INDICATOR GUIDE: TOOL FOR IMPROVEMENT OF DATA COLLECTION

Guide used by coaches to assist quality improvement teams in collecting, plotting and analyzing improvement data as part of the Maternal and Newborn Health in Ethiopia Partnership

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## Acronyms

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<th>Acronym</th>
<th>Description</th>
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<tr>
<td>ANC</td>
<td>Antenatal care</td>
</tr>
<tr>
<td>BCC</td>
<td>Behavior change communication</td>
</tr>
<tr>
<td>CMNH</td>
<td>Community Maternal and Newborn Health</td>
</tr>
<tr>
<td>HCW</td>
<td>Health care worker</td>
</tr>
<tr>
<td>HEW</td>
<td>Health extension worker</td>
</tr>
<tr>
<td>LS</td>
<td>Learning Session</td>
</tr>
<tr>
<td>MaNHEP</td>
<td>Maternal and Newborn Health in Ethiopia Partnership</td>
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<tr>
<td>QI</td>
<td>Quality improvement</td>
</tr>
<tr>
<td>PNC</td>
<td>Postnatal care</td>
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Introduction

The Maternal and Newborn Health in Ethiopia Partnership (MaNHEP), funded by the Bill and Melinda Gates Foundation, was designed to support communities in two regions of Ethiopia to provide care to mothers and babies from the time of birth to 48 hours after birth. A quality improvement approach was one of the key components of supporting communities together with training in the Community Maternal and Newborn Health (CMNH) Package and a behavior change communications (BCC) strategy. The improvement strategy began with quality improvement (QI) teams made up of family members, health care workers (HCWs), and community members that developed and tested changes to the way they provide care to mothers and babies. MaNHEP staff and coaches from health centers and Woreda (district) Health Offices supported the QI teams. The areas that the teams focused on included identification of pregnant women, registration in antenatal care (ANC), attendance at CMNH family meetings, notification of labor and birth, and ensuring postnatal care (PNC) within 2 days. As part of their improvement work, QI teams would collect and analyze data to determine whether their efforts and changes were leading to improvement. This document was developed to support coaches in assisting QI teams and to set up a consistent data collection system to be used across several project sites. The document was developed in 2010 and was last revised in November 2011. The data collection tools referred to throughout the document can be found on www.manhep.org. There are more indicators found in this document than were used by the project due to various constraints which are noted throughout. The results achieved related to these indicators are located in other MaNHEP publications. This is an example of a tool used by coaches rather than a report on results. The instructions in this guide are specific to the context of the regions where we worked and the goals of MaNHEP.

1 Additional information on the project activities can be found at www.MaNHEP.org.
## Overview of Quality Improvement Indicators

