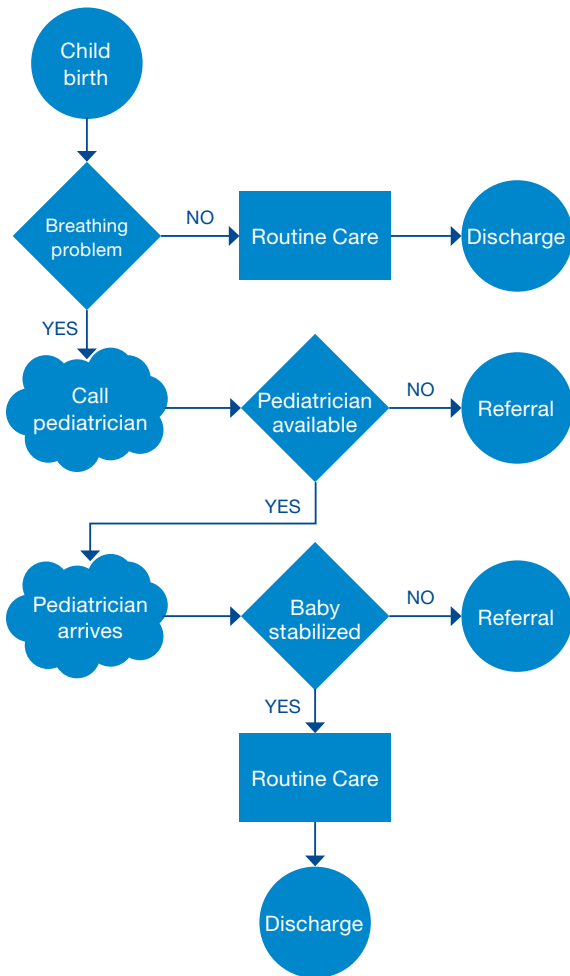


Tips and Tools for Learning Improvement

Flowcharts

Figure 1. Example of a flowchart



Part 1. What is a flowchart?

A flowchart is a diagram that uses shapes to represent the sequence of steps or activities in a work process (see Figure 1).

There are several different types of processes in healthcare that can be explained through flowcharting. They include the processes by which:

1. Clinical decisions are made
2. Information is transmitted between different people
3. Materials (drugs, supplies, food) are passed through the organization
4. Patients move through the medical facility as they receive care

Most processes are actually multiple flow processes whereby patients, materials, information, and others are involved simultaneously in the same process of care.

Why are flowcharts important for improvement?

Flowcharts are a powerful quality improvement tool as they help improvement teams to:

- Understand the sequence of activities and processes that make up a task
- Look at relationships between activities and decisions
- Identify opportunities to fix bottlenecks, add missing steps, clarify unclear steps or responsibility and eliminate unnecessary work

For example, In **Figure 1**, we see a flowchart from a team in India. Staff in a district hospital were worried about the high number of babies who died or needed to be referred due to

asphyxia. They wanted to provide better care to these babies. To decide how to go about this they used a flow chart to identify where things were going wrong.

The process of drawing the flowchart allowed the team to understand that there were unclear steps, marked by clouds on the flowchart, that needed to be addressed in order to provide better care. They were able to understand that most referrals happened when the pediatrician was not available and that there were significant delays in stabilizing

the baby while they waited for the pediatrician to be called and to come to the bedside. The team was then able to develop changes to address these problems.

Figure 2 shows the basic symbols used in creating a flow-chart for improvement.

Figure 3 shows how to use question symbols with ‘yes’ and ‘no’ arrows.

