

Annex 2: Project Details

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#1 - Increasing Immunization Coverage in Ghana through Identification of eHealth Services that Transform Service Delivery

Increasing Immunization Coverage in Ghana through Identification of eHealth Services that Transform Service Delivery	
Field	Description
1. Country	Ghana
2. Brief description of the intervention	<p>The goals of the project are:</p> <ol style="list-style-type: none"> Ontology of “common” mhealth technical building blocks, use cases, and existing tools that can be applied in any country. Apply this ontology in combination with the existing collaborative requirements development methodology (CRDM) to develop functional requirements for Ghana in areas that are weakly implemented. Recommend how this methodology can be replicated globally. Provide an analysis of how mHealth technologies and tools can be implemented to “move the dial” or transform immunization coverage in Ghana and beyond.
3. Timing and frequency of the activities	Dec. 2011 - present
4. Scale of the intervention	National (GHS) visits were conducted in the Eastern, Central, and Ashanti Regions
5. Who is involved	National officials and the district health director and staff (including public health managers, data managers, technical officers). The team visited hospitals, district headquarters, health centers, and community-based health planning and services sites in all locations.
6. How successful were the interventions?	<p>The project identified the 5 levers required to maximize the impact of health service delivery at the community level:</p> <ul style="list-style-type: none"> Demand generation Registration Frontline workers Supply chain Adherence monitoring <p>The project is in process to interconnect these 5 various functions into an integrated system using MOTECH. Specifically, the outcomes will address improved immunization coverage, delivering family health interventions and surveillance.</p>
7. What are the enablers/drivers?	<p>Stakeholders identified a total of nine areas where significant opportunities exist for improvement and selected three high priority items listed below:</p> <ol style="list-style-type: none"> Defaulter prevention: encourage patients to attend their visits within the appropriate or recommended time frame. Defaulter tracing: identify individuals who are past due for their vaccines or visits. Clinic/outreach planning: provide planning information (e.g. number of vaccines for each antigen) to bring on outreach activities to health workers.
8. What are the challenges/barriers?	
9. Recommendations	They will conduct additional investigation in each of the priority areas to document the specific workflows, user scenarios, and use case examples for Ghana. Further, they will document potential solutions including interoperability with the proposed national database.

#2 - The Malaria Control and Evaluation Partnership in Africa (MACEPA)

The Malaria Control and Evaluation Partnership in Africa (MACEPA)	
Field	Description
1. Country	Zambia
2. Brief description of the intervention	Using District Health Information System (DHIS2) open source software and its Java-based Mobile Client, staff at the clinics report weekly on a small carefully chosen data set that includes the number of tests done, number of positive tests, number of people given malaria treatment and stock information. Low-cost mobile phones and prepaid SIM cards are supplied to the health workers. Within each health facility catchment area, the system also extends surveillance into the communities through a network of community health workers (CHWs). A Data Community Health Worker (DCHW) and is given the responsibility for reporting data into the DHIS2 server for groups of CHWs to improve on the disaggregation of focal transmission sites. The DCHW receives reports from the other CHWs on a monthly basis, concentrating data entry training to a smaller group of health workers and creating a cluster of data collectors around one reporter. This data is used to monitor the malaria situation in the region, direct more specific interventions and to distribute stocks effectively.
3. Timing and frequency of the activities	2011
4. Scale of the intervention	National MOH, Malaria Control Program, health workers (including data community health workers)
5. Who is involved	Over 800 mobile phones in 23 southern Zambian districts have been equipped with DHIS2 software. Nearly 600 facilities have been trained, and an additional 1,200 CHWs who report data through their catchment area's DCHW.
6. How successful were the interventions?	Only the DCHW is given a mobile phone at the start of the project, but by consistently reporting timely data over a period of time, the other CHWs are able to work towards a cheaper non-Java-enabled phone and receive additional airtime, improving communication channels locally for responding to malaria infections. The phone and credits earned are used as a work tool, making it easier for clinic staff to reach individual health workers to alert them of malaria cases that need to be responded actively to. The DCHW is also given a small financial incentive for completing the reporting work while the originating CHW is given a larger sum for providing the data. Money is transferred as airtime to the CHW's mobile subscription.
7. What are the enablers/ drivers?	<ul style="list-style-type: none"> Integrating within the national HMIS system allows for wider stakeholder buy-in. Rolling out the mobile platform helped leverage additional developments on the main HMIS system, including establishing the community level HMIS. DHIS2 is a complex system and having a large and consistent user base in country is the best way to develop communities of practice for data sharing, problem solving and learning. The cost of hosting a local server can be expensive and may require dedicated technical skills that are expensive. We found that a hosted server option, such as Amazon Web Services or Linode.com, minimizes server deployment and maintenance costs and works well for these efforts. Using a platform such as DHIS2 that works across cellular network providers allow local users to use the network with the best local service Providing low-end phones with 'just enough' capabilities reduces costs

