Monitoring results with health facility information systems: A technical consultation

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Executive Summary

Health facility data systems are a critical source of information for monitoring UHC, community outreach; improving quality of care; increasing efficient management of services; reporting progress towards health plan targets and goals; equity, MDGs, post-2015; performance based funding. They are also often the main source of sub-national data – by province/region or district – that lead directly to managerial decisions. Because facility data are available on a continuing basis and for the lowest service delivery levels, they provide critical inputs to annual health sector reviews, health statistics reports and analyses of health system performance.

Many countries have made major investments, but major information gaps persist. A common feature across countries is that routine reports from health facilities and districts are often late, incomplete and inaccurate. Such data quality issues have in turn hampered the use and credibility of indicators based on routine facility data. As a result, development partners have a tendency to set up separate data collection efforts, conduct single-purpose facility surveys or data validation exercises, and recruit project M&E staff. Examples are investments by specific programmes and partners in parallel facility reporting systems (e.g. ART, immunization), facility surveys with limited scope such as emergency obstetric care or HIV, single topic data quality assessment, conducted by donor partners.

The multiplicity of data collection systems and disjointed efforts in data analysis and use compounds the country situation and reporting burden. This situation is often felt hardest at the health facility level where frontline health workers have to complete large numbers of forms, registers and reports.
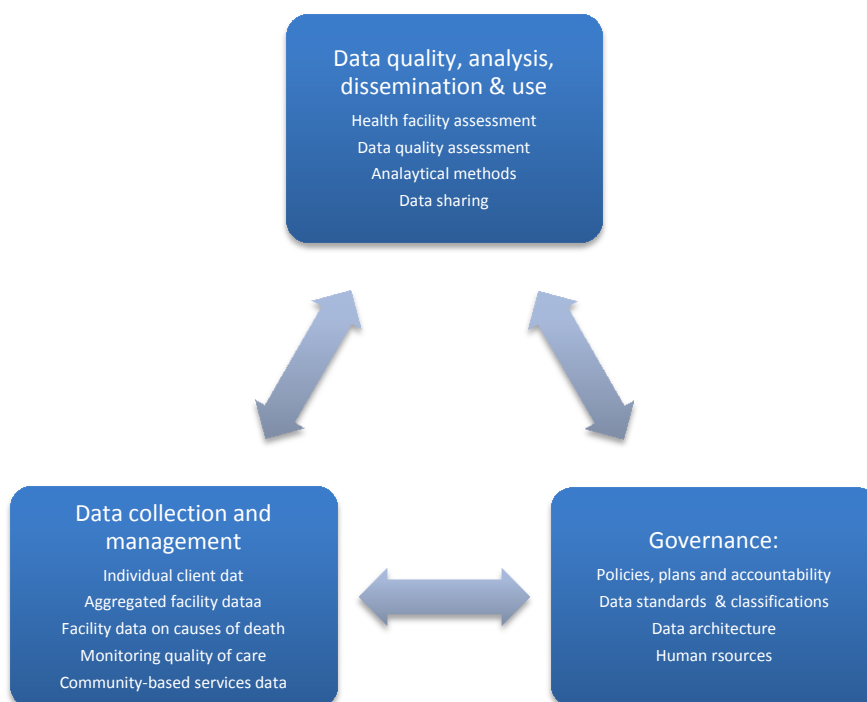
Moreover, analysis and communication of facility data, particularly in the context of national health sector and program reviews to shape decision making, can still be improved in many countries.

CORE COMPONENTS OF A FACILITY-BASED INFORMATION SYSTEM

The core components of a well- functioning health facility information system, which are mutually interdependent and reinforcing: governance, data collection and management and data quality review and analysis, dissemination and use (Figure 1).

- **Governance:** A basic prerequisite for a well functioning health facility information system is the existence of a supportive legal, institutional and policy framework including plans, operating procedures, standards and classifications, human resources, institutional capacity and accountability and coordination among stakeholders.

- **Data collection and management:** The facility-based information system requires mechanisms and processes for the identification of core metrics and indicators; the application of standard definitions and data collection approaches; efficient and timely data compilation and transfer. Innovations in data collection and management including information technologies (IT) can be harnessed to vastly enhance the timeliness and quality of data but need to be managed within a sound data architecture that supports interoperability.

- **Data quality analysis, sharing, dissemination and use for policy and programming:** A systematic and regular system of data quality assessment, including independent data verification, should be routinely conducted. This permits the integration of facility data are with data from other sources and the application of analytical techniques to interpret the key findings. Targeted dissemination and communication strategies are needed to facilitate the use of the data at all levels of the health system to underpin policy decisions, programming, operational planning, service delivery, and resource allocation.

Figure 1 – Core components of a facility-based information system

UNDERLYING PRINCIPLES FOR FACILITY-BASED INFORMATION SYSTEMS

- The development of facility-based information systems should be country driven and led and founded on a system-wide approach around which programmes and partners align investments. Country action and partner support should focus on the most essential actions needed to improve facility data in the short term while also retaining the long-term vision of system-wide improvements over time.

- Countries and partners should forge consensus on the major information needs that can be met through improved facility-based data. Harmonization of indicators and alignment of investments are needed to maximise the productivity of facility-based information systems. Facility-based data should be of sufficient quality to be relevant and useful for country policy and planning as well as to inform decisions on grant disbursement, performance based funding.

- A number of tools, strategies and approaches are available or being developed to support facility-based information system development. However, there remain a several unmet needs for guidance and tools. Partners should support research to address operational challenges and facilitate the documentation of country experiences and lessons learnt.

KEY ACTIONS TO STRENGTHEN FACILITY-BASED INFORMATION SYSTEMS

Participants identified key actions to be taken by countries and by technical and development partners in order to improve the availability, quality and use of facility data. These are summarized below and set out in more detail in Annex I.

GOVERNANCE

COUNTRY ACTIONS

- Establish a **legal, institutional and human resources framework** and develop a strategic plan for facility-based data collection and management, monitoring and accountability around which development partner should align.

- Define and **implement standards and classifications**, including identification of core indicators for facility-based data collection; production of a master list of health facilities including signature and service domains; and adoption of international or national classifications for categorizing data in order to facilitate the storage, retrieval, and analysis.

- Establish an overall **data architecture** and develop a plan for ICT introduction and maintenance, including equipment, training and protection of confidentiality.

- Carry out **planning, management and training of human resources**, including supportive supervision and mentoring.

PARTNER SUPPORT

- Document **models of governance**, country practices and lessons learnt and support peer-to-peer learning across countries on governance and policies. Mobilize donor co-investments for the establishment of technical support for governance.

- Build consensus across programmes, agencies, donors and partners around **core facility-based indicators** and ensure compliance in reporting progress towards health plan targets and goals, including UHC, equity, MDGs, post-2015, and performance based funding.

- Develop or modify **global standards and classifications** so as to ensure they are relevant and feasible at country and facility levels. Develop standards and guidance for data architecture, including practical guidelines on server hosting and standards on data security and protection of confidentiality.

- Develop guidance and practical tools for building **human resource capacities** for facility-based data.

DATA COLLECTION AND MANAGEMENT

COUNTRY ACTIONS

- Identify **individual client data** to be collected and systems for data collection and management, including systems for electronic data collection and management and data protection and confidentiality.

- Establish standards and implement tools for **data collection and aggregation across facilities** and districts, including use of electronic medical records (EMRs), m-health and e–health strategies. Set up a national online integrated data repository to store and maintain aggregated facility data.

- Implement **international standards for cause of death** recording and reporting at facility level and build capacities among health care personnel and statistical clerks for data collection, analysis and use. Use facility mortality data to identify deficiencies in quality of care.

- Embed systems for **monitoring quality of care** (QoC) into health system management. Harmonize QoC indicators and dashboards to support monitoring of goals and targets, including universal health coverage (UHC).

- Develop a community-based service delivery strategy and agree on a minimum set of **community level indicators** and data collection tools. Develop a training and continuous capacity building plan feasible for data collection, dissemination and use in low literacy settings.

PARTNER SUPPORT

- Develop **guidance and tools for individual, client level data** collection and create a knowledge base of country experiences and best practices.

- Produce guidance on **real time aggregated data systems facility-based data** collection, aggregation, management, archiving and aggregation across health facilities and districts and document country experiences in the use of EMRs and m-health and e–health strategies. Further align and invest in the DHIS 2.0 platform for aggregated data system, including the integration of reference indicators, reporting standards and data quality metrics and assessment methodologies to improve data quality and transparency and comparability.

- Provide operational **guidance on facility-based death certification and coding** of causes of death, including on reporting of main causes for public health purposes. Document examples of using facility-based mortality data to improve patient care. Ensure that existing tools for data recording and compilation of mortality data such as DHIS2 meet ICD standards.

