

TRIANGULATING IMMUNIZATION PROGRAM AND SUPPLY DATA

Lessons Learned from Ethiopia on Establishing a Data Triangulation Process for Improved Decision Making



Strengthening data use and quality is critical to achieving high, equitable immunization coverage. One approach that is being increasingly recognized as effective in improving data use and quality is data triangulation, which synthesizes two or more data sources to generate more informed decision making for immunization program improvement.

In Ethiopia, JSI, through the Universal Immunization through Improving Family Health Services (UI-FHS) project, introduced a data review process and an Excel tool for triangulating immunization program data and vaccine supply data to improve data quality and programmatic decision making. The Immunization Data Triangulation Tool (IDTT) highlights challenges, provides decision-support information, and suggests follow-up actions.

BACKGROUND

In Ethiopia, which ranks among the top 10 countries with the most under-/unvaccinated children¹, administrative data for immunization has had ongoing quality challenges, including timeliness, completeness, and accuracy. Some data are reported through different systems to different departments, and coordination between departments is limited. This has meant that immunization managers do not consistently incorporate supply chain data into their decision-making processes, and review or use of data overall for program improvement is not always consistent.

Data triangulation has been a topic of recent global interest as a strategy to improve data use and quality. By triangulating several pieces of data, even if the data is imperfect, decision makers can gain an additional layer of insight and understanding to improve their basis for decision making.² One common way to triangulate data is by comparing health program data with commodity supply data. In Ethiopia, administrative data for the immunization program are reported through the DHIS2 health management information system, and vaccine supply indicators are reported through the mBran logistics management information system.



KEY TAKEAWAYS

- Health staff saw clear benefits from using the tool, including more accessible and synthesized data.
- Use of triangulated data prompted decision making and actions to improve immunization, such as expanding the number of immunization sites and revising target populations.
- Staff could operate the tool on their own and lead the data review meeting, and further mastered these processes over time.
- Staff could not leverage triangulated data fully due to challenges with vaccine supply data availability, but the triangulation process prompted collaboration to address this gap.
- These early findings show the promise of using triangulated data to address immunization challenges.



RECOMMENDATIONS

- EPI managers should consider incorporating data triangulation analyses into their current data review systems and determine practical, feasible means to operationalize regular use of triangulated data at the sub-national level.
- As data triangulation processes advance and scale, they should be integrated into current health information systems to be properly institutionalized and sustained.
- More guidance may be needed to assist EPIs in determining feasible data triangulation processes and the indicators and analyses that are most useful for improved immunization program decision making.

¹ Progress Towards Global Immunization Goals - 2019 Summary presentation of key indicators. World Health Organization (WHO) website. Accessed October 19, 2021. https://www.who.int/immunization/monitoring_surveillance/SlidesGlobalImmunization.pdf?ua=1

² Centers for Disease Control & Prevention, UNICEF, World Health Organization. Triangulation for improved decision-making in immunization programmes. Accessed October 19, 2021. <https://technet-21.org/en/topics/triangulation>

Figure 1. Example of triangulated program and supply data – pentavalent vaccine, District X



JSI, through the UI-FHS project, has been supporting the Ministry of Health and Regional Health Bureaus (RHBs) over the past decade to improve the EPI. In 2019, JSI began working to improve the use and triangulation of immunization program and supply data for improved decision making.