	<p>and risks on investments in the phones provided.</p> <ul style="list-style-type: none"> • Training is critical for supporting DHIS2 nationally and requires finding a training partner for the system. • Tying reporting of data to talk time allocations encourages reporting and accountability at the end-user level.
8. What are the challenges/barriers	The broad spectrum and scope of DHIS2 and having individual pieces integrate with other health areas and partners/implementers.
9. Recommendations	The malaria surveillance system delivers real time data for monitoring the disease burden and can be used as an evidence-based decision-making tool for eliminating malaria in Zambia's five targeted zones by 2015.

#3 - Mobile Midwife Platform

Mobile Midwife Platform	
Field	Description
1. Country	India
2. Brief description of the intervention	<p>The mobile midwife platform improves postnatal maternal and newborn care in rural clinic- and home-based settings in India by giving midwives a mobile device for guidance on clinical decision-making, data collection, medical record storage, and patient education. Mobile health (mHealth) can enable community health workers, health centers, and national health systems to better report and use information in a timely and systematic manner.</p> <p>Focus: Clinical decision support device for midwives and data entry system using Open Data Kit on Android phones.</p> <p>Building on established principles of BCC and incorporating them into affordable new technologies, PATH developed the Digital Public Health (DPH) platform which leverages a local-to-global approach with community-led, culturally appropriate video to demonstrate globally informed health interventions to health care workers and patients during household visits and community gatherings. This component of the project integrates video-based maternal and child health education into existing community health systems to augment current health efforts with the DPH platform. Modeled after a local NGO's successful program for improved agriculture practices in India, DPH video content is created, filmed, and reviewed in the community, bolstering local engagement, empowerment, and participation. By customizing videos that combine scientific evidence and visual demonstrations with local customs, dialects, and input, a wide spectrum of health topics can be messaged in response to health issues and behaviors.</p>
3. Timing and frequency of the activities	October 2010 – August 2013
4. Scale of the intervention	Rajasthan region
5. Who is involved	The pilot study will involve two clinics in rural Rajasthan, seven ARTH-trained midwives and physicians, and more than 200 home-based visits. Upon the successful completion of the study, the project team expects to broaden the application of the MMP to include antenatal care and to extend the program to government-employed midwives in the region.
6. How successful were the interventions?	<p>The tool provides midwives with localized guidance on clinical decisions, patient record management, and instructional support. These components enable timely and improved health care service delivery, improved patient education, and real-time data transmission and aggregation for field-based consultation, organizational research, and process improvement.</p> <p>Customized educational videos can now be developed at the community level and shown using low-cost video projectors and cell phones. This novel globally informed, locally developed approach balances community perspectives with scientific evidence.</p>
7. What are the enablers/drivers?	<p>Leveraging the abilities of all available caregivers helps to maximize human resources and lessen capacity constraints.</p> <p>By providing a tool that offers point-of-care guidance in accordance to local adaptations of global best practices, lesser-skilled providers can be empowered to act on critical health information and improve the services they deliver, reduce delays, and improve access to appropriate care.</p>

	The adaptability, community engagement, and effectiveness of the DPH model will facilitate the integration of this approach into a wide range of health programs.
8. What are the challenges/barriers?	Mobile phone use can be highly disruptive to existing workflows – especially among older healthcare workers. Problems were around small font size and limited eyesight, as well as difficulty using a virtual keyboard for data entry were all design issues that need to be addressed.
9. Recommendations	Preliminary results from work in Rajasthan, India, found that midwives using the DPH platform felt that they provided more complete information, better engaged the mother’s support network, and improved their credibility and authority in the eyes of their patients.

