<tr>
<td>7</td>
<td>Skills for leading improvement</td>
</tr>
</tbody>
</table>
Target audience
The training is targeted at district level malaria coordinators, health care providers and managers.

Duration of training
This course can be delivered as traditional classroom training and it is expected to take approximately 2.5 days to complete, including breaks.

Participants and facilitators
The recommended number of participants per course is up to 25. The course is led by an improvement advisor and supported by two facilitators who are knowledgeable about improvement science principles and methods, and malaria case management.

Methods
The training uses PowerPoint presentations, large and small group discussions, and a case study for improving malaria care to allow participants to practice applying the key principles and methods being taught.

II. INTRODUCTORY MODULE: INTRODUCTIONS AND TRAINING OBJECTIVES
Time: 60 minutes
After this module, participants should be able to:
- Explain the training learning objectives

<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction Slide 1:</td>
<td>WELCOME: Welcome participants to the training of service providers and improvement coordinators.</td>
</tr>
<tr>
<td>Improving Quality of Care for Children Under Five and Pregnant Women Presenting with Fever in Malawi</td>
<td>SAY: This course is designed to introduce the science of improvement and how it can be applied to improve care for children under five years presenting with fever and improving malaria prevention and care in pregnant women.</td>
</tr>
<tr>
<td>Training for district level malaria and/or quality improvement coordinators, health care providers and managers</td>
<td>The fundamentals of improving health care, as well as the methods, are illustrated through a series of improvement modules. In this course we will use a case study on improving malaria care for children under five presenting with fever at a health facility. We will use the case study for exercises throughout the Model for Improvement module.</td>
</tr>
<tr>
<td>Facilitators introductions</td>
<td>INTRODUCE: Introduce yourself and the other facilitators. Explain that you will be asking participants to introduce themselves in a few minutes.</td>
</tr>
<tr>
<td>Participant introductions</td>
<td>SAY: Let’s move into our introductions. We want to hear all about you. Please tell the other participants your name, where you are from, your role and credentials, and how you are involved in improving health care.</td>
</tr>
<tr>
<td>Participant roles</td>
<td>DO: Have participants at each table identify three people who will take on the roles of a president, timekeeper and person responsible for social welfare for each group/table during the training.</td>
</tr>
</tbody>
</table>
### PRESENTATION VISUAL

<table>
<thead>
<tr>
<th>FACILITATOR'S MAIN POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
</tr>
<tr>
<td>DO: Distribute pre-test to each participant.</td>
</tr>
<tr>
<td>SAY: I am distributing the pre-test. The aim of the pre-test is for the facilitators to better understand what current knowledge you have about quality improvement. At the end of the training, we will ask you to fill out a post-test that will help us to better understand what you have learned through the course about improvement. You have 15 minutes to complete the pre-test.</td>
</tr>
<tr>
<td>DO: Collect the pre-tests after 15 minutes.</td>
</tr>
<tr>
<td>Participant expectations</td>
</tr>
<tr>
<td>ASK: Ask the participants what they are hoping to learn from this training and write down and summarize all expectations on a flipchart.</td>
</tr>
<tr>
<td>Course learning objectives</td>
</tr>
<tr>
<td>INTRODUCE: Introduce the learning objectives and ask participants if the objectives match their expectations.</td>
</tr>
</tbody>
</table>

#### Agenda review

**Learning objectives**

- Articulate the key issues in health care quality
- Explain the fundamentals underlying the science of improvement
- Give examples of successful improvements from different technical areas and geographic contexts
- Explain how gender can be integrated into quality improvement (QI)
- Develop the following skills:
  - Define an improvement aim
  - Form improvement teams
  - Analyze processes of care
  - Develop, test, and implement changes
  - Monitor and evaluate results of tested changes

**REVIEW: Review the agenda with participants.**

Go over housekeeping at your location (i.e., break room, water, bathrooms, etc.).

**ASK: Ask if participants have any questions before you begin with Module 1.**

### III. MODULE 1: WHAT IS QUALITY HEALTH CARE?

**Time: 30 minutes**

After this module, participants should be able to:

- Describe what is meant by quality health care
- Discuss different definitions of quality
- List the six World Health Organization (WHO) dimensions of quality health care
**PRESENTATION VISUAL**

**What do we mean by quality health care?**

**Slide 3:**

![Image of quality health care definition](image)

**FACILITATOR’S MAIN POINTS**

**ASK:** Think about what “quality of care” means to you.

**ASK:** Now, in your experience or from reading the newspaper or your understanding of the world, how are we doing in delivering quality health services?

---

**Definition of health care quality**

**Slide 4:**

![Image of definition of health care quality](image)

**SAY:** The most common definition of quality of care is brought to us by the Institute of Medicine.

**READ:** “The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.”

**ASK:** How does that definition sound to you?

**LISTEN:** Listen and respond to participants’ responses.

**ASK:** Is context taken into account with this definition?

**SAY:** We know from practice, context is a very important factor. Otherwise, this definition is a little abstract. Let me tell you a story.

---

**Real world example: Nicaragua obstetric care story**

**SAY:** In general, most infant deliveries are safe procedures, complications are avoided, and women and newborns do not require medical attention. Only about 15% of all deliveries require interventions. However, it is that 15% that need attention and a coordinated effort on the part of a team of health care providers to generate a positive health outcome.

In this example from a village in Nicaragua, a full medical team involving the hospital and health centre staff, including obstetricians, surgeons, and birth attendants who deliver the births at home were all trained together on how to provide coordinated care for pregnant women.

One day in this village, a mother gave birth to her newborn son with the traditional birth attendant present. The delivery went well, however, the mother’s placenta was not delivered within 30 minutes of the birth of the newborn. This is dangerous for the mother. Fortunately, the traditional birth attendant working with the mother was trained on this and other danger signs during pregnancy. She knew what dangers to look for and what to do if the danger occurred – the mother must be quickly referred to and transported to the hospital.

The local health team members had already previously discussed the procedure of what to do in cases of such emergencies. The team talked to the family and explained that the woman must go to the hospital or there...
Another definition of quality care

**Slide 5:**

**What is quality care?**

“Quality care is what happens at all the points of service along the continuum of care, and high quality care is a function of the system’s ability to produce care that will address the client’s needs in an effective, responsive and respectful manner…”

— David Nicholas, The Quality Assurance Project, 1990s

**Pause**

**FACILITATOR’S MAIN POINTS**

would be serious complications. The family listened, and the woman was quickly driven to the hospital. Before she even arrived the operation table was ready, she had an IV drip put in, and the surgeon performed a manual evacuation of the placenta.

Two hours later, the new mother was resting in bed nursing her newborn. She received the care that she needed because the local health professionals and health workers were all a part of a cohesive team. During this emergency, they immediately took action and knew what to do.

This is the desired outcome for a patient – When medical professionals work together in a coordinated fashion by using all appropriate resources and current professional knowledge. Context is everything in medical situations, if not more important than the actual science behind the medicine. The science of a situation does not mean much outside the context of the situation.

The alternative to this story is that the traditional birth attendants do not know what to do, the emergency team is not put in place and trained, and the newborn lives without a mother.

**SAY:** Another definition of quality care is one by David Nicholas who was with the USAID Quality Assurance Project in the 1990s.

**READ:** “Quality care is what happens at all the points of service along the continuum of care, and high quality care is a function of the system’s ability to produce care that will address the client’s needs in an effective, responsive and respectful manner…”

**ASK:** Are we getting a better sense of what is good quality care?

**SAY:** In practice, there is a huge difference between the definition of quality care and quality health care. In many countries, there is a strong desire and motivation to do the right thing. For example, the Ministry of Health in a country might go online and research standard evidence-based care from the WHO or the NIH or the CDC. It will take these standards and develop them into country guidelines, which are written with the best intentions.

However, because there is no context given to those guidelines, failures in the system can occur.

Given our example above, the guideline for how long you wait after birth for the placenta to be delivered is 30 minutes. This is the standard. But the context has to do with how you act on this standard. What happens after the delivery? Are health care workers doing the right things in the right way when the patient needs it done?

**ASK:** How can you harness the hospitals, health centres, communities, and people working together to allow quality health care to happen contextually?

**ASK:** Are there any questions?
WHO Dimensions of Quality
Slide 6:

Dimensions of quality
- Effective: delivering evidence-based care that results in improved outcomes and is based on need.
- Efficient: delivering care which maximizes resource use and avoids waste.
- Accessible: delivering care that is timely, geographically reasonable, and provided in a setting where skills and resources are appropriate to medical need.
- Acceptable/patient-centered: delivering care which takes into account the preferences and aspirations of patients and the cultures of their communities.
- Equitable: delivering care that does not vary in quality because of personal characteristics such as gender, race, ethnicity, geographical location, or socioeconomic status.
- Safe: delivering care which minimizes risks and harm to patients.

Pause

SAY: The World Health Organization, has proposed the following six dimensions of quality for a common understanding of quality health care:

READ:

- Effective: delivering evidence-based care that results in improved outcomes and is based on need
- Efficient: delivering care, which maximizes resource use and avoids waste
- Accessible: delivering care that is timely, geographically reasonable, and provided in a setting where skills and resources are appropriate to medical need
- Acceptable/patient-centered: delivering care that takes the preferences and aspirations of patients and cultures of their communities into account
- Equitable: delivering care that does not vary in quality because of personal characteristics such as gender, race, ethnicity, geographical location, or socioeconomic status
- Safe: delivering care that minimizes risks and harm to patients

ASK: Do you have any questions or comments about these dimensions of quality?

ASK: Ask participants to share their experiences of what the different dimensions of quality mean to them.

IV. MODULE 2: THE ISSUE OF QUALITY IN HEALTH CARE

Time: 30 minutes

After this module, participants should be able to:

- Explain the issues in providing quality health care in both developing and developed countries.

The issue of quality in health care
Slide 7:

The Issue of Quality in Health Care

ASK: Given the incredible gains in knowledge and interventions in improving health care and health care outcomes over the last two decades, the major question is, "Why aren't we getting the results we should get?"

Health care is a complicated industry. The average health care provider plays three different roles simultaneously:

- S/he advises you,
- S/he carries out the intervention or procedure that s/he advises you on, and
- S/he benefits from the procedure.
### Presentaion Visual

**"The quality of health care delivered to adults in the U.S" McGlynn et al. NEJM 2003**

Slide 8:

<table>
<thead>
<tr>
<th>SAY:</th>
<th>It is important to recognize that achieving quality health care is not just a developing country issue. The systems of care are not in place in many countries (developed and developing) to achieve quality care. Developed countries may have more technology and resources. However, improvement is not only about the inputs into health care, but it is also about the way in which these inputs are used.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A study by McGlynn et al. in 2003 in the United States found that just over half of patients (54.9%) received scientifically indicated care. This means that 45% received poor quality care. This study included medical records for 6712 patients, 439 indicators of clinical quality of care in 30 acute and chronic conditions, plus prevention.</td>
<td></td>
</tr>
</tbody>
</table>

### Facilitator’s Main Points

**The issue of quality in health care**

Slide 9:

<table>
<thead>
<tr>
<th>SAY:</th>
<th>The phenomenon that the best available knowledge about care is not being implemented in everyday work to benefit patients is a predominant theme in health care around the world.</th>
</tr>
</thead>
<tbody>
<tr>
<td>In 2001, the Institute of Medicine published the “Crossing the Quality Chasm” report that found:</td>
<td></td>
</tr>
<tr>
<td>There are serious problems in quality: “Between the health care we have and the care we could have lies not just a gap but a chasm.”</td>
<td></td>
</tr>
<tr>
<td>The problems come from poor systems…not bad people.</td>
<td></td>
</tr>
</tbody>
</table>

### What is the problem?**

Slide 10:

<table>
<thead>
<tr>
<th>SAY:</th>
<th>Margaret Chan, former Director General of the World Health Organization, has a different perspective on the problem.</th>
</tr>
</thead>
<tbody>
<tr>
<td>READ THE QUOTE: “The reality is straightforward. The power of existing interventions is not matched by the power of health systems to deliver them to those in greatest need, in a comprehensive way, and at an adequate scale.”</td>
<td></td>
</tr>
<tr>
<td>Source: Margaret Chan, Director General World Health Organization 2006-2017</td>
<td></td>
</tr>
</tbody>
</table>
### Module 3: What Results Are We Seeing?

**Time:** 40 minutes

After this module, participants should be able to:

- Understand the terminologies surrounding improvement science
- Discuss real world examples where improvement science was applied to improve quality of care

<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>What results are we seeing?</td>
<td>SAY: There are many ways to improve health care. Over the years, people have improved care through experience and knowledge. There have been many scientific discoveries that have led to significant improvements in health care. However, we are not here to talk about any of these discoveries. We are here to talk about health care interventions that are known to save lives – evidence-based interventions – that are not being implemented consistently. We will talk about how improvement science, or working in teams to test small changes, can yield improved outcomes. This approach to improving health care has been tested in different countries and has successfully improved care. Now, we will go over some examples of the results.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the problem: World Bank</td>
<td>SAY: Jim Kim, former President of the World Bank, believes that the enormous investments that have been made in global health should have led to what we might have called a science of implementation, execution, or improvement.</td>
</tr>
</tbody>
</table>

**Pause**

**Break – 15 minutes**

**ANNOUNCE:** Tell participants this is a 15-minute break.
What results are we seeing?
Slide 13:

**SAY:** This is an example of quality improvement science in action. In this example, the purpose of the project was to improve diagnosis and treatment of febrile illness in children under five and pregnant women in Balaka and Mchinji Districts.

What results are we seeing?
Slide 14:

**SAY:** This is an example of improvements in the percentage of febrile children prescribed Artemether-lumefantrine in Machinga District.

**DESCRIBE:** In the annotations (boxes pointing to the graph) you can see the two changes that were implemented that led to these improvements: 1) Assigned a Health Surveillance Assistant (HSA) to take weight; 2) Developed schedule for HSA to rotate taking weight.

What results are we seeing?
Slide 15:

**SAY:** The approach has also been used to improve nutrition programs in Malawi. The purpose of the project was to improve nutrition care for HIV and TB patients in Karonga and Balaka Districts.

**DESCRIBE:** Describe the elements of the graph.

The blue line indicates percentage of patients assessed and categorized at 7 sites in Karonga and Balaka Districts. Look at the changes they made to achieve 100%. The changes are very simple things that we usually do not think could bring tangible improvement. The improvement approach we will talk about in this training uses simple solutions to improve care.

At the heart of improvement is using established medical science, organizing care of delivery to allow us to find solutions that are simple to implement. Also, the best solutions come from the health workers themselves. They have a profound knowledge of their health systems.
Improving Care for Children under Five and Pregnant Women Presenting with Fever in Malawi: Facilitator Guide

PRESENTATION VISUAL

FACILITATOR’S MAIN POINTS

They own the interventions and when they see them work, they become very proud of what they’ve accomplished.

SAY: There are many examples from other countries that have used the same approach to improve health care. I will highlight a few examples.

In Tanzania, they used the improvement approach to improve initiation of HIV-infected pregnant women on antiretrovirals (ARV).

DESCRIBE: Describe the elements of the graph and the changes they tested to achieve the results.

Quality improvement integrates content of care and the process of providing care

SAY: All these results were achieved when service providers used the quality improvement methodology to improve care.

Quality improvement integrates content of care and improving the processes of providing care to achieve better and more reliable health outcomes. This model was adapted from Batalden and Stoltz (1993).

Traditionally, health care improvement has focused on the technical content such as the development of standards and guidelines, training, and measuring compliance with standards. More recently improvement approaches combine the traditional improvement approaches with improving organization of processes of care to achieve better, more reliable health outcomes.

Achieving quality health care requires re-organizing care delivery in order to provide the appropriate content of care to every patient who needs it every time it is needed.

Pause

ASK: Are there any questions before we take a quick break?

Short break – 5 minutes

ANNOUNCE: Tell participants this is only a 5-minute break.

VI. MODULE 4: THE MODEL FOR IMPROVEMENT

Overview

Time: Overview (15 min). Total module: Up to 8 hours (for all eight sections combined)

After this module, participants will have competencies in the following skills:

1) Prioritization
2) Defining improvement aim(s)
3) Forming improvement teams  
4) Analyzing processes of care  
5) Developing indicators  
6) Plotting a time series chart  
7) Developing, testing and implementing changes to improve everyday work  
8) Monitoring results and taking action

<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
</table>
| Recap               | **ASK:** What have been some of the most interesting things you have learned so far?  
Do you have any questions? Comments? |
| The Model For Improvement  
Slide 18: | **SAY:** I will now introduce the Model for Improvement |

**The Model for Improvement**

**Slide 19:**

**SAY:** The Model for Improvement has become the foundation for improvement activities for decades around the globe. It is all about testing changes to see if they yield the results we want. The model specifically looks at: *What are we trying to accomplish? How will we know we achieved it? What changes can we make?*

The first step is to plan what change you would like to test (plan), then implement the change (do), analyze if the change has achieved the result you were looking for or not (study), if it has achieved good results then you should scale up (act) or if it has not achieved the intended results consider testing a new change and begin the process again.

