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

Session I

Overview of the Data Quality Review (DQR) Methodology













Learning Objective

SESSION I

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
- Appreciate the importance of using the results for action



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.

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Quality of health facility data – why do we care?

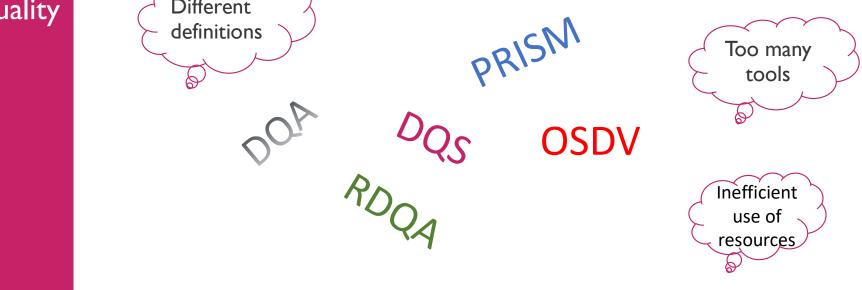
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Overview of DQR

Quality of health facility data – why do we care?

- High-quality data provide 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 at every level of the health system (including district and below)
 - Inform effective and efficient allocation of resources
 - Support ongoing monitoring, by identifying best practices and areas where support and corrective measures are needed

How did we measure quality of data?



Different

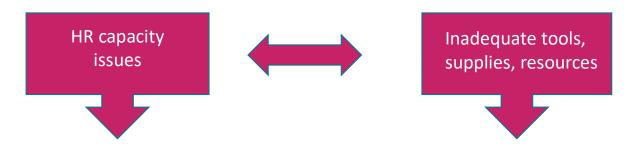
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- -Confusion in measurement of DQ
- -Lack of country ownership of results
- -Little improvement in quality of data

Why do we have poor quality of data?

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Overview of DQR



-Lack of adequately trained staff resulting in:

- Recording errors
- Compiling errors
- Reporting errors

-Lack of guidelines to fill out main data sources

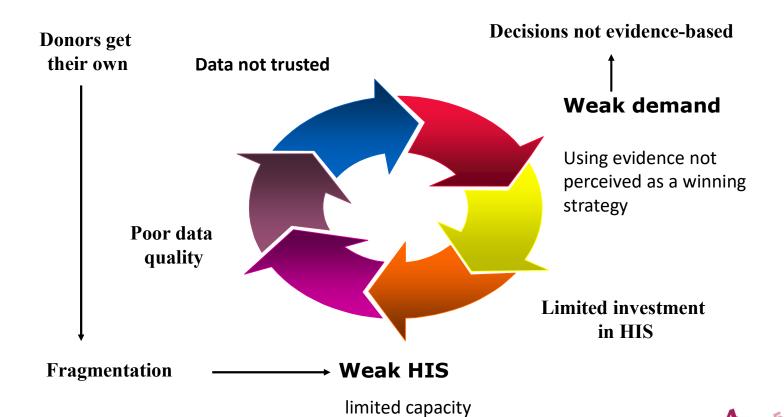
-Un-standardized source documents and reporting forms



Poor data quality – a vicious cycle

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Overview of DQR



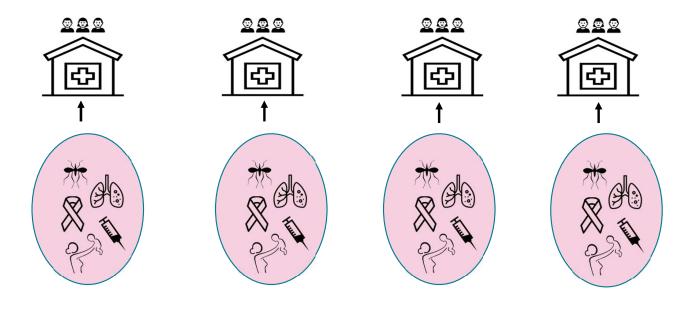
to manage or analyse data

How can we address these issues?

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Overview of DQR

When the **same** health personnel treat different diseases, can HR capacity issues on recording and reporting data be addressed programmatically?



NO!



What is needed?

A harmonized approach to:

- -measuring data quality
- -improving data quality

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What does a harmonized approach look like?

