Integrating the Under 5 Birth Registration System into the Electronic Tanzania Immunization Registry

PATH

Abbreviations

BID Initiative	Better Immunization Data Initiative
BRS4G	Birth Registration System for 4th Generation
HMIS	Health Management Information System
ICT	information and communications technology
IVD	Immunization and Vaccine Development
M&E	Monitoring and Evaluation
MOH	Ministry of Health
PORALG	President's Office - Regional Administration and Local Government
RITA	Registration, Insolvency and Trusteeship Agency
TImR	Tanzania Immunization Registry

Background

In Tanzania, a health facility serves as the first point of contact for vaccination and birth notification while the Registration, Insolvency and Trusteeship Agency (RITA) is mandated for birth registration and provision of birth certificates. At health facilities, newborns are provided with a child health card and notification card that instructs parents to process the birth certificate at RITA offices, which are decentralized at the district level. In 2015, birth certificates' coverage for children under 5 years was under 50 percent, according to RITA, compared to birth notification provided at health facilities. This low coverage of birth certificates was due to several factors, including delays of parents in visiting RITA offices, loss of birth notification cards in the first 90 days, limited awareness of birth certificates, and inadequate tracking of records. These factors motivated the Ministry of Health (MOH), through the Immunization and Vaccine Development (IVD) Program and RITA, to initiate the registration of births and provision of birth certificates be conducted concurrently at health facilities. This intended to improve immunization service delivery as well as birth registration and coverage of birth certificates in the country. Since the launch of this initiative in June 2015, the number of registrations of children under 5 years old increased from 13 percent in 2012 to 65 percent in 2021.

Challenge

When RITA introduced the Under 5 Birth Registration System using mobile phones at the health facility level and the Birth Registration System for 4th Generation (BRS4G) electronic system at the district level, the MOH was using Health Management Information System (HMIS) books in parallel with the electronic immunization system, Tanzania Immunization Registry (TImR), to capture immunization records. The HMIS books are in all 26 regions of Tanzania, TImR is in 10 regions, and since 2021, the Under 5 Birth Registration System is in 15 regions. All these different systems, coupled with frontline health care workers using different devices to capture related information, resulted in a heavy workload and poor data quality. In addition, the digital systems were unfrequently used in some facilities. For example, visits to five health facilities in Geita Region in March 2020 showed the last login for TImR was August 2019 and for the BRS4G system was in February 2019.

Solution

The MOH through the IVD Program and RITA in collaboration with the President's Office - Regional Administration and Local Government (PORALG) and PATH agreed on potential integration of the two systems: TImR and the Under 5 Birth Registration System. The intention was to allow one system to capture both required and related child information to reduce the workload to frontline health care workers and improve the acquisition of accurate information. The TImR is an Android-based system that captures immunization records and pushes data to the HMIS District Health Information System (DHIS2) and Vaccine Information Management System (VIMS). The system is interoperable and used by health care workers through tablet devices. The Under 5 Birth Registration System is an Android-based system that registers births and pushes information to a BRS4G electronic system at the district level. The two systems are based at the health facility level, and the Under 5 Registration System is also at ward offices.

As part of the solution, the Better Immunization Data (BID) Initiative under PATH, funded by Gavi through the Health System Strengthening fund, was tasked to support integration of TImR with the Under 5 Birth Registration System and ensure the integrated system is piloted to at least one region of Tanzania. The

MOH through the IVD Program, together with the BID Initiative, managed to facilitate integration of the two systems and tested the integration to see how it works. The two systems can communicate and transfer data from one system to another. Facilities that provide routine immunization as well as facilities that perform only maternity services with no vaccine services use TImR to capture data and send it to the Under 5 Registration System. For health facilities that do not provide immunization services, the Under 5 Registration System will be used to share data to TImR.

Objectives

1. To describe the process of integrating the electronic Tanzania Immunization Registry (TImR) and the Under 5 Birth Registration System.

2. To share lessons learned on the integration process of the two systems.

Process

Integration of TImR and the Under 5 Birth Registration System went through different processes, including the following.

Stakeholders meeting

In February 2020, the MOH through the Directorate of Policy and Planning and the IVD Program—in collaboration with PORALG, PATH under the BID Initiative, and RITA initiated a meeting in Dodoma on the possibility of integrating TImR and the Under 5 Birth Registration System. After going through the two systems and understanding how the systems work, the team agreed on the need for integration. They agreed to use existing resources, such as using the same tablets and phones distributed by RITA and the IVD Program, while looking for extra resources for the additional costs. The team recommended facility visits to observe how the two systems work and identified two teams to advise on the information and communications technology (ICT) perspective. Another technical team was consulted to focus on MOH policy and guidelines on integration. The IVD Program and RITA were responsible for facilitating the integration process with support from PATH.