**SAY:** In *"A Modern Paradigm for Improving Healthcare Quality"* published in 2001, Massoud and colleagues used an earlier improvement model, which is slightly easier to use for teaching purposes.

The Model for Improvement’s steps involve identifying a problem, analyzing the issue, and developing a solution to test using plan-do-study-act (PDSA) cycles. The model allows you to think about the specific context of the health system that you are working in as well as map out the processes that are currently occurring.

The case study portion of this course will use this model to work through the exercises.
## Improvement principles and frameworks

### Slide 21:

**Fundamental Concept of Improvement:**

- "Every system is perfectly designed to get the results it gets." - Seidman and Sdoia, 1995

**Principles of Improvement:**

- Understanding work in terms of processes and systems
- Developing solutions by teams of health care providers and patients
- Focusing on patients’ needs
- Testing and measuring effects of changes
- Shared learning

**Say:** The fundamental concept of improvement is that “every system is perfectly designed to get the results it gets.”

Change is at the heart of improvement. Measurement itself is not an improvement. Nothing necessarily changes when all we are doing is measuring. There is a Palestinian proverb that says, *“you can weigh a cow every day, but that is not going to make it fatter.”* If we continue doing the same thing without making any changes, we will continue to get the same results. Though, after changes are implemented, we must measure to see if an improvement is being made. The key to improvement is change, but not every change is an improvement.

The key principles of improvement are:

- Understanding work in terms of processes and systems
- Developing solutions by teams of health care providers and patients
- Focusing on patients’ needs
- Testing and measuring effects of changes

## Section 1: Prioritization

**Time:** 45 minutes

**Say:** The first step is in implementing improvement is to prioritize the problems that need to be addressed.
**Model for Improvement**

Slide 23:

- **SAY**: Health care systems have many challenges. To address these problems, it is important to tackle small pieces of the problem one by one.

  Malaria case management programs, for example, have different components, including diagnosis, treatment of uncomplicated malaria and treatment and/or referral of complicated malaria. These all pose different challenges that affect patient outcomes. You will need to identify and prioritize which problems to address.

**Discussion questions**

Slide 24:

- **ASK**: Why do we need to prioritize what to focus on for improvement?
- **DO**: Let participants respond.

- **ASK**: Can you think of some ways you could prioritize what to focus on?
- **DO**: Give participants some time to respond to the question.

**Why do we need to prioritize?**

Slide 25:

- **SAY**: As mentioned before, health care issues, such as malaria case management, pose many challenges. Since we cannot address all challenges, we need to focus on those that are most important.

**Prioritization of improvement**

Slide 26:

- **SAY**: There are many factors that can influence priorities for improvement. These include:
  - Existing MOH or government leadership priorities
  - Data that show where need is greatest (e.g., existing reports, baseline assessment studies, service utilization data, epidemiological data, perform new assessments)
  - Priorities that are recognized by donors and funders
  - Patients and staff (questionnaires and interviews)
  - Practitioners, communities, and other stakeholders
<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prioritization for improvement</strong>&lt;br&gt;Depending on the scale, topics can come from:&lt;br&gt;- Existing NHSS/MOH/MOPH priorities&lt;br&gt;- Data (e.g., existing reports, baseline assessment studies) that show where need is greatest&lt;br&gt;- Priorities recognized by donors and funders&lt;br&gt;- Patients, staff, practitioners, communities, other stakeholders</td>
<td><strong>Pause</strong>&lt;br&gt;<strong>ASK:</strong> Are there any questions before we take a quick break?</td>
</tr>
<tr>
<td><strong>Pause</strong></td>
<td><strong>ANNOUNCE:</strong> Tell participants to take a lunch break.</td>
</tr>
<tr>
<td><strong>Lunch Break</strong></td>
<td><strong>Section 2: Defining Improvement Aim(s)</strong>&lt;br&gt;<strong>Time:</strong> 50 minutes</td>
</tr>
<tr>
<td><strong>PRESENTATION VISUAL</strong>&lt;br&gt;<strong>Section 2: Defining an Improvement Aim</strong>&lt;br&gt;<strong>Slide 27:</strong> [Slide Image]&lt;br&gt;<strong>Section 2: Defining an Improvement Aim</strong></td>
<td><strong>FACILITATOR’S MAIN POINTS</strong>&lt;br&gt;<strong>SAY:</strong> Throughout the remainder of the course, you will be working in small groups to conduct a quality improvement project from start to finish. To do this, we will use a case study that you will refer to and answer questions about. The group discussions will be followed by a full class debrief.&lt;br&gt;<strong>SAY:</strong> All improvement starts with an improvement aim.&lt;br&gt;<strong>ASK:</strong> What is an improvement aim?</td>
</tr>
<tr>
<td><strong>Model for Improvement</strong>&lt;br&gt;<strong>Slide 28:</strong> [Chart Image]&lt;br&gt;<strong>Model for Improvement</strong></td>
<td><strong>SAY:</strong> Let’s go back to our Model for Improvement. Step 1 says to “identify” the problem.</td>
</tr>
</tbody>
</table>
### PRESENTATION VISUAL

**Model for Improvement**

Slide 29:

![Model for Improvement](image)

**Determining a good improvement aim**

Slide 30:

![Determining a good improvement aim](image)

**Discussion: Is this a good aim statement?**

Slide 31:

![Example 1: Improvement aim](image)

### FACILITATOR'S MAIN POINTS

**SAY:** To identify the problem, we need to clearly define the aim – or objective – for improvement at the service delivery level. Earlier on I talked about how to prioritize which problems to begin addressing. And I mentioned some of the ways we can use to identify these priorities. Now we will talk about how to develop specific improvement aims, based on the priorities you identified.

**SAY:** A good aim statement will answer the question, “What are we trying to accomplish?”

**SAY:** Defining a good aim statement is important. It needs to be ambitious while at the same time realistic, achievable, and measurable.

A good aim statement has:

- A defined **boundary** that specifies the scope of the improvement goal (what?). For example, what specific population will you focus on, in what geographic area?
- Specific **numerical targets for outcomes** that are ambitious but achievable (how much?). These should be measurable and based on either baseline data or what has been achieved elsewhere.
- A **timeframe** (by when?). How much improvement do you want to see by when?
- **Guidance** on how the aim will be achieved (how?). How will you achieve the aim? For example, through the application of existing guidelines.

**SAY:** Using this definition let’s go through an example together.

**READ:** Read the statement below.

**Statement #1:** At Mikundi Health Centre in Mchinji District, within the next four months we will achieve 100% receipt of the first dose of AL as DOT for all children under five who are sick with malaria by establishing a DOT corner

**SAY:** Discuss this aim statement in your groups for five minutes. Is this a good aim statement? Does it have a boundary? Numerical goals for outcomes? A timeframe? Guidance?

**ASK:** Ask for volunteers to share each component of the aim statement.

**Answers:**

Does it have a boundary? "Mikundi Health Centre” not the community, not the whole community, and “children under five who are sick with malaria"
<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion: Is this a good aim statement?</td>
<td></td>
</tr>
<tr>
<td>Slide 32:</td>
<td></td>
</tr>
<tr>
<td><strong>Example 2: Improvement aim</strong></td>
<td></td>
</tr>
<tr>
<td>Within the next six months, Balaka D. Hospital will improve the clinical skills of health workers to make a definitive malaria diagnosis for 80% of all children under five coming for a sick visit at the under-five clinic by using a competency-based checklist.</td>
<td></td>
</tr>
<tr>
<td><strong>Boundary:</strong> Balaka District Hospital, under-five clinic</td>
<td></td>
</tr>
<tr>
<td><strong>Numeric goals:</strong> 80%</td>
<td></td>
</tr>
<tr>
<td><strong>Timeframe:</strong> 6 months</td>
<td></td>
</tr>
<tr>
<td><strong>Guidance:</strong> competency-based checklist</td>
<td></td>
</tr>
<tr>
<td>SAY: Let's do another one.</td>
<td></td>
</tr>
<tr>
<td>READ: Read the statement below.</td>
<td></td>
</tr>
<tr>
<td><strong>Statement #2:</strong> Within the next six months, Balaka District Hospital will improve the clinical skills of health workers to make a definitive malaria diagnosis for 80% of all children under five coming for a sick visit at the under-five clinic by using a competency-based checklist.</td>
<td></td>
</tr>
<tr>
<td>SAY: Discuss this aim statement in your groups for five minutes. Is this a good aim statement? Does it have a boundary? Numerical goals for outcomes? A timeframe? Guidance?</td>
<td></td>
</tr>
<tr>
<td>ASK: Ask for volunteers to share each component of the aim statement.</td>
<td></td>
</tr>
<tr>
<td>Answers:</td>
<td></td>
</tr>
<tr>
<td>Boundary: Balaka District Hospital, under-five clinic</td>
<td></td>
</tr>
<tr>
<td>Numeric goals: 80%</td>
<td></td>
</tr>
<tr>
<td>Timeframe: 6 months</td>
<td></td>
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<tr>
<td>Guidance: competency-based checklist</td>
<td></td>
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<tr>
<td>Section 2 Exercise 1: Case Study</td>
<td></td>
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<tr>
<td>Slide 33:</td>
<td></td>
</tr>
<tr>
<td><strong>Exercise: Case study</strong></td>
<td></td>
</tr>
<tr>
<td>• Read the case study (included in the facilitators Manual)</td>
<td></td>
</tr>
<tr>
<td>• Develop a clear improvement aim for your team</td>
<td></td>
</tr>
<tr>
<td>DO: Read the case study out loud. (Make sure everyone also has a paper copy of the case study and Exercise 1).</td>
<td></td>
</tr>
<tr>
<td>SAY: Now let's have you work in your groups to try to develop an improvement aim for the case study.</td>
<td></td>
</tr>
<tr>
<td>CHECK IN: After 10 minutes, check if groups need more time.</td>
<td></td>
</tr>
<tr>
<td>ASK: Ask for 2-3 volunteers to share their responses.</td>
<td></td>
</tr>
<tr>
<td>ASK: Are there any questions before we take a quick break?</td>
<td></td>
</tr>
<tr>
<td>ANNOUNCE: Tell participants this is only a 5-minute break.</td>
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</tbody>
</table>
Exercise 1. Case Study: Defining an Improvement Aim

Case Study

Malaria is one of the leading causes of death in under five children. You have recently joined a team of health care workers as a clinician at the Chadzunda Health Centre and have the opportunity to be part of the facility management team. From the time you joined the health facility you noted that many children come to your health centre with fever and are treated for malaria although a rapid diagnostic test (mRDT) is not performed. You are aware that your clinic has a number of challenges to overcome including an already overstretched care team, your colleagues who do not appreciate the importance of conducting mRDT to confirm the presence of malaria plasmodium, and inadequate supplies for malaria case management. You know that despite these challenges, improvements could still be made to ensure that all the clients in this clinic receive quality malaria care, which would in turn have a positive impact on their clinical outcomes. You know that one of the ways to improve malaria treatment and care for children under five would be to coordinate all service providers and the care that a child with fever passes through at the clinic.

Recently when you reviewed the clinic records of children under five treated for malaria with the data clerk, you realized that in the last month alone, of the 2381 children who were treated for malaria, only 1441 had a positive mRDT test result.

Based on this information you believe that focusing on improving the provision of the mRDT test for all suspected malaria cases for children under five in the next three months will improve the management of sick children at the facility in addition to reducing over-use of antimalarial drugs, with its associated costs. You have discussed this with your clinic supervisor and he decides to call for a meeting with the other key staff at the facility. During this meeting you all agree that one of the ways to address the problem is to ensure that the mRDT test kits are always in adequate supply and that service providers should be encouraged to follow standard operating procedures for malaria treatment.

Instructions

When answering these questions, you should remember that your goals should be ambitious, but achievable. An ambitious goal that is not realistic will demotivate you and your colleagues, while a realistic goal that is not ambitious will fail to motivate you to make as much of a change as you are capable of making.

Where will your change be implemented? (A) Chadzunda Health Centre (a location such as a town, clinic, or office)

What outcome are we trying to change? (B) improve treatment of malaria in under-five children based on positive mRDT test result (Should be a tangible result, such as a decrease or increase in something that matters in health care)

By what amount are we trying to change it? (C) 40% (Should be a percentage or some other numerical value)

When do you expect to see this result to happen? (D) in 3 months (An amount of time or by a certain date)

What will you do/use to achieve this result? (E) reinforce malaria case management standard operating procedures (What intervention, method, tool, or resource will you employ to make the change?)

Put together your responses to complete the aim statement for your improvement project:
In (A) _______ our clinic (Chadzunda Health Centre) ____________, we will (B) ___ improve the treatment of malaria in under-five children based on a positive mRDT test result by (C) ___40%__________________ within/by (D) _______ 3 months____________通过 (E)_____ reinforcing malaria case management SOPs______________

**Section 3: Forming the Improvement Team**

Time: 40 minutes

<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
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</thead>
<tbody>
<tr>
<td>Section 3: Forming the Improvement Team Slide 34:</td>
<td>SAY: Now that we have identified the priority health area we are focusing on and have set an improvement aim, we need to think about the people we need on the team to help us accomplish this improvement work. We will invite those who are actually involved in the work to sit on the improvement team. When health care workers come up with the solutions to their own problems, they are more likely to see through the implementation. The notion of empowerment is extremely strong here. People begin to realize they can truly impact the change they wish to see.</td>
</tr>
<tr>
<td>Model for Improvement Slide 35:</td>
<td>SAY: We will now work on deciding who should be on your quality improvement team to address your improvement aim.</td>
</tr>
<tr>
<td>Model for Improvement Slide 36:</td>
<td></td>
</tr>
</tbody>
</table>
**Why is teamwork important for improvement?**

Slide 37:

**PRESENTATION VISUAL**

**FACILITATOR’S MAIN POINTS**

**SAY:** Improvement is about figuring out the interdependencies that occur to give the end result. It is therefore important to include team members who understand the different parts of the health care system and can give their input into suggested changes. Teams are important because:

- Health care processes consist of inter-dependent steps that are executed by different people fulfilling different professional functions.
- Quality faults often occur when patients or clients move between providers.
- Given the opportunity to work in teams, staff can often identify problems and generate ideas to resolve them.
- Participation improves ideas, increases buy-in, and reduces resistance to change.
- Accomplishing things together increases the confidence of each team member, which empowers organizations.

**Teamwork**

Slide 38:

**SAY:** To create a team, you will need to think about the parts of the health care process you are trying to address. All key players in the different steps of the process being improved should be included on the team. No function should be missing; otherwise knowledge and insight about the steps of the process might be missing.

In the real world, building the team can become an iterative process where you may realize later on that you forgot to include someone important on your team.

People are not resistant to change; however, they hate being changed. It is more effective to ask them “How can we do this better?”

**Team roles and responsibilities**

Slide 39:

**SAY:** Improvement team members are the people who work on improvement teams to share their knowledge, experience, and expertise while working to accomplish team goals. The improvement team leader sets the agenda, orchestrates improvement team activities, coordinates the stakeholders, maintains the team records, and forms the communication link between the team members.

In health care, the more we can involve patients, the more beneficial the improvement will be as well. Patient involvement makes a huge difference in the final outcome of a change process, as patients have a powerful and different perspective than health care workers. Patient participation could be in the form of surveys, interviews, check-ins, even sitting on improvement teams. You should choose patients (or their family members) who are familiar with the context of the facilities and have received services from the facility more than once.

**Creating good QI teams**

Slide 40:

**SAY:** When creating an improvement team, it is important to bear in mind how many people to involve and their characteristics. Remember the following points:
Exercise 2: Form your improvement team

Slide 41:

Exercise: Form your improvement team

1. Referring back to the aim statement, you have developed for your facility, consider the process that you want to improve.
2. Think of those responsible for each step in that process. A representative of each function should be on your improvement team.
3. Think about who else would be important to include on your improvement team, such as: management, practitioners, patients or groups representing patients, or other people involved in the system of care.

In group discussions at your table, discuss who should be in your team.

Pause

Break – 15 minutes

Exercise 2: Form the Improvement Team

SAY: You will now form your improvement team based on the case-study (make sure all participants have Exercise 2).

1. Refer back to the aim statement, consider the process that you want to improve.
2. Think of those responsible for each step in that process. A representative of each function should be on your improvement team.
3. Think about who else would be important to include on your improvement team, such as: managers, practitioners, patients or groups representing patients, or other people involved in the system of care.

SAY: You may find this table useful as you are forming your team.

SAY: Take 10 minutes to discuss and complete the exercise.

CHECK IN: After 10 minutes, check if more time is needed to complete the exercise.

ASK: Volunteers to share their answers.

