![Better Immunization Data Initiative logo]

BID Learning Network (BLN) Discussion Meeting

Arusha, Tanzania | 7-10 December, 2015

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Abbreviations

BID	Better Immunization Data
BLN	BID Learning Network
BMGF	Bill & Melinda Gates Foundation
CDC	Centers for Disease Control and Prevention
CHW	Community Health Worker
CRVS	Civil Registration and Vital Statistics
DHIMS2	District Health Information Management System
DVD/MT	District Vaccine Data Management Tool
ECSA-Health	East, Central and Southern Africa Health Community
eLMIS	Electronic Logistics Management Information System
EPI	Expanded Program on Immunization
Gavi	, the Vaccine Alliance
GHS	Ghana Health Services
HIS	Health Information System
LMIS	Logistics Management Information System
MCH	Maternal and Child Health
OJT	On-the-job training
PVSD	Portable Vaccine Storage Device
SOP	Standard Operating Procedure
USAID	United States Agency for International Development
WHO	World Health Organization

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Introduction

The BLN is a platform for peer learning and information exchange intended to enable strong collaborative links between peers from different countries in support of improved data quality, collection, and use among participating countries. BLN meetings like the December Discussion Meeting held in Arusha, Tanzania are designed to be hands on and highly participatory events that become a rich learning experience for all attendees.

In this report, we share some of the discussions around strategies and approaches to improving data, quality, and use among participating countries and include highlights around the progress made in BID demonstration countries (Tanzania and Zambia), the successes and challenges they have had, and the way forward.

Meeting Participants

The meeting brought together eHealth and immunization program personnel from 17 sub-Saharan African countries. Partner organizations were represented by USAID, the Bill & Melinda Gates Foundation, Mott McDonald, Intellectual Ventures, Cooper Smith, World Vision, WHO, and ECSA-Health.

Countries Represented

- Burkina Faso
- Cameroon
- Cote d'Ivoire
- Ethiopia
- The Gambia
- Ghana
- Liberia
- Mali
- Mozambique
- Nigeria
- Senegal
- Sierra Leone
- South Africa
- Tanzania
- Uganda
- Zambia
- Zimbabwe

Meeting Objectives

The meeting objectives included:
- Disseminate progress, challenges, and opportunities in the BID Initiative demonstration countries.
- Explore options for packaging BID Initiative interventions for scaling in other African regions and countries.
- Receive updates on health information systems from design countries.
- Learn about donor priorities and facilitate donor/country interactions.
- Ascertain appropriateness and value addition of BLN activities from meeting participants.
- Recognize and share performance, excellence, and innovation of country participants.

Session Highlights & Key Messages

Welcome Remarks

In the welcome remarks, BID Initiative staff shared a high-level look at progress in its two demonstration countries and some challenges such as difficulties in attaining stakeholder alignment, high staff turnover rates, rapid changes in government leadership, health worker resistance to onsite training methodology, and poor data quality that slows down the development of immunization registries. The two demonstration countries continue to work toward solutions to these challenges.

Participants were encouraged to actively participate as both learners and teachers, acknowledging that everyone in the meeting had something to learn and something to share.

Field Visit & Report Back

Meeting participants visited five facilities selected from the 54 health facilities where BID Initiative solutions have rolled out, including: Kaloleni, Moivaro, Huruma (dispensary), Olkereyan (dispensary), and the Usa River (health centre). Before implementation, health workers were trained on the introduced immunization registry as well as other data use interventions such as a WhatsApp group, so that health workers from neighboring facilities can connect with one another. The immunization registry used in these facilities is accessed via a tablet device, allowing health workers to register children, record their vital statistics, and document the immunization services provided to each child. Health workers identify individuals using barcode scanners and unique barcodes attached to child health cards. This allows for quick access, update, and storage of critical information that help health workers and facility supervisors obtain stock balances and project future demands to more effectively plan for and deliver services. The pilot sites are also networked so that the system can identify services delivered in other health facilities, thus providing each facility with information regardless of where the child received vaccinations.

