Refresher Training for Frontline Health Workers in Expanded Program for Immunization (EPI)

Facilitator's Guide

January 2005
Addis Ababa, Ethiopia

A collaborative in-service training jointly developed by the SNNPR, Oromiya and Amhara Regional Health Bureaus and the ESHE Project
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1. Planning and Organizing a Training Program

In planning a training program, the facilitator needs to answer the following questions:

1.1 Who is to be trained?
The facilitator has to identify the characteristics of the learner/participant and tailor the training accordingly. The participants may include:
- Woreda and health facility staff.
- Health service providers who need to implement new policies and strategies.
- Health service providers who need to use new equipment, e.g. vaccine vial monitors, AD syringes.

1.2 How many participants will be in the training Program?
- For training in basic immunization services, which require extensive practical skills, the training Program should accommodate a number, which is easy to train. The number should not exceed 24 participants per class.

1.3 What is to be taught and how?
- There is need to develop a training schedule or agenda.
- The agenda should contain date, time, and sessions/topics to be covered and responsible persons, tea/coffee and lunch breaks.
- The agenda should also include the objectives of the training program, introduction of participants and of the training program, and methods of evaluation.

1.4 Who is responsible for what?
- A training program needs a course coordinator, facilitators, administrative and support staff.
- The course coordinator organizes the training program and coordinates activities
- Facilitators provide information, organize learning tasks, supervise skill practice, evaluate the progress of participants and provide feedback.
- Administrative and support staff provide administrative, secretarial, logistics and other services for the training.

1.5 How many facilitators are needed and what qualifications should they have?
- The number of facilitators should be determined depending on the number of staff and trained facilitators available. But it is still good to have at least three facilitators conducting a training program.
- Facilitators should know the content of the training modules and be skilled in the aspects of providing immunization services, which they are teaching.
- Facilitators should be well versed in teaching others different skills as stipulated in the training modules

1.6 How long should the training last?
- The duration depends on the purpose of training and the experience of the participants.
- A training course on immunization skills using these modules takes at least 3 full days for EPI managers.

1.7 What facilities are needed?
   a) Invitation Letters
      Writing invitation letters and distributing them in time is very important. It is also advisable to check through telephone to make sure that letters reached the intended people or institutions.
   b) Venue
      - A large room with chairs (if necessary with tables) is required in which all participants can sit comfortably.
      - Space is also needed for small group exercises/discussions and demonstrations.
      - A large room may be divided, tables may be separated, or smaller rooms nearby may be used for small group discussions.
   c) Clinical setting
      - As the program includes clinical practice the training center should be near health facilities to which the participants have access.
   d) Teaching/learning materials/Training Aids
      - Copies of training modules for each participant
      - White or blackboard
      - Chalk
      - Flipchart stand.
      - Overhead projector, slide projector and a projection screen if appropriate
      - Also, a reliable source of power if there is a plan to use OHP or LCD

Consumables

For most training programs, participants and facilitators need:
- Flip charts
- Marker pens
- Writing pads
- Ballpoint pens
- Pencils
- Rulers
- Chalk

Training equipment

Equipment for skill practice will depend on the type of training program. It may include:
- Injection equipment
- Disposal equipment
- Vaccine vials
- Cotton swabs
- Cold chain equipment, e.g. refrigerators, vaccine carriers, boxes, thermometers, monitors
- Recording materials e.g. cards, registers, tally sheets and reporting forms
- **Check in the modules for specific equipment.**
- **Make sure you have all the equipment and materials before the beginning of the training program.**

1.8 How can training be evaluated?

Methods for evaluating the effectiveness of the course should be selected before the program and evaluation tools e.g. forms are prepared. The most commonly used methods are pre and post tests after each module. You have to mark and give these tests to participants to compare the pre and post test results so that they can see their improvements.

It is also possible to ask the following questions at end of every training day and get facilitators discuss on the feedback so that improvements can be made next week.

- What new thing(s) did you learn to day?
- What in particular did you like?
- What in particular did you not like?
- Any recommendation(s)?
## Course Syllabus

<table>
<thead>
<tr>
<th>Session/Objectives</th>
<th>Content</th>
<th>Learning methods and activities</th>
<th>Materials/Resources</th>
<th>Time</th>
</tr>
</thead>
</table>
| **Facilitating Adult Learning** | • Principles of Adult Learning  
  • Participatory Learning Methods  
  • Role of Facilitator  
  • Characteristics of a Good Facilitator:  
  • Common Participant Behaviors | • Brainstorming  
  • Group discussion  
  • Plenary discussion  
  • Simulation exercise  
  • Cases | Pen, flip chart, note on flip chart, cases on cards | 70 min |
| **EPI Target Diseases, Vaccines and Their Administration** | For each disease: Description of the disease, how spread, signs/symptoms, complications, treatment and prevention.  
For each vaccine: what it is, how stored, when and where and how given, number and amount of doses(s), side effects and their treatment.  
Contraindications to immunization: true and false contraindications | • Reading  
  • Small group consensus building on key information about VPD and vaccine use  
  • Plenary discussion  
  • Case study  
  • Group competition | Module 1, note cards, flipchart | 2 hours |
| **The Cold Chain** | • Cold chain equipment used in health facilities  
  • Cold chain monitoring equipment used in health facilities  
  • How to load cold chain equipment  
  • How to freeze icepacks  
  • How to monitor and adjust the refrigerator temperature  
  • How to maintain cold chain equipment  
  • How to do a shake test | • Reading  
  • Case study  
  • Buzz groups and discussion  
  • Small group consensus building on key information about cold chain  
  • Plenary discussion  
  • Group work on rules for good vaccine storage  
  • Demonstration and practice | Module 2, note cards, flipchart, cold box and icepacks, vaccine carrier with foam pad and icepacks, running loaded kerosene refrigerator, spare parts for kerosene refrigerator, temperature monitoring chart | 3.25 hours |
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</thead>
<tbody>
<tr>
<td><strong>How to Provide Safe and Quality Immunization Services</strong></td>
<td>• Learn how to prepare for services</td>
<td>• Materials needed for vaccination session</td>
<td>Flipchart, pens, Module 3, all items found at a vaccination table: vials of each type of vaccine and each diluent, mixing syringes, injection syringes, safety box, oranges, OPV droppers, BCG ampoule file, vitamin A capsules, scissors, vaccine carrier packed with icepacks and foam lid, tally sheet, registration book, vaccination cards (for infant and mother)</td>
<td>4.5 hours</td>
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<td></td>
<td>• Learn how to screen clients</td>
<td>• Ways of organizing vaccination session</td>
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<td></td>
<td>• Learn how to prepare and administer vaccines and vitamin A</td>
<td>• Screening clients</td>
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<td></td>
<td>• Learn how to ensure safe injections and their disposal</td>
<td>• Reconstitution and administration of vaccines and vitamin A</td>
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<td></td>
<td></td>
<td>• Steps taken after immunization session</td>
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<td></td>
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<td>• Disposal of used syringes and needles</td>
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<td></td>
<td></td>
<td>• Reading</td>
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<td></td>
<td>• Small group consensus</td>
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<td>• Buzz groups</td>
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<td>• Case study</td>
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<td></td>
<td></td>
<td>• Plenary, group competitions</td>
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<td></td>
<td>• Demonstration and practice</td>
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<tr>
<td><strong>Communicating with caretakers &amp; communities for improved immunization coverage</strong></td>
<td>• Identify factors that influence whether caretakers bring their children for immunization</td>
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<td></td>
<td>• Describe effective communication techniques</td>
<td>• Mothers and health worker concerns and assumptions about immunization</td>
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<td></td>
<td>• Identify 6 key messages caretakers need to know</td>
<td>• Effective communication techniques</td>
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<td></td>
<td>• Explain how to mobilize the community</td>
<td>• 6 key messages caretakers need to know</td>
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<td></td>
<td></td>
<td>• How to work with and mobilize the community</td>
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<td></td>
<td></td>
<td>• Small group work</td>
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<td>2 hours</td>
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<td>• Role plays</td>
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<td></td>
<td>• Plenary discussion</td>
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<td></td>
<td></td>
<td>• Story</td>
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<tr>
<td><strong>Monitoring Immunization Coverage, Dropout and Quality of Service</strong></td>
<td>• Use and analyse</td>
<td>• Data collection</td>
<td>Module 4, pre-prepared flipcharts, situation &amp; question cards, story</td>
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<td>• Data use and analysis</td>
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<td>• Monitoring</td>
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<td>• Brainstorming</td>
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<td>• Group discussion</td>
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<td>• Plenary</td>
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</thead>
<tbody>
<tr>
<td>immunization cumulative coverage monitoring charts</td>
<td>Action planning</td>
<td>discussion • Simulation • Case study • Small group work • Data analysis</td>
<td>reporting forms at each level, registration book, vaccination cards (for infant and mother), cumulative coverage monitoring charts (blank and partially filled), actual annual coverage data (for the most recent completed full year) by antigen and dose (including DPT1) and by health facility for the selected woreda</td>
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<tr>
<td>• Explain the importance of using data to monitor immunization performance</td>
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<td>• Compile, analyse and interpret data</td>
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<tr>
<td>• Use monitoring tools and forms</td>
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<tr>
<td>• Identify action needed to improve immunization service</td>
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Sessions
# Session 1

## Module 0: Facilitating Adult Learning

### Course Syllabus

| Session/Objectives | Explain the concept of participatory learning  
|                   | Explain main principles of adult learning  
|                   | Use participatory learning methods  
|                   | Explain the role and characteristics of a good facilitator  
|                   | Use basic communication skills to manage a group |
| Content           | Principles of Adult Learning  
|                   | Participatory Learning Methods  
|                   | Role of Facilitator  
|                   | Characteristics of a Good Facilitator  
|                   | Common Participant Behaviors |
| Learning Methods and Activities | Brainstorming  
|                           | Group Discussion  
|                           | Plenary Discussion  
|                           | Simulation Exercise  
|                           | Cases |
| Materials/Resources | Pen  
|                       | Flip Chart  
|                       | Note on Flip Chart  
|                       | Cases on cards |
| Time                | 70 min |
Module 0: Facilitating Adult Learning

0.1 Lesson Plan

Time: 1 hour and 45 minutes

Learning Objectives:
By the end of the session, participants will be able to
♦ Explain the concept of participatory learning
♦ List main principles of adult learning
♦ Use participatory learning methods
♦ Explain the role and characteristics of a good facilitator
♦ Use basic communication skills to manage a group

Preparation in Advance by Facilitator:
1. The facilitator of this session should first carefully read this detailed lesson plan and the guide and understand the activities very well.
2. The notes for presenting to participants should be written on a flipchart and ready ahead of time (a day earlier). They are marked as Flip Chart 1-3 and are in boxes.
3. Each case should be typed on a colored card and be ready before hand.

Materials: Flip Chart and Pen

Process

Step 1: 5 minutes
Introduce the content of the session briefly. This session contains:
- Participatory Learning
- Principles of Adult Learning
- Learning Methods
- Characteristics of Good Facilitator
- Managing Participant Behaviors

Step 2: 15 minutes
Brainstorm on what participatory learning is and its characteristics and show Flip Chart 1 for participants.

Step 2: 15 minutes
Divide participants into three groups and ask them to discuss on the difference between child and adult learning practices and present their findings in plenary. Then show Flip Chart 2 and make a link with the groups’ findings.

Step 3: 15 minutes
Break participant into four groups and ask them to identify learning methods and explain for what kinds of activities they may use them. Then ask them to present their findings in plenary on a flip chart and discuss on each presentation. Give some directions on some of the issues which are not clear or seem ambiguous. (Note to
facilitator: read and understand Section e “Using Appropriate Learning Methods”, which appears in Module 0 “Facilitating Adult Learning”

**Step 4:** 25 minutes
Divide participants into three/four groups and ask them to discuss and write the role and characteristics of a good facilitator and present their findings in plenary. Show Flip Chart 3 and make a link with the participants’ findings.

**Step 5:** 25 minutes
Keep the same three/four groups working together and ask them “What actions do they take as a facilitator?” after reading two/three cases on the different behaviors of participants assigned to the groups and ask them to present their findings (the cases should be written on a card and given out to each participant). Then distribute note no.1 and discuss on the answers in plenary.

**Step 6:** 5 minutes
Discuss with participants how they can apply these new skills in future activities as facilitators and identify potential barriers. Validate the achievements of the objectives of the session.
EXPERIENCE: The facilitator helps participants in using their past experiences to develop new knowledge. It is gathering their experiences with the topic/task through games, exercises, and small group work or in a large group discussion.

REFLECTION/DISCUSSION: You may also provide opportunities for participants to reflect/discuss on their experiences so that they exchange opinions and learn from each other and generate data.

GENERALIZATION: By using the discussion and by making sense of the data they generated, they will arrive at a certain generalization. This is an agreement among participants on how the learning can be applied the next time.

APPLICATION/EXPERIMENTATION: This is the application/experimenting of the new knowledge to test how it works in their “real world”, personal or professional lives situations which later will be an experience to reflect, generalize and apply.
A. Difference between Adult and Child Learning

**Self-concept:** children see themselves as dependant whereas adults see themselves as autonomous beings, capable of self direction. The relationship between learner and teacher is necessarily altered.

**Experience:** children have few life experiences to bring to new learning activities while adults bring their previous life experiences. To deny or ignore their experience would constraint learning.

**Readiness to learn:** children are viewed as gathering information and social skills in their schooling process which are prescribed by an external agent. Adult learners want to decide what and how they will learn based on their present social situation and the problem they face.

**Time perspective:** children learn for the future, not for the present. Adults have problem-centered time perspective and from this come their desire to become better problem-solvers today.

B. Principles of Adult Learning when Training

Adults learn differently from children since they have a lot of experience they gained through a life time experience. Facilitators should bear in mind the following issues while planning to train adults.

