Data Quality Review (DQR) Data Verification and System Assessment Workshop

Session 1

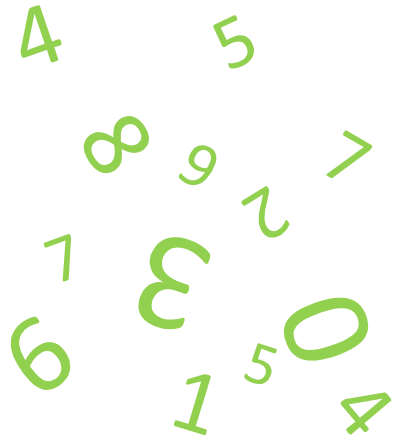
Overview of the Data Quality Review (DQR) Methodology

World Health Organization

USAID
FROM THE AMERICAN PEOPLE

MEASURE Evaluation

The Global Fund



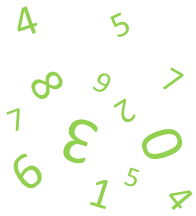
Learning Objective

SESSION 1

Overview of DQR

Learning Objectives: familiarize workshop participants with the DQR Framework and the different metrics used to evaluate data quality within the four domains.

- Understand the different methods employed in the DQR (facility survey, desk review)
- Know the different data quality domains
- Know the different adaptations of the standard method (e.g. in-depth assessment)
- Learn about requirements of implementing the desk review
- Learn the importance and strategies for using the results for action to improve data quality



Developing a harmonized approach to data quality assessment

SESSION 1

Overview of DQR

Data Quality Review (DQR) Framework and Metrics

-Review of quality of health facility data

Developing a harmonized approach to data quality assessment

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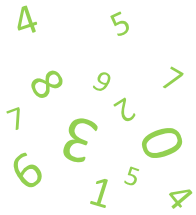
Overview of DQR

Why is health facility data important?

- For many indicators it is the only **continuous/frequent** source of data
- It is most often the only data source that is available at the **subnational** level -- important for equity;
- For many key indicators, it is the **sole** source of data. For example, PMTCT, ART, TB treatment outcomes, TB notification, confirmed malaria cases, causes of death, etc.



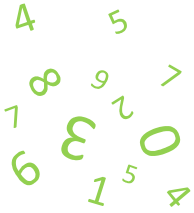
Developing a harmonized approach to data quality assessment

SESSION 1

Overview of DQR

Quality of routine health facility data – why do we care?

- High-quality data provides evidence to providers and managers to optimize healthcare coverage, quality, and services.
- High-quality data help:
  - Form an accurate picture of health needs, programs, and services in specific areas
  - Inform appropriate planning and decision making
  - Inform effective and efficient allocation of resources
  - Support ongoing monitoring by identifying best practices and areas where support and corrective measures are needed



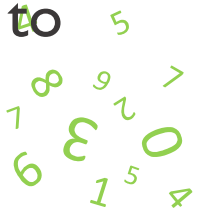
Developing a harmonized approach to data quality assessment

SESSION 1

Overview of DQR

Most common problems affecting data quality

- Lack of guidelines to fill out the main source documents and reporting forms
- Personnel not adequately trained
- Misunderstanding about how to compile data, use tally sheets, and prepare reports
- Un-standardized source documents and reporting forms
- Arithmetic errors during data compilation
- Lack of a review process before report submission to next level



Developing a harmonized approach to data quality assessment

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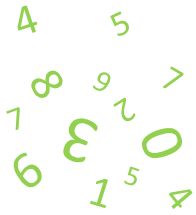
Many tools to address data quality

- GAVI DQA/IDQA
- WHO Immunization DQS
- Global Fund/MEASURE Evaluation DQA
- RDQA - Self assessment version of DQA (with in-country adaptations)
- PRISM
- WHO Data Quality Report Card (DQRC) – cross cutting



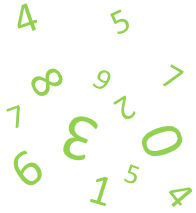
Developing a harmonized approach to data quality assessment