ASK: Are there any questions before we take a quick break?

ANNOUNCE: Tell participants this is 15-minute break.
Referring to the aim statement you developed, consider the health care process that you want to improve. Think of those key players responsible for carrying out each step in that process. Think about who else would be important to include on your improvement team, such as: management, practitioners, patients or groups representing patients, or other people involved in the system of care. A representative of each step in the process should be on your improvement team.

Who is involved in the process we are changing that needs to be part of the team?

<table>
<thead>
<tr>
<th>What part of the process / what role?</th>
<th>Who performs the function?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Receiving patients</td>
<td>• HSA, hospital attendant</td>
</tr>
<tr>
<td>• Triage, health education</td>
<td>• HSA, nurse</td>
</tr>
<tr>
<td>• Clinical assessment</td>
<td>• Clinician, medical assistant, nurse</td>
</tr>
<tr>
<td>• Laboratory test</td>
<td>• Trained HSA, lab assistant</td>
</tr>
<tr>
<td>• Prescribing drugs</td>
<td>• Nurse, clinician</td>
</tr>
</tbody>
</table>

Are there other stakeholders or contributors who are not directly involved in the process, but contribute to successful outcomes? Think about the wider health system in which you work.

<table>
<thead>
<tr>
<th>How does this process affect others?</th>
<th>Who are they?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Filing/Record-keeping</td>
<td>• The data clerk</td>
</tr>
<tr>
<td>• Dispensing Anti-malarial drugs</td>
<td>• Dispenser or pharmacist</td>
</tr>
</tbody>
</table>

When you have filled in all the individuals above, narrow down the group by circling those who are the most important to have involved. Of those remaining, will the team be able to function well and produce real effective change without them? Make sure all the necessary people are included but that the team is not too large or too small to be able to function well. An ideal team size is 7 to 12 people.

**Section 4: Part 1: Understanding the Current Process**

*Time: 60 minutes*

**PRESENTATION VISUAL**

**FACILITATOR’S MAIN POINTS**

*SAY:*

Now we will continue with the case study exercise, focusing on how to understand the current process.
PRESENTER VISUAL | FACILITATOR’S MAIN POINTS
--- | ---
Model for Improvement Slide 44:

*SAY:* The next step is to analyze our current process and situation.

Model for Improvement Slide 45:

*SAY:* Let’s think about the processes within the system that yield the aim for improvement.

Understanding work as processes and systems Slide 46:

*SAY:* For this training, we are going to concentrate on understanding work at the process level, but keep in mind that all health care processes are a piece of the greater health care system.

Donabedian Model of a System Slide 47:

*SAY:* One of the fundamental ideas of quality improvement is to get people to see that they are part of a bigger system and that not only do they need to do their specific job well, but they also need to make sure that the system works. Donabedian is one of the fathers of quality improvement. He wrote that all systems could be looked at in terms of inputs, processes, and outcomes/outputs.
Processes are key because they represent how to use your inputs. It is true that a lack of resources would negatively impact carrying out a process, however, even if all the resources were available, it still does not guarantee that the desired outcomes would be achieved.

For example, even if a health provider has the medicine, it does not mean that his or her diagnosis is correct, that the correct treatment is given, or that the medicine is given in a timely fashion.

One way to understand a process is to diagram it. Diagramming a process is called flowcharting. Flowcharting is a simple method originating from engineering science.

**SAY:** Let’s think about how process flowcharting could be useful for improving services provided at the health facility level.

**ASK:** Any ideas?

Allow time for participant ideas

**SAY:** A process flowchart is important because it

- Reduces complexity and waste
- Eliminates unnecessary steps
- Uncovers potential problems and bottlenecks
- Describes the actual process
- Helps to guide discussion on identifying problems

**SAY:** There are four steps in creating a process flowchart.

1. Decide on the beginning and end points of the process to be flowcharted
2. Identify the steps of the process
3. Link the steps with arrows showing direction
4. Review the draft to ensure that it truly describes the process

**SAY:** These are the basic symbols for improvement flowcharts.
PRESENTATION VISUAL

FACILITATOR’S MAIN POINTS

How to create a process flowchart:
Flow lines
Slide 51:

SAY: A square depicts a step in the process. Only one flow line can stem from a step. A decision is depicted by a diamond. Two flow lines must come out of a decision. The decision should ask a yes or no question.

Analyzing a Flow chart
Slide 52

SAY: Analyzing the flowchart is key to identifying inefficient steps in the process of care. When you have developed a flowchart of your current process, ask yourself the following key questions for each step to help you identify which step are inefficient or those that are omitted:

- Does this step need to be done?
- Where are the delays?
- Is the sequence of steps appropriate?
- Are there missing steps?

Example: Process for febrile under-five children before changes
Slide 53

SAY: Here is an example of a process flowchart of a febrile child under five arriving at the health facility in Machinga, before changes were introduced.
Exercise 3: Drawing a flow chart

**Slide 54:**

**Exercise: Drawing a flow chart**

- Referring to the improvement aim you developed with your team, draw a diagram of the sequence of steps/ care that a child under five with fever passes through when he or she comes for a sick visit at your health facility. (Participants should be grouped based on health facility). Think about your improvement aim when determining what the end of the process (i.e., the outcome) should be. Use the symbols of a flowchart from Slide 50 and 51.
- Analyze the flow chart using the key questions for analyzing process steps (Slide 52).
- Review the flow chart with your group and see if each step and what each team member does during each step of the process is accurately reflected.

**Debrief and closing**

**SAY:** Today, we have introduced the Model for Improvement and covered two sections of the model. Tomorrow, we will continue learning about the model using the case study. We will learn how to conduct cause and effect analysis, develop indicators, plot them, and test and implement changes.

If you want more practice on drawing flowcharts after today, please refer to *Tips and Tools for Learning Improvement* on the resource page on your desk (make sure they all have a copy of the resource page).

**Exercise 3: Drawing a flow chart**

- Referring to the improvement aim you developed with your team, draw a diagram of the sequence of steps/ care that a child under five with fever passes through when he or she comes for a sick visit at your health facility. (Participants should be grouped based on health facility). Think about your improvement aim when determining what the end of the process (i.e., the outcome) should be. Use the symbols of a flowchart from Slide 50 and 51.
- Analyze the flow chart using the key questions for analyzing process steps (Slide 52).
- Review the flow chart with your group and see if each step and what each team member does during each step of the process is accurately reflected.

**Section 4: Part 2: Cause and Effect Analysis**

Time: Recap 15 minutes + 60 minutes Part 2: Cause and Effect Analysis
### Cause and effect analysis: fishbone diagram

**Slide 55:**

<table>
<thead>
<tr>
<th><strong>Causes and effect diagrams: Fishbone diagram</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Collect and organize knowledge about potential causes of problems or variation</td>
</tr>
<tr>
<td>- Tool for organizing and summarizing known information</td>
</tr>
<tr>
<td>- Defines underlying causes and how these contribute to the problem</td>
</tr>
<tr>
<td>- Used to get to a deep level of detail</td>
</tr>
<tr>
<td>- Looks beyond the obvious causes</td>
</tr>
<tr>
<td>- Real value in simply creating it</td>
</tr>
</tbody>
</table>

**SAY:** Problems identified through the process flowchart can further be analyzed using cause and effect analysis to help identify their root causes. There are different types of cause and effect diagrams. These include fishbone diagrams, driver diagrams and a problem tree analysis. In this course we will focus on the fishbone diagram.

**SAY:** Say the points on the slide.

### Use of fishbone diagram

**Slide 56:**

**SAY:** The fishbone diagram can be used for the following purposes.

**READ:** Read the points on the slide.

### Steps to create a fishbone diagram

**Slide 57:**

**SAY:** To create a fishbone diagram you need to do the following steps:

1. Define the problem and write it in a box on the right side of the paper ("head" of the fish), and then draw the "spine"
2. Create "bones" of fish by brainstorming 3 to 6 major categories of causes or factors contributing to the problem
   a) General categories found to be useful: People, Methods, Materials, Measurement, Equipment, Environment
3. Brainstorm ideas about what factors, or causes, in each category are contributing to the problem – each will need its own "sub-bone" ("What are the people issues affecting/causing…?")
**PRESENTATION VISUAL**

<table>
<thead>
<tr>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
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<tbody>
<tr>
<td><strong>4.</strong> Get to a deep level of detail by asking “why” 3 to 5 times, continuing to draw additional levels of “sub-bones” for each reason</td>
</tr>
</tbody>
</table>

**Example 1 fishbone diagram**

Slide 58:

**Example: Fishbone diagram from Mlomba Health Centre, Machinga District**

**Example 2 of fishbone diagram**

Slide 59:

**Example: Fishbone diagram from Nainanje Health Centre, Machinga District**

**Exercise 4: Drawing a fishbone diagram**

Slide 60

**SAY:** Here is an example of a fishbone diagram from one of the health facilities in Machinga District that shows the root cause of the problem on the right side “LA dispensed is higher than confirmed cases.”

Explain the other parts of the fishbone diagram and how they relate to each other.

**SAY:** Here is another example.

Explain the parts of the fishbone diagram and how they relate to each other.

**SAY:** We are now going to try to draw a fishbone diagram based on our case study introduced earlier.

- Referring to the case study and the improvement aim you developed with your team, identify any problems that are affecting treatment of malaria in under-five children based on positive laboratory diagnostic test results.
- Analyze the probable causes of your problem using a fishbone diagram.
Take 15 minutes to discuss and complete the exercise.

CHECK IN: After 15 minutes, check if more time is needed.

ASK: Volunteers to share their answers.

ASK: Are there any questions before we take a quick break?

ANNOUNCE: Tell participants this is a 5-minute break.

Section 5: Developing Indicators
Time: 55 minutes

PRESENTATION VISUAL

FACILITATOR’S MAIN POINTS

SAY: Next, we need to develop measures, or indicators, for improvement. Indicators are at the core of quality improvement. They help us figure out how to know if the changes we are implementing are achieving the improvement we are seeking.

SAY: Let’s go back to the second step of the Model for Improvement: Analyze the problem.
PRESENTATION VISUAL | FACILITATOR’S MAIN POINTS
---|---
Model for Improvement Slide 63: | SAY: We need to determine the indicators that enable us to know that we have made the improvement we are seeking.

Why measure? Slide 64: | ASK: Why do we measure?

How measures/indicators should work Slide 65: | SAY: If you do not measure what you are doing, how will you know you have made an improvement?

Collecting data is a burden for each health care worker. However, we need to collect data to know whether what we are doing is working or not. Health care workers’ engagement is higher if they know why they are collecting the data that they are. If they know there is some sort of improvement resulting from the data they are collecting, they will be more likely to collect it.

We see a lot of incorrect data in health care systems. No matter how well you process the data, if you put garbage in, you’ll get garbage out.

The rule of thumb is to collect the minimum amount of data necessary to answer the question: How will we know that a change is an improvement?

Try to evaluate the data that already exists. What data is useful? What additional data needs to be collected?

SAY: Let’s look at how measures, or indicators, should work

- Should be directly linked to improvement aims
- Should be used to guide improvement and test changes
- Should be integrated into the team’s daily routine
- Should allow QI teams to learn
- Should concentrate on key measures—don’t overwhelm teams with endless data collection and analysis!
### PRESENTATION VISUAL

**How measures/indicators should work**
- Should be linked to improvement aims
- Should be used to guide improvement and test changes
- Should be integrated into the team’s daily routine
- Will allow QI teams to learn
- Should concentrate on key measures—don’t overwhelm teams with endless data collection and analysis!

---

### FACILITATOR’S MAIN POINTS

**Types of indicators**

**Slide 66:**

**Quality of a good indicator**

**Slide 67:**

**Example of an indicator**

**Slide 68:**

**SAY:** Using Donabedian’s model where we have inputs, processes, outputs, and outcomes, we can establish indicators at each of these levels. On this slide you can see examples of each type of indicator.

**Input indicators** measure the availability of key resources (i.e., human, material). They are the easiest to collect, but don’t tell us much (ex: number of staff trained in malaria mRDT).

**Process indicators** measure the degree of adherence with an evidence-based intervention or set of interventions. These can sometimes be difficult to collect, but are key to the improvement process (ex: % severe malaria among under-five children for whom microscopy was done).

**Output indicators** measure the immediate result of the service. These are especially important if increasing coverage is part of the aim for improvement but can also be important regardless to show impact (ex: Proportion of children treated for malaria).

**Outcome indicators** measure how a system is performing with respect to the health of a defined population or individual. These are often the most difficult to collect, but they are the ultimate measure of improvement (ex: mortality rate of under-five children due to malaria).

**SAY:** In short, a good indicator is defined in such a way that allows for it to be collected and measured *consistently*.

**Qualities of a good indicator** are:
- Clear and unambiguous (teams will not confuse what is meant by the indicator)
- Quantifiable
- Identifies the source of the data and the person responsible for collecting it
- Identifies a clear numerator and denominator
- Identifies the frequency with which the data should be collected

**SAY:** Here is an example of a well-defined indicator.
Exercise 5: Developing Indicators

Slide 69:

Exercise: Developing indicators

- Referring back to the improvement aim you developed with your team, develop a process indicator that will help the team to measure improvement

Instructions

As you fill out the form below identifying your indicators, ask yourself whether or not they fulfill all of the following qualities:

- Clear and unambiguous (teams will not confuse what is meant by the indicator)
- Quantifiable
- Identifies the source of the data and the person responsible for collecting it
- Identifies a clear numerator and denominator
- Identifies the frequency with which the data should be collected

**Indicator:** Describe what you are measuring

- Proportion of febrile children under five with a positive diagnostic test result who are treated with AL

SAY: Referring to the improvement aim you developed with your team, develop a process indicator that will help the team to measure improvement

Take 10 minutes to discuss and complete the exercise.

CHECK IN: After 10 minutes, check if more time is needed.

ASK: Volunteers to share their answers.

Pause

ASK: Are there any questions before we take a quick break? If you want more practice on developing indicators, you can find practice exercises in the *Tips and Tools for Learning Improvement* that is listed on the “Resource” page we distributed.

ANNOUNCE: Tell participants this is a 15-minute break.
### Numerator: The number of times your process succeeded
The number of febrile children under five with a positive diagnostic test result who are treated with AL

### Denominator: The total number of times you ran your process
Total number of febrile children under five treated with AL

### Source: Where you are getting your data from
AL, mRDT and laboratory registers

### Responsible person: Individual who will ensure that the data is collected and maintained
Laboratory and pharmacy assistants

### Frequency: How often it will be collected
Monthly

---

**Section 6: Plotting a Time Series Chart**

**Time:** 55 minutes

#### PRESENTATION VISUAL

Section 6: Setting up and plotting a time series chart
Slide 70:

#### FACILITATOR'S MAIN POINTS

**SAY:** We will now talk about data visualization. As you will be collecting data for the indicators you have developed, it is necessary to present your data in such a way that it is easy to interpret. One way this is done in quality improvement is through a time series chart.

**ASK:** What is a time series chart?

**SAY:** A time series chart tracks data trends over time. It helps teams to determine whether specific changes lead to improvement. It can be plotted on a daily, weekly or monthly basis.

As you will see on the next slide, the x-axis is the time. The y-axis is the indicator that the improvement team is tracking.
PRESENTATION VISUAL

FACILITATOR’S MAIN POINTS

**What is a time-series chart?**

- Data visualization tool that illustrates data points at successive intervals of time
- Simple effective tool to track the performance of a process over time and document the story of improvement
- It helps teams to determine whether specific changes lead to improvement

**Elements of a time series chart**

**Slide 72:**

**SAY:** This time series chart plots the percentage of febrile children under-five who were triaged upon arrival at Kalembo Health Centre in Balaka District.

**SAY:** Here on the x-axis you can see the months the data was collected. On the y-axis you can see the indicator that the team is tracking (% of under-five febrile children triaged upon arrival). The boxes in blue point out the key elements that should be in a properly labeled time series chart. This is to ensure that those examining our results have enough information to be able to accurately interpret the graphs.

Norms for time series charts are presented below in three categories: a set of norms valid for every time series charts and then additional specifications for charts of individual QI team data and for charts of aggregated data across sites. These norms should be built into the way charts are automatically generated by Excel and adhered to for any data presentation (paper presentation or electronic, at a learning session, an in-country presentation, etc.).

Every time series charts should have:

- **A clear, well-defined title:** A clear and well-defined title that expresses who, what, when, and where.

- **Labeled X-axis and Y-axis:** Axes should include a “scale” such as 0 – 100% and a “label” which describes what variable or indicator is being represented on the axis.

- **Denominator definition:** The criteria for being counted in the numerator and denominator.

- **Denominator and numerator values:** If the indicator being shown is a percentage, the corresponding denominator and numerator for each measurement period should be presented.

- **Data source:** Brief descriptions of the source of data (i.e., register or care cards).