- Adults tend to be highly motivated to learn when they are solving immediate personal or work related problems.
- Adults want to apply what they learn, often immediately.
- Adults want to preserve or even enhance their self-esteem.
- Adults are concerned with details. Even minor points have to be consistent with prior learning.
- Adults dislike sitting passively for long periods.
- Adults have trouble accepting information that contradicts or conflicts with their values and beliefs.
- Adults have acquired a wealth of information from their own life experience.
Flip Chart 3

Characteristics of a Good Facilitator

For facilitators to effectively carry out their roles, positive attitude is required at all times. Negative attitude kills good facilitation. As a facilitator:

You Instruct
- Make instructions clear
- Provide guidance in group activities
- Validate understanding through questions and answer sessions
- Encourage participants to ask questions and make comments

You Motivate
- Demonstrate enthusiasm for subject matter and of the course and for participants’ work
- Praise and complements each participant for comments, participation and contributions
- Prepare in advance and use appropriate energizers
- Encourage participants to explore how the modules can be applied to activities of their own health facilities and how the skills they are learning can help them to improve their immunization work

You Manage
- Ensure that all participants have access to supplies and materials when they need them
- Ensure that there are no obstacles to learning, such as excessive noise, poor lighting or insufficient work space
- Monitor the progress of each participant
- Ask assistance from other facilitators or the course coordinator if you need help

Some of the Roles of the Facilitators are
- Begin discussion
- Encourage full participation
- Ensure every aspect is considered
- Keep the group on track
- Keep the atmosphere constructive
- Ensure each contribution is given fair consideration
- Summarize discussion
- Record conclusions and agreements
- Creating the right climate
- Resolving frustration during discussions
- Concluding the discussion
0.3 Additional Handouts

How to improve communication- Energizer

Communication is never as easy as it appears on paper. Many complex and interacting factors affect the flow of information and the meaning given to it. Though we may know what it is we want to say we may not find it so easy to recognize the problems of the person at the other end in making sense of it. We may be competent organizing information in a clear and logical way but we may fail to recognize the difficulties imposed by:

- physical distance
- lack of feedback, or
- resentful attitudes

There are there exercises that are designed to alert participants to some of the common pitfalls in communicating simple information. The following is a short test you can use as an energizer.

Organizers Notes

i. Announce to participants that you are about to give them a short test on their ability to follow instructions carefully.
ii. Hand out the test sheets either face down or folded in two and instruct everyone not to look at the sheets until you say ‘Go’.
iii. Tell them they have three minutes to complete the test and that you will be timing them.
iv. Give the word ‘Go’ and thereafter move around as if you were an exam invigilator. If anyone comes in late ask them to sit down quickly, hand them the sheet and tell them the test has already started and that they have…….(whatever time is left) to complete it.
v. After two minutes announce ‘there is one minute left’ and so on after two and a half and two and three-quarter minutes.
vi. After three minutes ask whether everyone has finished (your tone of voice should indicate that you would expect that to be so) and if some say ‘no’ then ask them how long they will need to do so and grant them an extension.

You will recognize that the idea is to create a sense of outside pressure and urgency in order to demonstrate how easily we can become distracted from the simple task of following instructions.

Review

Ask: Can anyone explain what happened as they did the test? What effects did the way I handled it have on you? What did you learn from it all?
This is a timed test. You have three minutes only to complete it.

1. Read everything carefully before doing anything.
2. Put your name in the upper right hand corner of this paper.
3. Circle the word NAME in sentence number 2.
4. Draw five small squares in the upper left hand corner.
5. Put an X in each square.
6. Sign your name under the title of this test.
7. Put an X in the lower left hand corner of this paper.
8. Draw a triangle around the X you just put down.
9. On the back of this paper multiply 703 by 66
10. Draw a rectangle around the word ‘corner’ in sentence number 4.
11. Loudly call out your first name when you get this far.
12. If you have followed the directions carefully to this point, call out ‘I have’.
13. On the reverse side of this paper, and 8950 and 9805
14. Put a circle around your answer, and tick it if you think it is correct.
15. In your normal speaking voice, count from ten to one backwards.
16. Punch three small holes in the top of this paper with your pencil point.
17. If you believe you are the first person to reach this point, loudly call out: ‘I am the first person to reach this point, and I am the leader in following instructions’.
18. Underline all even numbers on the left side of this paper.
19. Loudly call out, ‘I am nearly finished. I have followed instructions’.
20. Now that you have finished reading everything carefully, do only sentences one and two.

THEN KEEP QUIET! OTHER PEOPLE MAY STILL BE WORKING
0.4 Exercises (with answers) in Module

Answer the following question after reading the cases.

What actions do you take as a facilitator if you face these kinds of participants?

**CASE #1:** Alemu is a participant and seems very eager to learn. He also looks like showing off. He keeps talking and talking.

**CASE #3:** Negussie tries to actively participate in discussions but his ideas are not clear since he mixes many issues together.

**CASE #5:** Senait sometimes talks against Bekele’s ideas. She manages to have some participants to support her ideas. Bekele also started to realize that and getting supporters.

**CASE #7:** Ayelech keeps on asking for facilitator’s opinion on every topic. She sometimes asks very difficult question to test him/her.

**CASE #2:** Eyasu seems to like to argue on every issue discussed. He wants to confront the facilitator and make fun of him in front all participants.

**CASE #4:** Elias is attending the training and has never said a word. He just keeps quiet.

**CASE #6:** Tasew speaks when he has the chance but never talks about the topic. He talks usually out of topic.

**CASE #8:** Tesema follows the discussion very carefully. But he cannot tell what he thinks. He rather talks in a distorted way.
Handling participants’ behavior: some techniques

Overly Talkative: The participant in this case may be an ‘eager’ or simply a “showoff”.

Don’t be embarrassing or sarcastic: you may want to call on their participation later. Slow them down with some difficult questions or interrupt them with “this is an interesting point; now lets see what the group thinks…”

Highly Argumentative: The learner may have a combative, confrontational personality or wants to “heckle”.

Keep your own temper in check and don’t allow other group members to get excited. Try to merit one of his/her point, and then move on. If not possible talk with the person during the break to find out what is bothering him/her.

Rambler: They talk about everything except the topic at hand…

When they stop for breath, thank them and refocus their attention by restating the relevant points, then move on.

Personality Clash: This is when two or more members clash. Such a clash may divide the group into factions as each party gathers support from other members.

Emphasize points of agreement and minimize disagreement if possible. Draw their attention back to the objectives. Ask direct question on the topic and bring positive members into the discussion.

Won’t Talk: This person may be bored, indifferent, timid, insecure or may feel superior to the group.

Depend on what is motivating the individual. Arouse interest by seeking the person’s opinion. If you think that the individual feels superior, ask for his/her view. Indicate your respect for their experience or wisdom but don’t overdo it. First time s/he talks, compliment him/her. Be sincere.

Ask for Your Opinion: There is nothing wrong with participants seeking your own personal opinion on a topic. It becomes more difficult when you feel that the person is trying to test you or to put you on the spot.

Avoid solving trainee’s problem for them. There are times when you must give a direct answer. Say, “first, let’s get some other opinions about that” Then call on another individual by name.

Wrong Subject: This person does not ramble but is simply off base.
Take the blame yourself with “something I said must have led us away from the topic”. Restate the last point given. Above all, don’t embarrass the individual.
# Session 2

## Module 1: EPI Target Diseases, Vaccines and Their Administration

### Course Syllabus

| Session/Objectives | To identify and understand:  
• Key information of public health importance about vaccine preventable diseases  
• Key information for facility staff about vaccine use  
• True and false contraindications |
|--------------------|----------------------------------------------------------------------------------------------------------------|
| Content            | **For each disease**: Description of the disease, how spread, signs/ symptoms, complications, treatment and prevention.  
**For each vaccine**: what it is, how stored, when and where and how given, number and amount of doses(s), side effects and their treatment.  
**Contraindications to immunization**: true and false contraindications. |
| Learning methods and activities | • Reading  
• Small group consensus building on key information about VPD and vaccine use  
• Plenary discussion  
• Case study, and  
• Group competition |
| Materials/Resources | • Module 1  
• Note cards  
• Flipchart |
| Time               | • 2 hours |
Module 1: EPI Target Diseases, Vaccines and Their Administration

1.1 Lesson Plan

Time: 2 hours

Learning Objectives:

By the end of this session, participants will become familiar with 6 target vaccine-preventable diseases (plus vitamin A deficiency - VAD) and the vaccines used to prevent them. Participants will be able to:

- Identify and explain key information of public health importance about the vaccine-preventable diseases
- Identify key information needed by health facility staff about vaccine use
- Identify true and false contraindications to immunization

Preparation in advance by facilitator:

- Read Module 1
- The facilitator of this session should first carefully read this detailed lesson plan and understand the activities very well.

Homework assignment for the participants before the session:

If possible, participants should read the entire Module 1 the evening before training begins.

Materials: flipchart, pens, note cards, Module 1

Process:

Quickly orient the participants to Module 1 referring to Page iv “About the Module”.

Step 1: 10 minutes
Randomly assign the participants into 7 groups, one for each of the six diseases and VAD. Request them to silently read only the few pages of the module related to their assigned disease excluding the vaccines (Group 1 read on Tuberculosis - Section 1-1.6, Group 2 reads on Diphtheria - Section 2-2.5, Group 3 reads on Pertusis - Section 3-3.6, Group 4 reads on Tetanus - Section 4-4.6, Group 5 reads on Polio - Section 7-7.6, Group 6 reads on Measles - Section 8-8.6, Group 7 reads on VAD - Section 9-9.3). Explain that they should identify and agree on the key information of public health importance that they would like to convey in a two-minute conversation with an imaginary former health instructor not engaged in the field of immunization or preventive medicine. Ask them to select one spokesperson from the group who will present this key information in plenary.
Step 2: 30 minutes
Re-convene into plenary and request each team to present the key information in a maximum of 2 minutes followed by questions and answers.

Step 3: 10 minutes
Case study: “The two months pregnant woman.” Exercise 1 Page 11 of Module 1
Request participants to form buzz groups and silently read and discuss the case study. Call for answers and discuss.

Step 4: 10 minutes
Break the participants into the same 7 groups. Request them to silently read only the few pages of the module related to the vaccine used to prevent the disease that they discussed in Step 1 Group 1 reads on BCG Section 1.7-1.7.8, Group 2 and 3 read on DPT Section 5-5.8, Group 4 reads on TT Section 6-6.8, Group 5 reads on OPV Section 7.7-7.7.6, Group 6 reads on Measles Section 8.7-8.7.8, Group 7 reads on Vitamin supplementation Section 9.4-9.8. Explain that they should identify any interesting, important or new information that they believe would be of relevance to health facility service providers. Ask them to select one spokesperson from the group who will present this key information during 2 minutes in plenary.

Step 5: 30 minutes
Re-convene into plenary and request each team to present the key information in a maximum of 2 minutes followed by questions and answers.

Step 6: 10 minutes
Request the participants silently in plenary to read pages in Section 10 on Page 30 of Module 1 about contraindications and call for questions.

Step 7: 15 minutes
Conduct small group exercise/competition: exercise 5 Page 32 Divide participants randomly into 4 groups. Ask all groups the first question. Request each group to quietly discuss and reach agreement. Request a single person in each group to write the group’s answer on a note card. Call for each group to show their cards. Give a point to the groups with the correct answer. Repeat for each question in turn.

1.2 Learning Aids and Additional Exercises to Use in Session
None

1.3 Additional Handouts
None

1.4 Exercises (with answers) in Module
Exercises 2, 3 and 4 are optional.
Case study

The two months pregnant woman

Mrs. Rahel, two months pregnant with her first baby, is at the clinic and hears a health worker talking to a group of women. He is telling them about neonatal tetanus, a disease that causes death in newborn babies and about the injection that women can get to protect themselves and their babies.

Nurse Kinfe is giving tetanus toxoid immunization. Mrs. Rahel asks him for one. "I am going to my mother’s village soon and will stay several months", she says. "There may not be time for two injections when I come back."

"I am sorry," says Nurse Kinfe, "I can't give you tetanus toxoid now. It's too early in your pregnancy and it might harm the baby."

"My friend told me that the health workers in Haik give these injections to every woman the first time she goes to the antenatal care clinic - even if she is only one month pregnant. They say it is not dangerous."

"I am sorry," says Nurse Kinfe. "My supervisor has told me not to give tetanus toxoid before a woman is at least four months pregnant."

Discussion

1. Who is following the correct procedure Nurse Kinfe or the health workers in Haik?
   The workers in Haik are correct. It is safe to immunize women with tetanus toxoid at any stage of pregnancy.

2. What should Nurse Kinfe do?
   Nurse Kinfe should discuss the matter with his supervisor and together consult Module 1 of the EPI refresher and training of trainers course.
Small group discussion

Case study

The Medical Officer of Zinab Woreda PHC

In Zinab Woreda, the Medical Officer, Dr. Ali is managing the immunization program.

One day, he visits a district hospital and is shocked to find 19 children with measles, some of them severely ill. He asks the hospital staff for information on the immunization histories of the children.

- 15 had not received measles vaccine.
- 5 of these 15 had never been to a health centre or other health facility before being hospitalized.
- 10 of the 15 had gone to a health centre for a measles immunization but had not received it because the health workers would not immunize children with colds or diarrhea.
- The remaining 4 out of the 19 children had received measles immunization in the same health centre and had been at the right age for this.

Discussion

1. Which of these cases of measles could have been prevented? How?

All the cases could have been prevented by immunizing all the eligible children with colds or diarrhea who had gone to the health center. The four children who were immunized might have received impotent vaccine. Since they all attended the same health center, there could be a problem with a cold chain.

2. What should the medical officer do to reduce the number of measles cases in the district?

The medical officer should find out what contraindications policy is being followed by the health workers.

He should make sure that the policy is correct and that the health workers applied.

Dr. Ali should also check the cold chain practices at the health center attended by the fully immunized children.
Exercise 3 (found on Page 26 of the Module)

Buzz group discussion

1. Which vaccines are damaged most by heat? OPV, Measles

2. Why must you discard reconstituted vaccines? Because they lose their potency

3. When must you discard reconstituted vaccines? After 6 hours or at the end of a session whichever comes first

4. What is the immunization schedule for children? Indicate the vaccines, the doses and the recommended ages for immunization.

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Number of Doses</th>
<th>Age</th>
<th>Minimum Interval between doses</th>
<th>Route of administration</th>
<th>Dose</th>
<th>Vaccination site</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>1</td>
<td>At birth</td>
<td>-----</td>
<td>Intradermal</td>
<td>0.05 ml for under 1 year and 0.1ml for above 1 year</td>
<td>Upper right arm</td>
</tr>
<tr>
<td>OPV</td>
<td>4</td>
<td>At birth and at 6, 10 and 14 weeks of age</td>
<td>4 weeks</td>
<td>Oral</td>
<td>2 drops</td>
<td>Mouth</td>
</tr>
<tr>
<td>DPT</td>
<td>3</td>
<td>6, 10 and 14 weeks of age</td>
<td>4 weeks</td>
<td>Intramuscular</td>
<td>0.5 ml</td>
<td>Outer part of thigh</td>
</tr>
<tr>
<td>Measles</td>
<td>1</td>
<td>9 months</td>
<td>-----</td>
<td>Subcutaneous</td>
<td>0.5 ml</td>
<td>Upper left arm</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>2</td>
<td>At 6 months At 12 months*</td>
<td>6 months</td>
<td>Oral</td>
<td>100,000 IU 200,000 IU</td>
<td>Mouth</td>
</tr>
</tbody>
</table>

*give only 100,000 IU if the child weighs less than 8 kg.