SESSION 1

Overview of DQR

DQR - harmonized approach to assessing and improving data quality

- The DQR is a multi-pronged, multi-partner framework for country-led data quality assurance that proposes a harmonized approach to assessing data quality
- It is a framework that builds on the earlier program-specific quality tools and methods while proposing the examination of data quality in a more systemic way that can meet the needs of multiple stakeholders
- It is a framework that also includes the examination of existing routine facility data (that does not require additional data collection) which was missing from earlier tools
- It provides valuable information for fitness-for-purpose to support the Health Sector Strategic Planning Cycle (e.g. health sector or program reviews)



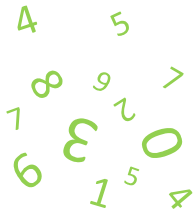
Developing a harmonized approach to data quality assessment

SESSION 1

Overview of DQR

Rationale for a harmonized approach to data quality

- Data quality is a systems issue - multiple assessments for different diseases/programs are inefficient and burdensome for the health system
- We can largely satisfy the needs for data quality assurance of all stakeholders with one holistic data quality assessment
- Permits stakeholders to know that the routine data have undergone a known minimum level of scrutiny which lends credibility and confidence in the data
- Use of standardized methods of data quality assessment which permits data quality to be compared over time and compared between countries
- The application of a standard framework to evaluate data quality enables the understanding of the adequacy of routine data used for health sector planning – we link data quality assessment to health planning efforts



Regular data quality assessments prior to health sector planning events

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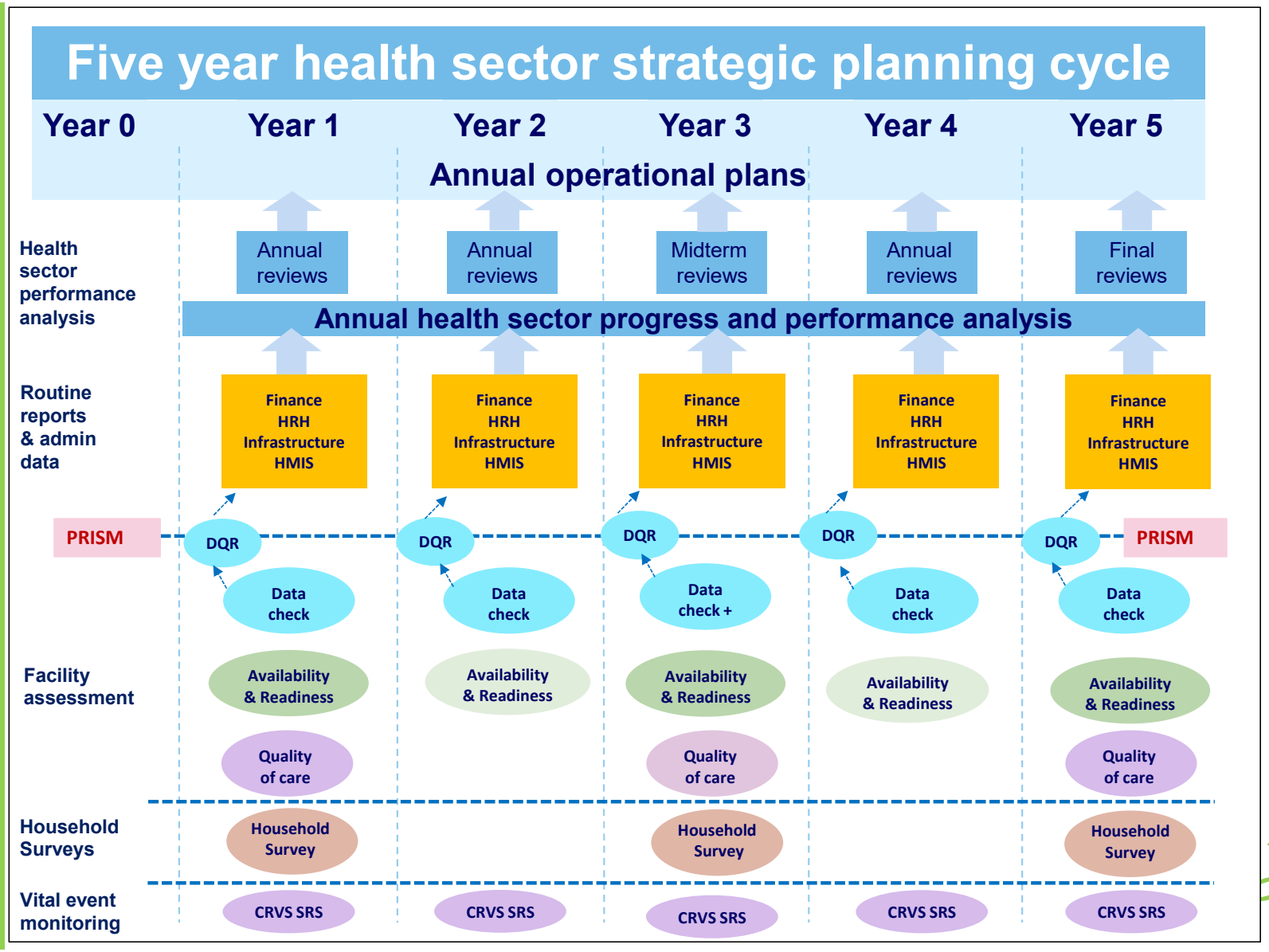
Overview of DQR