- **Sampling strategy:** If data for the denominator come from a sample, rather than all cases that fit denominator definition in that period, state how sampling was done (e.g., systematic sample of 10 records).

Time series charts showing data for one site or one QI team should also have:
**PRESENTATION VISUAL**

**FACILITATOR’S MAIN POINTS**

- **Annotate key tested changes:** Annotations should be of two categories: timing of key changes and other key events that might explain changes in results over time. Key changes represent interventions, which relate to substantial changes in the value of the indicator (positive or negative). In this example you can see the change that was implemented in the grey box.

Time series charts showing aggregated data across multiple sites should also have:

- **Number of sites reporting for each measurement period:** For each point on the graph, the total number of sites included in the aggregated measure should be presented.

**Data form for plotting your time series chart**

Slide 73:

SAY: Here is a sample data form to collect data to plot on the time-series chart.

This is the form the team can use to record the data in the “improvement journal.”

The clinic data clerk records the data from the register and clients’ cards every week into the form/journal. In this example, each week’s entry needs to include the total number of under-five children suspected of malaria who were seen in the clinic, and the number treated for malaria.

The improvement team member in charge of data began plotting this information on a time series chart to allow the team to see the change in both their process and outcome indicator over time.

**Example of time series chart**

Slide 74:

SAY: Here is an example of a time series chart from Mchinji District Hospital.

**Pause**

**Short break – 5 minutes**

ASK: Are there any questions before we take a quick break? I would recommend you do the Measurement-Time Series Chart this evening for homework from the Tips and Tools for Learning Improvement that is listed on the “Resource” page we distributed (see: https://www.usaidassist.org/sites/assist/files/tipstoolsimprovement_measurementtimeseries_may2017_ada.pdf).

ANNOUNCE: Tell participants they can have a 5-minute break.
Section 7: Developing, Testing, and Implementing Change
Time: 60 minutes before lunch + 30 minutes after lunch

<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 7: Developing, Testing, and Implementing Change</td>
<td>SAY: Finally, in this section we move to the development, testing, and implementation of changes in processes and systems to improve quality.</td>
</tr>
<tr>
<td>Slide 75</td>
<td></td>
</tr>
<tr>
<td>Model for Improvement</td>
<td>SAY: Now we move on to Step 3 of the Model for Improvement: Develop the solution.</td>
</tr>
<tr>
<td>Slide 76</td>
<td></td>
</tr>
<tr>
<td>Model for Improvement</td>
<td>SAY: During this steps teams consider possible changes (interventions) they can make that yield improvement. Changes need to be organized according to their importance and practicality. If there are many changes, and teams have difficulty prioritizing which one to focus on first, there are different methods for doing so. This includes voting, rank ordering, having a decision made by and expert on the team. For more information on how to do this, I would refer you to Tips and Tools for Learning Improvement: Developing Changes</td>
</tr>
<tr>
<td>Slide 77</td>
<td><a href="https://www.usaidassist.org/sites/assist/files/tipstoolsimprovement_developingchanges_may2017_ada.pdf">https://www.usaidassist.org/sites/assist/files/tipstoolsimprovement_developingchanges_may2017_ada.pdf</a></td>
</tr>
</tbody>
</table>
### Developing changes

#### Slide 78:

**SAY:** Changes should be something that you have not done before, you can do tomorrow, that worked somewhere else, and that address identified gaps. Changes should not be something that you’ve done before, low impact, or full of technical slow-downs.

#### Slide 79:

**SAY:** Here are some tips for what to avoid when developing changes.

#### Slide 80:

**SAY:** When developing changes, you should ask yourself the following questions.

**READ:** Read points on slide

#### Slide 81:

**SAY:** I will now show you some of the examples of changes developed by teams at the Chamba health centre in Machinga District.

**READ:** Read points on slide.
### PRESENTATION VISUAL

**Example: Effective changes tested at Chamba health facility, Machinga District**

<table>
<thead>
<tr>
<th>Improvement aim at Chamba facility</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>To improve the prescription of malaria treatment in under-five children based on weight as per national guidelines</td>
<td>- Identify a weighing area within OPD</td>
</tr>
<tr>
<td></td>
<td>- Identify a weighing scale at outpatient department area</td>
</tr>
<tr>
<td></td>
<td>- Allocate service providers to take weight of sick children and record in health passport book</td>
</tr>
<tr>
<td></td>
<td>- Assign pharmacy assistant to record weight in the AL register</td>
</tr>
</tbody>
</table>

**Example: Developing changes**

**Slide 82:**

**Examples of changes, Mangamba health centre**

<table>
<thead>
<tr>
<th>Improvement aim at Mangamba facility</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>To improve receipt of the first dose of AL as DOT for all sick with malaria under five children</td>
<td>- Source funds from the community health fund and purchased buckets and cups</td>
</tr>
<tr>
<td></td>
<td>- Identify space within the dispensary to establish the DOT corner</td>
</tr>
<tr>
<td></td>
<td>- Assign the provider dispensing medicine to administer DOT and record in the AL register</td>
</tr>
</tbody>
</table>

**Example: Developing changes**

**Slide 83:**

**Example: Improving receipt of first dose of AL as DOT in children U5, Nyambi Health Centre**

**Exercise 6: Developing changes**

**Slide 84:**

**Exercise**

- Referring back to the Fishbone diagram, prioritize three main problems affecting treatment of febrile children under five, based on a positive mRDT result.
- Brainstorm on possible solutions for addressing these problems.

Take 15 minutes to discuss and complete the exercise.

**CHECK IN:** After 15 minutes, check with participants if more time is needed.

**ASK:** Volunteers to share their answers.

---

**FACILITATOR’S MAIN POINTS**

**SAY:** Here is another example from Mangamba health centre.

**READ:** Read points on slide.

**SAY:** And here is another example from Nyambi health centre.

**SAY:** You will now do an exercise on developing changes.

- Referring to the fishbone analysis diagram, prioritize three main problems affecting treatment of febrile children under five, based on a positive mRDT result.
- Brainstorm on possible solutions for addressing these problems.

Take 15 minutes to discuss and complete the exercise.

**CHECK IN:** After 15 minutes, check with participants if more time is needed.

**ASK:** Volunteers to share their answers.
<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pause</td>
<td><strong>ASK</strong>: Are there any questions before we take a lunch break?</td>
</tr>
<tr>
<td>Lunch break</td>
<td><strong>ANNOUNCE</strong>: Tell participants it is time for a lunch break.</td>
</tr>
<tr>
<td>Testing changes using PDSA cycles</td>
<td><strong>SAY</strong>: Now we will discuss testing changes using the Plan-Do-Study-Act (PDSA) cycle.</td>
</tr>
<tr>
<td>Slide 85:</td>
<td><strong>ASK</strong>: Who has heard of this cycle before? <strong>ASK</strong>: Can someone give an example of when and how they conducted a PDSA cycle?</td>
</tr>
<tr>
<td>Elements of the cycle for learning and improvement: Plan-Do-Study-Act (PDSA) cycle</td>
<td><strong>READ</strong>: Read the different sections and bullets in the slide.</td>
</tr>
<tr>
<td>Slide 86:</td>
<td><strong>SAY</strong>: Here is an example of a PDSA cycle from Chikweo Health Centre. <strong>READ</strong>: Read the slide.</td>
</tr>
<tr>
<td>PRESENTATION VISUAL</td>
<td>FACILITATOR’S MAIN POINTS</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------</td>
</tr>
</tbody>
</table>
| **Testing and implementing changes**  
Slide 88:  
![Testing and implementing changes](image) | **SAY:** Here is a flow chart illustrating the PDSA cycle.  
**READ:** Read the flow chart and point to the different components. |
| **Testing a change**  
Slide 89:  
![Testing a change](image) | **SAY:** Tips for testing a change:  
- Test BIG changes on an initially small scale, then ramp up  
- Test individual changes separately when possible  
- Negative results are an opportunity to learn  
- Think about how conditions change over time (monthly, seasonal patterns, external variables) |
| **Exercise 7: Plan for proposed changes**  
Slide 90:  
![Exercise: Plan your proposed changes](image) | **SAY:** We will now do an exercise on the topic we covered. Referring to the case study and the changes developed in the last step, select one of the three proposed changes and develop a plan for testing. Take 15 minutes to do so. |
| **Pause**  
**Short break – 5 minutes** | **ASK:** Are there any questions before we take a quick break?  
**ANNOUNCE:** Tell participants this is only a 5-minute break. |
Section 8: Monitoring Results and Acting on Them
Time: 60 minutes

<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening and recap</td>
<td><strong>ASK:</strong> What have been some of the most interesting things you learned so far? Do you have any questions? Comments?</td>
</tr>
<tr>
<td>Section 8: Monitoring results and acting on them</td>
<td><strong>SAY:</strong> So far, we have defined our aim for improvement, formed the improvement team, developed a flowchart and a fishbone diagram, developed indicators, drawn a time series chart, and developed and tested changes using a PDSA cycle. Tomorrow, we will discuss how to monitor results and act on them, as well as gender integration in malaria programming.</td>
</tr>
<tr>
<td>Slide 91:</td>
<td><strong>SAY:</strong> We will now talk about monitoring results and acting on them. After we collect improvement data, develop a time series chart, and test our changes, we need to compare baseline data and data collected during the PDSA to measure the impact of the solution. To better understand how to do this, we will go through a real-life example from the ASSIST work on improving NACS for HIV positive clients visiting one facility in Uganda.</td>
</tr>
<tr>
<td>Percentage of clients whose nutritional status is assessed using mid-upper arm circumference (MUAC)</td>
<td><strong>SAY:</strong> As you can see here, nothing happened for 3 weeks. No one did any work on assessing nutritional status using mid-upper arm circumference (MUAC).</td>
</tr>
</tbody>
</table>

---

[Graph showing percentage of clients whose nutritional status is assessed using MUAC]
**Question**
Slide 93:

**ASK:** Why do you think NACS was not implemented even though supplies were available, and the staff were trained?

**SAY:** Most likely the staff were too busy and conducting nutritional assessments was not a priority.

Percentage of clients whose nutritional status is assessed using mid-upper arm circumference

Slide 94:

**SAY:** Here you can see what happened at the facility. The health care providers were trained, they had the commodities but still no one was implementing NACS.

**Question**
Slide 95:

**ASK:** Why do you think NACS was not implemented even though supplies were available, and the staff were trained?
### PRESENTATION VISUAL

#### FACILITATOR’S MAIN POINTS

Percentage of clients whose nutritional status is assessed using mid-upper arm circumference

Slide 96:

![Percentage of clients whose nutritional status is assessed using mid-upper arm circumference](image)

**SAY:** In week 10, health care providers were told to do MUAC. As you can see in week 11, this resulted in 100% of clients whose nutritional status was assessed with MUAC.

---

Question for discussion

Slide 97:

![Question for discussion](image)

**ASK:** What do you think happened here (causing the huge increase in the numbers of clients assessed)?

---

Percentage of clients whose nutritional status is assessed using mid-upper arm circumference

Slide 98:

![Percentage of clients whose nutritional status is assessed using mid-upper arm circumference (MUAC)](image)

**SAY:** The team was informed of an external visit to check the facility in week 11, causing 100% compliance.
<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question for discussion Slide 99: <img src="image" alt="Question for discussion" /></td>
<td><strong>ASK:</strong> What do you think happened next?</td>
</tr>
<tr>
<td>Percentage of clients whose nutritional status is assessed using mid-upper arm circumference Slide 100: <img src="image" alt="Uganda: % of clients whose nutritional status is assessed using mid-upper arm circumference (MUAC)" /></td>
<td><strong>SAY:</strong> Look at the graph now. After the first week of 100% compliance, the percentage of patients assessed using MUAC dropped dramatically.</td>
</tr>
</tbody>
</table>
| Question for discussion Slide 101: ![Question for discussion](image) | **ASK:** Why do you think the proportion of patients assessed for MUAC dropped?  
**SAY:** This occurred because there was only a short-term incentive to assess clients using MUAC. No change was made in the system to support this. It was unsustainable. |
### VII. MODULE 5: GENDER INTEGRATION IN MALARIA PROGRAMMING

**Time:** 45 minutes

**Learning Objectives**

By the end of the module participants should be able to...
• Define gender integration
• Understand the steps needed to integrate gender in malaria care
• Give examples of changes

<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
</table>
| Module 5: Gender integration in malaria programming Slide 103: | SAY: Gender integration is our last module in this course. We will look at considerations for integrating gender issues in malaria care using the Model for Improvement. By the end of the module you should be able to
  • Define gender integration
  • Understand the steps needed to integrate gender in malaria care
  • Give examples of changes |

<table>
<thead>
<tr>
<th>What is sex? Slide 104:</th>
<th>ASK: What is sex? READ: Read the slide</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is sex?</td>
<td></td>
</tr>
<tr>
<td>Refers to the biological differences between males and females. These differences are concerned with the physiology of males and females. Examples:</td>
<td></td>
</tr>
<tr>
<td>• Women can give birth, men cannot.</td>
<td></td>
</tr>
<tr>
<td>• The rate of malaria infection is higher in pregnant women because of their decreased immunity.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>What is gender?</td>
<td></td>
</tr>
<tr>
<td>Refers to the economic, social, political, and cultural attributes and opportunities associated with being male or female. These roles and responsibilities that people learn, not what they are born with. The social definitions of what it means to be a woman or a man vary among cultures and change over time. Examples:</td>
<td></td>
</tr>
<tr>
<td>• Women are expected to care for the home, the children, the disabled, the sick, and the elderly.</td>
<td></td>
</tr>
<tr>
<td>• Men are expected to work, earn money, and provide for the family.</td>
<td></td>
</tr>
</tbody>
</table>

<p>| Gender and malaria: Risk of exposure Slide 106: | ASK: How does gender relate to malaria? SAY: We will discuss how gender relates to malaria in order for us to better understand how to integrate gender into a malaria response. |</p>
<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
</table>
| **Gender and malaria: Risk of exposure** | **Read:** Read the slide.  
**ASK:** Ask the participants to share specific examples in the Malawian context.  
**SHARE:** Share personal experiences and examples. |
| Gender norms and values that influence the division of labor, leisure patterns, and sleeping arrangements may lead to different patterns of exposure to mosquitoes for men and women.  
- Women who work in fields or forests at peak biting times or migrate to malaria-endemic areas for work may be at a higher risk of contracting malaria.  
- Women who give birth in traditional settings or low-resource communities may also be exposed to mosquitoes.  
- Women who perform domestic chores, such as fetching water, may be at increased risk of malaria transmission.  
- In some societies, men tend to sleep outdoors and this may increase their risk of exposure to mosquitoes. | |
| **Gender and malaria: access and utilization of health care services**  
Slide 107: | **Read:** Read the slide.  
**ASK:** Ask the participants to share specific examples in the Malawian context  
**SHARE:** Share personal experiences and examples. |
| Access to healthcare services for malaria can be affected by gender factors, including gender inequality.  
- Women often have to ask for their husband’s permission to access treatment for themselves and/or their children.  
- Women may be more willing than men to invest in malaria prevention measures, such as insecticide-treated bed nets (ITNs), but men lack the financial and decision-making power to do so.  
- Evidence from some countries indicates that restricted mobility of women may also impede their attendance at primary health care clinics for malaria testing.  
- In some settings, males utilize health care services less than females due to cultural norms. | |
| **Gender and malaria: vulnerable populations**  
Slide 108: | **Read:** Read the slide.  
**ASK:** Ask the participants to share specific examples in the Malawian context.  
**SHARE:** Share personal experiences and examples. |
| There are several populations that for both biological and social reasons are more vulnerable to malaria.  
- Pregnant women and children are at the greatest risk of contracting malaria both in high and low malaria-endemic areas.  
- Adolescent girls are particularly vulnerable to malaria. In many sub-Saharan African settings, adolescents are often asexual and anemic when they first become pregnant.  
Both non-pregnant and pregnant adolescent girls had significantly higher parasite rates than women over 15 years of age. | |
| **Gender and malaria: Other social determinants**  
Slide 109: | **Read:** Read the slide.  
**ASK:** Ask the participants to share specific examples in the Malawian context.  
**SHARE:** Share personal experiences and examples. |
Improving Care for Children under Five and Pregnant Women Presenting with Fever in Malawi: Facilitator Guide

What is gender integration?

Slide 110:

**What is gender integration?**

*Identifying, and then addressing gender inequalities during strategy and project design, implementation, and monitoring and evaluation.* (USAID)

Respecting the different needs, behaviors, preferences, access to, and utilization of health services for women, men, girls, and boys.