SESSION I

Overview of DQR

Routine & regular review and feedback

(e.g. monthly) of data quality – desk review of data quality and system of supervision and feedback

Annual independent cross-cutting_review and feedback

examining quality
of health facility
data for annual
health sector
planning & program
monitoring

Periodic
independent in-deptl

focus on single disease/program area; conducted periodically (e.g. every 3 years)



What is the approach called and what does it do?

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- Data Quality Review (DQR) is a framework and methodology that builds on the earlier program-specific data quality tools and methods by:
 - Providing a common language (standard metrics) for the measurement of data quality;
 - Proposing a harmonized approach to measuring and improving data quality that addresses the systemic nature of data quality problems;
 - Including tools that can be adapted by users

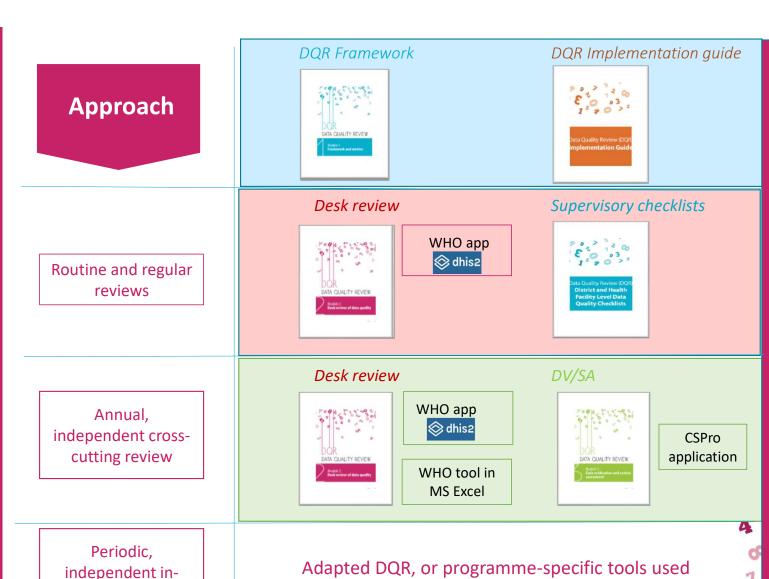


What are the resources included with the harmonized approach?

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Overview of DQR

depth review



(not covered here)

DQ tools overview – What? Who? When? How much?

SESSION I

Overview of DOR



reported HMIS data from all

facilities



Completeness

Consistency

Outliers



National: HMIS/ program

District: Data/ program

Facility: Facility in-charge

is available at facility level)

(if access to electronic data

managers

managers



What resources are

National: Monthly District: Monthly Facility: Monthly

(monthly implementation especially cumbersome if Excel tool used at district or facility levels)

Technical: Medium; conduct review, interpret results, and follow-up on errors Financial: Low

Time: Low/High depending on use of DHIS-2 app or Excel tool

System of continuous review of data quality

Discrete

assessment of data

quality



-∿∿-

Continous DQ

desk reviews

Rapid assessment of data quality using checklist: used as self assessment by facility managers -part of district supervision -at national level as as an overview of district data

- Completeness Consistency Accuracy
- · Readiness to produce quality data

National: HMIS and/or health program managers

District: District health managers

Facility: Facility in-charge or data manager

National: Biannually or annually District: Aligned with supervision schedule Facility: Monthly

Technical: Medium; must complete checklist in Excel, interpret results

Financial: Low; should be incorporated into existing supervision activities

Time: Low (not including travel time to site)

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Discrete desk review of data quality

6

Data

system

assessment

verification and

Analysis of the quality of reported HMIS data from all

Independent, holistic health

assessment of data quality

facility and district

- Completeness Consistency
- ► Outliers

► Accuracy · Readiness to produce quality data

National: Independent assessment by MOH and/or independent agency with oversight from HMIS/M&E TWG oversight

National: Independent

assessment by MOH and/or

independent agency with

oversight from HMIS/M&E

TWG oversight

National: Biannually or annually

National: Annually

Technical: High; conduct review, interpret results, translate findings into improvement plan Financial: Low

Time: Low/High depending on use of DHIS-2 app or Excel tool

Technical: High; implement survey, analyze results, and translate findings to improvement plan

Financial: High; requires new data collection

Time: High; field work can take substantial time

DATA QUALITY IMPROVEMENT PROCESS

Costed data quality improvement plans are developed based on results from the discrete assessment of data quality, including the desk review and site assessment. They are however implemented through the continuous and regular monitoring of data that address and correct errors in real-time. A subsequent discreet assessment, then, evaluates the improvement made in data quality over the year. The overall cyclical data quality review process should be under the guidance of a multi-stakeholder technical working group (e.g. HMIS TWG).