- Support operational **research on the feasibility of 'task-shifting' for cause of death certification** Harmonize verbal autopsy instruments and produce guidance on their routine application and links to civil registration of deaths.

- Forge international consensus around a comprehensive **framework for monitoring quality of care**, including a core set of quality of health care metrics and facility-based measurement approaches.

- Map **technical resources, existing practices and recommendations around community based reporting** and develop an inventory/compendium of country case studies to share experiences. Support research on ways of producing good quality community data and overcoming barriers to data quality and use at the community level.

DATA QUALITY ASSESSMENT, ANALYSIS, DISSEMINATION AND USE

COUNTRY ACTION

- Collaborate with national institutes to implement a **harmonized plan for health facility assessment** (HFA) that includes the collection of data for independent verification of routine reporting. Reach consensus among programmes and partners around the content of the HFA using a modular approach contextualized to country needs. Ensure that facility assessment results are disseminated and the implications for programme management and resource allocation are fed into the analytical review process.

- Develop and implement a national **data quality assessment** (DQA) strategy that is linked to the annual health sector planning cycle and uses standard data quality metrics, including completeness, timeliness, accuracy, integrity and consistency over time. Ensure transparency and feedback of the DQA findings to data producers, users and relevant stakeholders.

- Establish collaborative arrangements with local institutions and experts (academia, researchers, technical partners) to support periodic **analytical reviews of facility data** and work with technical experts, development partners and communicators to describe and interpret the result of data analyses in order to increase their use for policy and programming.

- Develop a comprehensive **data dissemination strategy** that includes the production of an annual facility statistics report with key facility indicators; issuance of summaries, bulletins and policy briefs identifying actions needed to improve services; use of a variety of dissemination techniques targeting diverse audiences; and a data warehouse with a web portal to enable visualizations based on user queries. Engage with the media and civil society to disseminate the findings and bring together data producers and users to examine ways of making facility data more relevant to policy makers.

PARTNER SUPPORT

- Further develop a **modular approach for HFAs, including data quality verification**. Develop guidance and share lessons learnt on how to ensure integration of results of HFAs into management decision-making. Evaluate the strengths and limitations as well as the costs and effectiveness of routine facility-based data collection and HFAs and produce guidance on capacity requirements to maintain national institutions to continuously implement HFAs.

- Further develop **harmonized guidance on DQA**, ensuring review and inputs from disease programmes and partners in order to ensure programme relevance and utility. Extend current DQA framework to include data on services beyond the facility, learning from experiences in countries.

- Develop a **harmonized approach to data analysis and adjustment**, including dealing with bias and missing values through data imputation and adjustment. Develop practical analytical tools for mid-level managers and support capacity-development in analytical skills and judgment. Document good practices in making the underlying data available for analysis by academics and researchers

- Develop a taxonomy of the kinds of decisions taken based on facility data and **document lessons learnt to enable better understanding of factors that influence decision-making**, including decisions made outside the health sector. Support the incorporation into data warehouses and web portals **of** facility-based data and the sharing of facility-data within and across facilities, and across levels of the health system.

Workshop report

CONTEXT

Reliable, regular and timely data are needed to monitor country progress in improving access, quality and coverage of health services. A valuable source of data is the information collected within health care facilities for patient care and management purposes. Data generated through routine facility reporting systems and facility assessments can be used to guide operational planning, track progress and performance over time and strengthen accountability for better results. Many countries have made major investments, but major information gaps persist. A common feature across countries is that routine reports from health facilities and districts are often late, incomplete and inaccurate. Such data quality issues have in turn hampered the use and credibility of indicated based on routine facility data. Moreover, analysis and communication of facility data, particularly in the context of national health sector and program reviews to shape decision making, can still be improved in many countries.

Despite these challenges, there is ample room for optimism. In recent years, innovative approaches are leading to substantial improvements in the availability and quality of facility data for health decision-making. Significant advances have been made in the development of tools and standards, including standardization of point-of-service data collection in order to enhance comparability across facilities, districts and over time. Examples include data collected on immunization, directly observed treatment short course (DOTS) and antiretroviral drugs for HIV infection. Information and communication technologies (ICTs) hold great promise for improving the entire health information cycle from data collection, transfer, compilation and sharing, analysis and synthesis, communication and dissemination and use for policy and programming. Examples include electronic data reporting systems combined with system revision; rapid tools for service delivery and data quality assessment; innovations to manage stock outs of medicines and commodities; application of universal standards for cause of death reporting; electronic health records for treatment monitoring; mobile computing devices; communication technologies in emergency response and field outbreak investigations; and state-of-the-art visualization and analytical tools etc.

This technical consultation was designed to bring together knowledge, tools and lessons learnt on how to harness these innovations in order to strengthen facility-based information systems and enable them to play a central role in monitoring and evaluating the performance of country health systems.

MEETING SCOPE, OBJECTIVES AND EXPECTED OUTCOMES

The consultation was jointly organized by World Health Organization (WHO), the United States Agency for International Development (USAID) and the University of Oslo, under the auspices of the IHP+ M&E working group. The aim was to share and discuss progress, gaps and best practices regarding strengthening the availability, quality, analysis and use of health facility data and statistics through innovative approaches. Specific objectives were to:

1. Take stock of the current situation concerning health facility information systems with a focus on innovative approaches.
2. Identify the key elements of a well-functioning health facility information system in a series of Modules.
3. Identify existing and required tools and approaches to strengthen the implementation of a new generation of country health facility information systems.
4. Discuss ways in which global partners can best support the strengthening of country facility information systems and institutional capacity.

This was one of a series of technical consultations organized with the aim of addressing essential data gaps in country capacities to measure and monitor results and improve accountability for health. It was anticipated that the outcomes of the consultation would be of relevance for country, regional and global monitoring currently and in the post-2015 development agenda. Expected outcomes included:

1. Consensus on a description of the key elements of a good health facility information system in countries;

2. Outline of an operational toolkit to support the development of a new generation of country health-facility information systems;

3. An outline of a strategic multi-stakeholder work-plan for next steps to develop needed tools and approaches for enhancing facility-based information systems and strengthening of national institutional capacity for monitoring results.

PARTICIPANTS, AGENDA AND METHODS OF WORK

There were over 60 participants at the consultation, drawn from countries with experiences in the collection, management, analysis, dissemination and use of facility-based data, as well as from technical agencies, development partners, academia and NGOs (see list of participants in Annex II).

The meeting opened with presentations on the role of health facility information for national health sector planning, monitoring and evaluation, with particular reference to Universal Health Coverage (UHC) and the post-2015 development agenda. This was followed by an overview of key elements of a health facility information system and a discussion on innovation, with specific reference to ICT and e-health and m-health strategies. There was also an opportunity to discuss development partner and donor investments in strengthening health facility information systems.

The bulk of agenda of the meeting was organized around the main components of a well- functioning health facility information system, namely:

- Governance;

- Data collection and management;

- Data quality, analysis, dissemination and use for policy and programming.

Each section was preceded by country presentations following by working groups on Resource Kit Modules and plenary discussions (see agenda in Annex III)

Working materials for the consultation included a draft *health facility information systems resource kit*, and a *draft checklist of key elements*. Inputs were also provided through several country presentations. Additional resource materials and tools were included as background to inform the discussions (see list of key materials in Annex IV).

MEETING OUTPUTS

The main outputs of the meeting were:

- A summary report, including an executive summary.

- A *Health Facility Information Systems Resource Kit,* that summarizes key challenges and presents currently available tools and resources.

- A *Checklist of key items* designed to summarize good practices and facility-based information systems and facilitate monitoring of progress.

GENERAL ISSUES EMERGING FROM THE INTRODUCTORY DISCUSSIONS

During the initial discussions, participants considered a wide range of issues, including:

- This consultation should focus on the role of health facility information systems for monitoring national and subnational service delivery. While facility-based data are also important for client care and facility management purposes, this is not the prime focus of the consultation.

- Although improved health information will feature in the post-2015 development agenda, it will be of particular importance in the context of monitoring UHC.

- Facility-based data will be a component of a Global conference on Results, Measurement and Accountability for Health for the Post-2015 Development Agenda. This conference, planned for February 2015, will focus on enhancing accountability and M&E and will develop a global roadmap for health monitoring and better alignment and improvement of local data systems.

- Facility data are critical for monitoring quality of services, coverage and effective coverage with an equity component.

- The persistence of gaps in data availability and quality, and weak and vertical information systems must be addressed given the importance of facility-based data for annual health sector reviews and monitoring of five yearly plans.

- The facility-based information system is a major source of data but unless users have confidence in its quality they will not use the information.

- Given the fragmentation of health information systems currently, it is essential to produce a harmonized set of standards for data collection, analysis, use, quality and governance.

- Efforts to strengthen facility-based data should incorporate ways of working with the private sector (both for-profit and non-profits, including FBOs).