Measuring gender

Slide 111:

**Measuring gender: Sex disaggregated data and gender sensitive indicators**

<table>
<thead>
<tr>
<th>Sex-disaggregated data</th>
<th>Gender-sensitive indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data tracked for males and females separately for an intervention which is targeting both sexes and females.</td>
<td>Indicates that measure changes in the status and role of men- and women over time.</td>
</tr>
<tr>
<td>Examples:</td>
<td>Examples:</td>
</tr>
<tr>
<td>The prevalence of malaria (by sex and age),</td>
<td>The incidence of malaria among pregnant women.</td>
</tr>
<tr>
<td>Percentage reporting</td>
<td>The percentage of women who can make the decision by themselves or with the help of the household.</td>
</tr>
<tr>
<td>Health-seeking behavior and utilization of healthcare (by sex)</td>
<td>If the woman has a partner that is not involved in the decision process.</td>
</tr>
<tr>
<td>Both are important but they are not the same thing.</td>
<td>The incidence of other malaria symptoms.</td>
</tr>
</tbody>
</table>

Example of non-sex-disaggregated data

Slide 112:

**Before: Non-sex disaggregated data, Uganda**

**FACILITATOR’S MAIN POINTS**

**READ:** Read the slide.

**SAY:** Gender integration means identifying, and then addressing gender inequalities during strategy and project design, implementation, and monitoring and evaluation of a project.

We can use the science of improvement to identify and then address gender-related gaps and improve health outcomes.

**SHARE:** Share a personal experiences or examples (i.e., parent’s preference on which child (boy or girl) to rush to the clinic when they get sick, or which child to send to school).

**SAY:** Sex-disaggregated data and gender-sensitive indicators help monitor and evaluate health care improvements for all and close gaps in care.

Gender analysis help to understand local gender context, identify and address gender-related issues.

**READ:** Read what is on the slide so that participants fully understand the difference between sex-disaggregated data and gender-sensitive indicators.

**SAY:** This is an example from Uganda of TB/HIV co-infected clients on ART, before the data was disaggregated by sex.

**DESCRIBE:** Describe the graph.
**PRESENTATION VISUAL**

Example of sex disaggregated data
Slide 113:

![Example of sex disaggregated data, Uganda](image)

**FACILITATOR’S MAIN POINTS**

**SAY:** And here is an example of results after the data was disaggregated by sex.

**DESCRIBE:** Describe the graph, pointing out how disaggregating the data showed great gaps in males and females on ART. These gaps could be addressed through improvement changes and were subsequently reduced.

Important questions to consider
Slide 114:

**SAY:** As you work on improving malaria care, you need to ask yourself these important questions.

![Important questions to consider](image)

Debrief and closing

**SAY:** Today, we covered flowcharts, fishbone diagrams, developing indicators, developing, testing and implementing changes, monitoring results and acting on them and gender integration. Tomorrow, we will work on our planning for next steps.

---

**VIII. MODULE 6: PLANNING FOR NEXT STEPS**

90 minutes (60 min Section 1 and 40 min Section 2)

**Learning Objective**

By the end of the module participants should be able to:

- Develop a plan of activities that they will carry out at their sites

**Section 1: Flowchart the New Process**

**Time:** 60 minutes
### PRESENTATION VISUAL

#### Next steps

**Slide 115:**

![Next Steps](image)

#### Section 1: Flowchart the New Process

**Slide 116:**

![Section 1: Flowchart the New Process](image)

#### Section 1: Create a flowchart of the new process

**Slide 117:**

![Create a flowchart of the new process](image)

#### Key questions for analyzing process steps

**Slide 118:**

![Key questions for analyzing process steps](image)

### FACILITATOR’S MAIN POINTS

**SAY:** In this module our main objective is to develop plan of activities that you will carry out when you go back to your own health facilities.

Now that you have learned how you can improve care for children under five presenting with fever at our clinics, you need to plan how you will initiate improvement when you return to your facilities. This module has two steps. First, you will redraw the flow charts you worked on earlier. Second, you will list activities you will do at your sites using a template I will give to you.

**SAY:** Earlier on in our course we drew a flowchart of processes of care for a sick child under five coming into your health facility. In Section 7, you also did some exercises where you developed changes to improve mRDT outcomes. Now it is time to re-draw the flowchart based on the suggested changes.

**ASK:** Why is it important to re-draw the flowchart?

**READ:** Read the slide.

**SAY:** When you are developing your new flowchart for febrile children, think about the changes that were implemented and consider the following key questions for analyzing the process steps.
**Section 1: Create a flowchart of the new process**

**Slide 119:**

*Example: Flow chart of febrile children under 5 children after implementing changes at the Nyambi Health Centre*

**SAY:** For example, here is a new flowchart for the process for treating febrile children under five after implementing changes at the Nyambi Health Centre.

**SAY:** Now in your groups, referring to the case study and the flow chart you developed yesterday, draw the new flow chart specifically for your own clinic.

**CHECK IN:** After 30 minutes, check if more time is needed.

**ASK:** Volunteers to share their answers.

**Section 2: Developing Facility Work Plans**

40 min

**Section 2: Developing Facility Work Plans**

**Slide 121:**

**SAY:** The last part of this module is for you to develop a Ghant Chart for the activities you will carry out to initiate improvement.
<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Section 2: Exercise 9. Developing Facility Work plans" /> Slide 12:</td>
<td><strong>SAY:</strong> In your facility groups, first list all the activities you will carry out, then assign time period you will carry out your activity. In addition, identify the person who will facilitate or ensure that the activity is done. Take 30 minutes to discuss and complete the exercise. <strong>CHECK IN:</strong> After 30 minutes, check if more time is needed. <strong>ASK:</strong> Volunteers to share their answers.</td>
</tr>
<tr>
<td><img src="image" alt="Section 2: Debrief and closing" /></td>
<td><strong>SAY:</strong> As you will be implementing your own improvement project(s), remember each component of the improvement model is important. Focusing only on one component than the other will yield poor results. Remember that changes should be tracked over time in a time-series chart so that you can observe the improvements that are made. The results should be shared and discussed within the quality improvement team as well as with other quality improvement teams working to achieve the same aim, in another context. This sharing will facilitate learning across different contexts and can stimulate further ideas for testing changes. Building the culture for improvement will instill the will to constantly improve quality of care. In addition, keeping records of your improvement projects is important as records will help you know whether you are progressing towards your project goals. The records will also allow you to confidently share your improvement journey since you have evidence of your improvement initiatives. <strong>ASK:</strong> Ask if there are any questions on the material. <strong>ASK:</strong> Ask for verbal feedback on the course.</td>
</tr>
<tr>
<td>Post-Test</td>
<td>Distribute post-test and give participants 15 minutes to complete</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Distribute evaluation forms to all participants. Ask them to complete and return after 15 minutes</td>
</tr>
</tbody>
</table>
## IX. MODULE 7: LEADERSHIP SKILLS TO SUPPORT IMPROVEMENT

**Time:** 40 minutes

### Learning Objective

By the end of the module participants should be able to:

- Understand roles and responsibilities of leaders during the different stages of the improvement project

### PRESENTATION VISUAL

<table>
<thead>
<tr>
<th>Module 6: Leadership skills to support improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slide 123:</td>
</tr>
<tr>
<td><img src="image" alt="Roles of Leaders to Support Improvement" /></td>
</tr>
</tbody>
</table>

### FACILITATOR’S MAIN POINTS

**SAY:** This session is only for those who will be supporting improvement, either to districts teams or health facility teams. You may be an improvement coach, or a program coordinator, or a program specialist. But as long as you will be supporting improvement you need to understand your role as a leader.

By the end of the module, you will be able to understand your role as a leader supporting improvement.

In improvement there are different players that are involved, and leaders are key in supporting teams to be focused and motivated.

**ASK:** Who are the different players in improvement?

### Roles of QI team members, coaches, and leaders

**READ:** Read the slide

**ASK:** What do you think are the roles and responsibilities of an improvement team leader and leaders in general?

### Roles and responsibilities of QI leaders

**READ:** Read the slide.

**SAY:** Leaders at different levels have different responsibilities. Identifying the level at which you are supporting improvement is important, as this may prevent unnecessary conflict and confusion with other leaders within the improvement project.
Group Exercise 10: Roles and responsibilities of leaders

Slide 126:

**Question for discussion**

What is your role as a leader in supporting your teams to improve the process, testing and implementing changes?

**ASK:** What is your role as a leader in supporting your teams to improve the process, testing and implementing changes?

**DISCUSS:**

**Group Exercise 10: Roles and responsibilities of a leader**

List down your roles as a leader in the current malaria improvement project.

If you are a coach, list down your roles as coaches in your group and if you are at leadership level you will discuss and list your roles as such.

Take 15 minutes to discuss the question

**CHECK IN:** After 15 minutes, check if more time is needed.

**ASK:** Volunteers to share their answers.

**SAY:** This marks the end of our course.

**ASK:** Are there any questions on any of the models that we have discussed?

**SAY:** As you will be implementing your own improvement project(s), remember each component of the improvement model is important. Focusing only on one component than the other will yield poor results. Remember that changes should be tracked over time in a time-series chart so that you can observe the improvements that are made. The results should be shared and discussed within the quality improvement team as well as with other quality improvement teams working to achieve the same aim, in another context. This sharing will facilitate learning across different contexts and can stimulate further ideas for testing changes. Building the culture for improvement will instill the will to constantly improve quality of care.

In addition, keeping records of your improvement projects is important as records will help you know whether you are progressing towards your project goals. The records will also allow you to confidently share your improvement journey since you have evidence of your improvement initiatives.

**ASK:** Ask if there are any questions on the material.
<table>
<thead>
<tr>
<th>PRESENTATION VISUAL</th>
<th>FACILITATOR’S MAIN POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-Test</td>
<td><strong>ASK</strong>: Ask for verbal feedback on the course.</td>
</tr>
<tr>
<td></td>
<td>Distribute post-test and give participants 15 minutes to complete</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Distribute evaluation forms to all participants. Ask them to complete and return.</td>
</tr>
<tr>
<td>Closing Remarks</td>
<td>Give time for closing remarks from participant representative, DHO representative and/supporting partners</td>
</tr>
</tbody>
</table>
X. APPENDICES

Appendix A: Sample Training Agenda

<table>
<thead>
<tr>
<th>DAY 1</th>
<th>Time</th>
<th>Duration</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8:00</td>
<td>60 minutes</td>
<td>Introductory session</td>
</tr>
<tr>
<td></td>
<td>9:00</td>
<td>30 minutes</td>
<td>Module 1: What is quality in health care?</td>
</tr>
<tr>
<td></td>
<td>9:30</td>
<td>30 minutes</td>
<td>Module 2: The issue of quality in health care</td>
</tr>
<tr>
<td></td>
<td>10:00</td>
<td>15 minutes</td>
<td>Break</td>
</tr>
<tr>
<td></td>
<td>10:15</td>
<td>40 minutes</td>
<td>Module 3: What results are we seeing?</td>
</tr>
<tr>
<td></td>
<td>10:55</td>
<td>5 minutes</td>
<td>Break</td>
</tr>
<tr>
<td></td>
<td>11:00</td>
<td>15 minutes</td>
<td>Module 4: Overview: The Model for Improvement</td>
</tr>
<tr>
<td></td>
<td>11:15</td>
<td>45 minutes</td>
<td>Section 1: Prioritization</td>
</tr>
<tr>
<td></td>
<td>12:00</td>
<td></td>
<td>Lunch</td>
</tr>
<tr>
<td></td>
<td>13:30</td>
<td>55 minutes</td>
<td>Section 2: Developing an improvement aim</td>
</tr>
<tr>
<td></td>
<td>14:25</td>
<td>5 minutes</td>
<td>Break</td>
</tr>
<tr>
<td></td>
<td>14:30</td>
<td>40 minutes</td>
<td>Section 3: Forming the improvement team</td>
</tr>
<tr>
<td></td>
<td>15:10</td>
<td>15 minutes</td>
<td>Break</td>
</tr>
<tr>
<td></td>
<td>15:25</td>
<td>60 minutes</td>
<td>Section 4: Part 1: Understanding the current process</td>
</tr>
<tr>
<td></td>
<td>16:25</td>
<td>5 minutes</td>
<td>Closing of Day 1 and preview of Day 2</td>
</tr>
<tr>
<td></td>
<td>16:00</td>
<td></td>
<td>Adjourn</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DAY 2</th>
<th>Time</th>
<th>Duration</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8:00</td>
<td>15 minutes</td>
<td>Recap of Day 1 and review of Day 2 agenda</td>
</tr>
<tr>
<td></td>
<td>8:15</td>
<td>60 minutes</td>
<td>Section 4 Part 2: Cause and effect analysis</td>
</tr>
<tr>
<td></td>
<td>9:15</td>
<td>5 minutes</td>
<td>Break</td>
</tr>
<tr>
<td></td>
<td>9:20</td>
<td>55 minutes</td>
<td>Section 5: Developing indicators</td>
</tr>
<tr>
<td></td>
<td>10:15</td>
<td>15 minutes</td>
<td>Break</td>
</tr>
<tr>
<td></td>
<td>10:30</td>
<td>55 minutes</td>
<td>Section 6: Plotting a time series chart</td>
</tr>
<tr>
<td></td>
<td>11:25</td>
<td>5 minutes</td>
<td>Break</td>
</tr>
<tr>
<td>Time</td>
<td>Duration</td>
<td>Topic</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>-------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>11:30</td>
<td>60 minutes</td>
<td>Section 7: Developing and testing changes (Developing changes)</td>
<td></td>
</tr>
<tr>
<td>12:30</td>
<td></td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>14:00</td>
<td>30 minutes</td>
<td>Section 7: Developing and testing changes (Developing changes continued)</td>
<td></td>
</tr>
<tr>
<td>14:30</td>
<td>60 minutes</td>
<td>Section 8: Monitoring results and taking action</td>
<td></td>
</tr>
<tr>
<td>15:30</td>
<td>15 minutes</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>15:45</td>
<td>45 minutes</td>
<td>Module 5: Gender Integration in Malaria Programming Section 9: Mapping the new process</td>
<td></td>
</tr>
<tr>
<td>16:15</td>
<td>15 minutes</td>
<td>Closing of Day 2 and preview of Day 3</td>
<td></td>
</tr>
<tr>
<td>16:30</td>
<td></td>
<td>Adjourn</td>
<td></td>
</tr>
</tbody>
</table>

### DAY 3

<table>
<thead>
<tr>
<th>Time</th>
<th>Duration</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td>15 Minutes</td>
<td>Recap of Day 1 and review of Day 2 agenda</td>
</tr>
<tr>
<td>8:15</td>
<td>60 minutes</td>
<td>Module 6: Planning for Next Steps Section 1: Flowchart New Processes</td>
</tr>
<tr>
<td>9:15</td>
<td>15 minutes</td>
<td>Break</td>
</tr>
<tr>
<td>9:30</td>
<td>40 minutes</td>
<td>Module 6: Planning for Next Steps Section 2: Developing Action Plans</td>
</tr>
<tr>
<td>10:10</td>
<td>15 minutes</td>
<td>Debrief and Closing</td>
</tr>
<tr>
<td>10:25</td>
<td>15 minutes</td>
<td>Post-test, Training evaluation</td>
</tr>
<tr>
<td>10:40</td>
<td>40 minutes</td>
<td>Module 7: Leadership skills to support improvement</td>
</tr>
<tr>
<td>11:20</td>
<td>15 minutes</td>
<td>Debrief and closing</td>
</tr>
<tr>
<td>11:30</td>
<td>15 minutes</td>
<td>Post-test, Training evaluation</td>
</tr>
<tr>
<td>11:45</td>
<td></td>
<td>Adjourn</td>
</tr>
</tbody>
</table>
Appendix B: Case Study and Exercises Handouts

Case Study

Malaria is one of the leading causes of death in under-five children. You have recently joined a team of health care workers as a clinician at the Chadzunda Health Centre and have the opportunity to be part of the facility management team. From the time you joined the health facility you noted that many children come to your health centre with fever and are treated for malaria although a rapid diagnostic test (mRDT) is not performed. You are aware that your clinic has a number of challenges to overcome including an already overstretched care team, your colleagues who do not appreciate the importance of conducting mRDT to confirm the presence of malaria plasmodium, and inadequate supplies for malaria case management. You know that despite these challenges, improvements could still be made to ensure that all the clients in this clinic receive quality malaria care, which would in turn have a positive impact on their clinical outcomes. You know that one of the ways to improve malaria treatment and care for children under five would be to coordinate all service providers and care that a child with fever passes through at the clinic.

Recently when you reviewed the clinic records of children under five treated for malaria with the data clerk, you realized that in the last month alone, of the 2381 children who were treated for malaria, only 1441 had a positive mRDT test result.

Based on this information you believe that focusing on improving the provision of the mRDT test for all suspected malaria cases for children under five in the next three months will improve the management of sick children at the facility in addition to reducing over-use of antimalarial drugs, with its associated costs. You have discussed this with your clinic supervisor and he decides to call for a meeting with the other key staff at the facility. During this meeting you all agree that one of the ways to address the problem is to ensure that the mRDT test kits are always in adequate supply and that service providers should be encouraged to follow standard operating procedures for malaria treatment.