<table>
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<tr>
<th>Indicator</th>
<th>Definition</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Data Source</th>
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<tbody>
<tr>
<td>1</td>
<td>Number of newly identified pregnant women per month</td>
<td>Number of newly identified pregnant women, per month</td>
<td>Number of newly identified pregnant women per month</td>
<td>n/a</td>
</tr>
<tr>
<td>2</td>
<td>Cumulative percent of newly identified pregnant women registered who received 1st ANC, per month</td>
<td>Cumulative number of newly identified pregnant women who registered/ received 1st ANC, divided by the cumulative number of newly identified pregnant women, per month.</td>
<td>Cumulative number of newly identified pregnant women receiving 1st ANC, per month</td>
<td>Cumulative number of newly identified pregnant women, per month</td>
</tr>
<tr>
<td>3</td>
<td>Percent of delivered women who completed all four CMNH meetings, per month</td>
<td>Number of delivered women who completed all four CMNH meetings divided by number of delivered women, per month</td>
<td>Number of delivered women who report attending all four CMNH meetings, per month</td>
<td>Number of delivered women for the given month</td>
</tr>
<tr>
<td>4</td>
<td>Percent of delivered women whose case was notified to HEW during labor and within 2 days after birth, per month</td>
<td>Number of delivered women whose birth was notified to HEW during labor and within 2 days after birth, divided by number of delivered women, per month</td>
<td>Number of delivered women for whom the HEW was notified during labor and within 2 days after birth</td>
<td>Number of delivered women for the given month</td>
</tr>
<tr>
<td>5</td>
<td>Percent of delivered women who were visited by HEW in &lt; 2 days of birth, per month</td>
<td>Number of delivered women who were visited by HEW in &lt; 2 days of birth, divided by number of delivered women, per month.</td>
<td>Number of delivered women who were visited by HEW in &lt; 2 days of birth, per month</td>
<td>Number of delivered women for the given month</td>
</tr>
<tr>
<td>Indicator</td>
<td>Definition</td>
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<td>Denominator</td>
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<td>-------------</td>
</tr>
<tr>
<td>6</td>
<td>Number of days between maternal deaths; stillbirths; newborn deaths 0-48 hrs and 0-7 days</td>
<td># of days between maternal deaths; stillbirths; newborn deaths 0-48 hrs and 0-7 days</td>
<td>n/a</td>
<td>Numerator: Master list record of the dates of maternal deaths; stillbirths; newborn deaths 0-48 hrs and 0-7 days and count days in between each incident. Indicator calculated at end of month, each month.</td>
</tr>
<tr>
<td>7</td>
<td>Percent of women who received misoprostol immediately after birth of the placenta, per month</td>
<td>Number of women who received misoprostol immediately after birth of the placenta, divided by number of delivered women, per month</td>
<td>Number of delivered women for the given month</td>
<td>Numerator: Master list cross-checked with Misoprostol Distribution record Denominator: Master list, cross-checked with HP Delivery Register Indicator calculated at end of month, each month.</td>
</tr>
<tr>
<td>8</td>
<td>Cumulative Percent of pregnant women completed CMNH meetings 1, 2, 3, 4, per month</td>
<td>Cumulative number of pregnant women completed CMNH Meeting 1, Meeting 2, Meeting 3 and Meeting 4, divided by Cumulative number of pregnant women identified, per month</td>
<td>Cumulative number of pregnant women identified, per month</td>
<td>Numerator: Guide Team Record Denominator: Master list cross checked with Guide Team record. Indicator calculated at end of month, each month.</td>
</tr>
<tr>
<td>9</td>
<td>Percent of women referred to a facility for perceived/ reported complication</td>
<td>Number of women who referred to a facility, divided by number of perceived complication, per month</td>
<td>Number of women with perceived complication, per month</td>
<td>Numerator: Master list Denominator: Master list cross checked with HP delivery register. Indicator calculated at end of month, each month</td>
</tr>
<tr>
<td>10</td>
<td>Average team maturity in a modified index</td>
<td>Average value of team maturity value for X number of teams</td>
<td>Sum of team maturity value for X number QI teams</td>
<td>Number of QI teams</td>
</tr>
</tbody>
</table>
Indicators

Indicator 1 – Number of newly identified pregnant women per month

a. **Definition:** Number of pregnancies identified for the first time each month for each kebele

b. **What it tells us:** Total number of women newly identified each month and whether that is increasing and/or varying around the estimated expected number

c. **Numerator:** Total number of pregnancies identified for the first time by the community

i. **Source –** A master list kept by HEW of all newly identified pregnant women for the given month will provide information.

ii. **Data collection –** The total number of newly identified pregnant women should be taken from a Master List developed by the HEW. The Master List should come from reports from Guide Team Records on who has been newly identified for the given month and the HEW records on who was newly identified through home visits or self-reporting to the Health Post, Health Center or Hospital.

d. **Denominator:** n/a

e. **Frequency:** Monthly according to Ethiopian Calendar

f. **Calculation:** The only calculation needed for this indicator is to tally the number of newly identified pregnant women.

g. **Validation:** The average number of expected new pregnancies per month can be used as a general guide for whether kebeles are finding what seems to be an appropriate number of newly pregnant women per month. Due to natural variation month to month, the estimated number of pregnancies is a guide only. Validation of numbers of newly identified women can be conducted by checking the Master List of the HEW against the lists of guide team record.