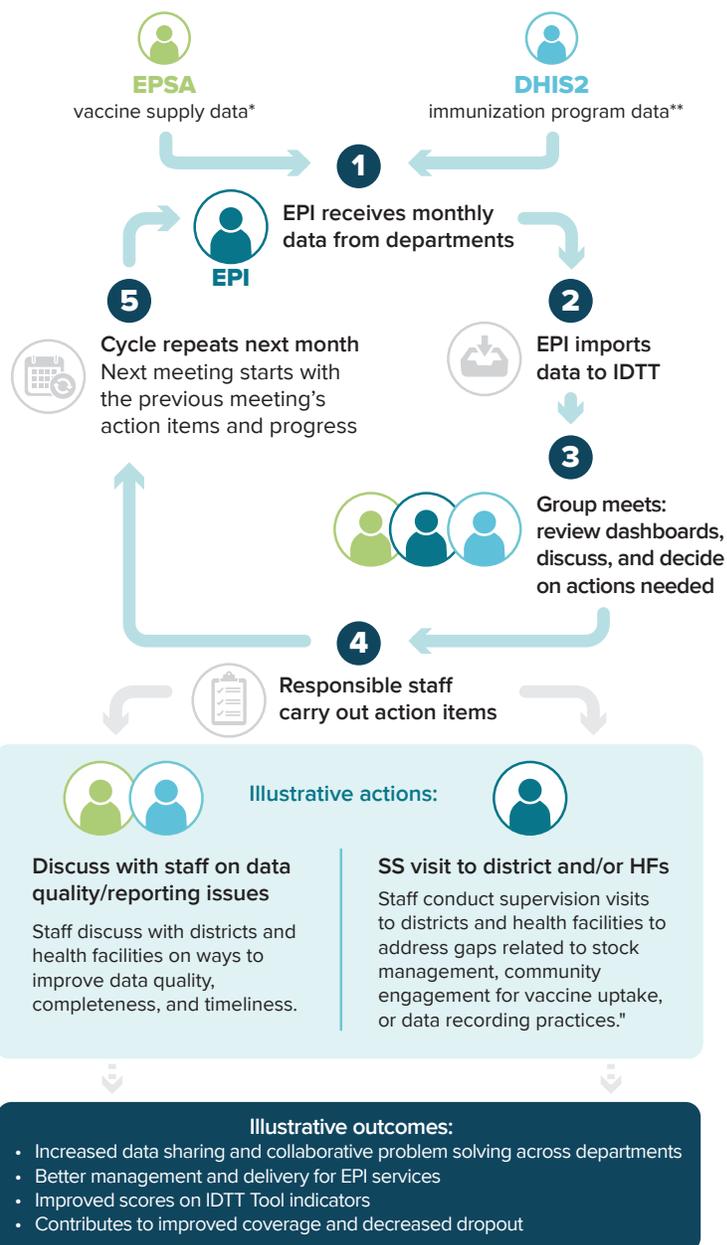
JSI'S APPROACH

JSI and RHB stakeholders co-developed the Excel-based Immunization Data Triangulation Tool (IDTT) to triangulate immunization program data from DHIS2 and vaccine supply data from mBrana in a user-friendly way. Indicators are triangulated against each other to produce ratios that provide insight into data quality issues or programmatic issues (see example, Figure 1).

Using color coding, IDTT dashboards highlight districts that require programmatic attention and those that are performing well. The IDTT provides decision-support features, such as scoring based on performance, and suggests actions managers should take at the district level based on scores. It also highlights gaps between vaccines supplied and consumed and helps managers determine next steps to address programmatic, supply, or data quality issues.

JSI rolled out the IDTT and data review process (Figure 2) at the RHB in Benshangul Gumuz (BG) region and at the Zonal Health Department (ZHD) (a management level between regional and district) in Kembata Tembaro (KT) zone within the Southern Nations, Nationalities, and Peoples Region (SNNPR). JSI provided orientation and ongoing follow-up support, including helping facilitate monthly data review meetings. After several months of implementation, a process documentation exercise was conducted to document learning on the tool and process's usability and feasibility. Key informant interviews (KIIs) with key staff, a review of meeting minutes, and an analysis of data uploaded into the IDTT were conducted to understand how the IDTT was used at monthly data review meetings conducted by the cross-departmental data triangulation committee.

Figure 2. Data review process for triangulated data in Ethiopia



* stock on hand and vaccine issue data from mBrana logistics management system
** immunization coverage data from DHIS2"

FINDINGS

Overall, health managers saw ease of use and clear benefits from using the tool, including more accessible and synthesized data that supported decision making and actions to improve services and supply. Health managers could operate the tool on their own and lead the data review meeting, and further mastered these processes over time.



“The trend of triangulating supply chain data and the service data was not known previously. We can now monitor monthly improvements in the immunization program and take immediate actions to address the gaps. Outbreaks have reduced in our zone.”

— SNNPR Representative



In the KT ZHD, a cross-departmental committee meets monthly to conduct data triangulation review meetings, collaborating to examine the data holistically. Respondents reported that simultaneous review of immunization coverage and supply data was a new process; previously, the process had focused mainly on reviewing coverage data. mBrana often had

incomplete supply chain data, which led staff to focus more on indicators/analysis based on program data, while at the same time raising the issue of incomplete or missing vaccine supply data for discussion and action at higher levels.