Figure 2. Basic symbols for improvement flowcharts

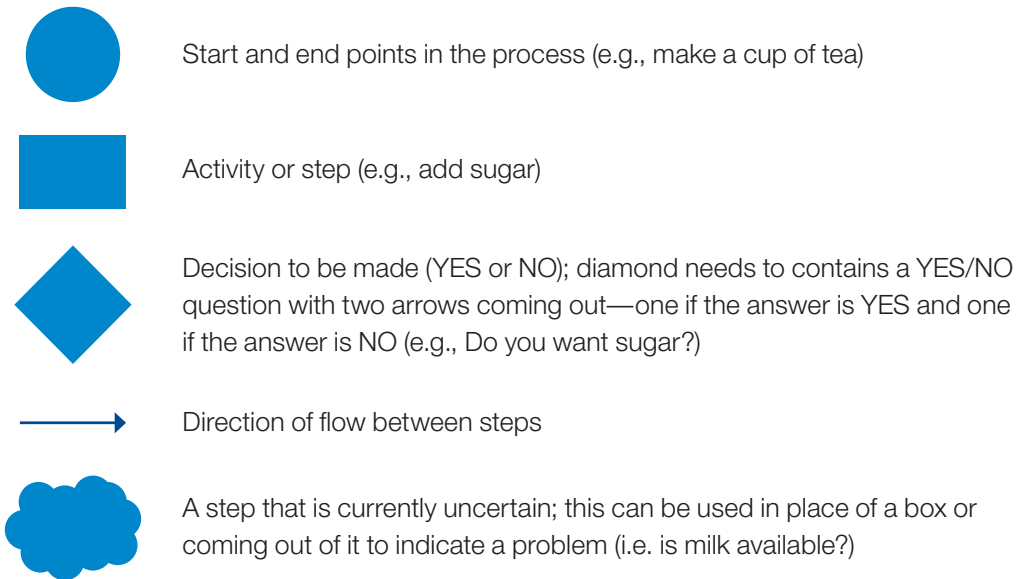
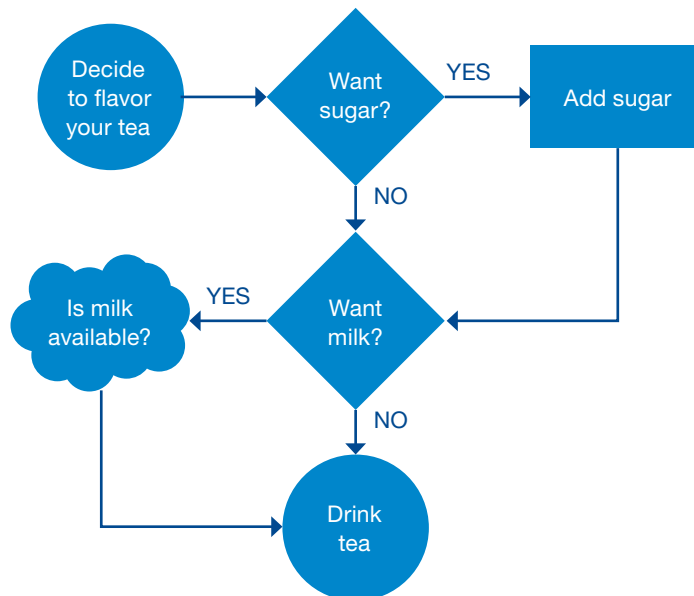


Figure 3. An example of how to use question symbols in a flowchart



Exercise 1. Practice using symbols

Practice using these symbols using the steps below by following the steps for making a cup of tea. Use the appropriate symbol for each part of the process.



Tips: Remember a step or activity only has one arrow going out of it. A decision diamond should be a yes/no question with one arrow out for “yes” and one arrow out for “no”.

A. Flowchart of how to make a cup of tea

First, determine which symbol from above you should use for each of the points of the process and put them in the blank space.

Time for tea		Pour boiling water over tea bag	
Gather supplies (heat source, water, pot, tea bag, cup spoon, sugar)		Remove tea bag	
Boil water		Want sugar?	
Prepare cup with tea bag		Add sugar	
		Drink tea	

B. Flowchart of how to make a cup of tea

Next, try putting those symbols into a flowchart here by adding the arrows. Remember a step or activity only has one arrow going out of it. A decision diamond should be a yes/no question with one arrow out for “yes” and one arrow out for “no”.

Part 2. Translating a process into a flowchart

Once you understand the basic components of a flowchart, the next step is to practice using a flowchart to visualize a process. Don't worry if you don't get it right the first time! This can be trickier than it sounds.

The following basic steps can be followed when drawing a flowchart based on a process:

1. **Form an improvement team of people who all have a role to play in the process you are trying to improve.** Each one of them will have insight into different steps in the process. In the India example in Figure 1, it would be the midwife, nurse, pediatrician and possibly other medical assistants involved in delivery and care of newborns.

2. **Determine and agree on the beginning and end points of the process to be flowcharted.**

- What is the beginning of this process?
- What is the end of the process?

When deciding on a beginning and end, think about your aim and what triggers the key process in your aim to begin. The end is often the output that you are looking for. In the example above, the team wanted to understand what happens to newborns between childbirth (beginning) and discharge home (end) or referral to another facility (end) in relation to breathing difficulties.

3. **Identify the elements of the flowchart by asking:**

- What is the next step or activity? Who does it?
- Are there any decisions that need to be made?
A decision point may be things like a diagnosis one way or the other, whether a resource is available, etc.

Sometimes it can be helpful to list out the steps and decisions on paper before drawing the flowchart.

This allows you to identify the steps and note any disagreements about the order of the steps or what is done during each step. For any steps that are unclear or have disagreement around them, make sure to use a cloud so that you know you need to come back and clarify that step.