Intradermal = into the skin
Intramuscularly = into a muscle
Subcutaneous = under the skin
5. What is the immunization schedule for women of childbearing age? Indicate the doses and recommended intervals after each immunization.

Administration guidelines of tetanus toxoid (TT) for women of childbearing age.

<table>
<thead>
<tr>
<th>Age</th>
<th>Recommendation</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>TT 1</td>
<td>at first contact with woman of childbearing age, or as early as possible in pregnancy.</td>
<td>Period of protection No protection</td>
</tr>
<tr>
<td>TT 2</td>
<td>at least 4 weeks after TT 1</td>
<td>3 years</td>
</tr>
<tr>
<td>TT 3</td>
<td>at least 6 months after TT 2</td>
<td>5 years</td>
</tr>
<tr>
<td>TT 4</td>
<td>at least 1 year after TT 3</td>
<td>10 years</td>
</tr>
<tr>
<td>TT 5</td>
<td>at least 1 year after TT 4</td>
<td>All childbearing years</td>
</tr>
</tbody>
</table>

| Dose size      | 0.5ml                                                                            | See manufacturer’s instructions |
| Number of doses| Five                                                                             | Provides protection during child bearing years |

| Injection site | Muscle of upper arm                                                              | Never immunize into the buttock |

6. What are the side effects of each of the vaccines in the immunization schedules? What advice do you give parents/clients if they occur?

- **BCG** - Small ulcer which heals in few weeks time
- **DPT** – Mild fever, and sore at injection site
- **OPV** – Virtually no side effects
- **Measles** – Mild fever, which subsides within 24 hours and mild skin rush within one week

Advice: Mild side effects can occur, which tell that the vaccine is working. When you compare the side effects with the actual disease, which is prevented by the vaccine, it is negligible.
Case study

The window-ledge

On Friday, Tesfaye decides to defrost and clean his refrigerator because a lot of ice has collected around the freezer.

He puts ice packs in a vaccine carrier and then places the vaccines from the refrigerator in the middle. There is not enough room in the carrier for everything, so he puts the diluent on the window-ledge out of the way.

"The diluent will be safe here until I can put it back in the refrigerator. Diluent doesn't lose its potency as vaccine does."

On the following Monday, immunization day at the Clinic, many children come in for measles immunization. Tesfaye takes the measles vaccine out of the refrigerator but at first cannot find the diluent. Eventually he sees it on the window-ledge.

Discussion

1. Can the diluent from the window-ledge be used to reconstitute the measles vaccine?

**T**esfaye must not reconstitute the vaccine with the diluent from the window ledge until it is cold. The warm diluent damages vaccine.

2. What should Tesfaye do before he immunizes the children?

**T**esfaye may put the diluent back in the refrigerator and use it when it has become cold again.

He should explain to the parents that diluent can not be used until it is cold and ask them to wait.
Answer the following by saying TRUE or FALSE. Your facilitator will read the questions for you.

1. Give DPT-2 and OPV-2 to a child who had convulsions immediately after DPT-1 a month before **FALSE**
2. Immunize a child with local skin infection **TRUE**
3. Immunize a child with chronic heart problem **TRUE**
4. Immunize a child who needs urgent referral **FALSE**
5. Immunize a child who has a brother with recurrent convulsions **TRUE**
6. Immunize a child who has a history of jaundice at birth **TRUE**
7. Immunize a child who is underweight **TRUE**
8. Do NOT immunize a child known to have AIDS **FALSE**
   [Only BCG should not be given]
9. Do NOT immunize a child with pneumonia **FALSE**
10. Do NOT immunize a child with fever following DPT-1 and OPV-1, 4 weeks ago **FALSE**
## Session 3

### Module 2: The Cold Chain

### Course Syllabus

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<td>• Understand good vaccine storage practices</td>
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<tr>
<td>• Practice routine maintenance tasks for kerosene refrigerators</td>
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<td>• Practice shake test and recognize frozen vials</td>
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<td>• Cold chain monitoring equipment used in health facilities</td>
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<td>• How to load cold chain equipment</td>
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<tr>
<td>• How to freeze icepacks</td>
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<tr>
<td>• How to monitor and adjust the refrigerator temperature</td>
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<td>• How to maintain cold chain equipment</td>
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<td>• How to do a shake test</td>
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<td>• Flipchart</td>
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<tr>
<td>• Cold box and icepacks</td>
</tr>
<tr>
<td>• Vaccine carrier with foam pad and icepacks</td>
</tr>
<tr>
<td>• Running loaded kerosene refrigerator</td>
</tr>
<tr>
<td>• Spare parts for kerosene refrigerator</td>
</tr>
<tr>
<td>• Temperature monitoring chart</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 2.5 hours</td>
</tr>
</tbody>
</table>
Module 2: The Cold Chain

2.1 Lesson Plan

Time: 3.25 hours

Learning Objectives:

By the end of this session, participants will become familiar with elements of the cold chain. Participants will be able to:

- Identify key information on cold chain needed by health facility staff
- Understand good vaccine storage practices
- Practice kerosene refrigerator maintenance tasks
- Practice the shake test and recognize frozen vials

Preparation in advance by facilitator:

- Read Module 2.
- The facilitation of this session should first carefully read this detailed lesson plan and understand the activities very well.
- Inform local health authorities about the need to make available a refrigerator and cold chain materials at the training site. (See materials section below)
- Identify an experienced technician available to demonstrate the routine use and maintenance of a kerosene refrigerator. Provide him with a copy of the hand-out with text for slides 36-42 (slides not available).
- Freeze one vial of DPT overnight and label it “Do not use.” Select a vial of the same manufacturer’s DPT and be sure by its rate of sedimentation that it indeed has never frozen.

Homework assignment for the participants before the session:

If possible, participants should read the entire contents of Module 2 the evening before.

Materials:

- Module 2
- Flipchart
- Commonly-used cold box and vaccine carrier (with foam pad) with correct number and type of frozen icepacks and vaccine
- Running refrigerator (preferably a kerosene refrigerator) loaded with vaccines, diluents, ice packs, water bottles, and thermometer and (any other temperature monitoring devices in use)
- Spare parts for refrigerator (fuel tank, funnel with filter, baffle, lamp, wick, etc.)
- Temperature recording charts
- One vial of frozen DPT and one vial of DPT that is known for certain never to have frozen
Process:

**Step 1**: 2 minutes  
Quickly orient the participants to Module 2.  
[Note to facilitator: Remove the frozen vial of DPT from the freezer so it begins to melt.]

**Step 2**: Exercise  
5 minutes

Request that the participants turn to exercise on “Hiwot and the icepacks” in Module 2 Page 30. Conduct the buzz group exercise to stimulate interest and discussion.

**Step 3**: 15 minutes  
Randomly assign the participants into 4 groups (A, B, C, and D) and assign them to read silently. Group reading assignments follow:

All groups read on “The Cold Chain” Pages 1-2 and Section 8 and 9, shake test and summary (Page 24-26). Each group also reads the sections indicated below:
- Group A: “cold chain equipment used in health facilities” (Section 2-2.5)  
- Group B: “cold chain monitoring equipment used in health facilities” (Section 3-3.3)  
- Group C: “how to load cold chain equipment and how to freeze ice packs” (Section 4-5)  
- Group D: “how to monitor and adjust the refrigerator temperature and how to maintain cold chain equipment” (Section 6-7.2)

Explain that they should identify any **interesting, important or new information** that they believe would be of **relevance to other participants and to health facility service providers**. Ask them to select one spokesperson from the group who will present this key information during 3 minutes in plenary.

**Step 4**: 25 minutes  
Re-convene in plenary and call for a volunteer to facilitate the discussion. Explain that the facilitator will request each team to present the key information in a maximum of 3 minutes, and will preside over a short period of questions and answers.

**Step 5**: 25 minutes  
Divide into two sub-groups: #1 and #2. Ensure that each group has at least one participant from each of the groups A, B, C and D. If not, make some substitutions. Request that the group select a participant to facilitate a discussion, captured on a flipchart with the help of a designated note-taker, to generate rules for good vaccine storage in the refrigerator. Explain that the facilitators will then be presenting their flipcharts for a total of 5 minutes to the plenary. Refer to the handout “some rules for good vaccine storage in the refrigerator," if needed, to stimulate discussion. [Do not hand it out]

**Step 6**: 20 minutes  
The two facilitators from sub-group 1 and 2 present in plenary, using the flipcharts, the rules for good vaccine storage in the refrigerator. They co-lead a discussion, focusing on any differences in the reports of the two sub-groups. (To find additional...
ideas, the facilitator can refer to the list “Some rules for good vaccine storage in the refrigerator.”

**Step 7**: 25 minutes
Re-divide into the same sub-groups 1 and 2. Request that the group pick another two participants to serve as facilitators to lead a discussion about the justification behind the instructions appearing in the drawing on Page 15 of Module 2 of a correctly loaded refrigerator called “Loading a Front-loading Vaccine Refrigerator.” Be sure that the participants fully understand the rationale behind these instructions.

**Step 8**: 15 minutes
Request a volunteer to load a refrigerator and a vaccine carrier, with vaccines, diluents, icepacks, etc. Instruct the others to observe. Call for comments after loading is completed. Call for a volunteer to load a vaccine carrier. Request others to observe. Call for comments. [Hand out “some rules for vaccine storage” and the sample job aid]

**Step 9**: 45 minutes
Call for an experienced technician (arranged beforehand) to demonstrate key points in the relevant slides on maintaining a kerosene refrigerator. Invite each participant to practice certain tasks. Hand out the diagram “Parts of a kerosene absorption refrigerator from the back.”

**Step 10**: 15 minutes
Remove the frozen vial of DPT from the freezer. Demonstrate the shake test using the frozen vial and a vial known for sure never to have frozen. Let each participant observe the rate of sedimentation.

(Optional if time permits, or after hours)
**Step 11**: 15 minutes
Request a volunteer to facilitate a plenary discussion (and record suggestions) on how to improve the cold chain. Some illustrative discussion points include:
- What are the cold chain problems in SNNPR and how can they be solved?
- What is the system of maintaining and repairing cold chain equipment?
- At which level are spare parts supposed to be stored?
- Which spare parts is the health facilities expected to keep in stock and be able to fit?
- Who is expected to perform periodic maintenance and how often?

**Exercises: (optional) 1, 2 and 4**

**Note**: Answers to exercises 1-4 are in Module 2, Page 32-36. Trainees should try exercises by themselves before they refer the answers.
2.2 Learning Aids and Additional Exercises to Use in Session

Some rules for good vaccine storage in the refrigerator: (there can be others, too)

- Make icepacks well in advance of your need for them.
- Stack vaccines neatly leaving air gaps between them.
- Store water bottles on the bottom shelf
- Check the temperature in the main compartment every day (should be between +2°C and +8°C)
- Never put vaccine in the door.
- Keep DPT and TT out of the freezer and away from the freezing element and ice (put only OPV and measles on the top shelf of the refrigerator).
- No food or drink in the vaccine refrigerator.
- Keep careful records of stock.
- Use storekeeping principles of “first expiring, first out” and within same expiry date “first in, first out.” (newly received vaccines are generally placed in the back)
- Keep the refrigerator door shut – use a lock.
- Make one person responsible for looking after the vaccine – he or she keeps the key.
**Sample job aid**

1. **Vaccine over or under-stocking:**
   - Maximum of 1 ½ month supply of each vaccine
   - Regular monthly cycle of vaccine deliveries
   - Inventory and vaccine usage records kept

2. **Vaccine stock rotation:**
   - Different expiry dates: expiring first, use first
   - Same expiry date: “First in, First out” principle
   - Write date of delivery on vaccine boxes

3. **Location of vaccine in the refrigerator:**
   - No vaccine in door
   - Measles, OPV, BCG in the upper main compartment of a refrigerator (+2 to +8°C, are not damaged by freezing)
   - DPT, TT, BCG, in refrigerator at +2 to +8°C. Never freeze.

4. **Keeping the refrigerator cold:**
   - Thermometer read and recorded twice daily
   - Adjust thermostat dial very carefully
   - Unused space full of sealed undrinkable water bottles.
   - Ice-packs in freezer
   - No food or drink
   - Avoid unnecessary door openings: cold air falls out.

5. **Looking after your refrigerator:**
   - Make one person responsible
   - Defrost when frost exceeds 0.5 cm thickness

6. **Organizing the vaccination session:**
   - Put day’s estimated vaccine requirements in vaccine carrier
   - Foam pad lid on top of ice pack in the vaccine carrier
   - Protect from light
   - Use foam pad to hold opened vaccines while vaccinated

7. **After the vaccination session:**
   - Reconstituted BCG and measles destroyed at day’s end
   - Label remaining vials for first use next day.

8. **Protect DPT, TT and DT from freezing:**
   - Let ice packs sit 20 minutes at room temperature before loading these toxoids into cold boxes or vaccine carriers (condition the ice packs)

9. **Packing cold boxes:**
   - Use ice packs, not blocks of ice which can soak labels off
   - Fill one third volume with ice packs
   - Line bottom, top, and sides with ice packs

10. **Prepare for cold chain failures:**
    - Identify emergency energy source
    - Know where to find key at all times
Parts of a kerosene absorption refrigerator from the back

- Condenser
- Flue top
- Flue (inside the box)
- Cooling unit
- Flue baffle (inside the flue)
- Lamp glass insert (sealing ring)
- Lamp glass
- Burner
- Guide pin
- Rail
2.3 Additional Handouts

How to maintain a kerosene refrigerator (slides available from WHO or TALC)

Every time you defrost your refrigerator, you must clean it. Wipe it inside and outside with warm soapy water, or a weak detergent, then with plain water, and then wipe all parts completely dry. Never use scouring powder, or steel wool, or other abrasive cleaners. In particular, remember to do the following:

- Wash the rubber seal around the door, and put talcum on it.
- Inspect the outside for chipped paint and rust, and repaint if necessary.
- Inspect the inside for any cracks and seal them with tape if necessary.
- Remove dust and fluff from the pipes at the back of the refrigerator with a soft brush or a piece of cloth (see Figure 13). The refrigerator will not work properly if they are dirty.