During the field visits, meeting participants made the following observations:

- The electronic immunization registry was well received by users and generally easy to use; the report back indicated that it has the potential to achieve what the immunization program of Tanzania has stated they would like to do.
- There were still challenges that need to be addressed to make the system more robust, specifically: barcodes are useful for defaulter tracing but expensive; it is not easy to trace defaulters and there was no system in place for reminding mothers to bring their children for vaccinations; report generation for use at point of service delivery are still a challenge; electricity and internet connectivity are inconsistent; lack of adequate training was resulting in under-utilization of the system; and in at least one facility, understanding of the amount of vaccines actually needed was an issue.
- As the electronic system is rolled out and improved upon, health workers continue to use paper-based systems. The current parallel use of systems results in duplication of work and lacks efficiency.
- BLN participants made the following recommendations:
    - Put a mechanism in place within the system that will enable health workers to trace children who do not report for specific antigens.
    - Explore the possibility of the system generating short message service (SMS) alerts to remind mothers/caregivers when their children are due for vaccination (especially because it was noted that nurses were good at updating mothers' details, including mobile numbers in the registry).
    - Address the issue of vaccinating children who move from one facility to another.
    - Include vaccine management data in the system and staff training status as some of the challenges may be attributed to staff not having training (this arises due to high staff turnover rates).
    - Expand the system to enable linkages between health facility, community health workers, and village leaders so that they can jointly be empowered to trace defaulters.
    - Reconcile quantities of vaccines used at the close of each vaccination session and enter a batch number of vaccine against each child that received the vaccine (this will improve stock management and in the case of an incident, make it easier to identify the associated vaccine batch).

Demonstration Country (Tanzania and Zambia) Symposium

The symposium was used as a platform for the two BID Initiative demonstration countries to share their objectives, activities, experiences, and lessons learned during the design, testing, and implementation phases. The following progress, challenges, and lessons learned emerged through this discussion and included:

- **Government ownership of BID solutions:** Both countries highlighted it was cardinal that governments and BID implementers understood that this work was to be owned and led by the government and that the role of BID Initiative was to work with the government and not in lieu of it. To this end, government leadership was critical in selecting systems and ensuring they aligned with the health information systems currently in use. It was

also clearly understood that immunization was only an entry point and the solution should be applicable to other health areas of concern to the government.

- **User-centered design and acceptance of BID solutions:** Both countries emphasized the use of User Advisory Groups (UAG) to enhance ownership and acceptability of BID solutions. The UAG was critical to ensuring solutions would be beneficial for intended users in demonstration countries.
- **Integration with the national Health Information System (HIS):** This is an on-going discussion which raised the importance of sorting out how immunization information systems will link into other HIS in-country; identification and use of existing systems within the countries; co-existence of paper and electronic systems for immunization information and how transitions will be made from paper to electronic; use of national identification documents (IDs) to help track individuals for immunization; use of barcodes and importance of birth registration to increase efficiency in data collection and management; and availability, quality, and appropriate use of data along the continuum of care.
- **Training and intervention deployment:** "Touches" whereby BID staff visit facilities to train or provide integrated, on-site supervision are conducted. This helps ensure a maximal number of health care providers are trained to mitigate against rapid staff turnover. District staff are included in the supervisory activities so they can provide continuous support to the facilities. Extra staffing support has also been extended to very busy facilities during the startup phase.
- **Roll-out of interventions:** In Tanzania, the approach was to start in Arusha region; Zambia is testing in four facilities and planning roll out initially in Livingstone District and then to the rest of the Southern Province. Based on lessons learned, feasibility in terms of available infrastructure and resources, the two countries are aiming to develop a solid package of interventions and tools that can be scaled further in both countries in collaboration with the Ministry and other partners.

Challenges

Both countries identified key challenges as follows:
- Geographic spread – particularly for Tanzania, which is a large country with 7,000 facilities and an average of six health workers per facility, requiring a minimum of four days of training per facility. This is further complicated by high staff turnover rates.
- Balancing the use of paper-based processes and the introduction of the new (electronic) system. The new data system has yet to be approved officially, so health workers are using two systems until there is a policy change (increases workload).
- Sustainability of the interventions, especially the barcodes (availability of paper, printers, cartridges, barcode stickers for the districts to provide the stickers to facilities). In Tanzania, this will soon be handed over to the Arusha municipality to begin managing as BID rolls out to additional districts.
- Data quality issues, and the time taken for quality back-entry into the data system.
- The lack of unique identifiers for children and difficulty in tracking defaulters.

- The interaction with other adjacent initiatives and the rollout beyond the Arusha region in Tanzania.
- The total cost of ownership estimates per country (cost of BID start up and sustainability).
- In Zambia, working with two ministries and gaining agreement and alignment with the way forward.