Low = Results are presented for easy interpretation. Does not require programming, data management or analysis and synthesis skills; Medium = requiring programming/data management skills abut minimal critical thinking and synthesis skills; High = Requires programming and data management skills as well high level of critical thinking and synthesis skills

DQ tools use cases - by levels of health system

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Overview of DQR



Technical: Medium; must conduct desk review, interpret results, and translate findings to improvement plan

Financial: Low

Time: Low/High depening on use of DHIS-2 app or Excel tool



Who? Facility in-charge reviews facility data in HMIS if access to electronic data is available at facility level



What? Analysis of the quality of

reported HMIS data from all

inconsistencies, and outliers

facilities in the district

When? Monthly

managers

Why? Identify data gaps,

Who? Data and program

What? Analysis of the quality of reported HMIS data from all facilities

National

level

Why? Identify data gaps, inconsistencies, and outliers

When? Monthly, annually

Who? HMIS and health program managers



Technical: Medium; must implement survey, analyze results, and translate findings to improvement plan

Financial: High; requires new data collection

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What? Participate in national DV/SA and data quality improvement process

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What? Independent, holistic health facility and district assessment of data quality

Why? Assess accuracy of data and readiness to produce quality data

When? Annually/Biannually Who? MoH with HMIS TWG oversight



Technical: Medium; must complete checklist, enter data in excel, interpret results

Financial: Low; should be incorporated into existing supervision activities

Time: Low

What? Rapid self-assessment of source document data quality Why? Ensure completeness and

Why? Ensure completeness and consistency of source document

When? Monthly

Who? Facility in-charge or data manager

What? Rapid assessment of data quality during supervisory visits Why? Ensure completeness and consistency of source document and monthly report data

When? Aligned with supervision schedule

Who? District health managers

What? National level review of supervisory visit data from district level DOR checklists

Why? Identify systematic problems for quality improvement

When? Biannually or annually

Who? HMIS and/or health program managers

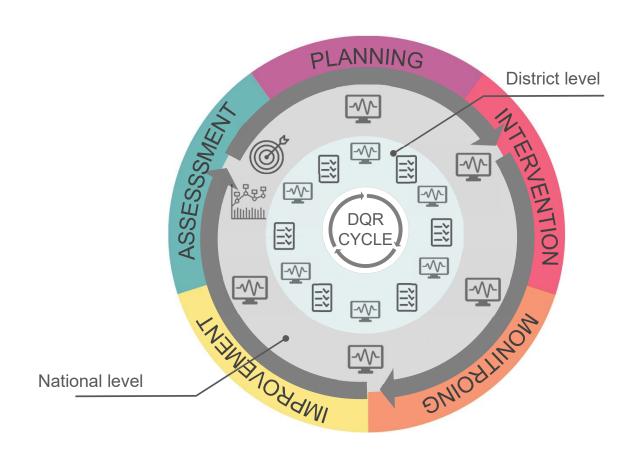
DATA QUALITY IMPROVEMENT PROCESS

DQR is a continual process coordinated by a multi-stakeholder technical working group (e.g. HMIS TWG) that uses information gained from the DQA tools to develop, cost, and implement data quality improvement plans.

Annual data quality review cycle

SESSION I

Overview of DQR





Routine desk review



Routine site assessment-checklists



Cross-cutting, discrete desk review



Discrete site assessment



Using results for data management system strengthening

SESSION I

Overview of DQR

• We've conducted an independent DQR ... Now what?

- Results should point to weaknesses in data management
- A Data Quality Improvement Plan should be developed wherein interventions are outlined to address identified data quality problems.
- The timing of the assessment and improvement plan should coincide with country health system planning cycles so interventions can be prioritized and funded.
- A unit within the MOH (e.g. HMISTWG) should be tasked with monitoring and ensuring implementation.