Figure 13. Keep the condenser and cooling unit clean or the refrigerator will not work properly.

Q. What are the spare parts that you see here?

Teacher's Note

If your audience use kerosene refrigerators, ask them to identify the parts, write down this list, and then check which ones they keep, and which ones they have ever needed. What other parts have any of the audience ever required? It is also useful to discuss where they keep their spares, and the advantages and disadvantages of various places - see next question.

A. The spare parts that you see here are:

- Two wicks
- Two lamp glasses
- A burner, shown here in two pieces (the burner itself and the metal crown)
- A metal insert to go on top of the lamp glass
- A wick cleaner, or trimmer, above the insert, and
- A wire brush for cleaning the flue. (You hear more about this wire brush with Slide 40.)

Q. What is the best place to keep spare parts?

A. This depends partly on your situation, but it must be somewhere safe. We have found that it is useful to put them in a plastic bag in the door shelf of the refrigerator. Then, they are there when you need them, and they are locked away at other times.

SLIDE 38

This slide shows you how to take apart the burner of a kerosene refrigerator. There are several kinds of kerosene refrigerator, and they all have slightly different burners. But whatever kind you have, you must take it apart to light it, to clean it, and to trim the wick.

First, carefully remove the metal insert and the glass as you see in picture 1.
Q. What is the metal insert for?

A. The metal insert is to make the lamp glass fit tightly to the bottom of the flue, so that all the heat goes up the flue. If they do not fit, the refrigerator will not cool, even though the flame is burning properly. This is a common reason for refrigerators not working well. (See Figure 14)

Q. What is the lamp glass for?

A. The lamp glass is to protect the flame from being blown out.

Figure 14. A good and bad seal between lamp glass insert and flue

Next, remove the metal crown, as you see in picture 2. Then you can light the wick. You must remove the metal crown before you light the wick so that the flame burns hot enough. Then the refrigerator works well.

In picture 2, notice the wick in the centre of the burner - the tail goes down into the tank and "sucks" up the kerosene. Notice also the holes in the side of the burner, between Sam's fingers.

Q. What are these holes for?

A. These holes let in air to help the flame burn.

---

SLIDE 39

To keep a refrigerator working well, you must clean its working parts regularly. You must defrost the compartments, and you must also clean the burner and the flue.

Here you see Sam cleaning his burner. The holes in a burner easily become blocked with soot - sometimes after only a few days. Then, air cannot get to the wick, and it cannot burn well. So you should clean your burner every week.

Take it apart, and wipe each part with a CLEAN rag and kerosene. You can remove the dirt from the holes with a needle. If no one has cleaned the burner for a while, you may have to gently scratch off the soot that has built up in other places too.

If you have cleaned the burner correctly, then you can see that it is clean all over, and the small air holes are clear.

---

Teacher's Note

If the audience will be using one particular kind of kerosene refrigerator, try to get the burner of one to demonstrate. Compare the burner with these pictures, and identify the parts.

---

SLIDE 40

In this slide Sam is cleaning the flue at the back of the refrigerator. You should do this every week at the same time that you clean the burner.

Q. How is Sam cleaning the flue? What do you see in his right hand, and what is in his left hand?

A. In his right hand, Sam has the special wire brush that you saw in Slide 37. He has taken off the flue top, and he is pushing the brush down the part of the flue that is inside the box. In his left hand he is holding a piece of white paper under the bottom of the flue.
Q. What do you see on the paper?

A. On the paper is some soot from the flue. You should push the brush up and down and turn it around until the soot stops falling on the paper. Notice also that Sam has removed the burner during this cleaning process. It is very important not to let soot fall on the burner.

Q. Why is it so important to clean the flue every week?

A. You must clean it because if the soot stays inside, then the heat from the flame cannot reach the walls of the flue. Then the refrigerator cannot work well.

Q. What do you see on the floor beside Sam’s foot?

A. That is something called a spiral (or baffle). It is a piece of twisted wire that hangs inside the flue. It makes the heat from the burner go up the flue more slowly. The refrigerator cannot work well without it. You have to take the spiral out of the flue before you can put the brush down. Remember to clean the spiral also and replace it (see also Figure 10).

Q. What should you do if you do not have the special wire brush?

A. If you do not have the brush, you can use a stick and a rough rag. You must clean the flue somehow! But try to get a brush - it works better. And clean the brush itself after you use it.

Figure 15. Some kinds of flue brush work better if you pull them through backwards.

Teacher’s Note

Reinforce this message by asking the audience about their experiences. First, review Slide 37, to remind them what the brush looks like. Ask them if they have a brush with their refrigerators; and if not, what happened to it. Have they tried to get a replacement? What were the problems? How have they been cleaning their refrigerator flue without a brush?

* * * * * * * * *

SLIDE 41

Here Sam is showing the third job that you should do every week, at the same time that you clean the burner.

Q. What do you think he is doing?

A. Sam is burning off the used edges of the wick to make it level. Then it will give a level and steady flame, which will make the refrigerator work more efficiently.

To level your wick, first turn off the flame. Wait for a few minutes to let the burner cool down. Remove the glass, and the burner, remove the wick from the tank, and squeeze out all the kerosene. Turn the wick down until only 2 mm shows. Then light the wick. Let the flame go out slowly, and then blow off the ashes. Be careful that they do not fall into the burner.

Q. How can you tell if a wick is correctly trimmed?

A. The flame is level round its top.

Q. What mistake is Sam making here?

A. He is burning off the wick too close to the open fuel tank. This is dangerous. He should do it somewhere else.

Further Discussion

If you have a wick trimmer, use that instead of burning off the wick. A wick trimmer is one of the “spare parts” that you saw in Slide 37. Review that slide, and identify the trimmer - it is the small pale grey one near the top of the wicks. Put the trimmer on top of the wick and turn it around one half turn. The wick should now be level and ready to light.

* * * * * * * * *
Now Sam is showing how you adjust the burner after you have trimmed the wick.

First he lit the wick, then he replaced the metal crown, lamp glass and metal insert. You can see some instructions about this printed inside the refrigerator near Sam's hand. Then he pushed the fuel tank back so that the burner is under the flue at the back.

Notice that on this refrigerator, the tank slides out at the front, where we are looking from. You can see the red warning notice saying "STOP" to anyone who wants to open the door of the main compartment.

**Figure 16. A wick that is level, and one that is not**

Q. How can Sam see and adjust the flame of the burner at the back, through the door at the front of the refrigerator?

A. Sam can see the flame at the back because there is a little mirror, which reflects the flame. It is like a dentist's mirror, and it sticks out at the front. Find the mirror here - Sam is looking right into it, while he adjusts the flame with his other hand. The white knob to adjust the flame is on a long rod which goes through to the burner at the back.

After you have lit the burner, wait for ten minutes, then check and adjust the flame again.

Q. Why check the flame again?

A. You must check and adjust the flame after ten minutes, or it may grow too high.

When you first light the flame, it starts small. Then, as the burner becomes hotter, the flame becomes higher. If it becomes too high, it makes smoke and fills the flue with soot.

The drawings on the right show two burners after they have just been lit - one flame is correct and one is too low.

Q. Were the wicks of these burners correctly trimmed? How can you tell?

A. Both wicks were correctly trimmed. You can tell this because the tops of the flames are level all the way round.

Q. What happens if the flame of the burner is too small?

A. The refrigerator will not be cold enough. Remember, a large flame makes the refrigerator colder. A small flame makes it warmer. There is no thermostat on a kerosene burner. You have to adjust the flame yourself according to the temperature.
2.4 Exercises (with answers) in Module

Exercise 1 (found in Section 9, Page 27 of Module 2)

Storing vaccines

1. What temperatures do the thermometers in the picture below show? Do they show a safe temperature for storing vaccines?

Figure: Different kinds of thermometers for immunization programs

Answers: Both thermometers show a temperature of approximately +5°C. This is a safe temperature for vaccines because it is between +2°C and +8°C.

2. Where should each of the following vaccines be stored - on the top shelf or the middle shelf of the refrigerator? Give reasons for your answer.

- BCG
- OPV
- DPT
- Measles vaccine
- Tetanus toxoid

Answers: OPV and Measles vaccines should be on the top shelf because this is the coolest part of the refrigerator. BCG, DPT, and TT should be on the middle shelves away from the freezer. DPT and TT are especially sensitive to cold.
3. In the picture below of a refrigerator temperature chart the shaded area shows the safe temperature range.

   a) What temperature is shown at the top of the safe temperature range? What temperature is shown at the bottom?

   Answer: The line at the top of the safe temperature range is at +8°C. The line at the bottom is at 0°C. Vaccines must be stored between +2°C and +8°C.

   Figure: A refrigerator temperature chart

   ![Temperature Chart](image)

   b) What do you notice about the temperature at the following times?
   - Morning of day 3
   - Evening of day 5
   - Morning of day 8
   - Evening of day 12

   Answer: The temperatures on the morning of day 3 and the evening of day 5 are within the safe range. The temperature on the morning of day 8 is too low; on the evening of day 12 the temperature is too high.

4. Why should you put ice packs between the vaccines and the foam pad of a vaccine carrier?

   Answer: Putting ice packs on top of the vaccines in a vaccine carrier helps to protect them from the heat when you open the lid.

5. How do you keep opened vials cold during a session? How do you keep unopened vials cold during a session?
Answer: In order to maintain the temperature of the vaccines you are using, put them on the foam pad on top of the vaccine carrier. In order to keep unopened vaccines cold, leave them in the refrigerator or the vaccine carrier until you are ready to use them.

Exercise 2 (found in Section 9, Page 29 of the Module)

Small group discussion

Case study

Hot water!

Chaltu is immunizing children when her supervisor arrives unexpectedly. Having prepared to give her next injection, the supervisor picks up some DPT from a cup of water. The supervisor feels the water and finds that it is hot.

The supervisor asks, "Why is this vaccine in hot water?"

"The vaccine was frozen solid this morning when I took it out of the refrigerator," says Chaltu. "I had to put it in hot water to melt it so that I could get it into the syringe."

Discussion

1. What has Chaltu done that is wrong?

Chaltu should not immunize children with DPT that has been frozen. It has lost its potency and cannot make them immune. Melting frozen vaccine in hot water will not make it potent again.

2. What should be done with the DPT vaccine?

The frozen vials should be discarded. Chaltu should check the other DPT vials in the refrigerator to see whether any of them are frozen. He should make sure that none of them are being stored on the top shelf. He should also check the temperature of his refrigerator. It is probably too cold, in which case he should adjust the thermostat.

3. What should Chaltu do about the children to whom she gave the DPT?

Chaltu should find the children he has immunized with frozen DPT and immunize again.
Case study

Hiwot and the icepacks

Hiwot, a community nurse, conducts outreach immunization sessions on Tuesdays and Thursdays.

On Tuesday she returns late from her outreach trip. She leaves her vaccine carrier and other equipment at the health center and hurries home.

On Wednesday afternoon she cleans all her vaccine carriers and other equipment. She checks the vaccine supply and puts the melted icepacks in the freezer.

On Thursday, Hiwot leaves for the outreach site early in the morning. It is already hot. When she arrives at the site, people are waiting for her. She opens the vaccine carrier and finds that the icepacks have melted. The thermometer in the carrier reads +16°C.

Discussion

a) What should she do now?

Hiwot must look at each vial of vaccine in the vaccine carrier to see if it has a VVM label on it. If some of the vials do have VVM labels, she can hold the immunization session using only those vials that the VVM indicates can still be used. If none of the vials have a VVM label, she must cancel the immunization session and dispose of all the vaccines in the vaccine carrier. She should explain the situation to the people who are waiting and arrange for a return visit as soon as possible. She could use the time to provide other health services to the people or to talk with them about vaccine preventable disease and how to prevent them.

b) What should she do in the future to prevent this problem?

Next time Hiwot should put the melted ice packs in the freezer as soon as she returns from outreach. She should have done this on the Tuesday night. The ice packs have not been in the freezer long enough to freeze completely by the time she takes them out on the Thursday morning. It takes 24-48 hours to freeze an ice pack, depending on the type of refrigerator and the outside temperatures.
Case study

A vehicle breaks down

Adam is a health worker on the Finche Woreda outreach team. One morning the team's vehicle breaks down on its way to an immunization session. Adam opens the bonnet and begins to look for the problem while his fellow worker lies down under a tree and falls asleep.

An hour later, supervisor Berhane drives up and stops to see if he can help. He thinks he may be able to take the vaccines and the other health worker to the immunization session.

Berhane finds the vaccine carrier in the sun on the back seat of the vehicle. The lid is partly off. Inside the carrier are vaccines, a bottle of Coke and three small pieces of ice in a plastic bag full of water. He finds syringes in a cardboard box, and bowls, cups and cotton wool in a paper bag.

At this point Adam, finishes repairing the vehicle. "We can go now," he says. "We can have the immunization session after all."

"I am afraid we cannot," says Berhane. "We must send a message to cancel the session and go back to the health center."

Discussion

1. Why does Berhane cancel the immunization session?

Because the vaccines are warm and probably useless and because the syringes are contaminated.

2. What should Adam do differently next time?

Adam should replace contaminated injection equipment with sterile ones. If the vehicle breaks down, the vaccine carrier should be taken from the vehicle and put in the shade. Its lid should be closed tightly and should not be removed. The Coke should not be put in the carrier.
## Session 4

### Module 3: How to Provide Safe and Quality Immunization Services

#### Course Syllabus

| Session/Objectives | • Learn how to prepare for services  
|• Learn how to screen clients  
|• Learn how prepare and administer vaccines and vitamin A  
|• Learn how to ensure safe injections and their disposal |

| Content | • Materials needed for vaccination session  
|• Ways of organizing vaccination session  
|• Screening clients  
|• Reconstitution and administration of vaccines and vitamin A  
|• Steps taken after immunization session  
|• Disposal of used syringes and needles |

| Learning Methods and Activities | • Reading, small group consensus, buzz groups, case study, plenary, group competitions, demonstration and practice. |

| Materials/Resources | • Flipchart  
|• Pens  
|• Module 3  
|• All items found at a vaccination table: vials of each type of vaccine and each diluent, mixing syringes, injection syringes, safety box, oranges, OPV droppers, BCG ampoule file, vitamin A capsules,  
|• Scissors  
|• Vaccine carrier packed with icepacks and foam lid  
|• Tally sheet  
|• Registration book  
|• Vaccination cards (for infant and mother) |

| Time | 4.5 hours |
Module 3: How to Provide Safe and Quality Immunization Services

3.1 Lesson Plan

Time: 4.5 hours

Learning Objectives:

By the end of this session, participants will become familiar with the steps in preparing, conducting and organizing immunization sessions. Participants will be able to:

• Prepare for services
• Screen clients
• Prepare and administer vaccines
• Ensure safe injections and their disposal

Preparation in advance by facilitator:

• Read Module 3.
• The facilitator of this session should first carefully this detailed lesson plan and understand the activities very well.
• The four situations in the exercise “Screening for contraindications” should be written in flip chart in advance of the session.