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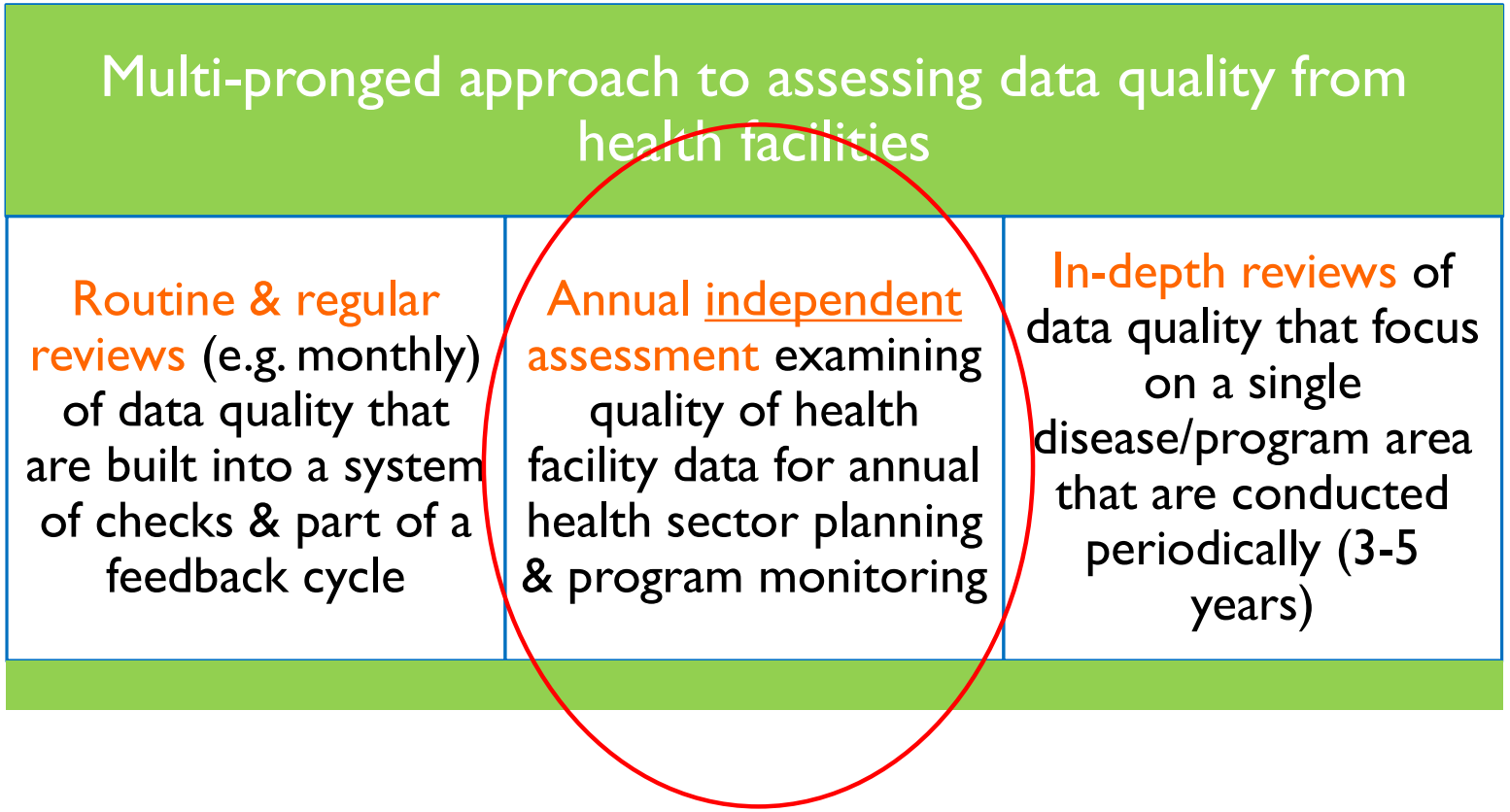

