Data Quality Review (DQR)
Desk Review
Tools and Methods
Workshop

DQR Desk Review
Global Fund LFA Training
October 2019
Developing a harmonized approach to data quality assessment

Data Quality Review (DQR) Framework and Metrics

- Review of quality of health facility data

SESSION 1

Overview of DQR
### Multi-pronged approach to assessing data quality from health facilities

| Routine & regular reviews (e.g. monthly) of data quality that are built into a system of checks & part of a feedback cycle | Annual independent assessment examining quality of health facility data for annual health sector planning & program monitoring | In-depth reviews of data quality that focus on single disease/program area that are conducted periodically (3-5 years) |

**SESSION 1**
Overview of DQR
<table>
<thead>
<tr>
<th>Program Area</th>
<th>Indicator Name</th>
<th>Full Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Health</td>
<td>Antenatal care 1st visit (ANC1)</td>
<td>Number (%) of pregnant women who attended at least once during their pregnancy</td>
</tr>
<tr>
<td>Immunization</td>
<td>DTP3/Penta3</td>
<td>Number (%) of children &lt; 1 year receiving three doses of DTP/Penta vaccine</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>ART coverage</td>
<td>Number and % of people living with HIV who are currently receiving ART</td>
</tr>
<tr>
<td>TB</td>
<td>Notified cases of all forms of TB</td>
<td>Number (%) of all forms of TB cases (i.e. bacteriologically confirmed plus clinically diagnosed) reported to the national health authority in the past year (new and relapse)</td>
</tr>
<tr>
<td>Malaria</td>
<td>Confirmed malaria cases</td>
<td>Number (%) of all suspected malaria cases that were confirmed by microscopy or RDT</td>
</tr>
</tbody>
</table>
Two types of DQR

Cross-cutting DQR vs. In-depth DQR

Determine type of DQR and which indicators are appropriate, worthwhile, and manageable to reflect programs and priorities, and which align to the health sector review process in country.

Cross-cutting DQR
- 1 core indicator per program area
- Annual assessment to identify gaps and errors in reporting and the plausibility of trends

In-depth DQR
- Multiple indicators to emphasize a specific program area
- 3–5 year in depth assessment
The DQR comprises two components

SESSION I
Overview of DQR

DQR methodology

Methods

- Desk review
  - Review the quality of data nationwide (not just a sample);
  - No travel required

- Health facility survey
  - Data verification (DV) – compare source documents to reported results
  - HMIS System Assessment
SESSION 1

DQR Desk Review

DQR Desk Review

DATA QUALITY REVIEW

Module 2
Desk review of data quality

World Health Organization
Gavi
The Global Fund
JSI
USAID
Desk Review of Health Facility Data

Objective: Examine data quality of aggregate reported data

- For recommended program indicators
- Using standardized data quality metrics

### Assessment Levels

<table>
<thead>
<tr>
<th>National</th>
<th>Subnational</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Assessment of each selected indicator aggregated to the national level</td>
<td>• Performance of subnational units (e.g., districts or provinces/regions) for the selected indicators</td>
</tr>
</tbody>
</table>
Developing a harmonized approach to data quality assessment

SESSION 1
Overview of DQR

Domains of Data Quality

1) Completeness & timeliness of data

2) Internal consistency of reported data

3) External consistency, i.e. agreement with other sources of data, e.g. surveys

4) External comparisons of population data – review denominator data used to measure performance indicators
Completeness and Timeliness of Reporting

**Focus**
- Measure extent to which data reported through the M&E system are available and adequate for planning, monitoring, and evaluation

**Completeness**
- Assessed by measuring whether all entities that are supposed to report actually do
- Includes health facility level, subnational level, and data elements within submitted reports

**Timeliness**
- Assessed by measuring whether the entities that submitted reports did so before a pre-defined deadline
Example - Completeness of facility and district reporting

Reporting of immunization data in 4 countries, August, 2016

- Country A
- Country B
- Country C
- Country D

District reporting and Facility reporting
Internal Consistency of Reported Data

Focus

- Examine the plausibility of reported results for selected program indicators based on the history of reporting for those indicators

Process

- Presence of extreme values (outliers)
- Trends are evaluated to determine whether reported values are extreme relative to other values reported during the year or across several years
- Assess program indicators which have a predictable relationship to determine whether the expected relationship exists between those two indicators
- Assess the reporting accuracy for selected indicators through the review of source documents in health facilities (data verification)
Example – extreme outliers