Lessons learned

- It is important to document and share lessons as we implement so others may learn from them. The two countries demonstrated how they have learned from each other and how Zambia is avoiding some pitfalls based on Tanzania's prior experiences.
- Leveraging health worker best practices. For example, in some areas nurses share stock statuses so that facilities with a surplus of vaccines can share with those that are having a stock out.

Design Country Experiences in HIS: Ghana and Senegal

Ghana

The Ghana BLN representative, Mr. Dominic Atweam, presented the Ghana Health Services' Health Information Exchange (HIE), which includes modules that could help integrate probable future systems. Mr. Atweam demonstrated the nationwide District Health Information Management Systems (DHIMS2) data sets and reports, indicators in DHIMS2, DVD-MT like dashboard, store reports at national and regional levels, facility reports, Excel template to allow data exchange from DHIMS2 to DVD MT, and the e-TRACKER currently used for MCH services, (which could also be used for immunization, TB and HIV). This tracker greatly reduces workload at the facility by automatically pushing data to the system, aggregating data and generating reports.

The following key takeaways during this session included:
- **Dual entry:** In the past, districts were doing double entry (DHIS2 and DVD/MT). Now, instead of repeating data entry, DHIS2 pulls data from DVD/MT.
- **Improved timeliness of reporting:** One of the very important aspects of data quality is timeliness. Ghana has reached 97% timeliness in reporting, due to the creation of competition (reassignment and demotions) within the districts, which encourages more timely reports.
- **Connectivity:** The solution applied to connectivity interruptions is to go to offline mode and auto-update mode, which works like a virus scanner and will update when internet connection is available.
- **Creation of a unique identifier using integration:** The e-Tracker combines IDs from the various systems and generates its own unique ID that will be integrated into whatever national ID is adopted in the country at a later date.

Senegal

Senegal's demonstration related to a supply chain solution known as the Passive Vaccine Storage Device (PVSD), which was developed for use in two countries. This device overcomes some of the challenges around transporting vaccines while maintaining the cold chain. Senegal participants shared how this made their operations more efficient and highlighted that the device received WHO pre-qualification in January 2015. A detailed cost-analysis is underway and it is anticipated that the device will be deployed in other countries in Africa and Asia in the near future.

Country Tête à Tête

During this session, five countries posed questions (highlighted below) that were of importance to them and successive groups of participants rotated through tables to provide input. Key outcomes of those discussions are summarized below.

Liberia

Question: How can we resolve the human resource deficit which is limiting the effectiveness of HIS implementation?

Feedback/solutions posed by participants:
- Hire a short-term data entry person to enter backlog of immunization data that was originally collected on paper. The initial costs related to the data entry would be high, but will decrease after the initial entry of the backlog data.
- Have a permanent data assistant who will work with the provider so nurses can spend more time providing services. The drawback of this approach could be the additional expense of having another person.
- Use community volunteers to work on the tablet and upload information while the provider is delivering immunization. These volunteers will have to be remunerated if kept for long periods. Financial constraints were again highlighted.
- Re-orienting existing human resources through:
  - Re-deployment of staff. All facilities don't have equal workload so tasks could be shifted. For example, transfer staff to facilities with higher workloads when nurses are on leave or the facility is under-staffed.
  - Retraining available support staff such as cleaners to support providers. However, this implies increased costs (higher remunerations commensurate with increased responsibility of the support staff).
- Engage caregivers/parents to enter a part of the data related to the children they care for. However, challenges related to this could include lack of or low computer literacy, assuring the quality of data entered, and cost-intensity due to multiplication of equipment.

- Advocate for a government policy that enables data management across functions in facilities rather than a standalone immunization registry or a standalone MCH registry. This would help avoid duplication and increase motivation.
- Address issues of data migration and system integration by:
  - o Streamlining immunization registry and reporting forms, keeping only minimum data that are meaningful and useful. This would give providers more time to focus on the patient. However, it was acknowledged that it is difficult to agree/negotiate which data should be considered *essential*.
  - o Have dropdown lists rather than field entries.

The Gambia

Question: How can I implement defaulter tracing mechanisms?

Feedback/solutions posed by participants:
- Use CHW and community volunteers. It was pointed out that in the Gambian context, this use of CHW would be a very good strategy considering community health nurses form a strong existent cadre.
- Engage traditional healers.
- Develop a child register that CHW keep and maintain.
- Continue to sensitize mothers.

Cameroon

Question: How can I improve data quality? More specifically, how can I solve the problem of incoherence between data sources?