Standard list of program indicators – adapted to country needs

Program Area	Indicator Name	Full Indicator
Maternal Health	Antenatal care 1st visit (ANC1)	Number (%) of pregnant women who attended ANC at least once during their pregnancy
Immunization	DTP3/Penta3	Number (%) of children < 1 year receiving three doses of DTP/Penta vaccine
HIV/AIDS	ART coverage	Number and % of people living with HIV who are currently receiving ART
TB	Notified cases of all forms of TB	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)
Malaria	Confirmed malaria cases	Number (%) of all suspected malaria cases that were confirmed by microscopy or RDT

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Overview of DQR

Two types of DQR

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Overview of DQR

Cross-cutting DQR vs. In-depth DQR

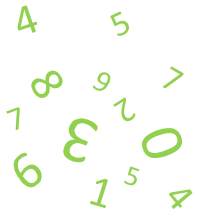
Determine the type of DQR and which indicators are appropriate, worthwhile, and manageable to reflect programs and priorities, and which align to the health sector review process in country.

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



DQR methodology

D.B.3

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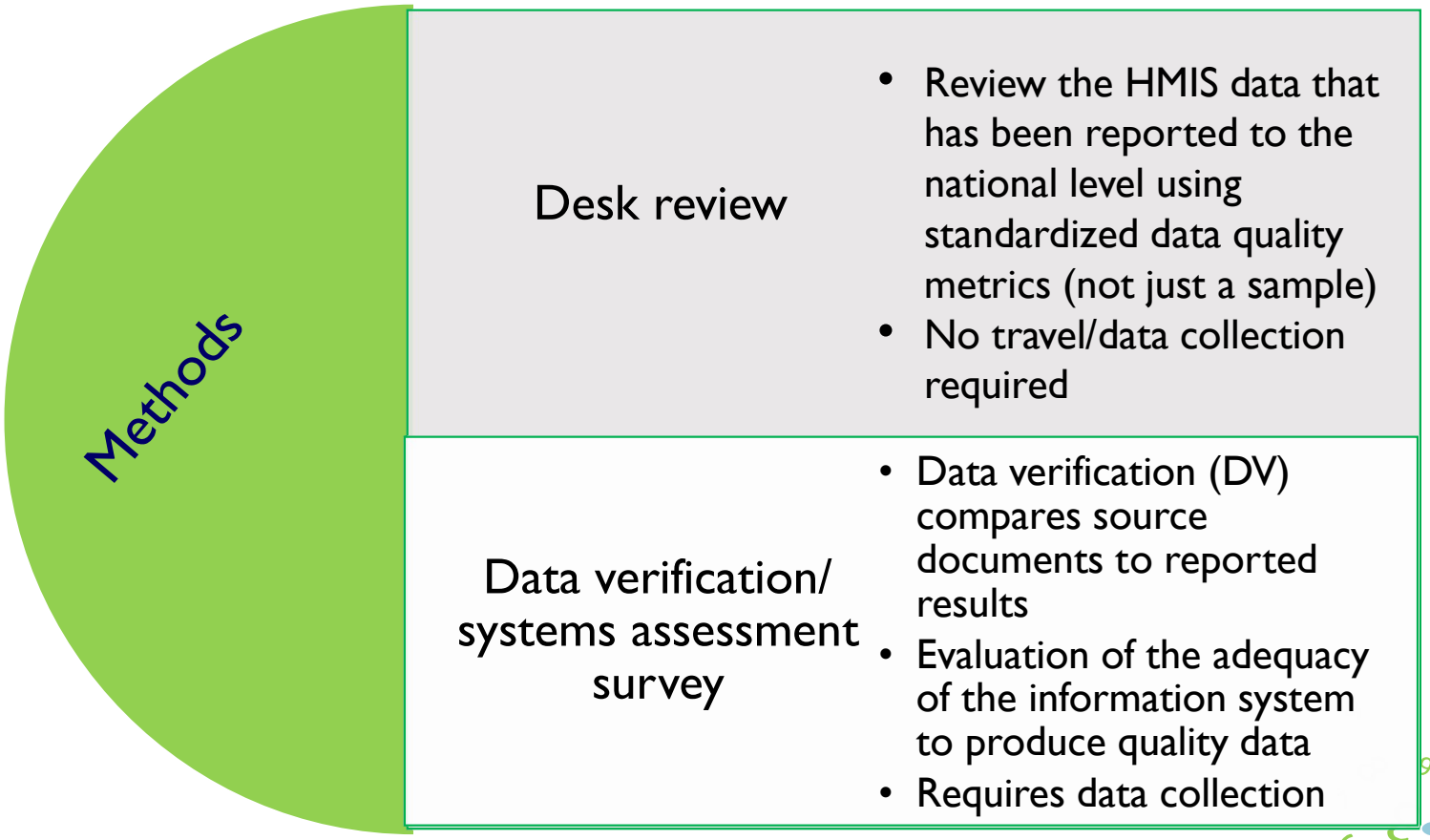
The DQR comprises two components



Slide 14

AS3 Significant content changes
Ashley Sheffel, 12/7/2019

D.B.3 I'm not sure which changes you are referring to here