- Regular, independent facility assessments can complement and validate routine facility-based reporting as well as to review quality of care.

- Innovation can play a major role in strengthening facility-based information systems through the combination of mobile telephony with internet/cloud data storage, which facilitates access at district level and below and the local production of data analyses and dashboards to inform decision-making. However, innovation brings challenges in terms of the new types of skills and infrastructure needed. Unfortunately, these opportunities cannot be fully exploited as long as donor agencies limit investments in server infrastructure and maintenance.

- While there is broad-based support for a more integrated approach to facility-based information, the needs and requirements of disease-specific programmes must be taken into consideration.

- The focus on facility-based data should be extended to include services provided at community level, given that only a proportion of health care takes place in facilities.

- Data use is a key component of facility-based information systems and should be prioritized in country activities and development partner support.

- There is a need to harmonize reporting requirement across agencies and donors, and strengthen human resources for data collection, management, analysis and use at both national and subnational levels.

- Existing tools such as the District Health Information System (DHIS) should incorporate dashboard that not only show indicators but that present information according to a theory of change logic, for example, by identifying bottlenecks and needed actions and documenting experiences.

- It is important to foster transparency in country data systems, while acknowledging that do data set is ever perfect.

- A harmonized information platform is needed that brings together survey and facility data so that facility-based data can be used to monitor change at the population level

- Donors want to use routine information on service coverage, outcomes and impact on an annual basis to inform decisions on grant disbursement. This implies the need for better mortality data at facility and community level, and ability to monitor service delivery to key population groups.

- Development partners should adopt a joint tool for data verification.

- A strategic approach should be taken on the use of health facility assessments for data verification and for strategies to increase efficiency.

- It will be essential to build capacities in countries, work with local agencies, researchers and academia to embed facility-based data into national information systems.

- There is a need to identify what kinds of incentives (financial or nonfinancial) will be most effective in improving data collection and use.

Key principles for facility-based information systems include:

- The development of facility-based information systems should be country driven and led and founded on a system-wide approach around which programmes and partners align investments. Country action and partner support should focus on the most essential actions needed to improve facility data in the short term while also retaining the long-term vision of system-wide improvements over time.

- Countries and partners should forge consensus on the major information needs that can be met through improved facility-based data. Harmonization of indicators and alignment of investments are needed to maximise the productivity of facility-based information systems. Facility-based data should be of sufficient quality to be relevant and useful for country policy and planning as well as to inform decisions on grant disbursement, performance based funding.

- A number of tools, strategies and approaches are available or being developed to support facility-based information system development. However, there remain a several unmet needs for guidance and tools. Partners should support research to address operational challenges and facilitate the documentation of country experiences and lessons learnt.

RECOMMENDATIONS FROM THE WORKING GROUPS AND PLENARY DISCUSSIONS

The working groups examined the draft resource kit modules and related checklists. For each module, working groups were tasked to:

- Validate the aims and objectives outlined in the individual Modules;

- Describe key elements and country actions needed;

- List available tools, methods and strategies; and

- Identify gaps and how to address them.

Participants agreed that the core objectives of the resource kit are to clearly define the key uses of facility-based data for monitoring service delivery; community outreach; improving quality of care; increasing efficient management of services; and for reporting progress towards health plan targets and goals including UHC, equity, MDGs, and the post-2015 development agenda.

This summary report presents the outputs of the group feedback and ensuing plenary discussions. In line with the meeting structure and the revised health facility information systems resource kit, this summary report is subdivided into three parts: governance; data collection and management; and data quality, analysis, dissemination and use. This report provides a brief description of each part, summarizes current status and identifies major gaps to be addressed. Annex V provides summary tables of key actions and good practice characteristics for each Module.

The revised *Health Facility Information Systems Resource Kit* is available as a separate document, along with the checklist accompanying each Module that can serve as an assessment and progress monitoring tool.

GOVERNANCE

Sound governance of facility-based information systems is essential and should be an integral component of health system governance overall. Governance is needed to manage rapid advances in health care delivery systems and increased complexity in how health system and health programmes re managed. Technological innovations are opening up new opportunities for improving availability of real-time data, managing huge databases and linking systems for sharing data. As the private sector provides an ever-growing proportion of health services, health data from private facilities needs to be mainstreamed into the national information system. As countries are striving for greater ownership of their health information systems, better coordination and collaboration among development partners is essential. Although governance issues arise across all the various elements of facility-based information, it can be seen as comprising three system-wide cross cutting domains:

1. Policies, plans and accountability;

2. Standards (including for indicators and facilities) and a unified data architecture;

3. Human resources, capacities and workforce development.

SUMMARY OF CURRENT STATUS AND MOMENTUM

- Some countries have made good progress in updating and modernizing governance for facility-based data, e.g. Afghanistan, Rwanda and Nigeria.

- Guidance has been developed covering many aspects of governance, notably by USAID.[*] Experience is needed on the implementation and scaling up of such guidance.

- Efforts are under way to bring together and harmonize a set of facility-based indicators. However, there remains work to be done in terms of specifying data elements and metadata and establishing preferred data sources.

- Standards are available for defining master facility lists and cause of death certification and coding. However, the ICD standards are too complex for application in facilities where resources and capacities are limited.

- In the light of advances in information and communication technologies, there is a need for each country to define and implement a system architecture that supports interoperability across databases and ensures the use of agreed standards and definitions for data collection, management and analysis.

- Improvements to health facility information systems require attention to the training, deployment, remuneration, career development and supervision of the health facility information system workforce.

GAPS IDENTIFIED

- How to support peer-to-peer learning across countries in the area of governance and policies and to document models of governance and country experiences and lessons learnt.

- How to mobilize donor co-investment for the establishment of technical support for governance.

- Ways of evaluating the adequacy of mechanisms for governance and accountability of facility-based information systems in countries. Reviews of the adequacy of existing tools (HMN tool, PRISM tool) for measuring performance of the HIS in countries and development of other tools that could be applied to ensure accountability and performance.

- How to build consensus across programmes and partners around core facility-based indicators.

- Ways of making global standards feasible to implement at facility level need to be identified, especially in relation to cause of death data.

- In the data architecture area, how to develop capacities at different levels, including:

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[*] USAID, MEASURE Evaluation. Draft Guidelines for Data Management Standards in Routine Health Information Systems. MEASURE Evaluation. September 23, 2013 Version

- Guidelines for user training including the facility level as well as the district levels, including on-site follow-up after training.

- Training health programmes and managers in data use

- Development of standards for server technology, both in terms of skills and actual implementation and hosting.

- Policies and practical guidelines on server hosting.

- Guidance and standards on data security and protection of confidentiality.

- How to develop a better understanding of the processes used by countries to determine the number of information system staff required and to identify ways of overcoming barriers to sustaining cadres to support the information system.

- Methodologies for estimating the number of staff and types of skills needed for a full-capacity national information system workforce and calculation of required financial and other related resources.

KEY ACTIONS FOR COUNTRIES

Policies, plans and accountability

- Establish or update the core components of the facility-based information system, including: legal framework; strategic plan; management structures; data collection & management policies and procedures; staffing and workforce development; monitoring, evaluation & accountability, including development partner compliance.

Standards and data architecture

- Define core indicators through an inclusive process involving major stakeholders.

- Establish and maintain a master list of health facilities that includes both the signature domain and the service domain.

- Adopt international or national classifications for categorizing aggregated data in order to facilitate the storage, retrieval, and analysis.

- Establish an overall architecture and plan for ICT, including equipment and training in use of ICT for the health information system.

Human resources

- Carry out planning, management and training of human resources for facility-based data and develop supportive supervision and mentoring strategies and mechanisms.

PARTNER SUPPORT

Policies, plans and accountability

- Support peer-to-peer learning across countries in the area of governance and policies and document models of governance and country experiences and lessons learnt;

- Mobilize donor co-investments for the establishment of technical support for governance;

- Evaluate the adequacy of mechanisms for governance and accountability of facility-based information systems in countries;

- Evaluate the adequacy of existing tools (HMN tool, PRISM tool) for measuring performance of the HIS in countries and develop other tools that could be applied to ensure accountability and performance.

Standards and data architecture

- Build consensus across programmes, agencies and partners around core facility-based indicators.

- Ensure that global standards are feasible to implement at facility level.

- Develop a system of classifications for facility elements, such as types of facilities, admissions etc.

- Develop an ICD-compliant abbreviated index for reporting cause of death data from health facilities.

- Modify the DHIS tool for cause of death data according to international standards;

- Develop standards for server technology, both in terms of skills and actual implementation and hosting.

- Produce policy guidance and practical guidelines on server hosting.

- Develop guidance and standards on data security and protection of confidentiality.

Human resources

- Develop guidance on estimating the number of information system staff and skills needed for a full-capacity national information system workforce, including calculation of the production rate needed to maintain the workforce at full capacity (taking into account attrition, HIS system development, etc.) and calculation of required financial and other related resources.