Feedback/solutions posed by participants:
- The causes of this incoherence are personal as well as systemic: unavailability of data tools; severe underuse of tools like tally sheets, registries, monthly reports and vaccination cards, (especially in countries with stronger reliance on outreach strategies). Recognizing this, Cameroon is revising all data management tools, addressing training strategies and their availability at all levels. The meeting also proposed quality assessment and data validation activities as follows:
  - o Conducting regular data quality assessments and data validation. This validation can be put into place at several levels simultaneously- each set of data must be validated by the facility as well as at district level.
  - o Regular data harmonization meetings at state and central levels including instituting spot checks to verify quality of data. It was further proposed that this should be supported by increased accountability in the system by instituting appropriate deadlines, assigning responsibilities, and improving quality of supervision. All this should be coupled with health worker training and impressing upon them the hazards of bad quality data.

Burkina Faso

Question: How can I improve data archiving across the health system, from community level upwards?

Feedback/solutions posed by participants:
- Electronic recording of data was suggested by all countries, which should be preceded by a plan for migration/transition to electronic archiving. It was noted that steps should be taken to ensure data back-up.
- Where it is not possible to go electronic, institute better management of paper-based records (e.g. tagging, better filing system, etc.).
- For paper-based registers, use registers with carbonized paper to decrease duplicate entry. Facilities could keep one copy and send the other to higher levels for analysis.
- Design and implement tally sheets to summarize data in ledgers. Send only the tallies to higher levels.
- Train personnel and build capacity through:
  - Training community-level personnel in archiving and data storage.
  - Including discussions on data archiving within facilities during weekly meetings.
- Additional suggestions included the engagement of mothers so that they maintained and retained vaccination cards, reinforced by making the production of a vaccination card a pre-requisite for enrolling into school.
  - This is being implemented in Sierra Leone and Ethiopia has a system of maintaining family records that others could learn from.
  - This system requires a person to be specifically responsible for making sure records are created and maintained. It was also suggested that vaccination cards should be attached to birth records where feasible.

BID Learning Network (BLN)

Question: How can we promote country ownership of the BLN?

Feedback/solutions posed by participants:
- Take a bottom-up approach (from within the country) and then reach to regional level.
- Identify focal persons in each country to organize linkages between BLN and governments.
- Reach out to national and regional learning networks.
- Make information accessible and have good communication around the value that BLN adds.
- Take advantage of areas where governments are interested such as integration and interoperability, and use them as entry points to make BLN known.
- Shift activity progressively towards the country and away from BID staff.
- More learning activities in the continent and using immunization only as an entry point.

Partner Panel Discussion: Immunization System Priorities

The session on country-partner interaction involved panelists representing the World Health Organization (WHO), the Bill & Melinda Gates Foundation (BMGF), the Gavi perspective (Gavi was unable to send a representative to the meeting but Skye Gilbert from BMGF shared about their strategies), and USAID. The takeaway messages from this discussion are summarized below:

- Data systems and use are increasingly getting attention as the demand for evidence-based decision making has increased. Data that is of a high quality, can be used for management within health systems, and enable donor accountability is now considered cardinal.
- It is an expectation that data should be studied and translated into actionable plans.
- There is an increased focus on country-led, country-owned systems and it is an expectation that countries will coordinate donors and partners. Ghana and Malawi were highlighted as examples where this is happening.
- In order to make successful funding requests, one must understand donor priorities, appropriately articulate and evidence the problem statement, and illustrate integration.

Parking Lot Breakout Discussions

To allow participants to have in-depth discussions of topics that emerged as important during the meeting but to which no specific sessions had been allocated, discussions were held with each table discussing an issue noted on the parking lot flip chart. Key points of these conversations are summarized below.

Donor engagement

The points made here were that it was critical to understand donor priorities and that the country approach to develop one health plan has proved challenging in terms of obtaining funding. It was suggested that it could be beneficial to have two plans: the ideal plan and a more realistic plan which prioritizes activities in the event that funding gaps occur. It is paramount to ensure that data credibility is established through periodic, objective reviews of strategic plans with the support of in-country partners. The immunization manager should play an active role in this as well as in advocating for system needs and budget setting.