David Boone, 4/21/2020

DQR Desk Review

SESSION 1

DQR Desk Review

Objectives

SESSION 1

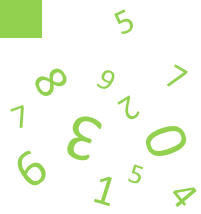
Overview of DQR

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	
National	**Subnational**
• Assessment of each selected indicator aggregated to the national level	• Performance of subnational units (e.g., districts or provinces/regions) for the selected indicators



Developing a harmonized approach to data quality assessment

SESSION I

Overview of DQR

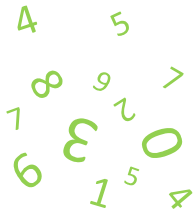
Domains of Data Quality

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



DQR
Domain 1

SESSION 1

Overview of DQR

Completeness and Timeliness of Reporting

Focus

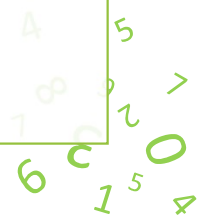
- Measures the extent to which data reported through the M&E system are available and adequate for planning, monitoring, and evaluation

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



DQR
Domain 2

SESSION 1

Overview of DQR

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)
  - via the DV/SA health facility assessment

DQR
Domain 3

SESSION 1

Overview of DQR

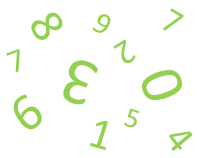
External Consistency: Consistency across data sources

Focus

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

Process

- HMIS or program specific information system
- Periodic population-based survey
- Other data sources, e.g., pharmacy records