Once a quarter, MaNHEP staff can randomly spot check the Master Lists and guide team record to see if the data in the guide team records agrees with the data reported in the Master Lists.

h. **Graph:**

i. **Interpretation:** As the kebele works on issues of pregnancy identification, we should see an increase in the number of newly identified pregnant women. We should expect variation (seen across most of the months up to October 2010 on this example). Based on where the graph has leveled, we need to consider whether/how making further improvements.
Indicator 2 – Cumulative percent of newly identified pregnant women registered/who received 1st ANC, per month

Note: The cumulative percent was used here since women do not necessarily receive first ANC within the same month they were identified. However, by the end of the project, we conducted analysis of this indicator using a numerator of women receiving first ANC in a given month and a denominator of all newly identified pregnant women in the same month with the same results.

a. **Definition:** Cumulative number of newly identified pregnant women, who registered/received 1st ANC, divided by the cumulative number of newly identified pregnant women, per month.

b. **What it tells us:** Whether women who are newly identified are registered/receiving the first ANC visit

c. **Numerator:** Cumulative Number of newly identified pregnant women receiving first ANC, per month
   i. Source – Master list
   ii. Data collection – Count the cumulative sum (cumulative from previous month + number for this month) of women who have received first ANC on the Master List in the given month to see how many newly identified pregnant women registered and had at least first ANC visit at home, health post, health center or hospital.

d. **Denominator:** Cumulative number of newly identified pregnant women, per same month
   i. Source – Master List
   ii. Data collection – Count the cumulative sum (cumulative from previous month + number for this month) of women who have been identified per the Master List.

e. **Frequency:** Monthly according to Ethiopian Calendar

f. **Calculation:** At the beginning of each new month, review the numerator and denominator for the previous month. Calculate the indicator: Cumulative number of newly identified pregnant women receiving first ANC/cumulative number of newly identified women x 100 = Cumulative percent of newly identified pregnant women who registered/received first ANC.

g. **Validation:** Once a quarter, ManHEP staff can randomly spot check the Master List and Health Post ANC Registry at a few health posts to see if the data in the registries agrees with the data reported by the teams.

h. **Graph:**

i. **Interpretation:** As the kebele works on issues of pregnancy identification and ANC registration, we should see an increase in the percentage of women receiving ANC. We should expect variation (such as the few months in mid way on this example) and investigate/act accordingly. Based on where the graph has leveled, we need to consider whether/how to make further improvements.
Indicator 3 – Percent of delivered women who completed all four CMNH meetings, per month

Note: QI teams generally focused more on looking at attendance of each meeting separately to determine whether they were engaging women in the meetings and keeping them. (See Indicator 8)

a. **Definition**: Number of delivered women who completed all four CMNH meetings divided by number of delivered women, per month

b. **What it tells us:**
   i. How many women are receiving all of the information needed to assist women and newborns at labor and delivery
   ii. How well we are retaining women in the program

c. **Numerator**: Number of delivered women who report attending all four CMNH meetings/trainings, per month
   i. i. Source – Master list cross-checked with Guide Team Record.
   ii. Data collection – In order for a woman to have completed all four meetings, she needs to be present for all four meetings.

d. **Denominator**: Number of delivered women, per same month
   i. Source – Master list cross checked with Health Post Delivery Registry
   ii. Data collection – Count the number of women who have given birth based on the Master list. Then cross check this list of women with Health Post Delivery Registry.

e. **Frequency**: Monthly according to Ethiopian Calendar

f. **Calculation**: At the beginning of each new month, review the numerator and denominator for the previous month. Calculate the indicator: Number of delivered women who report attending all four CMNH meetings, per month/Number of delivered women for the given month x 100 = Percent of delivered women who completed all four CMNH meetings

g. **Validation**: Once a quarter, MaNHEP staff can randomly spot check Master list at a few health posts to see if the data in the master list agrees with the data reported by the teams.

h. **Graph**:

i. **Interpretation**: As the kebele improves attendance at CMNH meetings, we should see the line move up. We should expect variation (such as the last few months on this example) once the improvement has leveled off. Based on where the graph has leveled, we need to consider whether/how to make further improvements.
Indicator 4 – Percent of delivered women whose case was notified to HEW during labor and within 2 days after birth, per month

a. Definition: Number of delivered women whose birth was notified to HEW during labor and within 2 days after birth, divided by number of delivered women, per month.

