DATA GUIDED

1 **What** is the definition of the core principle?

The Immunization Agenda 2030 (IA2030) states that "high quality, 'fit-for-purpose' data will be used to track progress, improve immunization programme performance and form the basis of decision-making at all levels."

This data-guided approach will be applied across all IA2030 strategic priorities, all vaccines throughout the life course, and all immunization programme domains. These include not only traditionally data-focused areas such as monitoring of vaccination coverage and disease surveillance, but also other areas where data utilization is evolving, such as immunization financing, human resource management, and demand generation.

2 **Why** is data-guided crucial to the implementation of IA2030?

The data-guided principle underpins use of data for **immunization programme planning and management at all levels from the community to global**, as well as IA2030 monitoring and evaluation. This is intended to:

- **Stimulate a continuous quality improvement process** (i.e. tracking of progress, assessing root causes of success and failure, informing evidence-based decision-making, and empowering actions to continuously improve immunization programme performance).

- **Measure progress and drive actions** to achieve IA2030 objectives and goals.

This principle informs not only quality improvement for programme planning and management but other essential components needed for successful immunization programmes – such as evidence-based decision-making for immunization policy through National Immunization Technical Advisory Groups (NITAGs) and evidence-driven approaches to programme advocacy. The key features of the data-guided core principle can be illustrated by examining the roles and responsibilities that ensure data quality and data use at all levels, from communities and facilities to global (Figure 1).
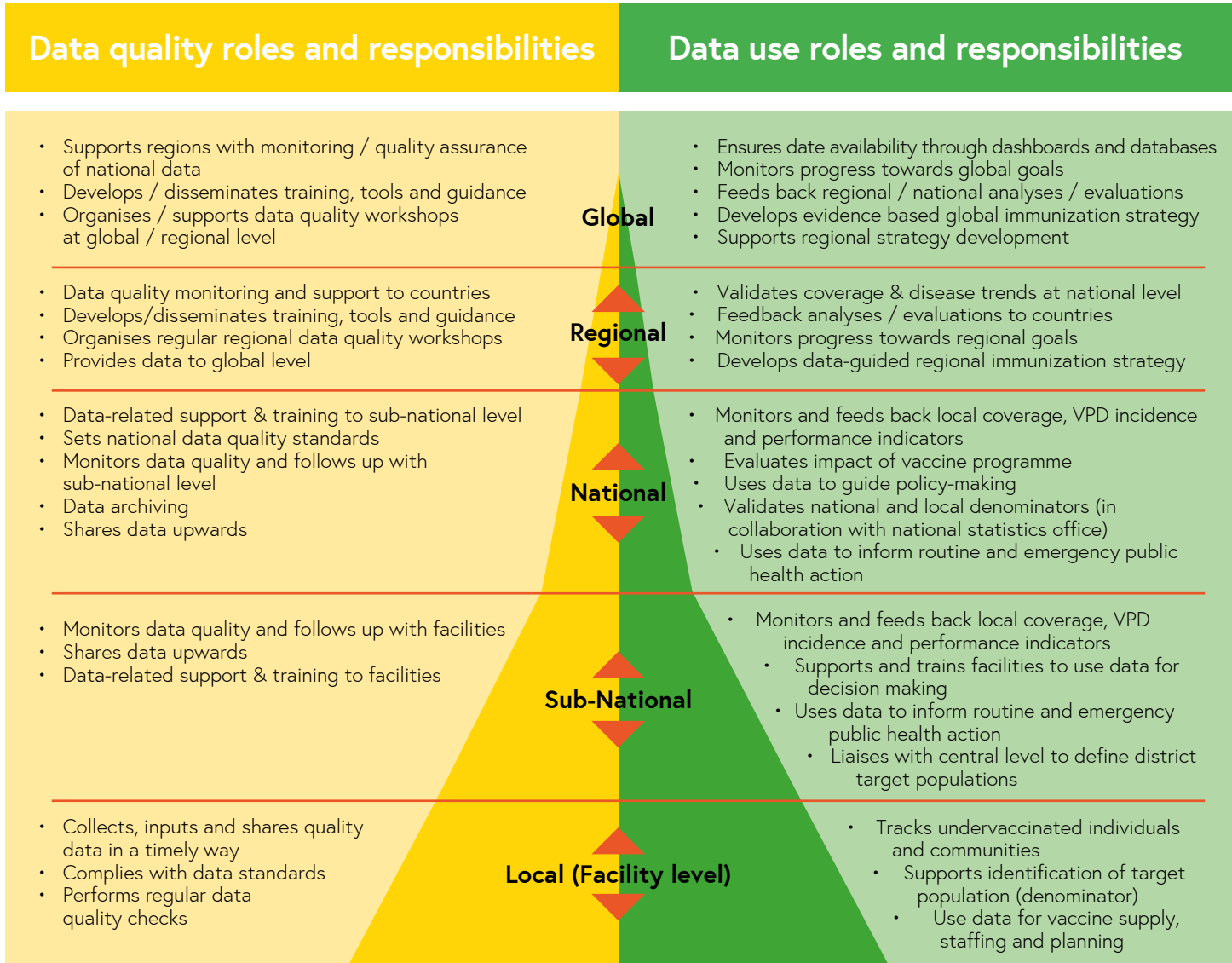
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Data quality roles and responsibilities	Data use roles and responsibilities