DQR
Domain 4

SESSION 1

Overview of DQR

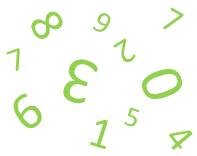
External Comparisons of Population Data

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



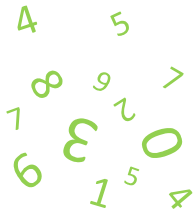
Planning the Desk Review

SESSION 1

Overview of DQR

Plan the Desk Review

- Select indicators and tools
  - DHIS 2 app
  - Excel based tool
- Gathering data for selected indicators from either HMIS or program information system or both
- Data managers from the disease programs of selected indicators should be involved in the data gathering, analysis, and interpretation
- A timeframe of about 1-2 weeks for data gathering (unless using the DHIS 2 app) and 1-2 weeks for analysis and interpretation



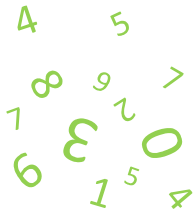
Data Requirements

SESSION 1

Overview of DQR

Data Requirements

Data from subnational administrative area for the most recent reporting year and annual aggregated data for the last three reporting years are required for the selected indicators	For each primary indicator selected, a secondary indicator from the same program area should also be selected to evaluate the internal consistency	Information on submitted reports and when they were received are required to evaluate completeness and timeliness of reporting	Denominator data for calculating rates, and the most recent population-based survey results (e.g., MICS, DHS and Immunization Coverage)



DQR Health Facility & District Assessment

SESSION 1

Overview of DQR

Data verification at health facilities and districts

SESSION 1

Overview of DQR

Data Verification – at health facilities and districts

Objective

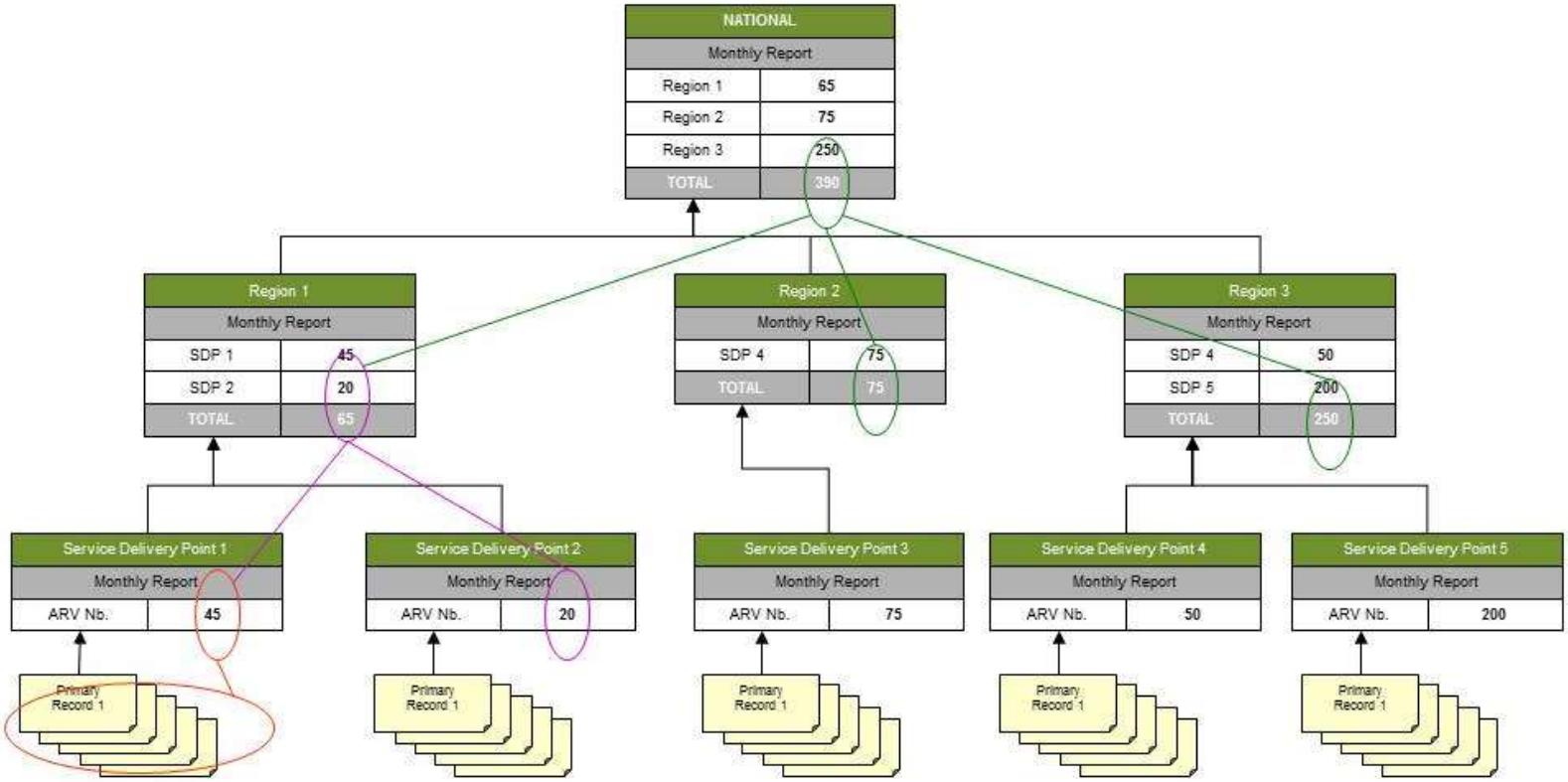
- Verify that the information contained in source documents has been transmitted correctly to the next level of reporting
  - For each level of reporting from the health facility level to the national level