DATA COLLECTION AND MANAGEMENT

The rapid expansion of information and communication technologies has opened up new possibilities for data collection and transmission, and for the creation of online data repositories, thereby drastically simplifying data compilation process and facilitating analysis of and access to data. The different aspects of facility-based data collection and management include:

- Collection and management and use of individual client level data
- Collection, management and reporting of aggregated facility data
- Facility-based data on mortality and causes of death
- Monitoring quality of care services with facility data
- Community-based service data.

SUMMARY OF CURRENT STATUS AND MOMENTUM

- There have been significant advances in the approaches, tools and methods for data collection and management for both individual and aggregated data, particularly thanks to the introduction of ICT and interoperability standards.

- Individual level data are important for tracking chronic conditions, identifying defaulters, monitoring compliance, continuity of care but they are currently rarely used beyond specific programme patient monitoring (e.g ARVs).

- Many investments in systems have been vertical, and programmes and partners are not working in a coordinated way. There is a lack of harmonization of reporting requirements (indicators) and concerns about the quality, trustworthiness and fitness-for-purpose of the data produced. This is a major driver for separate systems.

- Institutional hospital reporting is often incomplete, not based on uniform standards and often included neither in the analysis of HMIS data, nor in hospital performance improvement (management, functioning, quality of care).

- Facility reporting of mortality has the potential to provide important information on causes of death to underpin public health decision-making. However, there is a need to build capacities for determining and reporting cause of death according to ICD standards.

- Many tools exist covering different dimensions of service quality, but there is a need for a more comprehensive framework for monitoring the different aspects of QoC from inputs through processes (e.g readiness, provider knowledge, provider practice, client satisfaction) and related measurement strategies.

- Currently the extent to which the facility system captures data from service delivery points beyond the facility, including at community level, is patchy at best.

GAPS IDENTIFIED

- There is a need for clearer guidance on appropriate use and analysis of individual data both for patient management and for understanding and monitoring the performance of the facility. EMRs can greatly facilitate this, but there is a need for a well-planned, staged approach for introducing electronic medical records.

- Need to review complementarity of HMIS and health facility assessment and rationalise to country context.

- Although the use of automated coding would greatly facilitate reliable cause of death coding, DHISII is not currently configured to enable the application of automated coding (IRIS) to facility-based cause of death data.

- There is an urgent need to strengthen physician skills and knowledge in the correct certification of cause of death according to international standards.

- There is a need to identify or develop tools for using facility data to monitor QoC. Routine monitoring of quality of care, including independent verification, for example, through health facility assessments.

- Major gaps remain in ways of collecting information at the community level and developing coherent measurement strategies in relation to quality of care. There is a need for harmonization of reporting requirements from communities by different programmes and partners.

KEY ACTIONS FOR COUNTRIES

Individual and aggregate data collection

- Identify individual level data to be collected and why paying particular attention to ethical considerations, feasibility, and sustainability. Develop standardised recording forms for clinical episodes and standard operating procedures and eligibility for use of the recording form.

- Train personnel in the collection of the data and develop policies and guidance on processes for use and analysis of the data.

- Develop guidelines/protocols to ensure client confidentiality (e.g. data are kept securely, health workers have signed confidentiality agreements, and client-level data is not transmitted electronically) according to national policies.

- Establish standards for data collection and aggregation across all health facilities and districts, including standards from the data dictionary and the master facility list. Develop data collection tools designed using a participatory process and introduce electronic medical records in a phased manner in line with country capacities and availability of necessary infrastructure. Use m-health and e–health strategies for data collection especially for remote and isolated areas.

- Establish policies and guidelines for adequate storage and archiving of health data (paper or electronic). Set up a national online integrated data repository to store and maintain all aggregated facility data and to enable on line data entry, effective data analysis and use. Ensure that aggregated data are assessed for accuracy and completeness, and that data disaggregated by key stratifiers (age, sex, geography) are maintained during compilation and transfer in order to permit equity analysis.

Mortality and cause of death data

- Establish a national committee with the mandate of improving hospital mortality data, involving stakeholders from the health sector, medical training establishments, academia, researchers, and use groups and should develop a national strategic plan for improving hospital mortality data.

- Introduce the International Form of the Medical Certificate of Cause of Death (IMCCD). The quality of medical records should be sufficient that the routine system can collect both individual patient data and cause(s) of death in alignment with ICD standards.

- Implement or improve medical certification including training and quality assurance. Implement Standard ICD coding. Compile and improve cause of death statistics.

- Use hospital data on levels and causes of mortality to improve policies and practices, including producing and disseminating an annual/biennial report on hospital mortality and using facility mortality data to identify avoidable deaths and deficiencies in quality of care.

Quality of care monitoring

- Embed quality of care monitoring within health system management, including through: identification of QoC indicators that can be collected from facility-and community-based sources; provision of capacity building in monitoring quality of care; and developing dissemination strategies for QoC data.

- Conduct national level planning on harmonization of quality monitoring efforts, informed by facility level experience and gap analysis and agreement on "basket" of potential quality monitoring mechanisms.

- Develop national level quality of care dashboards and ensure close linkage between quality monitoring mechanisms and UHC tracking systems.

- Support technical capacity building in monitoring quality of care services e.g. institutional health partnerships.

- Ensure that facility assessments include periodic evaluation of patient satisfaction and quality of services received. Such evaluations can use client exist interviews, direct observation of client-provider interactions, and other methods as appropriate.

Community based data collection

- Establish a community-based service delivery strategy or programme at the national or sub-national level and conduct a rapid assessment to help map the organizations working at community-level to assess monitoring and evaluation systems/capacity in place, and if and how these programs relate to a national M&E framework.

- Undertake an indicator harmonization process to help streamline the collection, reporting, and use of community-level information. The key output would be an agreed upon minimum set of indicators as well as the data collection tools.

- Define a process to routinely link to the facility, district or national-level health information system (both technologically and through formalized collaborative meetings).

- Develop an organizational structure for human resources and a training and continuous capacity building plan, specifically designed considering low literacy if applicable.

- Establish a regular plan to use and disseminate the data appropriate for a community-based setting and a formal feedback loop to the health care workers collecting the data and the community itself.

PARTNER SUPPORT

Individual and aggregated data collection

- Build up a knowledge base of experiences in the collection, management and use of individual data and share best practices with countries and partners.

- Develop step-by-step guidance for individual data collection, management and use using a maturity model that can be adapted to country circumstances and capacities, with particular attention to ethical issues and confidentiality.

- Provide guidance on standards for data collection and aggregation across all health facilities and districts.

- Document country experiences in the use of electronic medical records and the use of m-health and e–health strategies for data collection especially for remote and isolated areas.

- Develop guidance on storage and archiving of health data (paper or electronic).

Mortality and cause of death data

- Develop operational guidance on the institutionalization of death certification and coding and ways of enhancing the skills of physicians and coders.

- Support operational research on the feasibility and effectiveness of 'task-shifting' for cause of death certification.

- Develop an ICD "index" of main causes for public health purpose that can be adapted to country contexts.

- Modify the DHIS11 tool so that facility-based mortality data are inputted based on ICD standards (with specific reference to the identification of the underlying cause of death).

- Produce guidance on appropriate ways of compiling and analysing facility-based mortality at local level in order to improve patient care, reduce case fatality rates, and identify ways of averting deaths where possible.

- Harmonize existing verbal autopsy instruments and produce guidance on their routine application at community level and alongside routine civil registration of deaths.

Quality of care data

- Develop a comprehensive framework for monitoring quality of care, mapping available tools and identifying approaches to addressing gaps and needs for guidance.

- Forge international consensus on a core set of quality of health care metrics and facility-based measurement approaches.

- Harmonize quality of care indicator reporting requirements among partners and align investments around country needs and plans.

Community data collection

- Map technical resources, existing practices and recommendations around community based reporting and develop an inventory/compendium of country case studies to share experiences.

- Support research on ways of ensuring good quality community data, for example, reducing CHW workloads, triangulating data across diverse sources to identify discrepancies, and how to address quality issues.

- Support implementation research on key questions such as how to overcome barriers to data quality and use at the community level and how to implement a 'systems thinking' approach that takes into account the multi-sectoral nature of community based programmes.

DATA QUALITY, ANALYSIS, DISSEMINATION AND USE

The purpose of facility-based data collection is to improve patient care, ameliorate the way health services function, and to enhance people's health and wellbeing. When facility data are of good quality, they can be used to inform annual health sector reviews and assessments of national progress and performance, and they provide the basis for subnational/district performance assessment. However, when data are perceived to be inaccurate and unreliable, they will not be trusted and will, therefore, not be used. Data quality assurance **is** essential, but investments to address it have often focused on fixing one problem but not improving the country system. While full integration is not always the best option, collaboration on supporting a harmonized approach to instiutionalise data quality will greatly improve efficiencies and quality of reporting systems. The challenges of data quality assurance, data sharing and dissemination and the use of facility-based data for to improve services, develop policies and guide programme decision-making include:

- Facility assessments;

- Data quality assessment and verification;

- Analytical methods and tools;

- Data sharing, dissemination and use.