Homework assignment for the participants before the session:

- Request that they read the entire Module 3.
- Assign short specific reading assignments of up to 10 pages to each participant such that about 5 participants will read the same section. Explain that you will be calling on them to present any information that they feel their colleagues and health facility staff may find important, interesting or unfamiliar.

Materials: flipchart, pens, Module 3, all items found at a vaccination table: vials of each type of vaccine and each diluent, mixing syringes, injection syringes, safety box, oranges, OPV droppers, BCG ampoule file, vitamin A capsules, scissors, vaccine carrier packed with icepacks and foam lid, tally sheet, registration book, vaccination cards (for infant and mother)

Process:

Quickly orient the participants to the start of Module 3 referring to the page “About the Module” Page iv.

Step 1: 15 minutes
Divide the participants into 2 or 3 small groups. Request that they list on a flipchart all the materials needed to conduct an immunization session inside a health facility and any additional materials specifically needed for outreach.

Step 2: 15 minutes
Return to plenary and request that each flipchart be posted. The facilitator for this session leads a discussion on any differences between the lists and whether there are any items that may still be missing.
Step 3: 15 minutes
Request the participants to arrange the furniture and equipment in the classroom as if a facility-based immunization session were to take place. Based on a realistic determination of the available human resources (2 people), they should indicate which activities will be conducted at each place and how the client will flow through the immunization site. Ask the participants to identify any problems associated with the arrangement of equipment and staff and respective roles. Discuss solutions.

Step 4: 15 minutes (Competition Exercise)
Remaining in plenary, divide the participants into 2-3 competing teams and conduct exercise “Screening Clients”, Page 7. (Tell them to assume that the intervals since the last doses are appropriate and that there are no contraindications). Hand out a single note card to each group and request that they select a note taker. Request each group to reach consensus and note their answers on the note card. Ask each question in turn. After all questions are asked, call for answers to each question one at a time. Discuss the correct answer. Keep score.

Step 5: 20 minutes
Divide into 3 groups and request participants to read the section in Module 3 “Assessing the client screening”, Page 4-12. Request that they discuss among themselves and identify any points that they believe may be unfamiliar or of particular interest to some of their colleagues and health facility staff. Request that a note taker record these specific points on a flipchart. Assign one person to be the spokesperson for each group to bring these points to the attention of the entire group during plenary.

Step 6: 20 minutes
Return to plenary and discuss the points identified in the previous step.

Step 7: 10 minutes (Competition Exercise)
Divide into 3 groups. Hand out a single note card to each group and request that they select a note taker. Request each group to reach consensus and record their answers on the note card. Show the flip chart pre-prepared with the four situations. Ask in turn each of the four questions on “Screening for Contraindications” exercise 2 Page 8. After all questions are asked, call for answers to each question one at a time. Discuss the correct answer. Keep score.

Step 8: 10 minutes
In plenary, discuss the answers to the four questions on contraindications.

Step 9: 20 minutes
Explain that volunteers will demonstrate vaccine reconstitution while the rest of the participants silently observe. Call for a volunteer to demonstrate all the steps in reconstituting an ampoule of BCG. The volunteer should announce what he is doing at each step (e.g., “now I am checking that the vial has not expired”). Call for another volunteer to demonstrate reconstitution of a vial of measles vaccine, announcing each step as he goes along. Call for observations on the techniques.
Step 10: 30 minutes
In small groups, request that participants practice reconstituting BCG and measles under the close observation of facilitators.

Step 11: 30 minutes
Explain that volunteers will demonstrate how each of the vaccines and vitamin A is administered. Call for volunteers to demonstrate one by one for each of the vaccines and vitamin A. Request that they announce each step as they go along (e.g., “Now I am checking that the dose of the vaccine in the syringe is correct.”). Call for observations on the techniques.

Step 12: 30 minutes
In small groups, request that participants practice how each of the vaccines and vitamin A is administered under the close observation of facilitators.

Step 13: 10 minutes
Request the participants to silently read exercise 3 (“Giving Immunizations” Section 9, Page 33 Module 3) in plenary. Call for answers and discussion.

Step 14: 30 minutes
Divide into three groups and instruct participants to silently read (Group 1 read Section 10 and 11 on Page 33-37, Group 2 read Section 12 on Page 37-40, Group 3 read Appendix 1-2) and present information of public health importance or new to them in a plenary. Emphasize on:
   1. What to do with opened and unopened vaccines after immunization sessions in a health facility and during outreach sessions
   2. How to dispose of syringes and needles in local context.

Step 15: 10 minutes
Request participants to pair off into buzz groups. Read aloud the exercise “Berhane is a most careful nurse” Section 11, Page 37 of Module 3. Call for answers in a general plenary discussion.

3.2 Learning Aids and Additional Exercises to Use in Session

None

3.3 Additional Handouts

None
3.4 Exercises (with answers) in Module

Exercise 1 (found on Page 7 of the Module)

“Screening clients”

<table>
<thead>
<tr>
<th>Group work/competition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Why are immunization cards important?</td>
</tr>
<tr>
<td>2. What immunizations, if any, is each of the following clients due to receive today?</td>
</tr>
<tr>
<td>a. A newborn. <strong>BCG and OPV0</strong></td>
</tr>
<tr>
<td>b. A 10-month-old child who has had BCG, OPV0-3, and DPT1-3. <strong>Measles and Vitamin A</strong></td>
</tr>
<tr>
<td>c. An 8-month-old child who has had BCG, OPV0-3, and DPT1-3. <strong>None, Appointment</strong></td>
</tr>
<tr>
<td>d. A 6-week-old child who has had BCG and OPV0. <strong>OPV1, DPT1</strong></td>
</tr>
<tr>
<td>e. A 5-week-old child who has never been immunized. <strong>BCG</strong></td>
</tr>
<tr>
<td>f. A 20-year-old woman who has never received a tetanus toxoid immunization. <strong>TT1</strong></td>
</tr>
<tr>
<td>g. A 4-week-old child who received BCG at birth but has no scar. <strong>BCG</strong></td>
</tr>
<tr>
<td>h. A woman who received TT2 8 months previously. <strong>TT3</strong></td>
</tr>
<tr>
<td>i. An 11-month-old who has never been immunized. <strong>BCG, OPV1, DPT1, measles and Vitamin A</strong></td>
</tr>
</tbody>
</table>

Exercise 2 (found on Page 8 of the Module)

“Screening for contraindications”

<table>
<thead>
<tr>
<th>Small group competition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decide and tell whether the child needs immunization today. Your facilitator will read the cases for you</td>
</tr>
</tbody>
</table>

1. **Balguda is 6 months old.** He has a common cold, anemia and is underweight.

   **Immunization history:** BCG, OPV 0, OPV 1, OPV 2, DPT 1 and DPT 2 given 6 weeks ago

   a. What immunizations, if any, does Balguda need today? **OPV 3 and DPT 3**
   b. When should he return for his next immunization? **He should return at 9 months of age for measles immunization and vitamin A supplementation**

2. **Sara is 3 months old.** She has diarrhea with no dehydration

   **Immunization history:** BCG, OPV 0, OPV 1, OPV 2, DPT 1 and DPT 2 given 5 weeks ago
a. What immunizations, if any, does Sara need today? **She needs DPT 3 and OPV do not record OPV 3**
b. What immunization will she receive at her next visit? **Give OPV 3 after the diarrhea stops since more than 4 weeks have elapsed**
c. After the next visit when should Sara return for next immunization

3. **Halima is 20 years old, and 20 weeks pregnant:**

   **Immunization history:** TT 1 taken 2 years ago.
   a. What immunizations, if any, does Halima need today? **TT 2**
   b. When should she return for her next immunization? **After 6 months**
   c. What immunization will she receive at her next visit? **TT 3**

4. **Petros is 10 months old.** He is classified as having dysentery, no dehydration

   **Immunization history:** BCG, measles, Vitamin A, DPT 1, OPV 1 taken 4 weeks back and Petros had convulsions immediately following the immunization
   a. What immunizations, if any, does Petros need today? **OPV do not record OPV 2 and do not give DPT 2**
   b. What immunization will he receive at his next visit? **OPV 2**
   c. After the next visit, when should Petros return for immunizations? **After 4 weeks for OPV 3**

Exercise 3 (found on Page 33 of the Module)

“Giving immunizations”

**Small group discussion**

1. Why is it important for an adult to hold a child securely and in the right position for an injection?

   *An adult must hold a child securely and in the right position so that the service provider can concentrate on giving the immunization properly. If a child is kicking and trying to push the service provider away the needle may touch something and become contaminated or the injection may be given in the wrong place or at the wrong depth. Sometimes, if a child moves too much, the needle breaks off in her or his arm or leg.*

2. Why must the bevel of an intradermal needle face upwards?

   *Intradermal injections with BCG are given into the skin, not under it. Holding the syringe so that the bevel faces upwards makes it easier to do this.*
3. How do you keep the following vaccines cold during an immunization session?

a) Opened vials that you are using

Put them in the foam pad that rests on top of the ice packs inside the vaccine carrier.

b) Unopened vials

Whether you are on outreach or in the health center, put them inside the vaccine carrier under the foam pad and leave them there until you need them.

Exercise 4 (found on Page 37 of the Module)

“Berhane is a most careful nurse”

Buzz Group Exercise

Ato Berhane is a very careful nurse. He understands that unsafe injections can be dangerous. He never re-caps used syringes. He uses one sterile syringe and one sterile needle for each injection.

He uses safety box for used syringes, if available. But he hasn’t had a supply of safety boxes for 6 months. So he carefully drops the used and uncapped syringes into a cardboard box. He knows the cleaning lady will take care of the rubbish at the end of the day. When he comes to work in the morning, he expects to see a clean and tidy room.

What problems may be occurring? What can be done to improve the situation?

The cardboard box being used in place of the safety box may not be strong enough. If the walls are thin, needles may penetrate. The box should have strong sides, top and bottom. If necessary, Ato Berhane should strengthen the box by placing one box inside another. The box should be closed at all times, with a small hole in the top just big enough for a syringe and needle to enter.

He should not re-use the same box after filling it once. He should destroy the container when it is three-quarters full and find a new container for his next session.

Ato Berhane should inform his supervisor that he has not received safety boxes for six months. This may be a problem that is occurring elsewhere, and the supervisor needs to learn of the lack of supplies.

It is generally preferable for the syringes and needles to be collected over a period of time rather than being disposed each day. Ato Berhane should determine what actions are being taken by the cleaning lady. Are the syringes and needles being properly burned and buried? Does the cleaning lady understand how to protect herself and the community from any exposure to used syringes and needles? Does she need to receive some instructions?
### Session 5

**Module 4: Communication with caretakers and communities for Improved Routine Immunization Coverage**

#### Course Syllabus

| Sessions/Objectives | 
|---------------------|------------------|
| • Identify factors that influence whether caretakers bring their children for immunization |
| • Describe effective communication techniques |
| • Identify 6 key messages caretakers need to know |
| • Explain how to mobilize the community |

| Contents | 
|------------------|------------------|
| • Mothers and health worker concerns and assumptions about immunization |
| • Effective communication techniques |
| • 6 key messages caretakers need to know |
| • How to work with and mobilize the community |

| Learning Methods and Activities | 
|------------------|------------------|
| • Small group work |
| • Role plays |
| • Plenary discussion |
| • Story |

| Materials/Resource | 
|------------------|------------------|
| • Module 4 |
| • Pre-prepared flipcharts |
| • Situation & question cards |
| • Story |

| Time | 
|------------------|------------------|
| • 2 hours |
Module 4: Communication with caretakers and communities for Improved Routine Immunization Coverage

4.1 Lesson Plan

Time: 2 hours

Learning Objectives:

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

- Identify and describe what concerns mothers/caretakers may have about immunization
- Recognize factors that influence whether mothers/caretakers may bring their children for immunization
- Explain the most important characteristics of effective communication for immunization
- List and convey the key messages caretakers need to know about immunization
- Describe current community & health worker attitudes and explain how they impact immunization coverage.
- Use/employ structures and ways to mobilize the community to increase demand for and use of immunization services.

Preparation in advance by facilitator:

- Read and familiarize yourself with Module 4
- The facilitator should first carefully read this lesson plan and understand activities very well.
- Prepare flipcharts (1,2,3)
- Make 4 copies of the “Story of Wubalem & Tigist” (1)—story can be read aloud to participants if copies not available.
- Prepare Situation cards (1,2)
- Select participants to help in role plays and do a brief practice (1,2,3)—make copies of role plays those who will participate in them
- Note: See Section 4.2 for preparation of flipcharts, situation cards, story and role plays

Homework/assignment for participants before the session:

- Participants should read the entire reference Module 4 the evening before the session

Materials:

- Flipchart, vaccination diplomas, cards
Process:

**Step 1**: 5 minutes
Introduce the session to participants and explain the learning objectives from the flipchart (#1 informative found in Page 54 of this guide).

**Step 2**: 10 minutes
Brainstorm with participants on the kinds of things they have been doing to increase caretakers and communities’ awareness and involvement in immunization activities. Ask what they know about HEP and CHPI.

**Step 3**: 25 minutes
Request that participants divide into three groups. Give the situation cards (#1 in Page 55 of this Facilitators guide) to each group. Each card describes a scenario of a mother and her child. Ask participants to read the card as a group and put themselves in the place of the mothers.

Ask each person in the group to think about how they would feel if they were that mother and to discuss as a group. Ask them what fears they might have for their child, what they think about immunizations (if they know about them), what reasons could make mothers believe so and what they would do to change their situation? (10 minutes)

Ask a reporter from each group to briefly present the discussion (15 minutes). Each reporter begins by reading out to the plenary the situation card they were given. After all groups have reported, ask all participants: “What is the importance of discovering how mothers think and feel about immunizations?”

**Step 4**: 25 minutes
Facilitators select participants to rehearse a role play (#1 and #2 in this Facilitators guide Page 56 and 57). Pre-selected participants conduct the role play.

Ask: “How do you think the mother felt in the role play?” “What did you think about how the health worker communicated to the mother?” “What did you think about what information the health worker gave the mother?” “Was it helpful?” “How would you do things differently?”