Process

- Recount selected indicators using the appropriate source document at the facility
- Compare recounted/verified value of the indicator to the value reported by the facility for the same reporting period
- At the district – re-aggregate facility reports to validate the district total

Data Verification Schema

Verification of reporting



Source documents: facility registers (ANC, ART, OPD, TB) & immunization tally sheet

SESSION 1

Overview of DQR

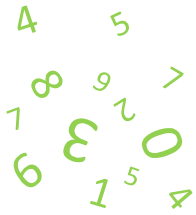
Data Verification

SESSION 1

Overview of DQR

Data verification module

- Assesses whether service delivery outputs (such as immunization) are being compiled and reported correctly from source documents to monthly facility reports
- For each selected indicator, process of data verification includes:
  - Documentation review
  - Recount the number of events
  - Reported number of events
  - Reasons for discrepancies



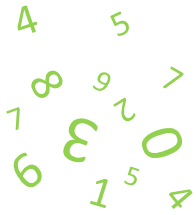
What data do we need for data verification at health facilities?

SESSION 1

Overview of DQR

Data Requirements

Health Facility Level	3 months of recounted values for each selected indicator from source documents
	3 months of reported values for each selected indicator from periodic reporting
	Information on the availability of data, i.e., number of months of missing data for each facility



What do we mean by source documents?

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Overview of DQR

Source document examples

Program	Indicator	Data source
General service statistics	▪ Total outpatient visits (OPD)	▪ OPD register
Maternal health	▪ ANC ▪ Institutional deliveries	▪ ANC register ▪ Labour and delivery facility register
Immunization:	▪ DTP1–3 /Penta 1–3 ▪ MCV1	▪ Tally sheets (or registers)
HIV/AIDS	▪ ART coverage ▪ PMTCT ART coverage ▪ HIV testing	▪ Programme records (ART register, ART patient cards) ▪ Facility-based ART registers ▪ Health facility data aggregated from patient monitoring system
TB	▪ Notified cases of all forms of TB	▪ TB unit registers ▪ Lab registers
Malaria	▪ Confirmed malaria cases	▪ Facility register or tally sheets ▪ Facility laboratory register

AS8
D.B.4

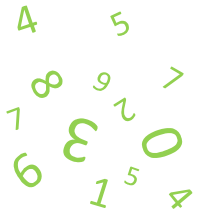
What do we need for data verification at the district health office?