Exercise 1: Defining an Improvement Aim

Instructions

When answering these questions, you should remember that your goals should be ambitious, but achievable. An ambitious goal that is not realistic will demotivate you and your colleagues, while a realistic goal that is not ambitious will fail to motivate you to make as much of a change as you are capable of making.

Where will your change be implemented? (A) __________________________ (a location such as a town, clinic, or office)

What outcome are we trying to change? (B) ________________________________ (Should be a tangible result, such as a decrease or increase in something that matters in health care)

By what amount are we trying to change it? (C) ______________________________

(Should be a percentage or some other numerical value)

When do you expect to see this result to happen? (D) __________________________ (An amount of time or by a certain date)

What will you do/use to achieve this result? (E) __________________________

(What intervention, method, tool, or resource will you employ to make the change?)

Put together your responses to complete the aim statement for your improvement project:

In (A) ______ our clinic (Chadzunda Health Centre) ______________, we will (B) ______ improve the treatment of malaria in under-five children based on a positive mRDT test result by (C) ______.
Exercise 2: Form the Improvement Team

Referring back to the aim statement you developed, consider the process that you want to improve. Think of those key players responsible for carrying out each step in that process. Think about who else would be important to include on your improvement team, such as: management, practitioners, patients or groups representing patients, or other people involved in the system of care. A representative of each step in the process should be on your improvement team.

Who is involved in the process we are changing that needs to be part of the team?

<table>
<thead>
<tr>
<th>What part of the process / what role?</th>
<th>Who performs the function?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Are there other stakeholders or contributors who are not directly involved in the process, but contribute to successful outcomes? Think about the wider health system in which you work.

<table>
<thead>
<tr>
<th>How does this process affect others?</th>
<th>Who are they?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When you have filled in all the individuals above, narrow down the group by circling those who are the most important to have involved. Of those remaining, will the team be able to function well and produce real effective change without them? Make sure all the necessary people are included but that the team is not too large or too small to be able to function well. An ideal team size is 7 to 12 people.

Exercise 3: Understand the Current Process

- Referring back to the improvement aim you developed with your team, draw a diagram of your current system by listing the different services that a child under-five with fever passes through when they come for a sick visit at clinic.

- Analyze the flow chart using the following key questions for analyzing process steps
  - Does this step need to be done?
  - Where are the delays?
• Is the sequence of steps appropriate?
• Are there missing steps?

• Look back at the flow chart and check if each step is represented in your proposed team and add any missing representatives

**Exercise 4. Drawing a fishbone diagram**

• Referring back to the case study and the improvement aim you developed with your team, identify any problems that are affecting treatment of malaria in under-five children based on positive laboratory diagnostic test results.

• Analyze the probable causes of your problem using a fishbone diagram.

**Exercise 5: Developing Indicators**

Referring back to the improvement aim you developed with your team, develop a process indicator that will help the team to measure improvement

Instructions

As you fill out the form below identifying your indicators, ask yourself whether or not they fulfill all of the following qualities:

• Clear and unambiguous (teams will not confuse what is meant by the indicator)
• Quantifiable
• Identifies the source of the data and the person responsible for collecting it
• Identifies a clear numerator and denominator
• Identifies the frequency with which the data should be collected
| **Indicator:** Describe what you are measuring |  |
| **Numerator:** The number of times your process succeeded |  |
| **Denominator:** The total number of times you ran your process |  |
| **Source:** Where you are getting your data from |  |
| **Responsible person:** Individual who will ensure that the data is collected and maintained |  |
| **Frequency:** How often it will be collected |  |

**Exercise 6: Developing Changes**

- Referring back to the Fishbone analysis diagram, prioritize three main problems affecting treatment of febrile children under five, based on a positive mRDT result.
- Brainstorm on possible solutions for addressing these problems

**Exercise 7: Testing proposed changes using PDSA**

- Referring back to the case study and the changes developed in the last step, select one of the three proposed changes and develop a plan for testing.

**Exercise 8: Create flowchart**

Referring to the case study and the flow chart you developed yesterday, draw the new flow chart specifically for your own clinic.

Take 30 minutes to discuss and complete the exercise.

**Exercise 9: Develop facility workplans/Workplan Template**

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Responsible person</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Activities may include:
Debriefing facility staff, forming the improvement team, developing meeting schedules for improvement team, developing first improvement aim based on your new flow chart etc.

**Exercise 10: Roles and Responsibilities of Leaders**

List down your roles as a leaders in the current malaria improvement project.
If you are a coach, list down your roles as coaches in your group and if you are at leadership level you will discuss and list your roles as such.
Take 15 minutes to discuss the question
## Appendix C: QI Training Pre/post Test

**Date:** _______ **Health facility:** ___________________

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
</table>
| 1. Achieving quality health care requires re-organizing care delivery in order to provide the appropriate content of care to every patient who needs it every time it is needed. | a. True  
   b. False |
| **CIRCLE ONE**                                                           |        |
| 2. Which of the following is NOT one of the World Health Organization's dimensions of quality health care? | a. Accessible  
   b. Management-oriented  
   c. Acceptable/patient-centered  
   d. Equitable  
   e. Efficient  
   f. Effective  
   g. Safe |
| **CIRCLE ONE**                                                           |        |
| 3. What is the main purpose of the Model for Improvement? CIRCLE ONE      | a. To determine priority areas for improvement  
   b. To test small-scale changes to see if they lead to improvement  
   c. To decide which priority areas for improvement are evidence-based  
   d. To inform management about the services they are providing |
| 4. What are the four main components of the Model for Improvement? CIRCLE ONE | a. Plan-Manage- Decide-Act  
   b. Plan-Do-Study-Act  
   c. Manage-Do-Decide-Act  
   d. Manage-Plan-Study-Act |
| **CIRCLE ONE**                                                           |        |
| 5. How can one decide what priority areas to focus on for improvement?   | a. Review existing data to determine primary reason for morbidity and mortality among the population  
   b. Review priorities that are recognized by donors and funders  
   c. Review existing MOH or government leadership priorities  
   d. Ask patients and staff  
   e. B and C  
   f. A and C  
   g. All of the above |
| **CIRCLE ONE**                                                           |        |
| 6. Which of the following is NOT part of a good aim statement? CIRCLE ONE | a. Defined boundary  
   b. A budget  
   c. Specific numeric goals  
   d. A timeframe  
   e. Guidance on how the aim can be achieved |
<table>
<thead>
<tr>
<th>Question</th>
<th>Option</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Can patients or community members can be part of an improvement team?</td>
<td>a. Yes</td>
<td>b. No</td>
</tr>
<tr>
<td>CIRCLE ONE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. What is required to identify a problem in service delivery? CIRCLE ONE</td>
<td>a. The facility in-charge to call for a meeting</td>
<td>b. Asking the supervisor&lt;br&gt;c. Conducting root cause analysis&lt;br&gt;d. District program coordinator to tell service providers what problems exist</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Which statement is NOT true for the statement below:</td>
<td>a. Conducting root cause analysis of the problem&lt;br&gt;b. Conducting a fishbone diagram&lt;br&gt;c. Conducting a survey to know who is causing the problem&lt;br&gt;d. Understanding the process and system of service delivery</td>
<td></td>
</tr>
<tr>
<td>Analysing the problem identified in service delivery involves ______.</td>
<td>CIRCLE ONE</td>
<td></td>
</tr>
<tr>
<td>10. What is the tool that is used to understand data variation in quality improvement?</td>
<td>a. A histogram&lt;br&gt;b. A time series chart&lt;br&gt;c. A pie chart&lt;br&gt;d. A running graph</td>
<td></td>
</tr>
<tr>
<td>11. What are gender-sensitive indicators? CIRCLE ONE</td>
<td>a. Measure data by sex&lt;br&gt;b. Measure changes in the status and role of men and women over time&lt;br&gt;c. Measure disaggregated data by gender&lt;br&gt;d. Don’t know</td>
<td></td>
</tr>
<tr>
<td>12. What are sex-disaggregated indicators? CIRCLE ONE</td>
<td>a. Measure data by sex&lt;br&gt;b. Measure changes in the status and role of men and women over time&lt;br&gt;c. Measure disaggregated data by gender&lt;br&gt;d. Don’t know</td>
<td></td>
</tr>
</tbody>
</table>
### Appendix D: QI Training Pre/post Test ANSWER KEY

<table>
<thead>
<tr>
<th>Date: _______</th>
<th>Health facility: __________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Question</strong></td>
<td><strong>Answer</strong></td>
</tr>
</tbody>
</table>
| 1. Achieving quality health care requires re-organizing care delivery in order to provide the appropriate content of care to every patient who needs it every time it is needed. | a. True  
b. False  

**CIRCLE ONE** |
| 2. Which of the following is NOT one of the World Health Organization’s dimensions of quality health care? | a. Accessible  
b. **Management-oriented**  
c. Acceptable/patient-centered  
d. Equitable  
e. Efficient  
f. Effective  
g. Safe  

**CIRCLE ONE** |
| 3. What is the main purpose of the Model for Improvement? **CIRCLE ONE** | a. To determine priority areas for improvement  
b. To test small-scale changes to see if they lead to improvement  
c. To decide which priority areas for improvement are evidence-based  
d. To inform management about the services they are providing  

**CIRCLE ONE** |
| 4. How can one decide what priority areas to focus on for improvement? | a. Review existing data to determine primary reason for morbidity and mortality among the population  
b. Review priorities that are recognized by donors and funders  
c. Review existing MOH or government leadership priorities  
d. Ask patients and staff  
e. B and C  
f. A and C  
g. All of the above  

**CIRCLE ONE** |
| 5. Which of the following is NOT part of a good aim statement? | a. Defined boundary  
b. A budget  
c. Specific numeric goals  
d. A timeframe  
e. Guidance on how the aim can be achieved  

**CIRCLE ONE** |
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Can patients or community members can be part of an improvement team?</td>
</tr>
<tr>
<td></td>
<td>a. Yes</td>
</tr>
<tr>
<td></td>
<td>b. No</td>
</tr>
<tr>
<td>7.</td>
<td>What is required to identify a problem in service delivery? <em>CIRCLE ONE</em></td>
</tr>
<tr>
<td></td>
<td>a. The facility in-charge to call for a meeting</td>
</tr>
<tr>
<td></td>
<td>b. Asking the supervisor</td>
</tr>
<tr>
<td></td>
<td>c. Conducting root cause analysis</td>
</tr>
<tr>
<td></td>
<td>d. District program coordinator to tell service providers what problems exist</td>
</tr>
<tr>
<td>8.</td>
<td>Which statement is NOT true for the statement below:</td>
</tr>
<tr>
<td></td>
<td>Analysing the problem identified in service delivery involves ______. <em>CIRCLE ONE</em></td>
</tr>
<tr>
<td></td>
<td>a. Conducting root cause analysis of the problem</td>
</tr>
<tr>
<td></td>
<td>b. Conducting a fishbone diagram</td>
</tr>
<tr>
<td></td>
<td>c. Conducting a survey to know who is causing the problem</td>
</tr>
<tr>
<td></td>
<td>d. Understanding the process and system of service delivery</td>
</tr>
<tr>
<td>9.</td>
<td>What is the tool that is used to understand data variation in quality improvement?</td>
</tr>
<tr>
<td></td>
<td>a. A histogram</td>
</tr>
<tr>
<td></td>
<td>b. A time series chart</td>
</tr>
<tr>
<td></td>
<td>c. A pie chart</td>
</tr>
<tr>
<td></td>
<td>d. A running graph</td>
</tr>
<tr>
<td>10.</td>
<td>What are gender-sensitive indicators? <em>CIRCLE ONE</em></td>
</tr>
<tr>
<td></td>
<td>a. Measure data by sex</td>
</tr>
<tr>
<td></td>
<td>b. Measure changes in the status and role of men and women over time</td>
</tr>
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<td></td>
<td>c. Measure disaggregated data by gender</td>
</tr>
<tr>
<td></td>
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<td>What are sex-disaggregated indicators? <em>CIRCLE ONE</em></td>
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</tr>
<tr>
<td></td>
<td>c. Measure disaggregated data by gender</td>
</tr>
<tr>
<td></td>
<td>d. Don't know</td>
</tr>
</tbody>
</table>
Appendix E: Participant Evaluation Form

Please be as honest and thoughtful about the following statements as possible as we will continue to make improvements to the workshop based on your feedback.

**Rating Key:** 1 - Strongly disagree  2 - Disagree  3 - Neither agree nor disagree  4 - Agree  5 - Strongly Agree  U – Unknown

<table>
<thead>
<tr>
<th>Evaluation Category</th>
<th>Evaluation Statement</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshop objectives</td>
<td>I understood the learning objectives.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td></td>
<td>I am able to relate each of the learning objectives to the learning I achieved.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td>Workshop materials</td>
<td>The workshop materials (case study, exercises) were covered by the facilitator in enough detail for me to understand what to do.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td></td>
<td>I found the workshop materials easy to navigate.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td></td>
<td>I think the visual aids were appropriate for the course content.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td></td>
<td>I think the workshop materials will be essential for my success in carrying out quality improvement work.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td>Participant Needs</td>
<td>I will be able to immediately apply what I learned to my work.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td></td>
<td>I was appropriately challenged by the material.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td></td>
<td>I was given ample opportunity to practice the skills I was asked to learn.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td></td>
<td>I felt the balance of lecture and activities contributed to my learning.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td>Facilitator</td>
<td>My learning was enhanced by the knowledge of the facilitator.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td></td>
<td>My learning was enhanced by the experiences shared by the facilitator.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td>Environment</td>
<td>I was comfortable with the format of the workshop.</td>
<td>1 2 3 4 5 U</td>
</tr>
<tr>
<td></td>
<td>I found the room atmosphere to be comfortable.</td>
<td>1 2 3 4 5 U</td>
</tr>
</tbody>
</table>

Additional comments and suggestions for how to improve the course (Please insert):

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
Appendix F: Facilitator Checklist of Materials and Tasks

Materials

Facilitator Materials:
- Facilitator Guide
- PowerPoint Presentation
- Agenda
- Pre/post test
- Workplan Templates per site
- Evaluation Sheets
- Plain paper for making name tags
- Flip charts
- Projector screen
- Projector

Participant Materials (one per participant):
- Agenda
- Note pads
- Pens
- Copy of case study
- Copies of exercises 1-10 from Appendix B
- Copies of Tips and Tools Exercises (see Resource page) to do at home (i.e., Measurement – Time Series Charts; Measurement – Variation vs. Improvement)

Preparation Checklist

A Month Before in the Workshop
- Line up extra facilitators
- Invite participants
- Familiarize yourself with all the modules

Two Weeks in Advance of the Workshop:
- Familiarize yourself with all the modules
- Remember to draw on personal experiences throughout the course, make note of when and where you will share these experiences as examples
- Review all the activities and materials
- Ensure you have all facilitator materials (see above)
- Ensure that you have enough materials for participants
☐ Research your participants by finding out their roles before the session
☐ Reserve conference/training room
☐ Reserve refreshments/lunch (if applicable)
☐ Request the training room be set up with small group tables

Day Before the Workshop:
☐ Test your presentation computer and projector
☐ Check to see how many participants you have for the session
☐ Ensure you have enough materials (case studies and exercise sheets) and evaluations for distribution
☐ Ensure the room is set up correctly: The ideal classroom for this training workshop has small tables with chairs dispersed around the room to encourage small group discussion during the case study portion of the course. It is recommended to have 4-5 people per table for best small group discussion. Ensure all participants have a clear line of sight to the presentation and the facilitator.

One Day After the Workshop:
☐ Summarize evaluation results and identify action items for next training.
Appendix G: Useful Resources

General resources on improvement

- **Improving Health Care Quality.** Global Health eLearning Center. This course introduces principles, approaches, and methods for improving quality health care. [https://www.globalhealthlearning.org/course/improving-health-care-quality](https://www.globalhealthlearning.org/course/improving-health-care-quality)

- **Improving Health Care eLearning Course.** USAID ASSIST Project. This interactive virtual course provides the same curriculum used to orient USAID ASSIST Project headquarters staff and Chief of Parties to improvement. The course is structured to give a broad overview of the science of improvement, going over key principles and methods necessary to understand how improvement projects can be implemented in any setting to make health care better. The course can also be taught as an in-person training using two companion materials, a participant and a facilitator guide. [https://www.usaidassist.org/resources/improving-health-care-elearning-course](https://www.usaidassist.org/resources/improving-health-care-elearning-course)

Resources for practicing methods and tools for improvement

- **Tips and Tools for Learning Improvement.** USAID ASSIST Project. This is a set of competency-based materials on: Aims for improvement, improvement teams, flowcharts, developing changes, PDSA cycles, measures for improvement, time-series charts, and variation vs. improvement. Each handout in the series is a self-contained, self-directed lesson with numerous competency-based exercises so that learners can practice the basic steps of improvement. [https://www.usaidassist.org/resources/tips-and-tools-improvement-series](https://www.usaidassist.org/resources/tips-and-tools-improvement-series)

- **Blog on Improving Data Visualization: No more Excel Data Tables.** USAID ASSIST Project. This blog provides more information on how to format time series charts: [https://www.usaidassist.org/blog/improving-data-visualization-no-more-excel-data-tables](https://www.usaidassist.org/blog/improving-data-visualization-no-more-excel-data-tables)
Appendix H: Training Slide Deck
Improving Quality of Care for Children Under Five and Pregnant Women Presenting with Fever in Malawi

Training for district level malaria and/or quality improvement coordinators, health care providers and managers

Learning objectives

After this course, participants will be able to:

1. Articulate the key issue in health care quality
2. Explain the fundamentals underlying the science of improvement
3. Give examples of successful improvements from different technical areas and geographic contexts
4. Explain how gender can be integrated into quality improvement (QI)
5. Develop the following skills:
   - Define an improvement aim
   - Form improvement teams
   - Analyze processes of care
   - Develop indicators to measure improvement
   - Develop, test and implement changes
   - Monitor and evaluate results of tested changes
What Do We Mean by Quality Health Care?