SUMMARY OF CURRENT STATUS AND MOMENTUM

- There is on going momentum for the institutionalization of regular facility assessments, as an integral part of the facility information system and good progress in harmonization of indicators as well as for an independent

source for verification of routine facility-based reports. However, overlaps remain, with lack of harmonization and duplication of data collection and tools, which still tend to be donor or programme driven.

- The application of standard tools to evaluate data quality enables the understanding of the adequacy of routine data used for health sector planning, monitoring and evaluation and permits stakeholders to know that the routine data have undergone a known minimum level of scrutiny which lends credibility and confidence in the data. Many programmes have developed data quality assessment tools but there is a need for harmonized approaches in order to avoid multiple data quality assessments by disease specific programmes.

- Good practice is to institutionalize a transparent method for data quality assessment regularly (annually). A standard set of crosscutting data quality metrics has been developed, as well as in depth programme assessments. Guidance on transparency is needed, including standards for publication and data sharing.

- There is significant progress in developing guidance on how to carry out regular analytical reviews of district and/or facility-based data to extract maximum value of available information and build of confidence of users in data quality and utility. This may involve data adjustment and imputation to address bias and data gaps. However, this can be a complex undertaking and needs to be adapted to the skills and capacities available at different levels, national, subnational, district, or facility.

- Innovative methods have been developed for data collection, data quality assessments and new technologies to present data in ways that are useful to decision-makers at different levels. The adoption of such approaches can help ensure that data collected are used for national health planning and annual health sector reviews as well as for management and planning at subnational/district/facility levels. However, while dissemination techniques such as dashboards and infographics are important, they will not necessarily directly improve data use for decision-making. It is important to bear in mind the political context within which decisions are made.

GAPS IDENTIFIED

- Despite some successful efforts to harmonize data collection efforts at country, there is further room to further streamline the implementation of facility assessments at country level and to bring together the existing tools into a comprehensive set of modules that addresses all the aspects of service delivery, quality of care, data quality in a harmonized way.

- There is a need to conduct reviews of the strengths and weaknesses of both routine HMIS and HFA in order to ensure the contents are complementary and rationalized and customized to the country context. The comparative costs of HFA and HMIS need to be fully evaluated.

- Guidance is needed on capacity building requirements to maintain the ability of national institutions to continuously implement HFAs. Training modules for new staff need to be developed and supervisory mechanisms established.

- Guidance is needed on the most effective ways of using HFA results. This should cover use of HFA data for management decision-making and annual health sector reviews. Feedback to facilities should be used to strengthen quality improvement processes. The results of HFA should be presented in ways that are meaningful and useful to facilities and districts.

- Current efforts to harmonize data quality assessment/assurance (DQA) tools and methods need to be extended and continued. Disease-specific programmes and partners should be involved in the harmonization process in order to ensure that the tools meet their needs for data quality assurance.

- There is a need for guidelines for countries for the development of DQA strategies and plans. These should include community level data as well as facility-based data.

- DQA tools need to integrate cognitive testing and non-response measurements within data verifications/system assessment components.

- There is growing demand in countries and among partners to maximise the utility of available data by reconciling information from different sources. However, this requires technical skills and expertise. Depending on the level at which the data quality analysis is undertaken, the complexity varies enormously. Currently there are few tools available to facilitate the analytical review process apart from detailed analysis in the context of specific programs (e.g. TB, PMTCT). There is a need to develop preset algorithms for application in DHIS and other facility-based data platforms.

- There is a need for a tool to guide the development of a taxonomy of decisions for which decision-makers at different levels of the health system need information. The taxonomy should identify what decisions need to be made at each level, who makes those decisions, what information is needed to inform and influence those decisions, and how should it be disseminated.

- Introduce 'theory of change' analyses into dashboards for Improved decision-making, planning, and accountability.

- Many data warehouses and web portals do not current include facility-based data. Moreover, there is a need for dedicated information sharing of facility-data within and across facilities, and across levels of the health system.

KEY ACTIONS FOR COUNTRIES

Health facility assessments (HFAs)

- In collaboration with national institutes with relevant experience to ensure technical quality, implement a harmonized plan for HFAs that addresses financial issues, coordination between national institutions and with partners. The plan should ensure that HFA is institutionalized as part of the national M&E plan including data quality assurance, and that country ownership and leadership are assured. Implement HFAs using a modular approach based on international expertise and harmonization.

- Reach consensus among programmes and partners around the contents of the HFA, including a census of all facilities every 5-7 years in order to update the master facility list; infrastructure availability, location and distribution (facilities, beds, equipment etc.); service readiness; staff qualifications, training, operating hours and supervision; quality of care and patient satisfaction; adherence to standards of practice and infection control.

- Ensure that facility assessment results are disseminated through meetings with stakeholders and the implications of the findings for programme management and resource allocation are highlighted and fed into the analytical review process.

Data quality assessments and analyses

- Develop a national strategy and plan for data quality assessment (DQA) that institutionalizes a systematic and comprehensive system for evaluating the quality and adequacy of facility-based data using standard tools and methods.

- Conduct systematic and comprehensive assessments of data quality based on a standard set of data quality metrics and report the findings regularly (annually), including analysis of completeness, timeliness, accuracy, integrity and consistency over time. Carry out independent verification of the quality of data regularly (annually) on a sample of facilities that includes reviews of service and patient records.

- Conduct periodic in-depth independent assessments of specific program data reporting system (e.g. Immunization) at least once every three years to inform the development of data quality improvement plans, monitor progress in data quality over time, and evaluate the impact of data quality improvement plans.

- Link the DQA system to the annual health sector planning cycle in the country so that information on data quality is available prior to the use of these data for planning. Planning needs to begin 6 months ahead of time with dedicated resources.

- Issue periodic reports of health facility data quality that include analysis of gaps and limitations in data quality and remedial actions. Ensure transparency and feedback of the DQA findings to data producers, users and relevant stakeholders.

- Establish collaborative arrangements with local institutions and experts (academia, researchers, technical partners) to support periodic analytical reviews of facility data. Work with technical experts, development partners and communicators to describe and interpret the result of data analyses in order to increase their use for policy and programming.

Data dissemination and use

- Develop a comprehensive data dissemination strategy relevant to each level of the health system.

- Produce an annual health facility statistics report that includes summary tables and charts of key facility indicators. Issue periodic data summaries and bulletins describing key findings and produce briefs identifying actions needed to improve service availability, delivery and use. Employ a variety of dissemination techniques, including dashboards and summary charts to convey information to diverse target audiences in ways that are meaningful to the media, general public and policy makers.

- Engage with the media and civil society to disseminate the findings from facility-based reporting. Establish a forum bringing together data producers and users to examine ways of making facility data more relevant to policy makers and planners and to enhance understanding of statistical findings.

- Establish a data warehouse or repository to enable sharing of facility-based data across national, subnational and district levels to support data analysis and use. The data warehouse should link to a web portal (see below) and provide a dynamic user-friendly interface to enable visualizations of aggregate data based on user queries. Set up a Web Portal functioning as a single point of access to information from the national data warehouse and other relevant sources.

- Offer bona fide researchers access to facility micro data for research and analysis (with appropriate safeguards for confidentiality).

- Foster a culture of information use.

PARTNER SUPPORT

Health facility assessments

- Develop guidance and lessons learnt on how to ensure integration of results of HFA and other data collection efforts into data quality assurance processes and management decision-making.

- Evaluate the strengths and limitations as well as the costs and effectiveness of routine facility-based data collection and HFAs. This would help ensure the contents are complementary and rationalized and specific to the country context (customized).

- Produce guidance on capacity building requirements to maintain the ability of national institutions to continuously implement the HFA.

- Produce guidance on the most effective ways of using HFA results. This should cover use of HFA data for management decision-making and annual health sector reviews.

Data quality assessment and analyses

- Further develop harmonized guidance on country strategies for data quality analysis and data quality improvement plan to guide the process at all levels. Ensure review and inputs from disease programmes and partners in order to ensure that the system-wide DQA is relevant to programme needs.

- Extend current DQA framework to include data on services beyond the facility, particularly at community level, learning from experiences in countries.

- Data quality assessment should include cognitive testing and non-response measurements in data verification.

- Develop a harmonized approach to data analysis and adjustment, including ways of dealing with bias and missing values through data imputation and adjustment. Although standardized tools are available, further work is needed to make these easy to implement at different levels.