Link to country planning mechanisms

Link to planning

- The results of the independent desk review of data quality and site assessment of data quality: data verification and system assessment (DV/SA) (at facility and district levels) should be combined to produce a single report to be used before heath sector planning events.
- Ideally, the DV/SA is scheduled far enough in advance that the results are validated and compiled into a report for use at the planning event. But not too far in advance that the findings are no longer relevant.
- If the report is ready with findings and recommendations highlighted (e.g. executive summary) the issues uncovered during the assessment are more likely to receive consideration (and funding!) and then be addressed in the current budgetary cycle.

Data Quality Improvement Plan (I)

Data Quality Improvement Plan

- Based on the results of the independent data DQR (data verification, system assessment, desk review) the Data Quality (or HMIS/M&E) Technical Working Group (TWG) should lead the development of a Data Quality Improvement Plan (DQIP), an action plan for system strengthening, ensuring the involvement of relevant stakeholders.
- The DQIP should map out interventions designed to address problems found during the assessment and improve the quality of data.
- The plan should identify responsible agencies with appropriate staff to implement the plan, the timeline, and resources required to ensure completion.

Data Quality Improvement Plan (2)

Data Quality Improvement Plan

- If sufficient funding is not available within the current budget, the TWG should conduct advocacy among the donor community to raise the necessary funding.
- Interventions to improve the quality of data should be prioritized so that those with the highest likelihood of success, and those making the greatest impact on overall data quality, should be implemented first.
- Interventions should have a basis in reality. Budgets should be realistic. Responsible agencies/personnel should be available and willing to take on the interventions (and should buy-in to the strategy).
- Timelines should be doable. The DQIP should not be a wish list! 9

Data Quality Improvement Plan

EXAMPLE

DQIP - Example I

Data quality	Evidence of finding	Remedial measures	Scope	Timeline	Responsible	Resources
finding	(interpretation)	illeasures				
Domain: Indicate	or definitions and re	eporting guideline	S			
Lack of understanding of indicator compilation techniques at health-facility level for PMTCT/HCT - Pregnant women are not disaggregated from HCT results	Systematic over-counting of HCT indicator values in some districts (as revealed by data verification)	Improved supervision and mentoring in affected districts Emphasis on indicator compilation during pre-service and in-service training -Ensure that printed copies of indicator definitions and compilation procedures are available in health facilities	Regions 2, 7, 10	One year (2015), then re-evaluate	-District health information officers or their designates (whoever is conducting supervision at the facility) -Pre-service, inservice curriculum design team (HMIS unit at national level)	District health information budgets -HMIS training budget (2015 allocation) -MOH nurse training (2015 budget) Global Fund Round 9 HSS grant

Data Quality Improvement Plan

EXAMPLE

DQIP – Example 2

Data quality finding	Evidence of finding (interpretation)	Remedial measures	Scope	Timeline	Responsible	Resources
Domain: Data m	aintenance and con	fidentiality				
Source documents are not available for data verification	A significant proportion of service delivery for malaria could not be verified because of the non-availability of source documents -poor record-keeping/archiving of reported results	-Districts should work with affected health facilities to develop sound storage areas (closet or cabinet with locking mechanism in a cool, dry place) -shelves should be built using locally-available materials	Identified health facilities in Region 2 (districts 4 and 6) and Region 9 (districts 27 and 34).	2015, then re- evaluate	District health management teams; facility in charge; Regional Health Authority (facilities management unit)	2015 Facilities Management Budget - Global Fund Round 9 HSS grant



Implementation of DQR – Progress, opportunities and gaps

	Progress & opportunities	Gaps & constraints		
Routine supervision	Guidance for routine DQA well developed	 High quality supervision/ DQA difficult to sustain 		
Desk review	 Guidance and tools (Excel & DHIS2) well developed DHIS2-based tools automate aspects of desk review Training materials developed for routine use of DQ tools district level Capacity building through online videos and tutorials 	 Only a few countries conduct formal annual desk reviews and data cleaning exercises Implementation research needed to document routine use of DQ tools at district level 		
Data verification	 Guidance and tools (model questionnaire, CS Pro files) well developed 	 DV/SA surveys are infrequent in many countries 		
DQIP	 Guidance, including model SOPs, well developed With routine use of DQ tools, DQR can become DQA (data quality assurance) 	 Many DQR's, but fewer DQIP's Implementation research need to document that DQA can be practical (not burdensome), effective (measurably improves DQ) and sustainable over several years. 		