Global

- Supports regions with monitoring / quality assurance of national data
- Develops / disseminates training, tools and guidance
- Organises / supports data quality workshops at global / regional level

- Ensures date availability through dashboards and databases
- Monitors progress towards global goals
- Feeds back regional / national analyses / evaluations
- Develops evidence based global immunization strategy
- Supports regional strategy development

Regional

- Data quality monitoring and support to countries
- Develops/disseminates training, tools and guidance
- Organises regular regional data quality workshops
- Provides data to global level

- Validates coverage & disease trends at national level
- Feedback analyses / evaluations to countries
- Monitors progress towards regional goals
- Develops data-guided regional immunization strategy

National

- Data-related support & training to sub-national level
- Sets national data quality standards
- Monitors data quality and follows up with sub-national level
- Data archiving
- Shares data upwards

- Monitors and feeds back local coverage, VPD incidence and performance indicators
- Evaluates impact of vaccine programme
- Uses data to guide policy-making
- Validates national and local denominators (in collaboration with national statistics office)
- Uses data to inform routine and emergency public health action

Sub-National

- Monitors data quality and follows up with facilities
- Shares data upwards
- Data-related support & training to facilities

- Monitors and feeds back local coverage, VPD incidence and performance indicators
- Supports and trains facilities to use data for decision making
- Uses data to inform routine and emergency public health action
- Liaises with central level to define district target populations

Local (Facility level)

- Collects, inputs and shares quality data in a timely way
- Complies with data standards
- Performs regular data quality checks

- Tracks undervaccinated individuals and communities
- Supports identification of target population (denominator)
- Use data for vaccine supply, staffing and planning

Figure 1. Framework of immunization data quality and use, with roles and responsibilities by level *(Source: Report of the SAGE Working Group on Quality and Use of Immunization and Surveillance Data, 2019).*

3 **What** data?

As IA2030 is implemented, use of data will guide overall strengthening of immunization programmes in pursuit of universal health coverage. The SAGE Working Group on Quality and Use of Immunization and Surveillance Data described 'fit-for-purpose' data as data that are accurate, precise, relevant, complete and timely enough for the intended purpose.

To apply the data-guided principle to serve the needs of immunization programmes, use of all relevant quantitative and qualitative data sources needs to be maximized, taking into account data limitations and interpretation of data within local contexts.

Implementation and operational research will generate evidence to inform policy recommendations through NITAGs, guide delivery of integrated packages of vaccination services, and identify drivers of immunization demand that can be used to improve the design and take up of immunization services. It can also be used to evaluate data-use interventions.

The design of new **information systems**, modernization of existing systems, methods to collect and manage data, and training in use of information systems will be determined by the needs at each level of the programme, from community and facility to national levels.

During the next ten years, immunization data systems need to be improved sub-nationally to better track under-immunized populations, and integrated with surveillance systems in novel ways to provide early warning of outbreaks. Tracking systems need to be upgraded to support more effective allocation of resources within immunization programmes.

Contextualizing the data-guided core principle and learning from GVAP
The value of using data to plan, manage and evaluate immunization activities is well recognized. Disease control programmes have relied heavily on disease surveillance and vaccination coverage data to guide both strategy development and on-the-ground decision-making. Experience has shown that even sub-optimal data can be useful, and that use of data can improve its quality.

Other initiatives focused on immunization programme strengthening have also highlighted the value of a data-guided approach. The Global Routine Immunization Strategies and Practices (GRISP) included accurate information systems as a key area of focus, while the Reach Every Community strategy recommends establishing data-review sessions for microplanning.