b. What it tells us: The process of notifying HEWs during labor and < 2 days after birth.

c. Numerator: Number of delivered women for whom the HEW was notified during labor and within 2 days after birth, per month.
   i. Source – Master list
   ii. Data collection – Count the number of women whose birth was notified to HEW during labor and within two days after birth from the master list

d. Denominator: Number of delivered women, per same month
   i. Source – Master list “Date of birth” to show delivery completed cross checked with Health Post Delivery
   ii. Data collection – Count the number of women who have given birth from the master list. Then cross check this list of women with Health Post Delivery Registry.

e. Frequency: Monthly according to Ethiopian Calendar

f. Calculation:
   i. At the beginning of each new month, review the numerator and denominator for the previous month.
   ii. For each time period, calculate the indicator:

\[
\text{Number of delivered women for whom the HEW was notified during labor and within 2 days after birth} \times 100 = \text{Percent of delivered women for whom the HEW was notified during labor and within 2 days after birth}
\]

g. Validation: Once a quarter, MaNHEP staff can randomly spot check the master list and delivery register at a few health posts to see if the data in the in these records agrees.

h. Graph: The X-axis is the months and the Y-axis is percentage from 0 to 100%.

i. Interpretation: As the site notification to HEWs, we should see move up (starting March 2011).
Indicator 5 – Percent of delivered women who were visited by HEW in < 2 days of birth, per month

a. **Definition:** Number of delivered women who were visited by HEW < 2 days of birth, divided by number of delivered women, per month.

b. **What it tells us:**
   i. How many women are visited in the project's target time period
   ii. Whether HEW are having trouble making the visit within the 2 day time period
   iii. How well the process for notification and organization of HEW's time are working (have HEW's been able to organize their schedules to respond to these unpredictable events?)

c. **Numerator:** Number of delivered women who were visited by HEW < 2 days of birth, per month
   i. Source – Master list
   ii. Data collection – Using the Master list for all of the delivered women in the given month, count the total number of women who received a postnatal visit specifically by the HEW (or who went to the Health post for a postnatal check-up) on Day 1 or Day 2 after delivery. For those cases where the HEW present at labor/birth (not count as first PNC), she needs to come back for the first PNC within two days.

d. **Denominator:** Number of delivered women, per same month
   i. Source – Master list “Date of birth” to show delivery completed cross checked with Health Post Delivery
   ii. Data collection – Count the number of women who have given birth based on Master list. Then cross check this list of women with Health Post Delivery Registry.

e. **Frequency:** Monthly according to Ethiopian Calendar

f. **Calculation:** At the beginning of each new month, review the numerator and denominator for the previous month. Calculate the indicator: Number of delivered women who were visited by HEW < 2 days of birth / Number of delivered women for the given month X 100 = Percent of delivered women who were visited by HEW < 2 days of birth

g. **Validation:** Once a quarter, MaNHEP staff can randomly spot check master list and Health Post Delivery Registry at a few health posts to see if the data in these registries agrees with the data reported by the teams.

h. **Graph:** The graph should have one point for each month. The X-axis is the months and the Y-axis is percentage from 0 to 100%.

i. **Interpretation:** As the kebele improves the percent of delivered women visited by the HEW within 2 days of birth, we should see the line move up. We should expect variation (such as the last few months on this example) once the improvement has leveled off.
**Indicator 6 – Number of days between maternal deaths; stillbirths; newborn deaths 0 to 48 hrs and 0 to 7 days**

*Note: Given the small numbers of deaths, we were not able to collect this indicator as an ongoing improvement indicator. We were able to look at newborn deaths using data collected as part of a cohort study conducted by Addis Ababa University of all women who delivered in a one year time period.*

a. **Definition:** Date of maternal deaths; stillbirths; newborn deaths between 0 to 48hrs and 0 to 7 days.