HINT: If you are developing a flowchart to identify weaknesses in your processes, the steps and decision points you put into the flowchart should reflect the true process (what is actually done, not what should be done according to a guideline or standard operating procedure). For example, a Ministry of Health guideline may require that you take every pregnant woman's blood pressure at every visit. However, a facility may have three exam rooms but only one with a blood pressure cuff, so only women being examined in the room with the blood pressure cuff actually get checked. Creating a flowchart that shows every woman being checked based on the guideline does not reflect the actual situation and is not helpful when you are trying to improve a process. If the real situation is that only some women get their blood pressure taken or if staff disagree on what happens, then you would use a cloud for that step to indicate there is a problem there.

4. **Within a few days, review the flowchart with the group with fresh eyes to see if everyone is satisfied with the result.** Ask others involved in the process if they feel it reflects what they do and revise accordingly.

Exercise 2. Turn a description of a process into a flowchart

Read the case below so that you can create a flowchart.

A mother arrives at the health center with a two year-old child who has a high fever and is sweating. The mother goes to the registration desk to retrieve the child's record. After a short wait, the nurse calls the child back for examination. The nurse examines the child and suspects malaria. The nurse refers the mother to the laboratory. There is only one person working at the laboratory, so the line is long. The laboratory technician eventually does the test and hands the mother the results to bring back to the nurse. The nurse's role is to inform the mother if the child has malaria or not and if the child does not have malaria, more tests may need to be done. The child has malaria. The nurse prescribes treatment. The mother goes to the pharmacy to pick up the treatment and goes home.

The flowchart symbols that you need to complete this exercise are listed below. On the next blank page, create a flowchart that reflects the process of the mother taking her child to the hospital. Draw the flowchart symbols in the correct order to develop a flowchart which reflects the story. You will need to add arrows between the steps and the "yes" and "no" for any decision point.

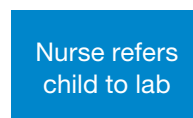
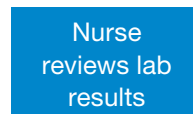
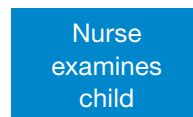
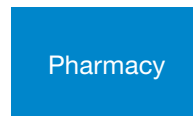
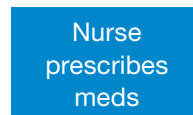
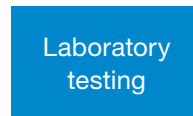
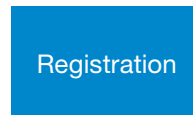
Beginning and End Points



Decision Points



Steps in the Process



Unclear Areas/ Problems



Draw your flowchart here.

Part 3. Interpreting a flowchart for improvement

Once your improvement team has created a flowchart that reflects the real situation at your health facility, the team will want to do a simple analysis to determine possible areas where changes can be made that will lead to improvement. You can ask yourselves the following questions:

- Are there any steps or group of steps that are redundant?
- Are there extra steps that involve fixing mistakes from earlier steps (a rework loop)? For example, if you find a rapid HIV test is consistently done incorrectly the first time; a second test would be required.
- Does every step add value to the process? Is there any unnecessary work that could be eliminated?
- What complexities or additional problems do the clouds reflect? Is there confusion among providers or an unclear step? What is the cause of this problem?

- Are there any possible problems in the transitions from one person to the next? What could or does go wrong?
- Is the flow logical? Are there fuzzy areas or places where the process leads off to nowhere? Are there parallel tracks? Is there a rationale for those?

This discussion should generate a list of possible areas for improvement in the process. In the earlier example of the team from India, the team realized that they needed to clarify a procedure for calling the pediatrician, addressing what to do if the pediatrician wasn't available and what to do while they waited for the pediatrician to arrive. The next steps of prioritizing and developing changes based on the flowchart analysis are covered in the ***Tips and Tools for Learning Improvement*** "Developing Changes" handout.

Exercise 3. Interpreting a flowchart

A team in a rural health center wants to increase the number of HIV patients lost to follow-up who are brought back to care. The team sat down and created a flowchart of their process for tracking patients and getting them back to care. Review their flowchart and answer the questions below.