Cost-benefit analysis

There was consensus that cost-benefit analyses are essential and should be part of overall assessments and evaluations so that there is a strong evidence base for HIS. Such assessments include costs, process improvements, and health outcomes. Though difficult, cost-benefit analyses can be done. The greater challenge is to compile the evidence base to influence decision-making. Project management and advocacy is as important as – if not more important than – building the evidence base itself (including cost-analysis). Participants proposed that each country should have "champions" within the country who advocate these

innovations in HIS. Some countries were keen to act upon these issues immediately upon return to their own countries, particularly after hearing the experiences of Malawi, Tanzania, Nigeria, and Gambia. Specifically, they want to address the decision-maker hesitations by shifting the view of HIS as "interventions" in and of themselves, and portraying them more as catalysts to known health interventions.

Data quality

This discussion highlighted the value of an electronic system and acknowledged that success could only be achieved with adequate training and supervision of users. It was also proposed that there should be a paper-based back up system. According to participants, this should be supported with efficient archiving and retrieval systems. It was also observed that electronic systems in themselves do not guarantee quality, and standardized data audits would be important. Additionally, data collection tools would have to be streamlined and reduced to a minimum number to lessen workload and efficient feedback loops would need to be created.

Back entry of data

Back entry of data is resource-consuming and one must assess the need for this activity. The group stated that one should seriously assess the need for back-entering the data, and take into account the costs and benefits. Ghana related their experience in back entry of transactional data (client-based individual records that can be tracked) that went back a year, because of a need to have a history of the children in the immunization program. They faced both manpower and systems challenges as the system could not backdate readily (resolved later) and the work was time consuming. Another example from Zambia was the back dating of a quarter's data to have comparisons for the new e-LMIS system. In both cases, there was evident justification for back entry despite the high human resource investment required. The issue of how long parallel systems should be run was raised and the group resolved that this was context-specific and should be based on standard operating procedures defined in that context.

National Identification Documents (IDs)

This was a noted as a problem shared by all countries and there is ongoing debate about whether or not you need a national ID. The group noted that at the very least, you need a common patient ID that cuts across all verticals. This is an issue that is cross-cutting across government ministries, and a lack of coordination between ministries is often responsible for failed national ID systems.

It was stated that partners have a key role to play here since they already engage with different stakeholder ministries and can bring them all to the table to discuss the matter. The group also thought it was important to explore how the migration from a birth registration (where biometrics aren't possible) to a more robust national ID could occur, particularly as most countries already issue birth registrations and give national IDs once a person attains 18 years of age.

Feedback from Participants

Remaining relevant and providing practical learning among peers is critical for the BLN. As noted by a representative from Ghana*, "I must say that since 2012 when we went online, most of the things we have done have used things that we have learnt from the BID Learning Network."* This is the aim of the BLN. In order to remain relevant, time was allocated to provide feedback through an online BLN network analysis form as well as through a paper-based meeting evaluation form. These are being analyzed and will inform future BLN activities.

Awards for Outstanding Contributions to the BID Initiative

This session recognized those who had made notable contributions to improving data collection, quality, and use as the BID solution was being designed or rolled out. Individual "Data Champions" and facilities were given awards and are summarized below.

Martha Precious Mazala (Zambia)

The "Data champion" award for consistent participation during the BID Initiative testing phase, her understanding of the value of using quality data, and her willingness to provide constructive feedback as part of the UAG was given to Ms. Martha Precious Mazala.

Linda Albine (Tanzania)

The "Data Champion" award for commitment in filling data on paper forms despite a very busy schedule and for innovations she introduced in filing and archiving (including her willingness to receive and provide services to children from facilities other than her own) was given to Ms. Linda Albine. She was also recognized as being very good at educating parents about the barcodes, and by doing so, promoting adoption and acceptance.

Facility awards

In Zambia, the award was given to all four BID Initiative testing facilities. In Tanzania, the Mareu Health Facility was chosen for its on-time submission of data, tracking of defaulters using CommCare-enabled individual mobiles, the peer training it conducts to encourage use of the system and its success and independence in taking up the system with minimal supervision, and the facility management's support to BID efforts.

Conclusions

Dr. Dafrossa Lyimo closed the meeting on behalf of the Tanzanian government. During her official closing, she shared, *"We are going back home enriched with knowledge … communicate what we have learned to folks back home, so that we have an opportunity to scale up what we have learnt".* She noted that this work is the heart of the BLN and as the demo countries continue implementing BID interventions, all countries should openly share and learn from one

another. She thanked meeting participants and all who had contributed to making the meeting a success, and wished all safe journeys back to their homes.

To access presentations from the BLN Discussion Meeting, visit:

http://bidinitiative.org/bid-learning-network/resources/bln-discussion-meeting-presentations-7-11-december-2015/

Appendix 1: List of Meeting Participants

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