

Executive Summary

Material included in the Yellow Book

1. Executive Summary of the report of the WG
2. Report of the SAGE Working Group on Quality and Use of Immunization and Surveillance Data”
 - Annexes and references included on the SharePoint
 - Sections include:
 - 1) Introduction and Methods
 - 2) Landscape of immunization and surveillance data availability, quality, use and guidance for countries
 - 3) Governance: Leadership, Policies, and Standards to Maximize the Data Quality and Use
 - 4) People: Building Workforce Capacity in the Generation and Use of Immunization Data
 - 5) Tools: Information Systems and the Risks and Benefits of Novel Approaches
 - 6) Assessment and Improvement Planning: Data Use for Continuous Quality Improvement
 - 7) Evidence gaps and research agenda
 - 8) Moving Forward
 - 9) Proposed recommendations
 - Sections 3-6 include a box with Key Messages at the beginning and conclusion at the end
 - Section 9 proposes recommendations and indicates for which level (country, regional, global) and links to the section of the report that contains the evidence
3. Immunization Data: Evidence for Action (IDEA) Precis of the “Realist Review of What Works to Improve Data Use for Immunization Evidence from low- and middle-income countries” (PATH/PAHO)

Supplemental material on the SharePoint

- All annexes to the Report: literature reviews, case studies, white papers and full list of references

Purpose of session: summarize major WG findings for each one of its 6 terms of reference, present a way forward and proposed recommendations

Target outcomes: SAGE to consider and endorse WG recommendations

Specific questions for SAGE: for SAGE to discuss major recommendations i.e., queries for direction.

Background

Concerns about the quality and use of immunization and vaccine-preventable disease (VPD) surveillance data have been highlighted on the global agenda –including by the SAGE – for more than two decades. The demand for accurate data and their use in programme management and decision-making has only increased as countries strive to meet the ambitious vaccination coverage and disease elimination goals of the Global Vaccine Action Plan (GVAP). These agreed upon goals require new, more precise and finer types of measurements than have often been used in many low- and middle-income countries. Improved information systems and data quality will also be critical to measuring progress in achieving the Sustainable Development Goals (SDGs) and Universal Health Coverage (UHC), such as improvements in equity of service delivery and in reaching under-served, marginalized, and migrant populations.

Recent efforts by countries and immunization partners to improve immunization-related data have resulted in successes in a number of countries. However, poor quality and under use of data remain a persistent problem in many, affecting the ability of countries and partners to monitor progress against the GVAP and other global goals as well as to support optimal changes to immunization programmes. In fact, SAGE assessment reports of GVAP implementation stated that poor data quality was impeding programme improvement, and recommended that improving data quality should be a top priority for national immunization programmes.

As a concrete measure to address this ongoing problem, the SAGE Working Group (WG) on the Quality and Use of Global Immunization and Surveillance Data was established in August 2017. Its mandate was to:

- Review current practices in the collection, use and impact of national, regional and global immunization and surveillance data, as well as data quality and gaps in data collected;
- Review existing guidance and standards for immunization programme monitoring and VPD surveillance and identify gaps;
- Review and assess the current ‘state’ of immunization and VPD-surveillance data quality at country and global level;
- Examine the factors limiting the quality and use of both immunization and VPD surveillance;
- Examine the effectiveness of various interventions to improve data access, quality and use; and
- Identify gaps in knowledge to inform a research agenda around data quality and use, and to propose recommendations for action.

Methods and definitions

A series of landscape analyses (involving key informant interviews and document reviews), literature reviews, country case studies and data analyses (data triangulation exercises) was conducted by the WG, consultants and partners to fulfill the terms of reference of the WG and prepare this report. Detailed reports for many of these reviews and analyses can be found in the Annexes, along with full versions of the case studies.

The WG used a definition of data quality as *data that are accurate, precise, relevant, complete and timely enough for the intended purpose (or “fit-for-purpose”)*, such as to monitor programme performance, support efficient programme management or provide evidence for decision-making. The structure of the report presents the current landscape and is based on a simplified theory of change, which identifies five the pillars – Governance, People, Tools, and Processes for Continuous Quality Improvement, and Evidence required to produce data that are available, fit-for-purpose and used for action.