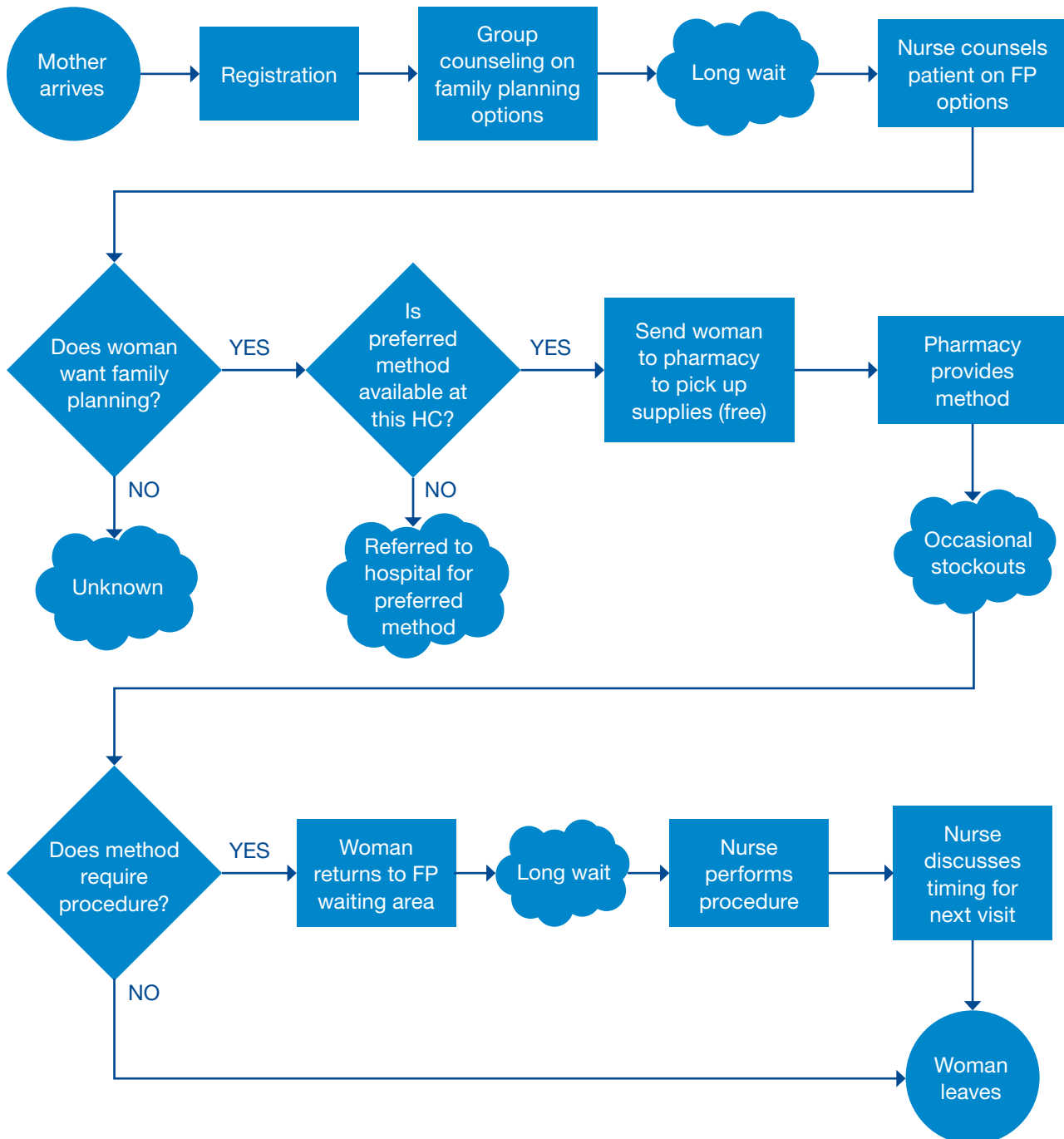


Statements about flowchart	True	False
This flowchart shows the information flow between the nurse and the CHW.		
This flowchart shows what happens if the patient doesn't return to care after the reminder call.		
This flowchart shows how the CHW addresses the patient's needs.		
This flowchart shows the process for reminding patients about appointments.		
This flowchart shows how lost to follow-up patients are returned to the clinic.		
This flowchart shows whether there are any unclear steps, problems or bottlenecks in this process.		
This flowchart has enough information to understand problems in the process and develop changes to improve the process.		
This flowchart would better address the aim if it included more information about what happens after the reminder phone call is made.		

Exercise 4. Analyzing a flowchart

Review the following flowchart and answer the questions on the following page.

This team is reviewing their process for providing family planning (FP) services to women in the health center (HC). They want to make the services as easy to use as possible for women seeking services.



Exercise 4. Analyzing a flowchart questions

1. Do you see any areas where the staff are doing double work?
2. Do you see any areas where there is opportunity for more efficiency?
3. What parts of the process might patients be unhappy with?
4. What steps or clouds might need to have their own flowchart to understand the process within that step or further areas for root cause analysis?
5. Which problem(s) would you want to address in your improvement work and why?