Definition of health care quality

“The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge”

- Institute of Medicine, USA
What is quality care?

“Quality care is what happens at all the points of service along the continuum of care, and high quality care is a function of the system's ability to produce care that will address the client's needs in an effective, responsive and respectful manner…”

— David Nicholas, The Quality Assurance Project, 1990s

Dimensions of quality

- **Effective**: delivering evidence-based care that results in improved outcomes and is based on need;
- **Efficient**: delivering care which maximizes resource use and avoids waste;
- **Accessible**: delivering care that is timely, geographically reasonable, and provided in a setting where skills and resources are appropriate to medical need;
- **Acceptable/patient-Centred**: delivering care which takes into account the preferences and aspirations of patients and the cultures of their communities;
- **Equitable**: delivering care which does not vary in quality because of personal characteristics such as gender, race, ethnicity, geographical location, or socioeconomic status;
- **Safe**: delivering care which minimizes risks and harm to patients.
The Issue of Quality in Health Care


- 439 indicators of clinical quality of care
- 30 acute and chronic conditions, plus prevention
- Medical records for 6,712 patients
- Participants received 54.9% of scientifically indicated care (Acute: 53.5%; Chronic: 56.1%; Preventive: 54.9%)
- Conclusion: The “defect rate” in the technical quality of American health care is approximately 45%
The issue of quality in health care

“… Between the health care we have and the care we can have lies not only a gap, but a chasm…”

“… The problems come from poor systems – not bad people…”

What is the problem: WHO

“The reality is straightforward. The power of existing interventions is not matched by the power of health systems to deliver them to those in greatest need, in a comprehensive way, and at an adequate scale.”

—Margaret Chan
Director General
World Health Organization 2006-2017
“The enormous investments that have been made in global health should have led to what we might have called a science of implementation and execution…

…We have just not focused on the enormous complexity of delivering health care in a way that keeps people healthy ”

- Jim Kim, former President
World Bank
**Malawi: Severe malaria using microscopy for children U5, Mchinji District Hospital, Jun 2016 – Jul 2017**

![Graph showing severe malaria rates over time.]

**Malawi: Improving AL prescription in febrile children U5 based on weight at Mlomba Health Centre, Apr – Aug 2018**

![Graph showing AL prescription rates based on weight.]

### Data Table

<table>
<thead>
<tr>
<th>Week</th>
<th>#U/5 prescribed with AL based on weight</th>
<th>% U/5 prescribed with AL based on weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wk1</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Wk2</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Wk3</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Wk4</td>
<td>38</td>
<td>49%</td>
</tr>
<tr>
<td>Wk5</td>
<td>124</td>
<td>91%</td>
</tr>
<tr>
<td>Wk6</td>
<td>135</td>
<td>100%</td>
</tr>
<tr>
<td>Wk7</td>
<td>176</td>
<td>100%</td>
</tr>
<tr>
<td>Wk8</td>
<td>220</td>
<td>100%</td>
</tr>
<tr>
<td>Wk9</td>
<td>300</td>
<td>100%</td>
</tr>
<tr>
<td>Wk10</td>
<td>218</td>
<td>100%</td>
</tr>
</tbody>
</table>

Percentage of patients assessed and categorized at 7 sites in Karonga and Balaka Districts from January 2013–September 2014

Changes tested:
- Moved assessment to registration
- Improved registers to improve documentation
- Trained and allocated g/laborer, to assess patients
- Use of roster to allocate staff to do assessment

Mar 13: Service providers trained on QI

June 2013: Country wide child health week campaign

Tanzania: HIV-infected pregnant women started on or receiving ARVs (AIMGAPS), Iringa Region Jan 2011 – Feb 2014

% HIV-infected pregnant women started on or receiving ART (treatment) or ARV prophylaxis in 11 sites in Iringa Region, Tanzania January, 2011 – February, 2014

Changes tested:
1. Storing ARV at RCH
2. Documentation at time of service provision
3. Keeping PMTCT care register at follow-up client care point
4. Keeping constant stock levels of ARTs at RCH

May 13: LS 1— Providers trained on QI principles, QI teams formed.

Nov 13: Increased stocks of ARVs at RCH to meet demand

Aug 11: Adopted WHO 2010 guidelines. Change in guidelines increased # of clients eligible for ARVs

Oct 13: All AIMGAPS sites transitioned from WHO treatment Option A to Option B+
Integrating content and organization of care

Quality Improvement Integrates Content of Care and the Process of Providing Care

Content of Care
- Evidence-based:
  * Standards
  * Protocols
  * Guidelines

Process of Care
- Quality Improvement Methodology

Traditional Quality Improvement

Continuous Quality Improvement

Adapted from Batalden and Stoltz (1993)

The Model for Improvement

9
Model for Improvement

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

Adapted from T. Nolan et. al. The Quality Improvement Guide
Improvement principles & frameworks

Fundamental Concept of Improvement:
“Every system is perfectly designed to get the results it gets” Batalden and Stolz, 1993

Principles of Improvement:
• Understanding work in terms of processes and systems
• Developing solutions by teams of health care providers and patients
• Focusing on patients’ needs
• Testing and measuring effects of changes
• Shared learning

Section 1:
Prioritization for Improvement
Model for improvement

1. Identify
2. Analyze
3. Develop

Plan

Act
4. Test and Implement
Do

Study

Adapted from: T. Nolan et. al. The Quality Improvement Guide

Discussion questions

1. Why do we need to prioritize?
2. How do we prioritize?
Why do we need to prioritize?

• We cannot do everything
• Not everything is equally as important
• Choose focus area

Prioritization for improvement

Depending on the scale, topics can come from:
• Existing NHS/MOH/MOPH priorities
• Data (e.g., existing reports, baseline assessment studies) that show where need is greatest
• Priorities recognized by donors and funders
• Patients, staff, practitioners, communities, other stakeholders
Section 2: Defining an Improvement Aim

Model for improvement

Adapted from: T. Nolan et. al. The Quality Improvement Guide
STEP 1. Identify the problem

- Clearly define the aim for improvement
- Determine the process(es)/system that yield this aim for improvement
- Decide who should be on the team that will solve the problem
- Achieve a consensus on the problem by the team

Model for improvement

Determining a good improvement aim

- A defined boundary that specifies the scope of the improvement goal
- Specific numerical goals for outcomes that are ambitious but achievable
- A timeframe (how much improvement by when?)
- Guidance on how the aim will be achieved
Example 1: Improvement aim

- At Mikundi Health Centre in Mchinji District, within the next four months we will achieve 100% receipt of the first dose of AL as DOT for all children under five who are sick with malaria by establishing a DOT corner

**Boundary:**

**Numerical goal for outcome:**

**Timeframe:**

**Guidance:**

Example 2: Improvement aim

Within the next six months, Balaka D. Hospital will improve the clinical skills of health workers to make a definitive malaria diagnosis for 80% of all children under five coming for a sick visit at the under five clinic by using a competency-based checklist.

**Boundary:**

**Numerical goal for outcome:**

**Timeframe:**

**Guidance:**
Exercise: Case study

• Read the case study (included in the facilitators Manual)
• Develop a clear improvement aim for your team

Section 3:
Forming the Improvement Team
Model for Improvement

STEP 1. Identify the problem
- Clearly define the aim for improvement
- Decide who should be on the team that will solve the problem
- Achieve a consensus on the problem by the team

Adapted from: T. Nolan et. al. The Quality Improvement Guide
Why is teamwork important for improvement?

- Healthcare processes consist of inter-dependent steps that are executed by different people.
- Quality faults often occur in the hand-over between people.
- Given the opportunity, staff can often identify problems and generate ideas to resolve them.
- Participation improves ideas, increases buy-in, and reduces resistance to change.
- Accomplishing things together increases the confidence of each team member, which empowers organizations.

Teamwork

Steps and participants in a patient visit to the clinic
Team roles and responsibilities

- **Improvement Team Member**: People who work on improvement teams share their knowledge, experience, and expertise while working to accomplish team goals.

- **Improvement Team Leaders**: People who orchestrate improvement team activities, maintain team records and serve as communication link.

Creating good QI teams

- Keep the team to a reasonable size. Not too big (7-12 people).

  **Example**: Namanja Health Centre in Machinga District had a QI team comprised of a medical assistant, nurse, hospital attendant (data clerk) and 3 HSAs (mRDT tester, weighing, pharmacy assistant).

- Include team members who want to contribute: Involve really motivated people.
- Helpful to involve reluctant persons.
- Identify a champion.
- Include leaders and managers.
- May want to include patient and community representatives.
Exercise: Form your improvement team

1. Referring back to the aim statement you have developed for your facility, consider the process that you want to improve.
2. Think of those responsible for each step in that process. A representative of each function should be on your improvement team.
3. Think about who else would be important to include on your improvement team, such as: management, practitioners, patients or groups representing patients, or other people involved in the system of care.

In group discussions at your table, discuss who should be in your team.

Form your improvement team

<table>
<thead>
<tr>
<th>What part of process, what role?</th>
<th>Who?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there other stakeholders that we have forgotten?</td>
<td></td>
</tr>
<tr>
<td>Are there others who are affected or integral to this process?</td>
<td>Who?</td>
</tr>
</tbody>
</table>

• When you have filled in all of the individuals above, narrow down the group by circling those who are necessary to be involved.
Section 4: Understanding the Current Process

Model for Improvement

1. Identify
2. Analyze
3. Develop
4. Test and Implement
   - Plan
   - Act
   - Study
   - Do

Adapted from: T. Nolan et. al. The Quality Improvement Guide
STEP 2. Analyze the problem

• Understand the process(es)/ system that yield this aim for improvement
  • Determine the indicators which enable us to know that we have made the improvement we are seeking
  • Analyze the available data and information
  • Collect additional data (as needed)

Model for Improvement

Understanding work as processes and systems

• Process: A sequence of steps through which inputs from suppliers are converted into outputs for customers.
• System: The sum of all the total elements, including processes, that interact together to produce a common goal.
Donabedian model of system

The sum of all elements, including processes, that interact together to produce a common goal

**Quality Improvement**

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Process</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources necessary to carry out a process</td>
<td>A series or sequence through which inputs are transformed into outputs</td>
<td>The outputs (services/products) and outcomes (health outcomes) result from the inputs &amp; processes</td>
</tr>
</tbody>
</table>

Importance of viewing a process

- Reduce complexity and waste
- Eliminate unnecessary steps
- Uncovers potential problems and bottlenecks
- Describes the actual process
- Gives a common understanding of the process
- Helps to guide discussion on identifying problems

How can a *flowchart* be useful for improving services?
How to create & use a flowchart

1. Decide on the beginning and end points of the process to be flowcharted
2. Identify the steps of the process
3. Link the steps with arrows showing direction
4. Review the draft to see whether the steps are in their logical order

Symbols of a process flowchart

- **Start and end points in the process** (e.g., make a cup of tea)
- **Activity or step** (e.g., add sugar)
- **Decision to be made** (YES or NO); diamond needs to contain a YES/NO question with two arrows coming out—one if the answer is YES and one if the answer is NO (e.g., Do you want sugar?)
- **Direction of flow between steps**
- **A step that is currently uncertain**; this can be used in place of a box or coming out of it to indicate a problem (i.e., is milk available?)
How to create a process flowchart: Flow lines

- Step: One flow line out of a step
- Decision: Two flow lines out of a decision
  - YES: Must ask a yes/no question
  - NO: (next step)

Analyzing a flow chart

- Does this step need to be done?
- Where are the delays?
- Is the sequence of steps appropriate?
- Are there missing steps?
Example: Flow chart of febrile under 5 children before changes, Machinga District, Nyambi Health Centre

<table>
<thead>
<tr>
<th>Patient arrives</th>
<th>Waiting area: Informal triage, no weight taken</th>
<th>Malaria suspected?</th>
<th>YES</th>
<th>Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>Malaria confirmed?</td>
<td>NO</td>
<td></td>
<td>Dispensary</td>
</tr>
<tr>
<td>NO</td>
<td>Documentation in AL register done by clerk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient exit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Exercise: Drawing a flow chart

- Referring back to the improvement aim you developed with your team, draw a diagram of your current system by listing the different services that a client passes through when they come for a sick visit at clinic
- Analyze the flow chart using the key questions for analyzing process steps
- Look back at the flow chart and check if each step is represented in your proposed team and add any missing representatives
Cause and effect diagrams: Fishbone diagram

- Collect and organize knowledge about potential causes of problems or variation
- Tool for organizing and summarizing known information
- Defines underlying causes and how these contribute to the problem
- Used to get to a deep level of detail
- Looks beyond the obvious causes
- Real value in simply creating it!

How to use your fishbone diagram

- Use it for planning for further learning and improvement
- Rank the causes by their importance according to your team
- Label the causes as long-term/systemic or not frequent/special
- Decide if you need to collect data on any of the causes to confirm your belief about the cause and effect relationship
- Color-code or add symbols on the diagram to:
  - Rank the importance
  - Show whether cause is confirmed by data
  - Long-term systemic issue or infrequent/rare special cause
- Update the cause and effect diagram as you learn
- Tell the story of improvement in your facility
How to create a fishbone diagram

1. Define the problem and write it in a box on the right side of the paper. This is the “head” of the fish. Continue to draw the “spine”

2. Create “bones” of the fish by brainstorming 3 to 6 major categories of causes or factors contributing to the problem
   - General categories found to be useful: People, Methods, Materials, Measurement, Equipment, Environment

3. Brainstorm ideas about what causes or factors in each category are contributing to the problem. Each will need its own “sub-bone”. Ex: What are the people issues affecting/causing?

4. Get to a deep level of detail by asking “Why?” three to five times while continuing to draw additional levels of “sub-bones” for each reason

Example: Fishbone diagram from Mlombo Health Centre, Machinga District
Example: Fishbone diagram from Nainunje Health Centre, Machinga District

Exercise: Fishbone diagram

- Referring back to the case study and improvement aim you developed with your team, identify any problems that are affecting treatment of malaria in under-five children based on positive laboratory diagnostic test results
- Analyze the probable causes of your problem using a fishbone diagram
Section 5: Developing Indicators

Model for improvement

1. Identify
2. Analyze
3. Develop
4. Test and Implement

Plan
Act
Do
Study

Adapted from: T. Nolan et. al. The Quality Improvement Guide
Model for improvement

STEP 2. Analyze the problem

• Understand the process(es)/system that yield this aim for improvement
• Determine the indicators which enable us to know that we have made the improvement we are seeking
• Analyze the available data and information
• Collect additional data (as needed)

Why measure?

• If you don’t measure, what you are doing:
  • How will you know if it is an improvement?
  • How will you know what led to the improvement?
How measures/indicators should work

- Should be linked to improvement aims
- Should be used to guide improvement and test changes
- Should be integrated into the team’s daily routine
- Will allow QI teams to learn
- Should concentrate on key measures—don’t overwhelm teams with endless data collection and analysis!