Penta 3 doses,
by month of 2015 and by district #12 of region 1 of country A
### Identification of outliers in routine data – DHIS 2 data quality tool

| Unit                          | Data                                                                 | Jan 14 | Feb 14 | Mar 14 | Apr 14 | May 14 | Jun 14 | Jul 14 | Aug 14 | Sep 14 | Oct 14 | Nov 14 | Dec 14 |
|-------------------------------|                                                                     |        |        |        |        |        |        |        |        |        |        |        |        |
| Kowo dispensary               | Penta vaccines given (KE, Under 1, Dose 3, Inside Service Area)     | 26.0   | 20.0   | 30.0   | 60.0   | 19.0   | 4647.0 | 24.0   | 7.0    | 18.0   | 20.0   | 26.0   |        |
| Kateshe Health Center         | Penta vaccines given (KE, Under 1, Dose 3, Inside Service Area)     | 30.0   | 4345.0 | 53.0   | 54.0   | 63.0   | 32.0   | 37.0   | 36.0   | 34.0   | 36.0   |        |        |
| ST. Aloysius Health Center    | Penta vaccines given (KE, Under 1, Dose 3, Inside Service Area)      | 20.0   | 23.0   | 23.0   | 33.0   | 34.0   | 22.0   | 20.0   | 3432.0 | 35.0   | 21.0   | 49.0   |        |
| RC/KNStor Dispensary          | Penta vaccines given (KE, Under 1, Dose 3, Inside Service Area)      | 19.0   | 3021.0 | 18.0   | 15.0   | 28.0   | 35.0   | 22.0   | 42.0   | 36.0   | 32.0   | 36.0   | 36.0   |
| Mlali Health Center           | Penta vaccines given (KE, Under 1, Dose 3, Inside Service Area)      | 13.0   | 16.0   | 1710.0 | 17.0   | 13.0   | 17.0   | 9.0    | 12.0   | 6.0    | 12.0   |        |        |
| Kandashe Dispensary           | Penta vaccines given (KE, Under 1, Dose 3, Inside Service Area)       | 17.0   | 13.0   | 24.0   | 15.0   | 14.0   | 20.0   | 16.0   | 1328.0 | 15.0   | 14.0   | 26.0   | 18.0   |
| Balang’a Dispensary           | Penta vaccines given (KE, Under 1, Dose 3, Inside Service Area)       | 1.0    | 6.0    | 13.0   | 5.0    | 3.0    | 11.0   | 9.0    | 1212.0 | 11.0   | 13.0   | 27.0   |        |
| Ruanda Health Center          | Penta vaccines given (KE, Under 1, Dose 3, Inside Service Area)       | 178.0  | 151.0  | 171.0  | 143.0  | 136.0  | 168.0  | 155.0  | 189.0  | 1110.0 | 121.0 | 169.0  |        |
## Consistency of indicator data over time – Excel desk review tool

### 2b2: Consistency of 'Immunization - 3rd dose DPT-containing vaccine' over time

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected trend</td>
<td>Constant</td>
</tr>
<tr>
<td>Compare districts to:</td>
<td>national result</td>
</tr>
<tr>
<td>Quality threshold</td>
<td>33%</td>
</tr>
<tr>
<td>National score (%)</td>
<td>93%</td>
</tr>
<tr>
<td>Number of districts with divergent scores</td>
<td>2</td>
</tr>
<tr>
<td>Percent of districts with divergent scores</td>
<td>3%</td>
</tr>
</tbody>
</table>

Names of districts with divergent scores:

District 12, District 17

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![Graph showing consistency of Immunization - 3rd dose DPT-containing vaccine events for preceding years (3 years max)](image)
Consistency of data between related indicators

Penta 3 doses versus OPV 3 doses, 2015, by district of country A
External Consistency: Consistency across data sources

Focus

• Assess the level of agreement between two sources of data measuring the same health indicator

Sources of Data

• HMIS or program specific information system
• Periodic population-based survey
• Other data sources, e.g., pharmacy records
External Comparisons of Population Data

Focus

• Determine the adequacy of the population data used in the calculation of health indicators

Process

• Compare two different sources of population estimates (for which the values are calculated differently) to ascertain the level of congruence between the two sources

• The higher the level of consistency between denominators from different sources, the more confidence can be placed in the accuracy of the population projections
Using the DQR Desk Review Excel Tool

• Using the data from the file:
  cut and paste the data by indicator into the Desk Review Tool:
  “WHO_DQR_Tool_GF_LFA_Training_Exercise_Oct_2019.xlsm”.

• Paste monthly values by district into the indicator specific tabs
  (Input_PA1_Ind1, etc.)

• Paste annual district values into the “Input_trend_data” tab

• Review the output and postulate reasons for any apparent anomalies.

• Discuss with colleagues.