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In addition, the Global Framework for Immunization Monitoring and Surveillance (GFIMS) defined the types of data needed to monitor and evaluate immunization programmes, and the draft Global Framework to Strengthen Immunization and Surveillance Data for Decision-Making articulated a shared strategic approach to improve the availability and use of immunization and surveillance data.

The Global Vaccine Action Plan (GVAP) 2011–2020 established the first global monitoring and evaluation framework for immunization, and raised awareness of the need for quality data. However, a review of GVAP concluded that data were not sufficiently tied to the actions of programmes or other stakeholders. Drawing lessons from GVAP, IA2030 has included the data-guided core principle to encourage a greater focus on data collection to inform actions and decision-making based on evidence.

4 **How** does this core principle translate operationally?

The data-guided core principle needs to be embedded within all aspects of immunization programme work. This will require significant shifts in emphasis, including:

- **A greater focus on data use** in addition to data quality, at all levels of immunization programmes
- A **"whole-system approach"** that goes beyond the implementation of tools and technological solutions to include people, governance and processes
- Innovative **workforce development** strategies that improve data-use capacity throughout a programme
- Alignment of information systems and **digital innovations** with local context and programme needs, and scale-up based on the readiness and priorities of each country. Such digital innovations include:
  - health management information systems (HMIS)
  - electronic immunization registries (EIR)
  - logistics management information systems (LMIS)
  - geographical information systems (GIS)
- Use of all existing data for programme planning and decision-making (i.e. **data triangulation**)
- More use of **predictive analytics**, in addition to retrospective analysis, to anticipate immunity gaps, maintain vaccine supply and ensure strong demand for immunization services
- Moving to **comprehensive VPD surveillance** systems, supported by strong laboratories and information systems (see Annex on comprehensive VPD surveillance).

Examples of best practices and areas of excellence

Using multiple sources for data triangulation: WHO and UNICEF Estimates of National Immunization Coverage (WUENIC) data combine coverage surveys, administrative reporting (vaccine doses, targeted population) and other programme data such as stock-outs to provide annual national estimates of vaccination coverage for multiple antigens. Many programmes routinely compare administrative reporting against coverage surveys in a less formal way, and a method to generate sub-national WUENIC estimates has been piloted in several countries. Spatially modelled coverage using population-based surveys and geospatial data represent a more advanced form of data triangulation that is increasingly available to country programmes.

Innovative data strategies: The Tailoring Immunization Programmes (TIP) approach to improving vaccination coverage offers countries a process through which to characterize populations with low immunization rates, assess behavioural barriers to vaccination, and develop tailored interventions to overcome these barriers and increase coverage. TIP utilizes immunization programme data as well as qualitative and quantitative behavioural research and social marketing to shape interventions for targeted populations. Developed by the WHO European Region, TIP has been used in several countries to improve immunization programme performance.

Using data for programme planning: India reviewed data from multiple sources to plan the Mission Indradhanush immunization drive. National Family Health Surveys were reviewed to assess not only vaccination coverage rates but also factors associated with low coverage such as gender, residence and wealth. Independent monitoring data from the National Polio Surveillance Project indicated how informational gaps and operational challenges contributed to low coverage. Case-based surveillance revealed changes in epidemiology, which supported modifications to immunization policy such as the replacement of tetanus toxoid with tetanus and diphtheria vaccine. From these data, officials were able to target outreach efforts to areas of low coverage.

Using data for evidence-informed policy decisions. A NITAG empowers national authorities and policymakers to make evidence-based policy decisions on immunization. Such a resource is particularly important in view of the complex and vast bodies of evidence now available on many vaccines, the need to adapt recommendations to the local context, and the global interdependence and integration of health systems. NITAGs contribute to robust and fiscally sound country decision-making through: (1) increasing credibility of government by improving its capacity for rigorous, evidence-based decision making; (2) deflecting pressure from narrowly focused lobbying groups, including industry and anti-immunization groups; (3) providing transparency, allowing members to abstain from decision-making on issues from which they might benefit; and (4) in the event of an adverse event from immunization, providing an evidence-based response to ensure public confidence in immunization. NITAGs have played an essential role specifically in the context of COVID-19 pandemic; for example, NITAGs in South Africa, Zimbabwe, Malawi and Senegal have developed recommendations for maintaining immunization services during the pandemic.

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