b. **What it tells us:** Increase in days between deaths means that we are avoiding maternal deaths, stillbirths and newborn deaths in the most vulnerable time period, the MaNHEP target.

c. **Numerator:** Date of maternal deaths; stillbirths; newborn deaths between 0 to 48hrs and 0-7days

   i. Source – Master list, date of death, whether maternal deaths, stillbirth, newborn death 0-48 hrs or 0 to 7 days
   
   ii. Data collection – Record date of death
   
   iii. Notes – Include maternal deaths; stillbirths; newborn deaths between 0 to 48 hours and 0 to 7 days. Verbal autopsy will be performed on all maternal deaths, stillbirths and early newborn deaths (0-7 days).

d. **Denominator:** n/a

e. **Frequency:** Record and plot each incident as they happen; however, a monthly review of incidents and plotting is fine; dates according to Ethiopian Calendar

f. **Calculation:** n/a

g. **Validation:** Once a quarter, MaNHEP staff can randomly spot check the master list and Health Post Delivery Registry at a few health posts to see if the data in the two documents are the same.

h. **Graph:** Example for death of neonate between 0 to 48hrs (same for days between maternal deaths, stillbirth and death of neonate 0 to 7 days, separate graph)

i. **Interpretation:** As kebeles improve implementing program, ensuring all actions in the MNH packages are done, the days between deaths will be wide (graph will go up)
Indicator 7 – Percent of women who received misoprostol immediately after birth of the placenta, per month

a. **Definition:** Number of women who received misoprostol immediately after birth of the placenta, divided by number of delivered women, per month

b. **What it tells us:**
   i. How many women are receiving misoprostol
   ii. How well the process for delivering misoprostol is working (may provide basis for allowing new groups to be allowed to do this)

c. **Numerator:** Number of women who received misoprostol immediately after birth of the placenta, per month
   i. Source – master list
   ii. Data collection – Review the Master list and add up all women who have a check mark by “give misoprostol”.

d. **Denominator:** Number of delivered women, per same month
   i. Source – Master list cross checked with Health Post Delivery
   ii. Data collection – Count the number of women who have given birth based on the Master list. Then cross check this list of women with Health Post Delivery Registry.

e. **Frequency:** Monthly according to Ethiopian Calendar

f. **Calculation:** At the beginning of each new month, review the numerator and denominator for the previous month. Calculate the indicator: Number of women who received misoprostol immediately after birth of the placenta/ Number of delivered women for the given month X 100 = \% of women who received misoprostol immediately after birth of the placenta

g. **Validation:** Once a quarter, MaNHEP staff can randomly spot check the Master list and delivery registries at a few health posts to see if the data in these registries agrees with the Master list data. The HEW will keep a Misoprostol Distribution Record (we must account for all tablets distributed) and then compare with the remaining stock.

h. **Graph:** The graph should have one point for each month. The X-axis is the months and the Y-axis is percentage from 0 to 100%.

i. **Interpretation:** As the kebele improves a process for ensuring that misoprostol can be given, we should see the line move up. We should expect variation (such as the last few months on this example) once the improvement has leveled off.
**Indicator 8 – Cumulative Percent of Pregnant women completed CMNH meetings 1, 2, 3 and 4 per month**

a. **Definition:** Cumulative number of pregnant women who have completed CMNH Meeting 1, 2, 3 and 4, divided by the cumulative number of newly identified pregnant women, per same month

b. **What it tells us:** How many women are completing the CMNH Meetings

c. **Numerator:** Cumulative number of women who have completed CMNH meetings
   i. Source – Guide Team Record
   ii. Data collection – Count the cumulative sum (cumulative from previous month + number for this month) of pregnant women who have completed each of the following meetings:
      1. Meeting 1
      2. Meeting 2
      3. Meeting 3
      4. Meeting 4

d. **Denominator:** Cumulative number of newly identified pregnant women, per same month
   i. Source – Master List
   ii. Data collection – Count the cumulative sum (cumulative from previous month + number for this month) of women who have been identified per the Master List.