- Develop practical analytical tools targeting mid-level managers and support capacity-development in analytical skills and judgment. Use of automated algorithms could be helpful but need further development and testing.

- Document good practices in making the underlying data widely available for analysis, including by academics and researchers

Data dissemination and use

- Develop a taxonomy of the kinds of decisions that are taken based on facility data at different levels.

- Bring together country experiences and lessons learnt on how to conduct successful stakeholder analyses and factor analyses in order to better understand the factors that influence decision-making and how better information can exert a more powerful role.

- Document lessons learnt to enable better understanding of factors that influence decision-making, including decisions made outside the health sector.

- Document good practices for making the data widely available for analysis.

- The further development of dashboards should introduce 'theory of change' analyses into for Improved decision making, planning, and accountability.

- Support the incorporation into data warehouses and web portals **of** facility-based data. Support sharing of facility-data within and across facilities, and across levels of the health system.

CONCLUSIONS AND NEXT STEPS

In concluding the meeting, it was agreed that a revised iteration of the resource kit and checklist would be prepared. In order to facilitate sharing of resources, WHO would establish a community web site to which all participants have access. This would greatly facilitate the peer review process and documentation sharing.

ANNEXES

Annex I:
Outline of strategic workplan: Priority actions to strengthen facility-based information system

GOVERNANCE

Current status	Momentum	Gaps	Country actions	Partner support
Policies, plans and accountability				
Good progress in some settings in modernising governance for facility-based data. Guidance developed in aspects of governance (USAID) but more experience needed on the implementation and scaling up.	Countries are striving for greater ownership of their health information systems and demanding harmonization and alignment among development partners. Countries are undertaking reviews of legal frameworks, developing strategic plans, defining management structures, and working to develop facility-based plans.	Models of governance for facility-based information systems. Documentation of country experiences and lessons learnt. Ways of evaluating the adequacy of governance mechanisms and performance.	Establish/update legal framework; strategic plan; management structures; data collection & management policies and procedures; staffing and workforce development; M&E, accountability, including development partner compliance.	Document models of governance and country practices and lessons learnt. Support peer-to-peer learning across countries on governance and policies; Mobilize donor co-investments for the establishment of technical support for governance. Evaluate the adequacy of mechanisms for governance and accountability of facility-based information systems in countries.
With the increasing emphasis on monitoring and evaluation (M&E) there is a proliferation of indicators, which often lack harmonization and increase workload without improving management.	Efforts under way to harmonize facility-based indicators. Further work needed to specify data elements, metadata and preferred data sources.	How to build consensus across programmes and partners around core facility-based indicators.	Define core indicators through an inclusive process involving major stakeholders.	Build consensus across programmes, agencies and partners around core facility-based indicators.

GOVERNANCE (cont'd)

Current status	Momentum	Gaps	Country actions	Partner support
Data standards and data architecture				
Standards available for master facility lists and cause of death certification and coding but they are complex for application in settings with limited capacities.	Efforts under way to define standards for facility-based data that are feasible in resource-constrained settings, especially with regard to cause of death data.	Ways of making global standards feasible to implement at facility level need to be identified.	Establish and maintain a master list of health facilities that includes both the signature domain and the service domain. Adopt international or national classifications (such as ICD) for categorizing data in order to facilitate the storage, retrieval, and analysis.	Ensure that global standards are feasible to implement at facility level. Develop a system of classifications for facility elements, such as types of facilities, admissions etc. Develop an ICD "index" of main causes for public health purpose that can be adapted to country contexts. Modify the DHIS tool for cause of death data according to international standards.
Current standards for syntactic interoperability such as SDMX-HD, which are needed for the exchange of data to happen are complicated to implement.	New initiatives under way to develop feasible interoperability standards (HELINA and OpenHIE).	Policies and practical guidelines on server hosting. Guidance and standards on data security and protection of confidentiality. In the data architecture area, how to develop capacities at different levels.	Establish an overall architecture and plan for ICT, including equipment and training. Ensure the legal framework addresses issues of confidentiality and data protection.	Develop standards for server technology, both in terms of skills and actual implementation and hosting. Produce policy guidance and practical guidelines on server hosting. Develop guidance and standards on data security and protection of confidentiality.
Human resources				
Human resource constraints for facility-based data need to be addressed.	Improvements to health facility information systems require attention to the training, deployment, remuneration, and career development of the health facility information system workforce.	Identification of approaches to overcoming barriers to sustaining cadres to support the information system.	Human resource constraints for facility-based data need to be addressed.	Improvements to health facility information systems require attention to the training, deployment, remuneration, and career development of the health facility information system workforce.

DATA COLLECTION AND MANAGEMENT

Current status	Momentum	Gaps	Country actions	Partner support
Individual client-level and aggregated facility level data				
Advances in approaches, tools and methods for data collection and management for both individual and aggregated data, often due to introduction of ICT and interoperability standards.	Individual level data are crucial for tracking chronic conditions and continuity of care but currently confined to specific programmes (e.g ARVs).	Guidance on appropriate use and analysis of individual data both for patient management and for understanding and monitoring the performance of the facility.	Identify individual level data to be collected; develop recording forms and standard operating procedures for reporting. Develop systems for individual, electronic data, including capacity development, data use, and client confidentiality.	Build up a knowledge base of experiences in the collection, management and use of individual data and share best practices with countries and partners. Develop guidance for individual data collection, management and use.
Institutional hospital reporting is often not standardized, incomplete, and included neither in the analysis of HMIS data, nor in hospital performance improvement.	Countries and partners want to overcome vertical and fragmented investments and work in a more harmonized manner. There is potential for ICT to greatly enhance data collection, aggregation, management and use.	How to enhance mutual complementarity of facility reporting, HMIS and health facility assessments and rationalise to country context. How to ensure that aggregated data are use to improve decision-making.	Establish standards for data collection and aggregation across facilities and districts, including data collection tools, use of EMRs, m-health and e–health strategies for data collection. Set up a national online integrated data repository to store and maintain aggregated facility data. Provide training for staff at facility and district levels in data collection and use, and offer feedback, guidance and supportive.	Provide guidance on standards for data collection and aggregation across health facilities and districts. Document country experiences in the use of EMRs and m-health and e–health strategies. Develop the DHIS 2.0 platform to integrate reference indicators, reporting standards and data quality metrics. Develop guidance on storage and archiving of health data (paper or electronic).

DATA COLLECTION AND MANAGEMENT (cont'd)

Current status	Momentum	Gaps	Country actions	Partner support
Facility-based data on mortality and causes of death				
Facility reporting of mortality has the potential to provide important information on causes of death to underpin public health decision-making but is often inadequate due to lack of capacities to report cause of death according to ICD standards.	There is growing momentum to improve the availability and quality of routine reporting of causes of death, including linking facility reporting to civil registration systems.	How to develop capacities for the correct certification of cause of death according to international standards. How to introduce automated coding would to facilitate reliable cause of death coding. DHISII is not currently configured to enable the application of automated coding (IRIS) to facility-based cause of death data.	Establish a national committee and develop a strategic plan for improving hospital mortality data. Introduce the International Form of the Medical Certificate of Cause of Death (IMCCD) and implement ICD coding. Compile cause of death statistics and use hospital data on levels and causes of mortality to improve policies and practices. Use facility mortality data to identify deficiencies in quality of care.	Develop operational guidance on death certification and coding. Support operational research on the feasibility of 'task-shifting' for cause of death certification. Develop an ICD "index" of main causes for public health purposes that can be adapted to country contexts. Modify the DHIS11 tool to meet ICD cause of death standards. Produce guidance on using facility-based mortality data to improve patient care. Harmonize verbal autopsy instruments and produce guidance on their routine application and links to civil registration of deaths.
Monitoring quality of care (QoC) services with facility data				
Tools exist for tracking some dimensions of quality of care (QoC), but there is a need for a more comprehensive framework, including provider knowledge and practices and client satisfaction.	With the growing importance of the principle of UHC, the need to be to monitor both the utilization of services and the quality of care provided, there is an urgent need to develop clear thinking, systems and tools to monitor quality of care services with facility data.	Tools for using facility data to monitor QoC. Tools for routine monitoring of quality of care, including independent verification, for example, through health facility assessments.	Embed QoC monitoring in health system management. Develop national plan and harmonize QoC indicators. Develop QoC dashboards and ensure close linkage between quality monitoring and UHC tracking systems. Ensure that HFAs include evaluation of patient satisfaction and quality of services received.	Develop a comprehensive framework for monitoring quality of care. Forge international consensus on a core set of quality of health care metrics and facility-based measurement approaches. Harmonize quality of care indicator reporting requirements among partners and align investments around country needs and plans.