DQR Desk Review

SESSION I

DQR Desk Review





Objectives of desk review of health facility data

SESSION I

Overview of DQR

Aggregate reported data is examined for data quality sing recommended set of program indicators and standardized data quality metrics. The objectives of the desk review are:

- To institutionalize an efficient and low-resource method of checking data quality;
- To identify weaknesses in the data management system;
- To monitor data quality performance over time.

Assessment Levels

National

Assessment of each selected indicator aggregated to the national level

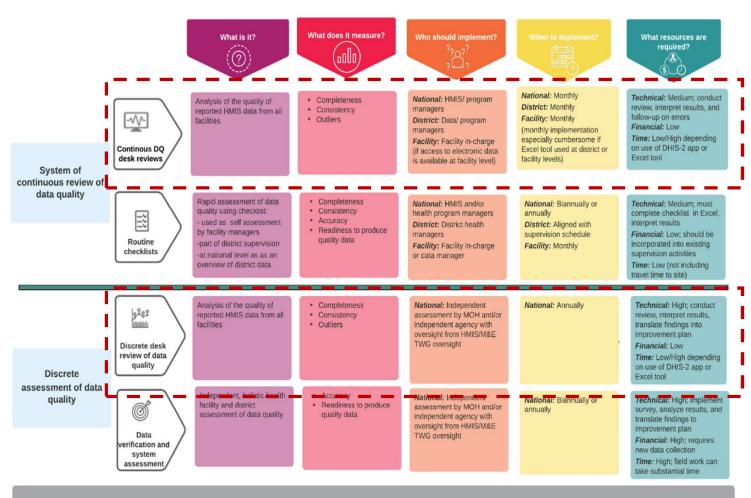
Subnational

 Performance of subnational units (e.g., districts or provinces/regions) for the selected indicators

Desk review types

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Overview of DQR



DATA QUALITY IMPROVEMENT PROCESS

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Skill level

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Desk review of data quality Routine Discrete **SESSION I** Programme specific Programme Cross-cutting Cross-cutting specific Overview of DQR

Recommended list of program indicators for cross-cutting discrete desk review — adapted to country needs

SESSION I

Program Area	Indicator Name	Full Indicator
Maternal Health	Antenatal care Ist visit (ANCI)	Number (%) of pregnant women who attended at least once during their pregnancy
Immunization	DTP3/Penta3	Number (%) of children < I year receiving three doses of DTP/Penta vaccine
HIV/AIDS	New on ART	Number of people living with HIV who initiate ART
ТВ	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

Dimensions of data quality

I) Completeness & timeliness of data

2) Internal consistency of reported data

SESSION I

Overview of DQR

3) External comparisons/cross-checks (with other data sources, e.g. surveys)

4) External consistency of population data – review denominator data used to measure performance indicators



DQR Dimension I

SESSION I

Overview of DQR

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



DQR Dimension 2

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)

SESSION I



DQR Dimension 3

External comparison/cross-checks (with other 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

SESSION I



DQR Dimension 4

Consistency of Population Data

Focus

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

Process

- Compare estimates from the National Statistics Office to estimates used by programs or estimates of UNPD
- Compare estimates of related denominators (e.g. pregnancies vs births vs infants)
- Review the consistency over time

SESSION I

Planning stages for discrete DQR – desk review and DV/SA

SESSION I

Overview of DQR

Determine mechanism of implementation. Part of a broader facility/district survey (e.g. SARA) or stand-alone DQA

Determine type of DQRcross-cutting or in-depth

Select program area Indicators

Set indicator benchmarks

Identify entities for implementation and technical support

Identify mechanism for funding Estimate LOE & recruit required technical support

Conduct advocacy to ensure cooperation from main stakeholders



Desk review implement-tation

SESSION I

- Select indicators and tools
 - WHO data quality (DQ) app in DHIS2
 - 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 I-2 weeks for data gathering (unless using the WHO DQ app in DHIS2 app) and I-2 weeks for analysis and interpretation

Data Requirements

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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)



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 Desk Review?
- Can you site some examples of data quality problems that can be found on the Desk Review?

SESSION I