Conduct role play 2, and hold brief discussion.

Show flipchart with effective communication techniques (#2 Page 58 in this facilitators guide).

**Step 5**: 30 minutes
Ask participants to break into groups of three with their neighbors. Ask each group to discuss and write 3 key messages on a card that a mother needs to know to better understand immunizations and address any concerns she may have. (5 minutes)

Collect and paste cards on the board and hold a discussion in plenary. (15 minutes). Then Show participants the pre-prepared flipcharts (#3 Page 58 of this facilitators guide) listing the 6 key messages a health worker can communicate.
Show the participants the immunization diploma and how it can be used by both health workers and community health workers to encourage mothers to bring their children for immunization and complete the series by one year of age. Note what has already been discussed by the group and comment on anything new (10 min).

Tell participants to review: “Communication “Checklist” for Immunization” on Page 16 of Module 4.

**Step 6: 45 minutes**
1. Request participants listen while you read out “The story of Wubalem and Tigist” (#1 Page 1 of Module 4). Then ask participants to take 1 minute and reflect quietly on what they have just heard. Ask them what they heard happening in the story and what they thought about it. (10min)
2. Request that participants divide into four groups. Give the situation cards (#2 Page 52 of this Facilitators guide) to each group. Ask participants to read the questions and discuss it as a group.
3. Call the groups back to plenary and ask a reporter from each group to briefly present the discussion. Each reporter begins by reading out to the plenary the question their group was given. Take comments from all participants.
4. To conclude the session, ask participants: “After what we’ve just discussed, what will you do when you go back to your woreda or health center about communicating with mothers, understanding and engaging communities?” Re-emphasize role of HEP, CHPI, new kebele structures, etc....
4.2 Learning Aids and Additional Exercises to Use in Session

Flipchart #1

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

♦ Identify and describe what concerns mothers/caretakers may have about immunization
♦ Recognize factors that influence whether mothers/caretakers may bring their children for immunization
♦ Explain the most important characteristics of effective communication for immunization
♦ List and convey the 6 key messages caretakers need to know imagination
♦ Describe current community & health worker attitudes and explain how they impact immunization coverage.
♦ Use/employ structures and ways to mobilize the community to increase demand for and use of immunization services.
Situation Cards #1

Group #1

Selam has a 2-month old baby. She lives in Kufa Kebele, far from the health center. She worries about her baby's health, so tries to keep him covered and out of the wind. She is not sure what else she can do to protect her child, except go to the local healer if he gets ill.

Group #2

Almaz brought her baby one time for immunizations. Her baby had a fever and the area where he got injected swollen and red. She doesn't want to hurt her baby, so will not go back again for immunizations.

Group #3

Hiwot has brought her baby for immunization 3 times. At first she had heard rumors that children become ill after getting vaccinated. The health worker told her this was nothing to worry about and that getting the disease was much worse. So she kept coming back.
Role plays

Adapt your two role plays from the following stories:

Role play #1

**HW:** Baby Yonas! *(Shouts towards the row of seated women) . . . Baby Yonas!!*

**Almaz:** Yes Nurse? *(she stands up and moves towards the procedure table with her baby)*

**HW:** Don't you listen? Why do you come here then? Show me your card!

**Almaz:** *(becomes uncertain of what to do and stands in front of the procedure table)*

**HW:** Just sit down! Don't waste my time; I have many children for immunization today.

**Almaz:** *(sits down and gets her baby ready for injection)*

**HW:** *(writes on the card and then gives the baby an injection without any regard for the baby or the mother; he writes on papers on his desk, ignoring the mother)*

**Almaz:** Please . . . I do not know the injection you gave my child and if I am to bring her back for another immunization.

**HW:** Look, are you stupid? Bring that your card. Everything is in this card. You have to be reading this card properly and make it your Bible or Qur'an. You see I have already marked the injection I gave your baby on the card.

**HW:** *(continues):*  The card also contains the immunization schedule as follows *(head down he reads the information from the card as rapidly as possible):*

- At birth ................... BCG & OPV0
- At 6 weeks .................. DPT1 & OPV1
- At 10 weeks .................. DPT2 & OPV2
- At 14 weeks .................. DPT3 & OPV3
- At 9 months .................. Measles

**Almaz:** Please Nurse...

**HW:** Madam! No questions. You are wasting my precious time. I have told you that I am always very busy in this clinic. Who’s next? Baby Alemu!
**Role play #2**

<table>
<thead>
<tr>
<th>HW:</th>
<th>Baby Yonas, please, come this way.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almaz:</td>
<td>Yes Nurse (she stands up and moves towards the procedures table with her baby)</td>
</tr>
<tr>
<td>HW:</td>
<td>Please sit down. How are you and how is your baby today? May I see your card?</td>
</tr>
<tr>
<td>Almaz:</td>
<td>Fine sister! (Sits down and gets her baby ready for vaccination). I do not have a card. Today is my first day.</td>
</tr>
<tr>
<td>HW:</td>
<td>Don’t worry. I will give you a card. (Health worker takes the card out and records all the necessary information and directs Wro. Almaz to get her child ready for vaccination). Wro. Almaz can I confirm that your child’s name is Dele, and he is 4 weeks old.</td>
</tr>
<tr>
<td>Almaz:</td>
<td>Yes, Nurse. Thank you.</td>
</tr>
<tr>
<td>HW:</td>
<td>I am going to give your child a vaccine on his left upper arm and some drops into his mouth. The vaccine in the upper arm protects your child against tuberculosis, which give children a chronic cough. The drops prevent polio, that disease which can make children lame. The small injection does not cause much pain. It may give a small lump that will last only a few weeks. You should keep the injection site dry and do not dress it (HW gives the injection on the left upper arm of the child). The drops do not cause any problems.</td>
</tr>
<tr>
<td>Almaz:</td>
<td>Thank you Nurse. I am so happy you are not angry with me.</td>
</tr>
<tr>
<td>HW:</td>
<td>Wro. Almaz, why would be angry with you?</td>
</tr>
<tr>
<td>Almaz:</td>
<td>Ah! You know the other mothers told me that because I did not bring my child immediately after birth, the nurses were going to shout at me. Thank you very much.</td>
</tr>
<tr>
<td>HW:</td>
<td>Records the vaccine given and tells Wro. Almaz the date, place and time of the next vaccinations. The HW also explains that to be fully immunized the child needs to complete several visits before the child’s first birthday. Your next visit will on this same day, Monday, in four weeks time. Do you have any questions or anything, which you would like me to explain further?</td>
</tr>
<tr>
<td>Almaz:</td>
<td>Yes, Nurse. What should I do if I miss my child’s immunization appointment?</td>
</tr>
<tr>
<td>HW:</td>
<td>Wro. Almaz, I know it is not always easy to keep all the appointments, but you should try as much as possible to keep the immunization appointments. Immunizations are very important for protecting your children against dangerous childhood diseases. But if you fail to keep an appointment, just come on the next immunization day even if the child is sick. We give immunizations every Monday in this clinic.</td>
</tr>
<tr>
<td>Almaz:</td>
<td>Thank you Nurse, (smiling). I will make sure I do not miss any immunization appointment.</td>
</tr>
<tr>
<td>HW:</td>
<td>Bye-bye Wro. Almaz, see you in 4 weeks time.</td>
</tr>
</tbody>
</table>
Flipchart #2

Effective communication:

- Be warm/friendly
- Encourage/Praise the mother
- Give messages relevant to the mother's/child's situation
- Keep messages simple and clear
- Make sure that the caretaker understands

Flipchart #3

The 6 key messages caretakers need to know at contacts or generally:

- What vaccine is given and what disease it protects against
- Expected side effects and how to treat them
- The place and time of the next immunization
- Have your child finish the complete series of immunizations before his/her first birthday and he/she will receive the "vaccination diploma"
- The need to bring the child for immunization even if he/she is ill
- Always bring the child's health card
The Story of Wubalem and Tigist

Wubalem had just returned home from fetching water. She was tired as the pump is far from her home. Her eldest daughter, Fatuma, was watching the baby, Tefera.

Fatuma told her mother that she had heard an announcement that morning about immunizations being held today in the kebele. Wubalem had already brought Tefera to immunizations once before and the health worker told her the last time that she should bring her baby back for more immunizations. Wubalem quickly put Tefera on her back and went to the immunization place with the immunization card.

On her way, she ran into her neighbor Tigist. She had a baby about the same age as Tefera, though her baby had never received any vaccinations. Tigist told Wubalem that she went to have her baby immunized because she heard that it would protect her baby, but when she arrived some other women told her that the health workers had already left. Tigist said that it probably wasn’t that important anyway. But Wubalem remembered that the health worker said that immunizing her baby was important. Not knowing who to believe, Wubalem walked back home wondering what to do next...

...back at the health center, the nurse who went for outreach that day reported to the center head about the days outreach activities. The health worker said that he was disappointed by the low turnout of women:” mothers in that Kebele just don’t understand the importance of immunizing their children”...
### Situation Cards #2

<table>
<thead>
<tr>
<th>Group #1</th>
<th>Group #2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What can be done at the health facility or by the health worker day(s) before the immunization session to increase the number of mothers who bring their children to immunization? What do health facilities have to do with communities when opening new outreach sites so that mothers bring children for immunization in good numbers?</strong></td>
<td><strong>A health worker arrives in Guba kebele for an outreach session. Only a few mothers have come for immunization. “What can the health worker do at that moment to have more mothers bring their children to the immunization session?” “What can health workers always do when they arrive at the outreach site so that mothers know they have arrived?”</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group #3</th>
<th>Group #4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What can community leaders and respected people in the community do to increase the number of mothers who bring their children to immunization?”</strong></td>
<td><strong>What can community health workers (such as, community health promoters, CBRHAs, etc.) do to increase the number of mothers who bring their children to immunization?”</strong></td>
</tr>
</tbody>
</table>
4.3 Additional Handouts

Communication “Checklist” for Immunization

☐ Greet the mother and congratulate the mother for bringing in her child—and let her know you mean this.

☐ Ask the mother for the child’s health card:

- If the mother has a card:
  - Thank the mother for bringing the card and remind her that it is valuable and should be brought at each visit
  - Check the child’s health card to see which immunizations he or she should receive during the visit

- If the mother has no card:
  - Do not scold a mother for not having a card.
  - Issue the mother a new card and tick off the immunizations that she reports the child.
  - Explain that the card is valuable, should be kept safe, and brought to each visit.

☐ Always explain to mothers the disease that this vaccine will prevent. Encourage them to ask questions.

☐ Address concerns about immunization immediately by correcting any misconceptions. For example, if a woman believes false rumors that a vaccine is a contraceptive she will not care about anything else you have to say. Talk to her about this first.

☐ Explain possible side effects and how to manage them. If the mother knows to expect side effects—for example a slight fever from DPT—she will not be frightened by the child’s discomfort and will more likely return for the next immunization.

☐ Tell the parent when and where to go to receive the infant’s next immunization and vitamin A supplement.

☐ Encourage the mother to bring her child to complete the full series of vaccinations before her child’s first birthday so that her child will be protected against 6 dangerous diseases and will receive a “vaccination diploma” (see Annex 2)

☐ Check for understanding! Ask the mother when she will return for the next immunization session.

☐ Enquire whether and when the mother has received tetanus toxoid (TT) vaccine to protect herself and her future newborn babies from tetanus.
4.4 Exercises (with answers) in Module

Case Study: The immunization calendar

The nurse at the local health center looks at the immunization calendar posted on the wall of the office. He sees that tomorrow outreach is scheduled for Wanja Kebele. The next day, he arrives at the center early and prepares the vaccines for transport. He then takes a motorbike to Wanja. When he arrives he sends a small boy to ask the Kebele chairman for chairs and a table. The boy soon returns with the Kebele chairman who expresses his surprise at the arrival of the nurse. He explains that no one knew that today was the day for outreach. The nurse looks at the Kebele chairman in disbelief and says: “But the date for outreach was clearly posted on the wall of the health center!”

1. What behavioral stage best describes the nurse’s situation? Why?
   Pre-Awareness. Having the immunization schedule is posted on the wall at the health facility does not mean that the community has been notified of outreach. The nurse does not realize this.

2. What is needed to ensure the community is better prepared for outreach?
   The health worker needs to work with the Kebele to plan outreach and identify ways with the community as to how to inform women that they outreach will come on a given day.

Case Study: Tigist brings her baby for the first time

Tigist has brought her 4–month-old child to the immunization session. She hasn’t brought her baby for immunizations before. She has heard rumors that children become sick after getting vaccinated and she wanted to protect her child. A friend, who is also the Kebele CBRHA, told Tigist that a little illness after the immunization is nothing compared to getting the disease itself. So she decided to bring her baby for immunizations.

1. What behavioral stage best describes this woman’s situation? Why?
   Trial. She is trying something that she has not done before.

2. What is needed to ensure this child completes the full immunization series?
   The health worker needs to praise Tigist for bringing her child to outreach. The health worker will also need to explain what side effects to expect, but that it is nothing to worry about—certainly a small thing compared to getting the disease! She will need to be encouraged to bring the child to the next visit.
Case Study: Earn the diploma!

Four months ago a health worker talked with Almaz about bringing her child to immunizations. Almaz brought her baby to outreach where DPT1 & Polio 1 were given. The baby had a slight fever after the immunization. Almaz did not worry, however, since the health worker had told the mother to possibly expect mild fever after the immunization and it was nothing to worry about. And to bring her baby back in four weeks for the next dose of DPT & Polio. Now the baby has received all DPT immunizations and the mother says she will bring her baby at nine months old for the measles immunization. Almaz says that she wants to protect her baby and get the immunization diploma!

1. What behavioral stage best describes this woman’s situation? Why?
   **Adoption.** Almaz has continued to bring her child for immunizations though she has not yet completed the series.

2. What is needed to ensure this mother brings her child to complete the immunizations?
   **Further praise and encouragement from the health worker in addition to reminders about bringing her baby for the measles vaccination at 9 months.**

Case Study: Outreach in Wanja Kebele

Nurse Hiwot arrives in Wanja kebele for an outreach session. Hiwot notices that only a few mothers have come for immunization. While she prepares for the session, a few more mothers arrive. She vaccinates those few children who are around. She then eats a bit of lunch that she has brought and waits for about another hour. As no more mothers come, she packs up her things and goes back to the health center.