DATA COLLECTION AND MANAGEMENT (cont'd)

Current status	Momentum	Gaps	Country actions	Partner support
Community-based services data				
Currently the extent to which the facility system captures data from service delivery points beyond the facility, including at community level, is patchy at best.	As provision of health services continue to extend to community level, it is important to track this information at the point of service for program management and decision-making on budget, policies and human resources. Such data also enable community health workers to follow their clients effectively and manage their care.	Ways of collecting information at the community level. Harmonization of reporting requirements from communities by different programmes and partners.	Develop a community-based service delivery strategy and conduct a rapid assessment to map community-level M&E systems and capacities. Agree on a minimum set of community level indicators and data collection tools. Develop a training and continuous capacity building plan feasible for low literacy settings. Establish a plan to use and disseminate data at community level, including a formal feedback loop to data collectors and the community.	Map technical resources, existing practices and recommendations around community based reporting and develop an inventory/compendium of country case studies to share experiences. Support research on ways of ensuring good quality community data. Support implementation research on how to overcome barriers to data quality and use at the community level.

DATA QUALITY, ANALAYSIS, DISSEMINATION AND USE

Current status	Momentum	Gaps	Country actions	Partner support
Health facility assessments (HFAs)				
There has been progress in the institutionalization of regular HFAs including in harmonization of indicators. However, there continue to be overlaps in data collection & tools, which tend to be donor or programme driven.	Countries are looking to implement a harmonized plan of facility assessments. HFAs should generate independent data to verify routine facility reporting and should be embedded into supervision system and implemented on a regular basis. There is further room to further streamline the implementation of facility assessments at country level.	Develop a comprehensive set of modules that addresses all the aspects of service delivery, quality of care, and data quality in a harmonized way. Conduct reviews of the strengths and weaknesses of both routine HMIS and HFA in order to enhance complementarity. Guidance is needed on capacity building requirements for continuing implementation of HFAs. Guidance is needed on the most effective ways of using HFA results.	Collaborate with national institutes to ensure HFA technical quality and implement a harmonized plan for HFAs. The plan should ensure that HFA is institutionalized as part of the national M&E plan, and that country ownership and leadership are assured. Reach consensus among programmes and partners around the content of the HFA. Ensure that facility assessment results are disseminated and the implications for programme management and resource allocation are fed into the analytical review process.	Develop guidance and share lessons learnt on how to ensure integration of results of HFAs into management decision-making. Evaluate strengths, limitations, costs and effectiveness of routine facility-based data collection and HFAs. Produce guidance on capacity requirements to maintain national institutions to continuously implement HFAs. Produce guidance on the most effective ways of using HFA results for management decision-making and annual health sector reviews.
Data quality assessment (DQA) and verification				
Many programmes have developed data quality assessment tools (DQA) but there is a need for harmonized approaches in order to avoid multiple data quality assessments by disease specific programmes.	A standard set of crosscutting data quality metrics has been developed, as well as in depth programme assessments in several countries. Guidance on transparency is needed, including standards for publication and data sharing.	Current efforts to harmonize DQA tools and methods need to be extended and continued. Disease-specific programs and partners should be involved in the harmonization process in order to ensure that the tools meet their needs for data quality assurance. Guidelines are needed for countries on data quality strategies and plans. DQA tools need to integrate cognitive testing and non-response measurements within data verifications/system assessment components.	Develop a national DQA strategy and plan using standard data quality metrics, including completeness, timeliness, accuracy, integrity and consistency over time. Conduct in-depth independent assessments of programme data (e.g. Immunization) to inform the development of data quality improvement plans. Link the DQA system to the annual health sector planning cycle. Ensure transparency and feedback of the DQA findings to data producers, users and relevant stakeholders.	Further develop harmonized guidance on DQA, ensuring review and inputs from disease programmes and partners in order to ensure programme relevance and utility. Extend current DQA framework to include data on services beyond the facility, learning from experiences in countries. Incorporate cognitive testing and non-response measurements in DQA approaches.

DATA QUALITY, ANALAYSIS, DISSEMINATION AND USE (cont'd)

Current status	Momentum	Gaps	Country actions	Partner support
Analytical methods and tools				
There is significant progress in developing guidance on how to carry out detailed analytical reviews of district and/or facility-based data to extract maximum value and build of confidence of users in data quality and utility.	There is growing demand in countries and among partners to maximise the utility of available data by reconciling information from different sources. However, this requires technical skills and expertise. Depending on the level at which the data quality analysis is undertaken, the complexity varies enormously.	Currently there are few tools available to facilitate the analytical review process apart from detailed analysis in the context of specific programs (e.g. TB, PMTCT). There is a need to develop preset algorithms for application in DHIS and other facility-based data platforms.	Establish collaborative arrangements with local institutions and experts (academia, researchers, technical partners) to support periodic analytical reviews of facility data. Work with technical experts, development partners and communicators to describe and interpret the result of data analyses in order to increase their use for policy and programming.	Develop a harmonized approach to data analysis and adjustment, including dealing with bias and missing values through data imputation and adjustment. Develop practical analytical tools for mid-level managers and support capacity-development in analytical skills and judgment. Document good practices in making the underlying data available for analysis by academics and researchers

DATA QUALITY, ANALAYSIS, DISSEMINATION AND USE (cont'd)

Current status	Momentum	Gaps	Country actions	Partner support

Data sharing, dissemination and use				
There has been a focus on collecting data, assessing data quality and using new technologies to present data in ways that are useful to decision-makers at different levels. However, less attention has been paid to how data are used for national health planning and annual health sector reviews as well as for management and planning at subnational/district/facility levels. Dissemination strategies should be based on needs at different levels in order to ensure that the data are effectively used.	There is growing awareness that decision-making is not a linear process; it is a complex process and there is a need for a more nuanced understanding of the factors that influence decision-making at different levels. Innovations such as dashboards and infographics are necessary but often insufficient for influencing data use and decision-making. It is important to create and support a culture of information use at all levels of decision-making.	There is a need for a taxonomy of decisions that require data at different levels of the health system. The taxonomy should identify what decisions need to be made and by whom, what data are needed to inform those decisions, and how should the data should be disseminated. How to incorporate 'theory of change' analyses into dashboards for Improved decision-making, planning, and accountability. Many data warehouses and web portals do not current include facility-based data. Moreover, there is a need for dedicated information sharing of facility-data within and across facilities, and across levels of the health system.	Develop a comprehensive data dissemination strategy. Produce an annual facility statistics report with key facility indicators. Issue summaries, bulletins and policy briefs identifying actions needed to improve services. Establish a data warehouse to enable sharing of facility-based data with a web portal to enable visualizations based on user queries. Use a variety of dissemination techniques targeting diverse audiences. Engage with the media and civil society to disseminate the findings. Bring together data producers and users to examine ways of making facility data more relevant to policy makers. Offer researchers access to facility micro data for analysis (with safeguards for confidentiality).	Develop a taxonomy of the kinds of decisions taken based on facility data at different levels. Document lessons learnt to enable better understanding of factors that influence decision-making, including decisions made outside the health sector. Document good practices for making the data widely available for analysis. Support the incorporation into data warehouses and web portals **of** facility-based data. Support sharing of facility-data within and across facilities, and across levels of the health system. The further development of dashboards should introduce 'theory of change' analyses into for Improved decision-making, planning, and accountability.

Annex II:
List of participants

COUNTRIES

Afghanistan
Said Yaqoob Azimi
Health Management Information Systems
Ministry of Public Health
Email: drazimi56@gmail.com

Cambodia
Khemrary Khol
Health Information Bureau
Ministry of Health
Email:k_khemrary@yahoo.com

Ghana
Anthony Ofosu
Ghana Health Services (GHS)
Email: anthony.ofosu@gmail.com

Kenya
Lize A. Ojowi
Development Program Specialist
Strategic Information/M&E
USAID/Kenya
Email: lojowi@usaid.gov

Nigeria
Aderemi Najim Azeez
Head, Health Research and Statistics
Federal of Ministry of Health
Email: zzaderemi@yahoo.co.uk

Philippines
Charity Tan
Ministry of Health
Email: charityltan@gmail.com

Rwanda
Randy Wilson
Senior HMIS and Data Use Advisor
Management Sciences for Health (MSH), Inc.
Email: rwilson@msh.org

South Africa
Candy Day
Technical Specialist
Health Systems Trust (HST)
Email: candy.day@hst.org.za

Uganda
Sarah Byakika Kyeyamwa
Assistant Commissioner Health Services
Quality Assurance Department
Ministry of Health
Email: sarahbyakika@hotmail.com

United Republic of Tanzania
Claud John Kumalija
Acting Assistant Director Monitoring and Evaluation
Policy and Planning Departmentt
Ministry of Health and Social Welfare (MOHSW)
Email: claudjohnk@yahoo.com

Desderi Joseph Wengaa - Research Triangle Institute – International
Senior Technical Adviser, Ministry of Health and Social Welfare (seconded)
Email: dwengaa@nb.rti.org