Facility visits

As a first step toward system integration, the MOH technical staff from the IVD Program, the ICT unit, and the Monitoring and Evaluation (M&E) unit, together with RITA, PORALG, and PATH, agreed to conduct a joint visit in the Geita Region, where both systems have been deployed, to understand the process flow and collect health care workers' insights on how to best streamline the two solutions. The team visited six facilities: Chato Hospital, Bwanga Hospital, Nzera Hospital, Buzirayombo Dispensary, and Nzera Ward in the Geita Region, all of which are using both two systems, TImR and Under 5 Birth Registration System. The team conducted observations and interviews to capture the following findings:

- There was a large workload at health facilities, including facilities that receive up to 100+ children per day, specifically at Bwanga and Nzera Hospitals.

- The two systems have different unique identifications; TImR uses a ten-digit barcode number and the Under 5 Birth Registration System uses the form number/birth certificate number.

- The two systems have different modes of sending data to the server—RITA's tool uses SMS and a BRS4G web-based application and TImR is an Android-based application.

- Both RITA systems have more registration variables compared to TImR.

- The digital system training was limited among the peers at health facilities, where those trained before were busy with health service delivery, making it hard to concurrently train and provide services. Thus, new health service providers who joined after introduction of the digital system were not aware of how to use the system, so when trained staff are absent, nobody is using the system.

- Some devices and smartphones used for registering children in the Under 5 Birth Registration System were not working.

Review Meeting

The MOH facilitated a technical team meeting with representatives from the IVD Program, the ICT and M&E units, PORALG, RITA, PATH, Regional Health Management Team, Council Health Management Team, and frontline health care workers from selected facilities in Mwanza Region for two days (March 12–13, 2022). The meeting aimed to discuss observation findings from the facilities visits, identify solutions, and set implementation plans for integration process.

Through this meeting, the team suggested an integrated system that should:

- Allow users to enter two identification numbers, the ten-digit barcode used by TImR and the Under 5 identification number (form number) used by RITA.

- Receive notification of latest updates from under 5 registrations used by Ward Executive Officers or hospitals that do not provide routine immunization.

- Accommodate all data elements in the Under 5 Registration System.

- Sync data to the Under 5 Registration System databases.

- List children who have been issued with birth certificates.

- An additional suggestion was that users should not update birth registration records in the system for children who have been issued with certificates to avoid contradiction of information between the two sources—the digital system and the certificate.

Business process and data flow

The business process and data flow for both systems were reviewed. It was learned that there are close similarities between the two systems in terms of demographic information being collected, users who are collecting that information, and devices used. For the two systems, the process starts by children receiving vaccines and being provided with a child health card that is used to identify them in the Under 5 Birth Registration System.

Requirement gathering

The process started by reviewing the current features and specification for both systems: the Tanzania Immunization Registry and Under 5 Birth Registration System. This was a key step to understand the structure of the system and the prioritized areas for enhancement. The system requirements were gathered through brainstorming, user stories, and document analysis approaches.

Results

The MOH through the IVD Program in collaboration with PORALG, RITA, and implementing partners agreed to use TImR for recording data and sending it to the Under 5 Birth Registration System for facilities that are providing routine immunization as well as facilities that provide only maternity services with no immunization services. For the health facilities that do not provide immunization services, the Under 5 Registration System will be used to share data to TImR.

The integration between TImR and the Under 5 Birth Registration System was tested to piloted facilities. When tested, information flow and data exchange among the two system was confirmed to be working.

Challenges and lessons learned

- The integration of TImR and the Under 5 Birth Registration System to live functionality was delayed ensuring data security and privacy policies and guidelines are agreed to among the two entities, the MOH and RITA.

- The instructions for registering children appeared to vary between health facilities. For example, the timing of registration for immunizations varies between locations; some of the facilities register children at their 6-week visit and others immediately when children are born. This was challenging for data management, setting up integration, and issuing birth certificates.

- There is the need for a strengthening mechanism for digital system use across all levels, from the national level to facility level, to ensure flow of data to both integrated systems. This was observed during facility visits where both TImR and the Under 5 Birth Registration System had not been used for more than a month.

- Running digital solutions at health facilities has cost implications that can be included within the Comprehensive Council Health Plan to allow facilities to manage information system expenses, such as internet expenses for data synchronization. During visits in the Geita Region, most facilities had localized data on their devices due to lack of internet bundles.

- Devices at facilities had minimum specifications and needed to be upgraded to use the integrated system.

Conclusion

The integration of the electronic Tanzania Immunization Registry with the Under 5 Birth Registration System is important to the MOH and RITA to improve data quality and influence immunization uptake and birth certification. The main actors need to be in agreement on technical aspects, policies, and guidelines so as to align with the health system in Tanzania.