1. “What could Hiwot have done so that more mothers would have brought their children to the immunization session?”
   **Some suggestions:** talk with community health workers (community health promoters, CBRHAs) to spread the word that the immunization team has arrived; she could have contacted the Kebele officials to send out the word that the immunization team had arrived; use a mega phone to alert mothers in the Kebele after contacting local officials and community health workers.

2. “What can health workers always do when they arrive at the outreach site so that mothers know they have arrived?”
   **The same as Q1. response.** However, it is even better if the health worker works with Kebele leaders and community health workers to notify mothers in advance of the day scheduled for immunizations.
## Session 6

### Module 5: Monitoring Immunization Coverage, Drop-out, and Quality of Service

#### Course Syllabus

| Session/Objectives | Use and analyze immunization cumulative coverage monitoring charts  
|                    | Explain the importance of using data to monitor immunization performance  
|                    | Compile, analyze and interpret data  
|                    | Use monitoring tools and forms  
|                    | Identify action needed to improve immunization service  
| Content | Data collection  
|          | Data use and analysis  
|          | Monitoring  
|          | Action planning  
| Learning Methods and Activities | Brainstorming  
|          | Group discussion  
|          | Plenary discussion  
|          | Simulation  
|          | Case study  
|          | Small group work  
|          | Data analysis  
| Materials/Resources | Flipchart  
|                    | Pens  
|                    | Module 5  
|                    | Tally sheet  
|                    | Reporting forms at each level  
|                    | Registration book  
|                    | Vaccination cards (for infant and mother)  
|                    | Cumulative coverage monitoring charts (blank and partially filled)  
|                    | Actual annual coverage data (for the most recent completed full year) by antigen and dose (including DPT1) and by health facility for the selected woreda  
| Time | 5 hours  


Module 5: Monitoring Immunization Coverage, Drop-out, and Quality of Service

5.1 Lesson Plan

Time: 5 hours

Learning Objectives:

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

- Use and analyze immunization cumulative coverage monitoring charts
- Explain the importance of using data to monitor immunization performance
- Compile, analyze and interpret data
- Use monitoring tools and forms
- Identify action needed to improve immunization service

Preparation in advance by facilitator:

- Read Module 5.
- The facilitator of this session should first carefully read this detailed lesson plan and understand the activities very well.
- Collect examples of the actual forms used such as tally sheet, reporting forms at each level, registration book, vaccination cards (for infant and mother), cumulative coverage monitoring charts, forms for problem analysis and action
- Collect actual annual coverage data (for the most recent completed full year) by antigen and dose (including DPT1) and health facility for the selected woreda.
- Pre-prepare flipcharts and handouts that will be used during the session.

Homework assignment for the participants before the session:
- Request that they read Module 5.

Materials: flipchart, pens, Module 5, tally sheet, reporting forms at each level, registration book, vaccination cards (for infant and mother), cumulative coverage monitoring charts (blank and partially filled), actual annual coverage data (for the most recent completed full year) by antigen and dose (including DPT1) and by health facility for the selected woreda.

Process:

Quickly orient the participants to the start of Module 5 referring to the page “About the Module”. (Page iii in Module 5)

Step 1: 10 minutes

In plenary, ask the participants to quickly brainstorm on “What is monitoring?” and current practice, if any, in their areas. (Compare the responses to the definition provided in Section 5.2 Page 68 of this guide) Also raise the point that monitoring can also include the concept of self-monitoring. Self-monitoring can provide motivational incentives for staff to improve their performance without waiting for the boss to order them to do so.
Step 2: 30 minutes
In plenary, explain that they will answer the question: “What can immunization coverage and drop-out indicators tell us?” For each indicator, call for a volunteer and then ask for any other opinions. Using just the column headings of the pre-prepared flipchart #1 “Immunization Coverage and Drop-out Indicators,” enter the replies under the columns “what it may indicate” and “limitations”. At the end of this step, instruct to see the pages at the end of the module on “Immunization Coverage and Drop-out Indicators.”

Step 3: 30 minutes
In plenary, explain that they will answer the question: “How can an analysis of coverage data lead to identification of performance problems and solutions?” Using just the column headings on the pre-prepared flipchart #2 “Examples of Using Coverage Data to Improve Vaccination Services,” request that participants identify the issues, possible reasons, and suggested remedies. Record their replies. At the end of this step, mention that it is at the end of Module 4 on “Examples of Using Coverage Data to Improve Vaccination Services”

Step 4: 15 minutes
Explain that coverage figures should always be examined. Sometimes there are “funny numbers” that need to be interpreted. Request that the participants break into buzz groups to discuss the following examples of “funny numbers.” In plenary, call for a possible explanation for reported coverage above 100%. Ask for other opinions. Call for a possible explanation for DPT3 reported to be higher than DPT1. Ask for other opinions. [Note: facilitator can refer to Section 5.2 Page 71 in the Facilitator’s Guide for some possible answers.]

Example 1: Coverage over 100%?
Example 2: Higher DPT3 than DPT1 coverage?

Step 5: 15 minutes
In plenary, call for a participant to explain: how tally sheets are to be used in the health facility to fill the monthly health facility report and how the monthly woreda report is to be filled. Tell that it is on Page 17 of Module 5 a copy of the tally sheet and reporting forms. Discuss any questions that arise.

Step 6: 20 minutes
In plenary, explain how immunization coverage is calculated for each vaccine. Using the “Example of data used to calculate annual vaccination coverage” in Section 5.2 Page 79 of this Facilitators guide provided in the pre-prepared flipchart, request that the participants divide into small groups and use the provided data to (a) calculate the number of infants surviving to 12 months of age coverage and (b) calculate annual vaccination coverage. In plenary, raise any questions and discuss answers. In plenary, request each participant to silently write on a note card their answer to the question about “Reporting performance in terms of vaccination coverage” which appears in Section 5.2. Discuss with them why the correct answer is 50%.
Step 7: 15 minutes
In plenary, explain how drop-out is calculated. Provide on a pre-prepared flipchart the example in Section 5.2 Page 80 of this Facilitators Guide on “How to calculate drop-out rates.” Divide into small groups to practice calculating drop-out rates using the data in the example. In plenary, raise any questions and discuss answers.

Step 8: 20 minutes
In plenary, demonstrate the value of displaying data so that any problems can be better recognized. Tell participants to refer Page 10 of their module “Understanding the problem: never reached or drop-out?” Point out that some areas have children who are unreached, other areas have children that drop out, and some areas have both. Request that the participants brainstorm about what types of people are “unreached” and where they live. Call for their answers and record them on a flipchart. Discuss what can be done to reach them. [Note: facilitator can refer to Section 5.2 Page 78 in the Facilitator’s Guide for some possible answers.]

Step 9: 20 minutes
In plenary, brainstorm to identify some of the local causes of dropout and what can be done in health facilities and in communities to reduce drop-out. Call for their answers and record them on a flipchart. Discuss. [Note: facilitator can refer to Section 5.2 Page 81 of Facilitators Guide. in the Facilitator's Guide for some possible answers.]

Step 10: 35 minutes
Divide into as many small groups as there are health facilities in the woreda. Hand out to each participant a copy of some actual annual coverage data by antigen and dose from health facilities in the woreda. Request that participants examine the data. Assign data from one health facility to one group, so that one health facility’s data will be examined by one group. Distribute some paper and request that they very quickly construct by hand a bar graph for the selected health facility that displays DPT1 or BCG versus DPT3 coverage versus measles coverage. Request they label the “unreached” and the “drop out” parts of the bar graphs. Identify and reach consensus on any concerns about the data that need to be investigated further. In plenary, call on each group in turn to show their graph and to state their concerns.

Step 11: 45 minutes
In the same small groups, instruct participants to use the actual data for the health facility to fill out the form for “diagnosis/planning action” in Annex V, Page 19 of Module 5, The facilitator refers Page 80 of the guide Return to plenary for each group to quickly summarize their plans.

Step 12: 45 minutes
Practice filling a cumulative immunization coverage monitoring chart. Hand out a blank monitoring chart to each participant, Annex III-1. In small groups, request that they fill the top of the chart with the following information: name of health facility and number of annual eligible infants. Request that they note the “x” axis of the graph on one side with the monthly target of eligible children (annual number of eligible divided by 12). On the other side of the “x” axis, they should note the corresponding % that each line represents (8%, 17%, 25%, etc. up to 100%). Then provide the fictitious DPT1 and DPT 3 monthly coverage figures (from the facilitator’s copy of the
partially-filled monitoring chart). Be sure that they know how to accumulate the coverage each month in the table below the graph, how to calculate the number of drop-outs (#DO) and the drop-out rate (DO%), and how to plot the points on the graph. **Hand out** the partially filled monitoring chart (see hand-out in Section 5.3 Annex III-2) to each group to see that the participants have filled their charts correctly. In plenary, discuss the meaning of the graph. Ask the participants the questions in the small group exercise in Section 5.2 “Cumulative immunization monitoring chart”, where you will also find a summary explaining the purpose of the monitoring chart.

### 5.2 Learning Aids and Additional Exercises to Use in Session

<table>
<thead>
<tr>
<th>What is monitoring?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring means the process of continuous observation and collection of data on immunization programs, in order to ensure that it is progressing as planned. It involves the routine analysis, presentation and use of selected data for decision-making and advocacy. Through monitoring you can assess how well you are doing and what improvements you should make.</td>
</tr>
</tbody>
</table>
**FLIPCHART #1**

**Immunization Coverage and Drop-out Indicators**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>what it may indicate</th>
<th>limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>-DPT1 coverage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-DPT3 coverage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Measles coverage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-DPT1 to DPT3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-TT1 coverage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-TT2+ coverage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(TT2, TT3, TT4, and/or TT5 coverage)</td>
<td></td>
</tr>
<tr>
<td>-Fully immunized child</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** For answers, see Page 82 of this facilitators guide
### FLIPCHART #2

#### Examples of Using Coverage Data to Improve Vaccination Services

<table>
<thead>
<tr>
<th>coverage data</th>
<th>issue</th>
<th>possible reasons</th>
<th>suggested remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example 1:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCG 80%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPT1 60%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPT3 55%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles 55%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Example 2:** |       |                  |                  |
| BCG 80%       |       |                  |                  |
| DPT1 75%      |       |                  |                  |
| DPT3 70%      |       |                  |                  |
| Measles 45%   |       |                  |                  |

| **Example 3:** |       |                  |                  |
| BCG 70%       |       |                  |                  |
| DPT1 70%      |       |                  |                  |
| DPT3 40%      |       |                  |                  |
| Measles 60%   |       |                  |                  |

**Note:** For possible answers, see Page 83 of this facilitators guide
“Funny Numbers” Exercise (with some possible answers)

Example 1: Coverage over 100%?

- **Possible answer:** For 6 months in a row, one health center recorded immunization coverage that exceeded expectations. Upon investigation, health workers realized that clients were coming to their health center from another catchment area where vaccine shortages were common. These individuals had not been in the denominator used to calculate coverage.

- Health workers included in their routine reports children over 12 months of age in calculating coverage. This inflated the numerator for calculating coverage, and since the denominator included only children under 12 months of age, the health facility’s coverage appeared to exceed 100%.

Example 2: Higher DPT3 than DPT1 coverage?

- During a catch-up campaign, health workers classified all DPT vaccinations as DPT3 without checking whether individuals had received DPT1 or DPT2.
- Most children receive DPT, before one year of age. Some children receive DPT3 after one year of age. If older children receiving DPT3 are counted along with under ones, the coverage can appear higher than DPT1.
### VACCINATIONS

<table>
<thead>
<tr>
<th>Type of vaccination</th>
<th>0-11 months (1 year)</th>
<th>Total</th>
<th>12 months &amp; Over</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polio at Birth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polio 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polio 2</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Polio 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPT 1</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>DPT 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPT 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Fully Vaccinated</td>
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<tr>
<td>TT 1 (women 15-49)</td>
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<td>TT 2</td>
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<td>TT4</td>
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<tr>
<td>TT5</td>
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### FAMILY PLANNING

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<tr>
<th>Type of Contraception</th>
<th>First Visit</th>
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<th>Revisits</th>
<th>Total</th>
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<tbody>
<tr>
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### ANTENATALS

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### POSTNATALS

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</table>

### CDD

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<th>ORT Given</th>
<th>Total children &lt; 5</th>
<th>Total</th>
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</thead>
</table>

### ARI

<table>
<thead>
<tr>
<th>Status (weight for age)</th>
<th>First Visit</th>
<th>Revisits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 80%</td>
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</tr>
<tr>
<td>70-80%</td>
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</tr>
<tr>
<td>60-70%</td>
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</tr>
<tr>
<td>60%</td>
<td></td>
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<tr>
<td>TOTAL</td>
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</table>

### GROWTH MONITORING

<table>
<thead>
<tr>
<th>Status (weight for age)</th>
<th>First Visit</th>
<th>Revisits</th>
</tr>
</thead>
</table>

### ATTENDANTS ALL DISEASES < 3

<table>
<thead>
<tr>
<th>ARI</th>
<th>Total</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>CDD</th>
<th>ARI</th>
</tr>
</thead>
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<tr>
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## Monthly Woreda EPI Vaccination Reporting Form (Revised 1994 EC)

<table>
<thead>
<tr>
<th>Region</th>
<th>Zone</th>
<th>Woreda</th>
<th>Month</th>
<th>Year</th>
</tr>
</thead>
</table>

### EPI Vaccination Given

<table>
<thead>
<tr>
<th>No. Health Facility Static</th>
<th>Out reach</th>
<th>BCG</th>
<th>Measles</th>
<th>DPT</th>
<th>Polio (OPV)</th>
<th>Fully vaccinated</th>
<th>Vit. A capsule given</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 to 11</td>
<td>12 to 23</td>
<td>0 to 11</td>
<td>12 to 23</td>
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</tbody>
</table>

**Total**
<table>
<thead>
<tr>
<th>No.</th>
<th>Health Facility</th>
<th>Tetanus Toxoid Vaccination Given</th>
<th>Vit. A cap. Given 6-8 wks post partum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pregnant Women</td>
<td>Non-Pregnant Women</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TT1</td>
<td>TT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TT1</td>
<td>TT2</td>
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<td>TT1</td>
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<td>TT2</td>
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<tr>
<td></td>
<td></td>
<td>TT1</td>
<td>TT2</td>
</tr>
</tbody>
</table>

Total
<table>
<thead>
<tr>
<th>No.</th>
<th>Group</th>
<th>Subject</th>
<th>Method</th>
<th>Duration</th>
<th>No. of Participants</th>
</tr>
</thead>
</table>