GLOBAL PARTNERS/EXPERTS

Bill and Melinda Gates Foundation
Martin Gross
Program Officer
HIV Efficiency and Effectiveness
Email: Martin.Gross@gatesfoundation.org

Centers for Disease Control and Prevention (CDC)
Steven S. Yoon
CAPT, US Public Health Service
Malaria Branch
Email: syoon@cdc.gov

GAVI Alliance
Peter Hansen
Director
Monitoring and Evaluation
Email: phansen@gavialliance.org

The Global Fund to Fight AIDS, Tuberculosis and Malaria (TGF)
Osamu Kunii
Head, Strategy, Investment and Impact Division
Email: Osamu.Kunii@theglobalfund.org

Nathalie Zorzi
Senior Manager
Monitoring and Evaluation
Email: nathalie.zorzi@theglobalfund.org

Jembi Health Systems
Alessandro Campione
Programme Director
Email: alessandro@jembi.org

Roberta Pastore
Jembi Health Systems
Email: robertapastore15@gmail.com

London School of Hygiene and Tropical Medicine/National Institute for Medical Research (LSHTM/NIMR)
James Todd
Email: jim.todd@lshtm.ac.uk

Fiona Vanobberghen
Email: Fiona.Vanobberghen@lshtm.ac.uk

MEASURE Evaluation
David Boone
Team Lead, John Snow Inc.
Email: david_boone@jsi.com
Syed Mohammad Tariq Azim
Senior Technical Advisor, John Snow Inc.
Email: syedtariqazim@gmail.com

James C. Thomas
Associate Professor of Epidemiology
Director, MEASURE Evaluation
Carolina Population Center
Email: Jim.Thomas@unc.edu

Office of the U.S. Global AIDS Coordinator (OGAC)

Sriyanjit Perera
Email: iix6@cdc.gov

Results for Development Institute (R4D)
Gina Lagomarsino
Managing Director and Chief Operating Officer
Email: glagomarsino@R4D.org

United Nations Children's Fund (UNICEF)
Maria Muniz
Email: mmuniz@unicef.org

University of Oslo

Jørn Braa
Department of Informatics
Email: jbraa@ifi.uio.no

Vincent Shaw
Department of Informatics
Email: vshaw@ifi.uio.no

Arthur Heywood
HMIS Consultant
IBF Hanoi
Email: arthurheywood@gmail.com

Ola Hodne Titlestad
Department of Informatics
Email: olatitle@gmail.com

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID)

Kathleen Handley
Senior Technical Advisor
Global Health Bureau
Email: khandley@usaid.gov

Annie Schwartz
Senior M&E Advisor
Global Health Bureau
Email: aschwartz@usaid.gov

Lindabeth Doby
Senior MIS Advisor
Office of HIV/AIDS
Email: mokhan@usaid.gov

Saad Khan
Senior HIS Advisor
Office of HIV/AIDS
Email: mokhan@usaid.gov

Lisa Maniscalco
Health Information Systems and Evaluation Advisor
Email: lmaniscalco@usaid.gov

World Bank Group

Gayle Martin
Program Leader / Economist
World Bank Group
Email: gmartin2@worldbank.org

WHO Regional Advisers

Americas

Patricia Lorena Ruiz Luna
Regional Adviser, Health Analysis and Statistics
Email: ruizpatr@paho.org

Alejandro Esteban Giusti
Regional Advisor, Vital and Health Statistics
Email: giustal@clap.ops-oms.org

Eastern Mediterranean

Mohamed Ali
Regional Adviser, Health Information and Statistics
Email: alim@who.int

Western Pacific

Rosebelle Azcuna
Health Statistics Specialist
Email: azcunar@who.int

WHO Programmes

Richard Cibulskis
Global Malaria Programme (GMP)
Email: cibulskisr@who.int

Jan Grevendonk
Expanded Programme on Immunication
Plus (EPI)
Email: grevendonkj@who.int

Robert Jakob
Classifications, Terminology & Standards (CTS)
Email: jakobr@who.int

Thierry Lambrechts
Maternal Child & Adolescent Health (MCH)
Email: lambrechtst@who.int

Eyerusalem Kebede Negussie
HIV/AIDS, Treatment and Care (HIV)
Email: negussiee@who.int

Denis Porignon
Health System Governance, Policy and Effectiveness
(HGS)
Email: porignond@who.int

Shamsuzzoha Babar Syed
Patient Safety and Quality Improvement
Email: syeds@who.int

Hazim Timimi
TB Monitoring and Evaluation (TME)
Email: timimih@who.int

Nathalie Van De Maele
Cost, Effectiveness, Expenditure and
Priority Setting (CEP)
Email: vandemaelen@who.int

WHO HQ Secretariat

Ties Boerma
Director
Health Statistics and Information Systems
Email: boermat@who.int

Kathryn O'Neill
Coordinator
Results Monitoring and Evaluation (RME)
Health Statistics and Information Systems
Email: oneillk@who.int

Carla Abou Zahr
Consultant
Results Monitoring and Evaluation (RME)
Health Statistics and Information Systems
Email: abouzahr.carla@gmail.com

Nancy Fronczak
Consultant
Result Monitoring and Evaluation (RME)
Health Statistics and Information Systems
Email: nfronczak@aol.com

Annex III:
Agenda

Wednesday, 11 June 2014		
Session 1 – Introduction		**Moderator: Ties Boerma**
9:00-10:30	**Welcome and introductions**	WHO/USAID/UoO
	The role of health facility information: national health sector plans, M&E, UHC, Post 2015 agenda	Ties Boerma, WHO
	Overview of key elements of a health facility information systems	USAID
	Innovative approaches in facility based information systems	Jorn Braa, University of Oslo
	Perspectives on partner investments in strengthening health facility information systems (tour de table - max. 5 minutes each)	Katy Handley, USAID Maria Muniz, UNICEF Peter Hansen, GAVI Nathalie Zorzi, Global Fund Gayle Martin, World Bank Marty Gross, BMGF
	Objectives, expected outcomes and introduction to sessions	
10:30-11:00	*Coffee break*	
Session 2 – Governance & Innovations in data collection and management		
		Moderator: Katy Handley
11:00-12:30	**Nigeria**: Key issues & challenges in governance, standards and accountability	Aderemi Azeez, MOH Nigeria
	Rwanda: Standards framework for routine facility information	Randy Wilson , MSH, Rwanda
	Mozambique: Hospital reporting of cause of death	Roberta Pastore, Jembi Health Systems
	Tanzania: Individual client data**:** Example of HIV/ART analyses	Jim Todd, LSHTM
	Kenya: Integrating service delivery data from beyond the facility	Lize Ojowi, USAID Kenya
	Afghanistan: Monitoring quality of services	Said Azimi, MOH Afghanistan
12:30-14:00	*Lunch break*	
14:00-16:00	• Group 1: Governance: Policies and human resources. • Group 2: Standards: Facilities, indicators, mortality and cause of death. • Group 3: Standards: Data architecture and accountability. • Group 4: Individual and aggregated data collection and management. • Group 5: Monitoring quality of services with facility data. • Group 6: Community based service data.	Working groups (2 hours)
16:00-16:30	*Coffee break*	
16:30-18:00	**Plenary – feedback from the groups**	Plenary
18:30- 19:30	*Reception*	

Thursday, 12 June 2014		
Session 3 – Data quality, analysis, dissemination and use		**Moderators: Maria Muniz**
08:30-10:00	**Data quality assessment**: Overview of harmonized framework and toolkit	David Boone, JSI/WHO
	Overview of facility assessment tools and opportunities for harmonized approaches (global and country perspectives)	Sarah Byakika, MOH Uganda Nancy Fronczak
	Cambodia: Use of data for annual statistical reports and decision making	Khemrary Khol, MOH Cambodia
	Ghana: Dashboards for local decision-making	Anthony Ofosu, MOH Ghana
	Tanzania: Analytical approaches: integrated subnational analysis of facility and survey data in health sector reviews	Claud Kumalija, MOH Tanzania
10:00-10:30	*Coffee break*	
Session 4 – Towards a health facility information system toolkit		**Moderators: Peter Hansen**
10:30-12:30	• Group 1: Data quality • Group 2: Facility assessments • Group 3: Analytical tools and methods • Groups 4 and 5: Dashboards, dissemination and use	Working groups (2 hours)
12:30-14:00	*Lunch break*	
14:00-15:30	**Plenary – feedback from the groups**	Plenary
15:30-15:45	*Coffee*	
15:45-17:00	**Synthesis and next steps** Synthesis of the key elements and toolkit for health facility information systems Towards a multi-stakeholder strategic work-plan • What are the major gaps/priorities for health information systems in the post 2015 agenda? • How can global partners better align investments in facility data systems and strengthening of national institutional capacity? **Close (by 17h00)**	Secretariat & all