Major findings and key points

The availability, quality and use of immunization and surveillance data, data-related guidance and assessment methods

There is a considerable amount and variety of immunization and surveillance-related data available nationally, regionally, and globally, though the data are not always accessible to those that need them the most. However, when evaluated, the quality of these data is still often poor, especially in low- and middle-income countries, with inaccuracies in denominators used to calculate immunization coverage or disease incidence rates being particularly pronounced. The WHO-UNICEF Joint Reporting Form (JRF) and WHO-UNICEF estimates of national immunization coverage (WUENIC) remain key sources of immunization data available internationally. There is also increased demand for the collection of disaggregated data for immunization and VPD surveillance (e.g., subnational; individual-level) to support achieving program objectives. The new global electronic platforms and strategies, including the WHO Immunization Information System (WIISE) (which will include an e-JRF), the WHO Immunization Data Handbook and related Immunization Monitoring Academy and the global Comprehensive VPD Surveillance Strategy, should help improve the quality and use of immunization and surveillance data.

In recent years, a plethora of global and regional guidance documents and standards have been developed to address issues related to monitoring, data quality and use. However, awareness of these tools among people working in immunization and VPD surveillance and their ability to find and access these tools needs to improve. In addition, the review found a continued lack of practical guidance and tools for a number of technical areas. Tools for countries to assess data quality – such as the Data Quality Self-assessment (DQS) and Data Quality Review (DQR) tools – have improved over the years and have had a positive impact on country ownership and interest in making data improvements in a number of countries, with some evidence of positive impact as well on data quality and use. More work is needed to define a common lexicon of definitions around data and a standard set of indicators to measure data quality and use, as part of comprehensive programme monitoring.

Governance related to immunization and VPD surveillance data and information systems

Having strong policies and mechanisms in place that govern all key aspects of data generation and use is important to develop immunization and VPD surveillance information systems that produce high-quality, credible data that are useful to monitor programmes, to keep them accountable for their performance, and inform policy decisions. Coordination and collaboration between different units dealing with data (e.g., immunization programme, labs, surveillance units), between partners and the government, as well as across the entire health care system is crucial to establish efficient, harmonized information systems, and to avoid systems that are fragmented and duplicative. Strong leadership within national governments and the political will to improve data quality — even if it initially leads to lower reported performance — are also critical to ensure the sufficient resources, key policies and regulations, and development of a “data use culture” needed for improvements. Also key is the establishment of national standards governing all stages of data generation and use, and having policies and mechanisms in place for sharing data both within countries (e.g., data from the private sector and NGOs/CSOs) and internationally, while also taking issues of privacy and confidentiality into account.

Building the capacity of the health workforce in data generation and use

The lack of skills among health workers in data collection, analysis, interpretation and use, as well as a lack of capacity-building in this area, are key factors limiting the quality of immunization and VPD surveillance data. This report recognizes that data quality at all levels ultimately depends on the quality of data collection at the health facility level, and thus data quality interventions, including capacity-building and creating an enabling environment, must specifically target the local level. In addition, data-related activities often compete with clinical duties for health workers' time, thus impacting the quality, completeness and timeliness of reporting. Improving this situation requires a multi-pronged approach — including pre-service and in-service training, with regular reinforcement through supportive supervision, and feedback — as well as dedicated time for data-related tasks taking into consideration in workforce planning.

The reviews found that current pre-service training programmes often do not adequately prepare health workers to carry out data-related tasks, even in high-income countries, nor has most in-service training around data had a major impact in improving the skills and practices of health workers. Governments therefore need to make a dedicated effort to provide continuous and effective competency-based training on the generation and use of health data, based on the data-related responsibilities required at all levels of the health system. The WG has developed a framework that defines the roles and responsibilities of health workers in collecting, analyzing and using immunization data from the facility to the global level in order to assist countries in planning their capacity-building activities related to immunization data and information systems.