Compiled target diseases report

<table>
<thead>
<tr>
<th>No. of reported cases and status of vaccination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target disease</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Measles</td>
</tr>
<tr>
<td>Pertusis</td>
</tr>
<tr>
<td>AFP/Polio</td>
</tr>
<tr>
<td>Diphtheria</td>
</tr>
<tr>
<td>Neonatal Tetanus</td>
</tr>
<tr>
<td>Tuberculosis</td>
</tr>
<tr>
<td>Yellow Fever</td>
</tr>
</tbody>
</table>

Vaccine in dose, AD syringe, mixing syringe, safety box and vit. A balance

<table>
<thead>
<tr>
<th>No.</th>
<th>Vaccine/AD Syringe</th>
<th>Received</th>
<th>Used</th>
<th>Balance</th>
<th>Needed</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mixing syringe/safety box</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vit A</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Suggestions and Recommendations

Date of report________________________
Reporting officer_____________________
Designation__________________________
Signature____________________________
Date of Receipt______________________
Signature __________
<p>| No. | Kebele | Static | Out reach | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 | 0 to 11 | 12 to 23 |
|-----|--------|-------|----------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Kebele</th>
<th>Tetanus Toxoid Vaccination Given</th>
<th>Vit. A cap. Given 6-8 wks post partum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pregnant Women</td>
<td>Non-Pregnant Women</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TT1</td>
<td>TT2</td>
</tr>
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<tr>
<td>Total</td>
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</tr>
</tbody>
</table>

Region/Zone ________________________  Woreda ________________________  Health Facility______________  Month_______  Year_______
### Vaccine in dose, AD syringe, mixing syringe, safety box and vit. A balance

<table>
<thead>
<tr>
<th>No.</th>
<th>Vaccine/AD Syringe</th>
<th>Received</th>
<th>Used</th>
<th>Balance</th>
<th>Needed</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vit A</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Compiled target diseases report

#### No. of reported cases and status of vaccination

<table>
<thead>
<tr>
<th>Target disease</th>
<th>Vaccinated</th>
<th>Not vaccinated</th>
<th>Unknown</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measles</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Pertuis</td>
<td></td>
<td></td>
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<tr>
<td>AFP/Polio</td>
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<tr>
<td>Neonatal Tetanus</td>
<td></td>
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<tr>
<td>Tuberculosis</td>
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</tr>
<tr>
<td>Yellow Fever</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Suggestions and Recommendations

- Insert suggestions and recommendations here.

---

Date of report____________________
Reporting officer_________________
Designation_____________________
Signature_______________________
Date of receipt________
Signature __________
Example of data used to calculate annual vaccination coverage

a) Calculate infants surviving to 12 months of age:

Calculate the births, infant deaths, and infants surviving to 12 months of age? (This becomes the denominator for calculating coverage.)

Total woreda population: 25,000
Crude birth rate: 40 live births per 1000 population per year
Infant mortality rate: 125 infant deaths per 1000 live births per year

Use the formulas:

- Total births per year = 25,000 population X 40/1000 = 1000 births
- Total infant deaths per year = 1000 births X 125/1000 = 125 infant deaths
- Total births per year – total infant deaths per year = total surviving infants per year

Answer: Therefore, 1000 births per year – 125 infant deaths = 875 surviving infants.

b) Calculate annual vaccination coverage:

DPT1 vaccinations in the woreda: 437
Number of surviving infants: 875

Use the formula:

DPT1 coverage (%) for infants = annual # of doses of DPT1 given to infants X 100
number of surviving infants

Answer: DPT1 coverage (%) for infants = \(\frac{437}{875} \times 100\% = 50\%\)

For practical purposes, infant coverage for each vaccine and dose is calculated as above.

Reporting performance in terms of vaccination coverage:

Assume that last year the population of surviving infants in your woreda was 800. Last year you set a target to vaccinate 600 of them with each vaccine. You succeeded in vaccinating 400 with DPT3.

What was your immunization coverage rate last year?

a) 50%
b) 67%
c) other

answer: 50%
How to calculate drop-out rates

Drop out rate: comparison of number of children who start the immunization series and the number of children who complete it during the same period of time.

DPT1 to DPT3 drop-out rate:
\[
\frac{\text{cumulative doses of DPT1} - \text{cumulative doses of DPT3}}{\text{cumulative doses of DPT1}} \times 100
\]

DPT1 to measles drop-out rate:
\[
\frac{\text{cumulative doses of DPT1} - \text{cumulative doses of measles}}{\text{cumulative doses of DPT1}} \times 100
\]

Examples:

DPT1 coverage for the year was 800. DPT 3 coverage for the year was 600. Measles coverage was 400. What was the drop out rate from DPT1 to DPT3? What was the drop out from DPT1 to measles?

Answer: DPT1 to DPT3 drop out = \(\frac{800-600}{800} \times 100 = 25\%\)

DPT1 to measles drop out = \(\frac{800-400}{800} \times 100 = 50\%\)
Understand the Problem — Never-Reached or Drop-Outs?

Never reached = 100% minus DPT1 % coverage

\[
\text{Drop-out} = \frac{\text{DPT1 coverage} - \text{DPT 3 coverage}}{\text{DPT 1 coverage}} \times 100
\]

**District A.** 50% of children have access to immunization services using DPT1 coverage as an indicator. 42% complete the three-dose series of DPT. The drop-out rate therefore is 16%:

\[
(\frac{50\%}{50\%} - \frac{42\%}{50\%}) \times 100 = 16\%
\]

In District A, planners should give priority to raising DPT1 coverage by reaching the 50% of children who have never been reached. Reducing drop-outs would, at best, result only in a gain in DPT3 coverage from 42 to 50%.

**District B.** 85% of children have received DPT1. 58% complete the three-dose DPT series. The drop-out rate is 32%:

\[
(\frac{85\%}{85\%} - \frac{58\%}{85\%}) \times 100 = 32\%
\]

In District B, reaching the last 15% of the population that has never been reached is likely to be labor-intensive and expensive. On the other hand, following up on dropouts and persuading them to complete the series could raise coverage of DPT3 from 58% to 85%. Unless additional information indicates otherwise, District B should give priority to reducing drop-outs.
"Who are the unreached?" (some possible responses)

- peri-urban populations who do not utilize accessible services
- rural and urban populations with access, but who drop out
- remote rural populations with poor access

Some local causes of drop out

Service delivery

- vaccine shortage
- cold chain breakdown
- long waits
- infrequent outreach sessions
- improper contraindications practices
- missed opportunities

Communication

- not told to return
- not provided with information on vaccination schedule
- not told about normal side effects
- health staff perceived as unfriendly

Community

- not informed in advance of outreach dates
- not informed outreach team has arrived
- session times conflict with farming/family duties
- no active follow-up of defaulters
## Diagnosis/Planning Action

<table>
<thead>
<tr>
<th>CAUSES of problems</th>
<th>ACTION With existing resources</th>
<th>ACTION With extra resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply quantity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staffing quality</td>
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<td></td>
</tr>
<tr>
<td>Staffing quantity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service quality and demand</td>
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</tr>
<tr>
<td>Service quantity and demand</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Small group exercise**

“Cumulative immunization coverage monitoring chart”

Refer to the cumulative immunization coverage monitoring chart:

- What is the monthly target?
- How many children should have DPT1 between 1 January and 30 April?
- How many children actually did have DPT1 between 1 January and 30 April?
- What percentage of the target population for the first four months of the year had received DPT1 by the end of that period?
- Answer the same questions for DPT3.

**Summary**

At the end of each month, you will be able to compare the actual cumulative number of interventions given by the health worker with the diagonal line on the graph. Very quickly you will see if your coverage achievements are above, below or close to the target. If the dot is below the diagonal line, then you are not on track to reach 100% of the target population. The difference between the diagonal line and the upper dot represents the left-out target population. The space between the two plotted lines on the graph is the visual equivalent of the dropout figures. Analysis of the data at each level should lead to action. To reinforce the monthly use of this chart, supervisors should ask to see the data on each visit and provide encouragement for the continued use of the chart.
### 5.3 Additional Hand-outs

#### Immunization coverage and drop out indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>What it may indicate</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DPT1 coverage</strong></td>
<td>Availability of, access to, and initial use of immunization services by children.</td>
<td>Measures only the first in a three-dose series.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BCG, although the first vaccination in the schedule, is not an effective indicator where births take place at home and no BCG is given. When BCG is given to babies born in hospitals, it may be recorded in a different information system, if at all.</td>
</tr>
<tr>
<td><strong>DPT3 coverage</strong></td>
<td>Continuity of use by parents, client satisfaction with services, and capability of the system to deliver a series of vaccinations.</td>
<td>Shows only completion of DPT series and not other antigens.</td>
</tr>
<tr>
<td><strong>Measles coverage</strong></td>
<td>Protection against a disease of major public health importance.</td>
<td>Does not indicate the capability of the system to deliver a series of vaccines.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplementary doses may be confused with routine doses.</td>
</tr>
<tr>
<td><strong>DPT1 to DPT3</strong> (Difference in the number of children who receive DPT1 and the number who receive DPT3, expressed as a rate)</td>
<td>Quality of service as perceived by parents and the quality of communication between parents and health workers — this is the classic drop-out indicator.</td>
<td>Does not stand on its own; must be interpreted in light of actual coverage levels.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Does not give a complete picture of drop-outs that may be occurring between other antigens.</td>
</tr>
<tr>
<td><strong>TT1 coverage</strong></td>
<td>Availability of, access to, and use of immunization services by pregnant women.</td>
<td>Measures only the first dose in a multi-dose series.</td>
</tr>
<tr>
<td><strong>TT2+ TT2, TT3, TT4, and/or TT5 coverage</strong></td>
<td>Continuity of use, client satisfaction, and capability of the system to deliver a series of vaccinations to women.</td>
<td>The series of five TT doses is given at different intervals over the course of many years.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Once a woman has received five doses, she should no longer be counted in the denominator as a member of the target population.</td>
</tr>
<tr>
<td><strong>Fully immunized child (FIC)</strong></td>
<td>Capability of the system to provide all vaccines in the childhood schedule at the appropriate age and the appropriate interval between doses in the first year of life; also measures public demand and perceived quality of services.</td>
<td>Generally not available from routine service statistics.</td>
</tr>
<tr>
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<td></td>
<td>Information can usually be derived from population-based surveys analyzed by WinCOSAS or other software.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Absence of vaccination cards limits the reliability of this indicator.</td>
</tr>
<tr>
<td></td>
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<td>The definition of FIC may vary among countries.</td>
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</tbody>
</table>
### Examples of Using Coverage Data to Improve Vaccination Services

<table>
<thead>
<tr>
<th>Coverage data</th>
<th>Issue</th>
<th>Possible reasons</th>
<th>Suggested Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example 1:</strong> BCG 80% DPT1 60% DPT3 55% Measles 55%</td>
<td>Why the decrease between BCG and DPT1 vaccinations?</td>
<td>Missed opportunities to give vaccination card and information at place of birth</td>
<td>When mothers give birth in maternity centers, give their babies BCG vaccine and:  - A vaccination card for the baby  - Information on where and when to bring the baby for other vaccinations  - Encouragement to get the baby immunized again as soon as he or she reaches 6 weeks of age</td>
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<tr>
<td><strong>Example 2:</strong> BCG 80% DPT1 75% DPT3 70% Measles 45%</td>
<td>Why the decrease between DPT3 and measles?</td>
<td>The long interval between vaccination with DPT3 at 14 weeks and measles at nine months</td>
<td>Inform parents about preventing measles by means of vaccination.  Remind parents when and where to bring the child in for measles vaccine.</td>
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<tr>
<td><strong>Example 3:</strong> BCG 70% DPT1 70% DPT3 40% Measles 60%</td>
<td>Why is measles coverage higher than DPT3?</td>
<td>Difficult and/or infrequent access to vaccinations Health workers may be (incorrectly) re-starting DPT series after long intervals between doses.</td>
<td>Remind health workers that if a child has reached nine months of age without completing DPT vaccinations, a DPT vaccination can be given at the same time as measles vaccine.  After DPT1 vaccination, remind parents that three doses are needed and when to bring child for DPT2 and DPT3.</td>
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Note for the reader: please use file from excel to replace this graph
Example: Chart for monitoring doses administered and drop-outs in children less than one year of age

Area: Fictida, District, Peri-urban Area
Year: 2001

Note for the reader: please use file from excel to replace this graph.
### Immunization Coverage and Drop-out Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>What it May Indicate</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPT 1 Coverage</td>
<td>Availability of, access to, and initial use of immunization services by children</td>
<td>Measures only the first in a three-dose series. BCG, although the first vaccination in the schedule, is not an effective indicator where births take place at home and no BCG is given. When BCG is given to babies born in hospitals, it may be recorded in a different information system, if at all.</td>
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<td>DPT 3 Coverage</td>
<td>Continuity of use by parents, client satisfaction with services, and capability of the system to deliver a series of vaccinations.</td>
<td>Shows only completion of DPT series and not other antigens.</td>
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<tr>
<td>Measles coverage</td>
<td>Protection against a disease of major public health importance</td>
<td>Does not indicate the capability of the system to deliver a series of vaccines. Supplementary doses may be confused with routine doses.</td>
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<td>DPT 1 to DPT 3 (Difference in the number of children who receive DPT 1 and the number who receive DPT 3, expressed as a rate)</td>
<td>Quality of service as perceived by parents and the quality of communication between parents and health workers – this is the classic drop-out indicator.</td>
<td>Does not stand on its own; must be interpreted in light of actual coverage levels. Does not give a complete picture of drop-outs that may be occurring between other antigens.</td>
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<tr>
<td>TT 1 Coverage</td>
<td>Availability of, access to, and use of immunization services by pregnant women.</td>
<td>Measures only the first dose in a multi-dose series.</td>
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<td>TT 2+ (TT2, TT3, TT4, and/or TT5 coverage)</td>
<td>Continuity of use, client satisfaction, and capability of the system to deliver a series of vaccinations to women.</td>
<td>The series of five TT doses is given at different intervals over the course of many years. Once a woman has received five doses, she should no longer be counted in the denominator as a member of the target population.</td>
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<tr>
<td>Fully immunized child (FIC)</td>
<td>Capability of the system to provide all vaccines in the childhood schedule at the appropriate age and the appropriate interval between doses in the first year of life; also measures public demand and perceived quality of services.</td>
<td>Generally not available from routine service statistics. Information can usually be derived from population-based surveys analyzed by WinCOSAS or other software. Absence of vaccination cards limits the reliability of this indicator. The definition of FIC may vary among countries.</td>
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