SESSION 1

Overview of DQR

Data Requirements

District Level	3 months of reported values for each selected indicator from facility reports – all facilities in the district
	3 months of reported values for each selected indicator from district reports
	Information on timeliness and completeness of reports submitted to the district



Slide 30

AS8 Significant content changes
Ashley Sheffel, 12/9/2019

D.B.4 not sure which changes you are referring to here
David Boone, 4/21/2020

Calculating the Verification Factor

Verification Factor (VF)

- At the facility level, compare the **recounted values** from the source document to the **values reported** in the monthly report
  - This is called the verification ratio and is one measure of data quality

$$Verification\ ratio = \frac{Recounted\ number\ of\ events\ from\ source\ document}{Reported\ number\ of\ events\ from\ HMIS}$$

M&E System Assessment

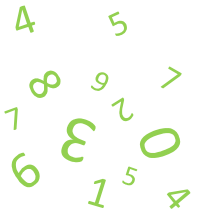
SESSION 1

Overview of DQR

Assessment to measure the readiness of the data management and reporting system to produce good quality data

- The system assessment measures the capacity of the system to produce good-quality data.
- It evaluates the extent to which critical elements of the reporting system adhere to a set of minimum acceptable standards.
- In addition, it provides information that will potentially enable managers to determine the causes of data quality problems.

Review adequacy of information system to collect, compile, transmit, analyze, and use HMIS and program data	Measure capacity of system to produce good-quality data
Interview staff responsible for data management and reporting at each level of the reporting system	Information system standards are organized within reporting system functional areas



M&E System Assessment Indicators

SESSION 1

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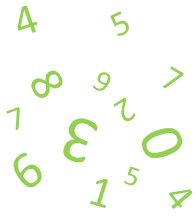
System Assessment Indicators

Indicator	Level	
	Facility	District
Presence of trained staff	X	X
Presence of guidelines	X	X
No recent stock out of data collection tools	X	X
Recently received supervision and written feedback	X	X
Evidence of analysis and use data	X	X



System Assessment Output – facility level

SESSION I

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	Facility type			Ownership		Location		
	Health post	Health centre	Hospital	Public	Private	Urban	Rural	Overall
Number of facilities	n=340	n=635	n=182	n=784	n=342	n=198	n=1,105	n=1,150
% with guidelines	66	63	36	54	61	69	54	57
% with trained staff	49	47	26	41	45	56	39	42
% without stock-out of forms	88	77	57	73	73	73	73	73
% receiving supervision and feedback	48	20	2	14	20	22	15	16
% analyzing and using data	45	43	20	38	47	56	33	37
% Had all criteria	17	3	0	2	4	4	2	2
Mean of items	65	49	33	44	50	54	44	46
Overall score (%)	30	44	17	37	32	38	34	35

AS9
D.B.5

Slide 34

AS9 See comment in Module 3 document; if there is a change there it also needs to be reflected here
Ashley Sheffel, 12/9/2019

D.B.5 Need to know what is being done about this.
David Boone, 4/21/2020

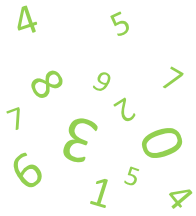
AS11
D.B.2

System Assessment Output – district level

SESSION 1

Overview of DQR

- Output of the system assessment at the district is limited to the districts in which facilities are assessed (the districts are not sampled).
- Output is:
  - Timeliness and completeness of reporting from facilities
  - Accuracy of data compilation for paper-based systems (increasingly rare at district level)
  - Accuracy of data entry for computerized systems
  - Readiness to produce quality data (system assessment)



Slide 35

AS11 Can you add an example from the district DV to show how theyare similar or different (i.e. district is not disaggreagated by facility type, etc.)
Ashley Sheffel, 12/9/2019

D.B.2 We should mention the district level piece on aggregating the facility results here
David Boone, 2/27/2020

Discussion

SESSION I

Overview of DQR

Discussion Questions:

- Why does data quality matter?
- What are potential advantages of a holistic approach to data quality assurance and how can this be achieved?
- What metrics are evaluated on the DQR health facility and district data verification and system assessment?
- Can you site some examples of data quality problems that can be found on the Desk Review?
- What are potential causes of discrepancies between recounted and reporting indicator values from health facilities?