The role of technological innovations in improving data quality and use and their limitations

Health workers need user-friendly tools (either paper or electronic) that make their jobs easier and more efficient. Recent advances in information and communication technology (ICT) have led to a multitude of innovative tools developed with the aim of improving data quality, availability and use. Immunization information systems are currently immunization-specific tools or part of an integrated health management information system, such as DHIS2, and challenges with both approaches exist. Innovative “e-Health” tools used in immunization and disease surveillance programmes range from electronic immunization registries (EIRs) to decision-support tools (such as dashboards), mobile technologies to enable real-time data collection, reporting and monitoring; geospatial-based tools (e.g., GIS) and predictive analytics to improve coverage and population estimates.

While there is evidence that some of these tools improve data quality and use, many — with the exception of electronic information systems, such as DHIS2 and some EIRs — never get rolled out nationally, nor thoroughly evaluated. Some innovations have failed because they ignored country context, user requirements, and issues of interoperability with existing systems. This highlights the fact that technology solutions are not a magic bullet for solving all data problems, but rather the successful use and scale-up of these innovations depends to a large extent on other key elements being in place, including a skilled and motivated workforce, strong governance, sustainable financing, adequate infrastructure, such as computers and connectivity, and clear operating procedures and processes. Global guidance is also needed on how and when to scale up innovations to ensure a sustained, long-term benefit on data quality and use.

Use of immunization and surveillance data for continuous quality improvement

There is evidence to suggest that improving the quality of immunization and VPD surveillance data on a periodic basis can only go so far, and that using a continuous quality improvement (CQI) approach has the potential for greater and longer-lasting improvements. This approach should start with an assessment of the

root causes of poor data quality extending down to the lowest level of the health system. Limited evidence also indicates that increasing the use of data can improve data quality, though not necessarily the other way round. However, gaps in data use and data use capacity abound at all levels.

Solutions proposed as part of a continuous quality improvement approach include a shift from periodic data quality assessments to routine monitoring of data quality, including automated data validation checks and analyses on electronic information systems; and the better use of existing, under-utilized data, such as surveillance, rapid coverage monitoring, and vaccine supply data, to create a fuller picture of programme performance. They also include the “triangulation” of data to synthesize evidence across different data sources to address relevant questions for program planning and decision-making (e.g., checking data quality, prioritizing areas for intervention, estimating coverage/denominator, evaluating program impact/effectiveness). Such data triangulation analyses should be the default for public health analysis.

In line with the goals of improving equity of services across populations and geographic areas, better measures, tools and indicators need to be developed to monitor equity on a regular basis. Similarly, current methods for measuring and estimating vaccination coverage must be adjusted to accommodate the shift towards a life-course vaccination approach. Methods for improving estimates of target populations, including dealing with migration, remain among the needs that are most critically felt at the local programme level.

Gaps in evidence and the research agenda and recommendations

This report identifies and maps out gaps in evidence and knowledge concerning key aspects affecting the quality and use of immunization and VPD surveillance data and proposes a research agenda based on these gaps, structured according to the pillars for improving data quality and use. In general, the Working Group found a need for more robust evaluation of the impact of various data quality and use interventions (e.g., tools, capacity building approaches), their cost-effectiveness, and their impact on staff time and efficiencies.

In Chapter 9 of the report, the Working Group has outlined specific recommendations for countries (national and subnational), regional and global levels under the following headers:

1. Embed monitoring of data quality into global, regional and country monitoring of immunization and VPD surveillance performance;
2. Increase workforce capacity and capability for data quality and use, starting at the lowest level where data collection occurs;
3. Take actions to improve the accuracy of immunization programme targets (denominators);
4. Enhance use of existing data at all levels for tailored action, including immunization programme planning, management, and decision-making;
5. Adopt a data-driven continuous quality improvement (CQI) approach as part of health system strengthening at all levels;
6. Strengthen governance around piloting and implementation of new information, communication, and technology (ICT) tools for immunization and surveillance data collection and use;
7. Improve data sharing and knowledge management across areas and organizations (e.g., private sector) for improved transparency and efficiency; and
8. WHO and UNICEF to strengthen global reporting and monitoring of immunization and surveillance data through a periodic needs assessment and revision process.