In BG, the triangulation activity was still in a nascent stage, as Covid-19 and ethnic conflicts created challenges and delays in implementation, including a backsliding in the availability of both program and supply data. Initial data triangulation meetings focused on improving data availability. Respondents expressed interest in continuing to use the IDTT with improved data availability.

All respondents noted several benefits and challenges of the IDTT.

Benefits:

- Tool allows for easy comparison and analysis of data from different sources in a single platform; data is more accessible and it eases data management, thereby reducing workload.
- Synthesis of data and information helps identify good- and poor-performing districts, and regular updating of data helps monitor progress over time.
- The tool and data review process help improve and maintain data quality, an important policy priority for the Ministry of Health.
- Color coding used in the tool’s dashboards helps visualize data and eases interpretation of data.



Outcome: increased number of outreach sites

One documented outcome from using the data triangulation tool and process was **an expansion of outreach immunization sites**. By using the IDTT tool, the KT ZHD team identified lower-than-expected coverage in one town despite adequate vaccine supply. The team communicated with EPI officers in the town and identified the reasons, which were poor planning and a shortage of outreach sites. **As a result, the ZHD, in collaboration with the district health office, decided to launch new outreach sites.**



Outcome: revised target population

In another example, the data review process revealed that a small town administration in a more urban area demonstrated poorer performance compared to its neighboring communities. The KT ZHD team investigated the cause and found that some neighboring rural areas with low coverage had been recently rezoned into the town administration, which resulted in a high number of unimmunized children in the administration. **The EPI team took immediate measures and adjusted its plan to redefine the target population.**

Challenges:

- Some respondents desired additional indicators (e.g., raw numbers of unimmunized children in addition to percent coverage) or for indicators to be summarized in a different manner (e.g., quarterly summary in addition to monthly analysis).
- Tool perceived as somewhat complex; interpreting output values takes time and practice to understand.
- Tool requires some knowledge of Microsoft Excel and computer skills.

LESSONS LEARNED

The experience in Ethiopia provided early lessons in establishing a regular process to use triangulated data in immunization. To optimally triangulate data, it is essential to ensure regular reporting of data to the data systems that will be used for triangulation analysis; otherwise, the indicator measures could fall short of achieving desired objectives. Regular reporting lapsed prior to beginning the activity, which hindered the ability of the teams to fully leverage triangulated data, but the process documentation showed some evidence that use of the IDTT and data review process improved decision making and led to actions that improved the management of immunization services at the district and health facility levels. Respondents also noted the value add of regularly using triangulated data.

Recommendations from key informant interview respondents

- National-level Federal Ministry of Health (FMOH) officials should institutionalize the tool for use at regional and zonal management levels.
- Clear tasks and responsibilities for every data triangulation committee member from across government departments should be determined and formalized.
- More human and financial resources are needed to help improve the availability of vaccine supply data.

This experience demonstrates promise in the ability of EPIs to leverage triangulated program and supply data to address challenges. The data triangulation process facilitated collaboration and decision making, as well as breaking down of silos; more data use and attention to data availability and quality; and some demonstrable actions that improved the management of immunization services. More needs to be done to document this kind of work, including at more advanced stages of implementation occurring over a longer period. As data triangulation processes advance and scale, they should be integrated into current health information systems, such as DHIS2, to be properly institutionalized and sustained.

About the UI-FHS project

STRENGTHENING IMMUNIZATION SYSTEMS IN ETHIOPIA

JSI's 10-year (2011–2021) Universal Immunization through Improving Family Health Services (UI-FHS) project uses innovative approaches to expand equitable access to routine immunization (RI) services for all eligible children in Ethiopia — including those in hard-to-reach pastoralist communities. Funded by the Bill & Melinda Gates Foundation, UI-FHS focuses on strengthening Ethiopia's routine immunization system through the RED-QI approach.

RED-QI is an innovative approach that strengthens the quality of the management of the immunization program and prepares health managers and workers at the woreda and health facility levels to operationalize the RED strategy to reach all children with high-quality immunization services. RED-QI equips health workers and managers with the data and skills they need to identify, analyze, and prioritize problems and support the development of local solutions to improve immunization.

Based on the success of initial testing in three woredas and expansion of the approach to 103 woredas, the FMOH integrated several RED-QI practices within its national guidance.