Types of indicators

<table>
<thead>
<tr>
<th>Patient moves through system</th>
<th>Input Indicators</th>
<th>Process Indicators</th>
<th>Output Indicators</th>
<th>Outcome Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient arrives</td>
<td># of staff trained in malaria rapid diagnostic testing (mRDT)</td>
<td>% compliance with mRDT guidelines</td>
<td>Proportion of under-five children with a positive mRDT result</td>
<td>Proportion of children treated for malaria</td>
</tr>
</tbody>
</table>
Qualities of a good indicator

• Clear and unambiguous, so teams do not confuse what is meant by the indicator
• Quantifiable
• Identifies the source of the data and the person responsible for collecting it
• Identifies a clear numerator and denominator
• Identifies the frequency with which the data should be collected

Example of an indicator

<table>
<thead>
<tr>
<th>Indicator: Describe what you are measuring</th>
<th>Proportion of febrile children under five with a positive test result who receive the first dose of AL as DOT at the facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator: The number of times your process succeeded</td>
<td>Number of children with fever and a positive RDT/microscopy test who took the first does of LA as DOT at the facility</td>
</tr>
<tr>
<td>Denominator: The total number of times you ran your process</td>
<td>Total number children with fever and a positive mRDT/microscopy</td>
</tr>
<tr>
<td>Source: Where you are getting your data from</td>
<td>AL register</td>
</tr>
<tr>
<td>Responsible person: Individual who will ensure that the data is collected and maintained</td>
<td>The Pharmacy Assistant</td>
</tr>
<tr>
<td>Frequency: How often it will be collected</td>
<td>Monthly</td>
</tr>
</tbody>
</table>
Exercise: Developing indicators

• Referring back to the improvement aim you developed with your team, develop a process indicator that will help the team to measure improvement.

Section 6: Plotting a Time-Series Chart
What is a time-series chart?

- Data visualization tool that illustrates data points at successive intervals of time
- Simple effective tool to track the performance of a process over time and document the story of improvement
- It helps teams to determine whether specific changes lead to improvement

Elements of a time series chart

- Clear and well-defined title that includes what and when
- X and Y axes have clear scale and include indicator label
- Numerator and denominator values shown for each month
- Numerator defined, including data source
- Denominator defined, including data source
- Tested changes are annotated
- Assigned HSA to triage all febrile U/5


Table:

<table>
<thead>
<tr>
<th>Month</th>
<th># of febrile under-five children triaged before consultation</th>
<th>% of febrile under-five children triaged before consultation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-16</td>
<td>289</td>
<td>0%</td>
</tr>
<tr>
<td>M-16</td>
<td>301</td>
<td>65%</td>
</tr>
<tr>
<td>J-16</td>
<td>385</td>
<td>80%</td>
</tr>
<tr>
<td>A-16</td>
<td>271</td>
<td>100%</td>
</tr>
<tr>
<td>S-16</td>
<td>159</td>
<td>100%</td>
</tr>
<tr>
<td>O-16</td>
<td>181</td>
<td>100%</td>
</tr>
<tr>
<td>N-16</td>
<td>173</td>
<td>100%</td>
</tr>
<tr>
<td>D-16</td>
<td>1501</td>
<td>100%</td>
</tr>
<tr>
<td>J-17</td>
<td>1898</td>
<td>100%</td>
</tr>
<tr>
<td>F-17</td>
<td>2016</td>
<td>100%</td>
</tr>
<tr>
<td>M-17</td>
<td>1800</td>
<td>100%</td>
</tr>
<tr>
<td>J-17</td>
<td>2144</td>
<td>100%</td>
</tr>
<tr>
<td>J-17</td>
<td>239</td>
<td>100%</td>
</tr>
</tbody>
</table>

Data Source: Kalembo Health Centre Register
### Data form for plotting your time series chart

<table>
<thead>
<tr>
<th>Process</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator: # febrile under-five children triaged upon arrival at clinic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denominator: Total # febrile under-five children seen at the clinic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator: # under-five children treated for malaria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denominator: Total # children suspected of Malaria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Example: % of U5 with suspected severe malaria for whom microscopy was done, Mchinji District Hospital, Jun 2016 – Mar 2017

Data source: Mchinji District Hospital Laboratory Register
Section 7: Developing, Testing and Implementing Changes

Model for improvement

1. Identify
2. Analyze
3. Develop

Plan
Act
4. Test and Implement
Do
Study

Adapted from: T. Nolan et. al. The Quality Improvement Guide
Model for improvement

STEP 3. Develop

• Determine possible changes (interventions) we believe may yield improvement
• Organize changes according to importance and practicality
• Test changes (if possible, one change at a time)

Developing changes

• Something that you’ve never done before
• Something you can do tomorrow
• Something that worked somewhere else
• Something that addresses identified gaps
Developing changes

Avoid:
- doing what you’ve done before: “Let’s have a training.”
- low impact changes: “Let’s put up a poster.”; “Let’s have an education session.”; “Let’s send out reminders.”
- technical slow-downs: “We will build a computer program to do this…”

Developing changes

- What change will you make?
- Why will this change result in an improvement? How will it work?
- What improvement will we expect to see as a result of this change? What do you think the result will be?
### Example: Effective changes tested at Chamba health facility, Machinga District

<table>
<thead>
<tr>
<th>Improvement aim at Chamba facility</th>
<th>Changes</th>
</tr>
</thead>
</table>
| To improve the prescription of malaria treatment in under-five children based on weight as per national guidelines | • Identify a weighing area within OPD  
• Identify a weighing scale at outpatient department area  
• Allocate service providers to take weight of sick children and record in health passport book  
• Assign pharmacy assistant to record weight in the AL register |

### Examples of changes, Mangamba health centre

<table>
<thead>
<tr>
<th>Improvement aim at Mangamba facility</th>
<th>Changes</th>
</tr>
</thead>
</table>
| To improve receipt of the first dose of AL as DOT for all sick with malaria under five children | • Source funds from the community health fund and purchased buckets and cups  
• Identify space within the dispensary to establish the DOT corner  
• Assign the provider dispensing medicine to administer DOT and record in the AL register |
Example: Improving receipt of first dose of AL as DOT in children U5, Nyambi Health Centre

<table>
<thead>
<tr>
<th>CHANGE MADE</th>
<th>HOW WAS THE CHANGE DONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction of materials for first dose of AL treatment for U5 children.</td>
<td>Q1 team contributed and purchased buckets and cups.</td>
</tr>
<tr>
<td>2. Introduction of Dot Corner for first dose of AL treatment for U5 children.</td>
<td>By establishing a spot for administration but not all the children.</td>
</tr>
<tr>
<td>3. Introduction of responsible person on Dot Corner.</td>
<td>By assigning the provider responsible for administering AL and record in the LRA register.</td>
</tr>
</tbody>
</table>

Exercise

- Referring back to the Fishbone diagram, prioritize three main problems affecting treatment of febrile children under-five, based on a positive mRDT result
- Brainstorm on possible solutions for addressing these problems
Model for improvement

Adapted from: T. Nolan et. al. The Quality Improvement Guide

Elements of the Plan-Do-Study-Act (PDSA) Cycle

Act
- What changes are to be made?
- What will be the next cycle?

Plan
- State objective of the cycle.
- Make predictions.
- Develop plan to carry out cycle... (who, what, where, when)

Study
- Complete the analysis of the data.
- Compare data to predictions.
- Summarize what was learned.

Do
- Carry out the test.
- Document problems and unexpected outcomes.
- Begin analysis of the data.

Langley et. al
Example: PDSA Cycle, Chikweo Health Centre, Machinga District

**Change:** Assign the provider dispensing AL to administer DOT and record in the AL register

<table>
<thead>
<tr>
<th>ACT</th>
<th>PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>To ensure DOT for all children, clinician ensures that all records on DOT are completed. We will adopt the change.</td>
<td>To ensure that all children receive the dose of AL under DOT. Two HSAs (Phiri and Banda) will alternate at the dispensary they were assigned to dispense, observe child taking AL, and record this in the improvised column in the AL register by ticking, from 4 May - 8 May 2018</td>
</tr>
</tbody>
</table>

Next change: Pasting reminder papers in register for clinician to record DOT information for patients treated at night.

<table>
<thead>
<tr>
<th>STUDY</th>
<th>DO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out of 84 children who received AL during the four days, 79 (94%) received as DOT. Children who were treated as DOT at night were not recorded.</td>
<td>The change was carried out as in the plan. In the five days that the HSAs were assigned, data on DOT was recorded.</td>
</tr>
</tbody>
</table>

---

**Testing and implementing changes**

Collect and analyze data to answer the questions:

1. **Did the changes lead to improvement?**
   - **NO:** Develop other changes.
   - **YES:** Keep the changes. Develop new changes.

2. **Is the change significant?**
   - **NO:** Adapt the change and conduct another test.
   - **YES:** Keep the changes. Develop new changes.
Testing a change

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

Exercise: Plan your proposed changes

- Referring back to the case study and the changes developed in the last step, select one of the three proposed changes and develop a plan for testing
Section 8: Monitoring Results and Taking Action

Uganda: % of clients whose nutritional status is assessed using mid-upper arm circumference (MUAC)
Question for discussion

Why do you think NACS was not implemented?

Uganda: % of clients whose nutritional status is assessed using mid-upper arm circumference (MUAC)

Tell everyone to do MUAC, a non-sustained change

Delivery of commodities

Nutrition training
Question for discussion

Why do you think NACS was not implemented even though the staff were trained and supplies were available?

Uganda: % of clients whose nutritional status is assessed using mid-upper arm circumference (MUAC)

Tell everyone to do MUAC, a non-sustained change

Delivery of commodities

Nutrition training
Question for discussion

What do you think happened here?

Uganda: % of clients whose nutritional status is assessed using mid-upper arm circumference (MUAC)

- Tell everyone to do MUAC a non-sustained change
- Delivery of commodities
- Nutrition training
- Informed of external visit

0 10 20 30 40 50 60 70 80 90 100

%
Question for discussion

What do you think happened next?

Uganda: % of clients whose nutritional status is assessed using mid-upper arm circumference (MUAC)

- Tell everyone to do MUAC a non-sustained change
- Delivery of commodities
- Nutrition training
- Informed of external visit
Question for discussion

Why do you think the proportion of patients assessed for MUAC dropped?

Uganda: % of clients whose nutritional status is assessed using mid-upper arm circumference (MUAC)

- Tell everyone to do MUAC
- Assign a staff person to do MUAC after registration
- A sustained change
- Delivery of commodities
- Nutrition training
- Informed of external visit
Gender Integration in Malaria Programming

What is sex?

Refers to the **biological differences** between males and females. These differences are concerned with the physiology males and females are born with.

Examples:
- Women can give birth, men cannot.
- The rate of malaria infection is higher in pregnant women because of their decreased immunity.
What is gender?

Refers to the economic, social, political, and cultural attributes and opportunities associated with being male or female. These are roles and responsibilities that people learn, not what they are born with.

The social definitions of what it means to be a woman or a man vary among cultures and change over time.

Examples:
- Women are expected to care for the home, the children, the disabled, the sick, and the elderly.
- Men are expected to work, earn money, and provide for the family.

Gender and malaria: Risk of exposure

Gender norms and values that influence the division of labor, leisure patterns, and sleeping arrangements may lead to different patterns of exposure to mosquitoes for men and women.¹

- Men who work in mines, fields or forests at peak biting times or migrate into malaria-endemic areas for work may be a higher risk of contracting malaria.²
- Women who get up before dawn to perform household chores may also be exposed to mosquitoes.³,⁴
- Sleeping arrangements may also affect malaria transmission. In some societies, men tend to sleep outdoors and this may increase their risk of exposure to mosquitoes.⁵

Gender and malaria: Access and utilization of health care services

Access to health care services for malaria can be affected by gender issues, including gender inequality.¹

• Women often have to ask for their husband's permission to access treatment for themselves and/or their children.²

• Women may be more willing than men to invest in malaria-prevention measures, such as insecticide-treated bed nets (ITN), but many lack the financial and decision making power to do so.³

• Evidence from some countries indicates that restricted mobility of women may also impede their attendance at primary health care clinics for malaria testing.³,⁴

• In some settings males utilize health care services less than females due to cultural norms.⁴


Gender and malaria: Vulnerable populations

There are several populations that for both biological and social reasons are more vulnerable to malaria.

• Pregnant women and children are at the greatest risk of contracting malaria both in high and low malaria-endemic areas.¹-⁴

• Adolescent girls are particularly vulnerable to malaria. In many sub-Saharan African settings, adolescents are often aparasitemic and anemic when they first become pregnant. Both non-pregnant and pregnant adolescent girls had significantly higher parasite rates than women over 19 years of age.⁵

Gender and malaria: Other social determinants

Gender often intersects with other factors, such as poverty and education, to contribute to poor malaria outcomes.

- Higher levels of education are associated with improved knowledge and practices in relation to appropriate malaria prevention and treatment strategies (and women tend to have less education).\(^1\)\(^-\)\(^3\)
- Burden of illness due to malaria rests disproportionately on economically disadvantaged women and on women with low social status.\(^4\)
- Excess morbidity related to malaria was found among women who were not employed, women living in poor neighborhoods, and those living in households without modern amenities.\(^4\)


What is gender integration?

“Identifying, and then addressing gender inequalities during strategy and project design, implementation, and monitoring and evaluation.” (USAID)

Responding to the different needs, behaviors, preferences, access to, and utilization of health services for women, men, girls, and boys.
Measuring gender: Sex disaggregated data and gender sensitive indicators

**Sex-disaggregated data**

- Data tracked for males and females separately for an intervention which is targeting both males and females
- Examples:¹
  - The prevalence of malaria (by sex and age)
  - Percentage reporting sleeping under an ITN (by sex and age)
  - Health-seeking behavior and utilization of healthcare (by sex)

**Gender-sensitive indicators**

- Indicators that measure changes in the status and role of men and women over time
- Examples:¹
  - The incidence of malaria among pregnant women
  - The percentage of women who can make the decision to take a child to the health facility if she or he has a fever or is displaying other malaria symptoms

*Both are important but they are not the same thing.*


---

**Before: Non-sex disaggregated data, Uganda**

**TB/HIV Co-Infected Clients on ART in 42 sites, Dec ‘13 – Nov ‘14**

- Changes implemented:
  - Sensitized staff about gender
  - Synchronized appointment dates for TB and HIV clinics

**Denominator: Number of TB/HIV Co-Infected Patients**

- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

- Dec-13 Jan-14 Feb-14 Mar-14 Apr-14 May-14 Jun-14 Jul-14 Aug-14 Sep-14 Oct-14 Nov-14
After: Sex disaggregated data, Uganda

Important questions to consider

1. How will gender integration affect the achievement of sustainable results?
2. How will these proposed results affect the status of men, women, boys and girls?
3. Will it increase inequalities, will they remain the same, or will it work to improve inequalities?

Remember the principle of “Do No Harm!”
Next Steps

Section 1: Flowchart the New Process
Create a flowchart of the new process

- Standardizes understanding of the new process
- Provides a reference for people to adhere to
- Allows you to re-examine the system again as part of the iterative process of improvement

Key questions for analyzing process steps

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>What is the purpose?</td>
<td></td>
<td>What if it were eliminated?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the purpose accomplished?</td>
<td></td>
<td>What would make it unnecessary?</td>
<td></td>
</tr>
<tr>
<td>Place</td>
<td>Where?</td>
<td>Where is it performed?</td>
<td></td>
<td>What alternate locations are viable?</td>
<td>Combine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Can the departments be reorganized?</td>
<td></td>
<td></td>
<td>Rearrange</td>
</tr>
<tr>
<td>Sequence</td>
<td>When?</td>
<td>What other sequences would work?</td>
<td></td>
<td>Can it be combined with another event?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>What are the implications of other sequences?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person</td>
<td>Who?</td>
<td>Who performs the task?</td>
<td></td>
<td>Who else could perform it?</td>
<td></td>
</tr>
<tr>
<td>Means</td>
<td>How?</td>
<td>What other methods are available?</td>
<td></td>
<td>What other process technologies exist?</td>
<td>Simplify</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Can smaller scale processes be used?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Example: Flow chart of febrile under 5 children after changes, Machinga District, Nyambi Health Centre

Exercise: Flowchart the standard process

- Develop a process map for treating children under-five with positive mRDT result at your facility
Section 2: Developing Facility Work Plans

Developing Work plans

• In your groups, plan on your next steps
• These are the steps you will take when you get back to your sites
Roles of Leaders to Support Improvement

Roles of QI team members, coaches, and leaders

- **Improvement Team Member**: People who work on improvement teams share their knowledge, experience, and expertise while working to accomplish team goals

- **Improvement Team Leaders**: People who orchestrate improvement team activities, maintain team records and serve as communication link

- **Improvement Coaches**: People with improvement, data-analysis and team-building skills who teach and support Team Leaders and Team members

- **Leaders**: Individual managers who identify needed improvements, form and support improvement teams to work on them and review and support the work of teams
Roles and responsibilities of QI leaders

- Maintains overall responsibility, authority, and accountability
- Selects and defines improvement project
- Determines resources
- Selects coach, team leader and team members
- Reviews progress for the team when necessary
- Ensures stakeholders have appropriate involvement in the project and project reviews
- Ensures changes made by the team are monitored and implements changes that the team is not authorized to make
- Feeds data and lessons learned into system for future improvements

Question for discussion

What is your role as a leader in supporting your teams to improve the process and test and implement changes?
THANK YOU FOR YOUR PARTICIPATION
USAID APPLYING SCIENCE TO STRENGTHEN AND IMPROVE SYSTEMS PROJECT

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