e. **Frequency:** Monthly according to Ethiopian Calendar

f. **Calculation:** At the beginning of each new month, review the numerator and denominator for the previous month. Calculate for each indicator:
   i. Cumulative number of pregnant women who have completed CMNH meeting 1/cumulative number of newly identified pregnant women x 100 = Cumulative percent of pregnant women who completed CMNH meeting 1.
   ii. Cumulative number of pregnant women who have completed CMNH meeting 2/cumulative number of newly identified pregnant women x 100 = Cumulative percent of pregnant women who completed CMNH meeting 2.

iii. Cumulative number of pregnant women who have completed CMNH meeting 3/ cumulative number of newly identified pregnant women x 100 = Cumulative percent of pregnant women who completed CMNH meeting 3.

iv. Cumulative number of pregnant women who have completed CMNH meeting 4/ cumulative number of newly identified pregnant women x 100 = Cumulative percent of pregnant women who completed CMNH meeting 4.

g. **Validation:** Once a quarter, MaNHEP staff can randomly spot check the Guide Team Records against the information provided to determine if the calculations are correct.

h. **Graph:** For each category there should be a separate line with a distinctive mark or color. For each category, plot one point for each month. The X-axis is the months and the Y-axis is percentage from 0 to 100%.

i. **Interpretation:** As the kebele improves lines could go high and gaps would reach close (overlap). Since every month a new group of pregnant women at different gestation age will be identified, the lines may not reach 100%.  

![Graph of cumulative percent of pregnant women completed CMNH meetings]
Indicator 9 – Percent of women referred to a facility for perceived/reported complication

**Note:** MaNHEP did not use this indicator because of difficulties in tracking women who were referred. Among the complications were incomplete health center records and movement of women before delivery to their parents’ homes.

**a. Definition:** Number of women who referred to a facility divided by number of perceived/reported complication.

**b. What it tells us:**

i. How many women with perceived complication are referred to health facilities

**c. Numerator:** Number of women who referred to a facility

ii. Source – Master list cross checked with HP delivery register

iii. Data collection – count the number of women referred to a facility for each month from the Master list.

**d. Denominator:** Number of women with perceived/reported complications

i. Source – Master list

ii. Data collection – count the number of women with perceived/reported complication from Master list for each month

**e. Frequency:** Monthly according to Ethiopian Calendar

**f. Calculation:** At the beginning of each new month, review the numerator and denominator for the previous month. Calculate for each indicator: Number of women who referred to a facility/number of perceived complication x 100

**g. Validation:** Once a quarter, MaNHEP staff can randomly spot check the Master list against the information provided to determine if the calculations are correct.

**h. Graph:** The X-axis is the months and the Y-axis is percentage from 0 to 100%.

**i. Interpretation:** As the kebele improves lines could go high and would reach close to 100%.
**Indicator 10 – Percent of maturity of a team in a modified index**

*Note: This indicator was collected by coaches and was calculated by MaNHEP for its own purposes of monitoring the progress of QI Teams and helping to guide appropriate approaches and goals for coaching visits. Details of the ranking can be found in the Coaching Tools document on the MaNHEP website.*

**a. Definition:** Average value of team maturity for X number of team

**b. What it tells us:** Monitor progress in team maturity as they work through different stage of improvement and care steps.

**c. Numerator:**

i. Source – Coaching guide  
ii. Data collection – At the end of each visit coaches will discuss and provide a score for the team. The score for each team will be aggregated at woreda, region and project level.

**d. Denominator:** Depending of the level of the aggregation, number of teams

i. Source – coaching guide  
ii. Data collection – aggregated for the level of report required

**e. Frequency:** Monthly according to Ethiopian Calendar

**f. Calculation:** At the beginning of each new month, review the numerator and denominator for the previous month. Calculate for each indicator: sum of team maturity value for X number of QI team/ X number of QI team

**g. Validation:** Once a quarter, MaNHEP staff can randomly spot check the summary from coaching guide with monthly report.

**h. Graph:** The X-axis is the months and the Y-axis is percentage from 0 to 100%.

**i. Interpretation:** As the team progress to a stage of maturity, working independently, at some point in the project lines could go high.