#4 - PHRplus – Improving the Analysis and Use of Vaccine-Preventable Disease Surveillance Information in Georgia

PHRplus - Improving the Analysis and Use of Vaccine-Preventable Disease Surveillance Information in Georgia	
Field	Description
1. Country	Georgia
2. Brief description of the intervention	<p>In Georgia, <i>PHRplus</i> is currently working with government counterparts at the national and local levels to strengthen vaccine preventable disease prevention and control activities through the dissemination of guidelines, improved tools, and capacity building at the district level. The primary objectives of this operations research study are: 1) to document the implementation and effectiveness of the surveillance strengthening intervention package in promoting desired analysis and response at the district level; and 2) to provide an in-depth assessment and description of how individual- and system-level factors affect the effectiveness and success of the job aid intervention package.</p> <p>The intervention package included: the development and introduction of surveillance guidelines for district-level public health managers along with a surveillance handbook for health facility staff, a job aid for district centers of public health (CPHs), training in the guidelines for both district CPH and facility staff and on-the-job technical assistance on an as-needed basis, and development of respective surveillance financial standards and financial assistance for selected analysis and response functions.</p>
3. Timing and frequency of the activities	Sept 2003 to Apr 2004, the training component of the intervention consisted of workshops, seminars, and on-the-job technical assistance within 5 months of introducing the job aids and new guidelines
4. Scale of the intervention	Uniformly implemented in all 12 districts within a single region (Imereti).
5. Who is involved	Public – district and regional level staff working at CPHs.
6. How successful were the interventions?	New surveillance guidelines and job aids were available at the district level and that district level staff had been trained (and were familiar) with how to use them. The completeness, timeliness, and accuracy of data from subordinate health facilities had significantly improved since the introduction of the intervention package. CPH staff felt that they were capable and motivated to perform analysis of captured data. It was believed that specific components of the intervention – the continuous trainings and technical assistance and availability of the guidelines – led to improved knowledge about current regulations at both the local and health facility levels, clarification of the roles and responsibilities of staff at regional, district, and health facility levels, and as a result, improved availability and analysis of data.
7. What are the enablers/ drivers?	Regarding the job aid portion of the intervention there has been improved understanding of their roles, job functions, and regulations since the introduction of the intervention package. To assist with the analysis of data a workbook was provided that included detailed instructions on how to complete data analysis. The focus on building capacity of the individuals utilizing the data at the facility-level (CPHs) was important.
8. What are the challenges/ barriers?	First, while the situation has improved, CPH staff still cited there was insufficient availability of quality surveillance data from subordinate health facilities. The unavailability of phones and electricity in health facilities and CPH offices, low levels of health care utilization, and poor reporting of data from some private providers also play a role in limiting the availability and quality of surveillance data. Second, there appears to be a common perception that even if surveillance data are analyzed (or aggregated), they will likely not be used by those at higher levels.

	<p>Third, the CPH staff frequently expressed the fact that they had no authority to impose penalties on low-performing health facilities, no matter how poorly they carried out their surveillance duties. Fourth, limitations of government resources to carry out surveillance responses was frequently cited as a reason for why analysis is not used to carry out prevention and control responses. And last, low salaries were cited as a reason why some CPH staff were not always motivated to perform their surveillance tasks adequately.</p> <p>Additionally motivation to use analyzed data appeared to be tempered by the following barriers: limited availability of resources to carry out surveillance response, deterioration of public health functions as a result of health care reform, and limited priority placed on vaccine preventable disease (VPD) surveillance by local governments.</p> <p>External factors, particularly those that operate at the health systems level, played an important role in limiting its effectiveness in enhancing data analysis and response. Specifically, accountability relationships within Georgia’s health system are often weak.</p>
<p>10. Recommendations</p>	<p>While there may have been sufficient training in basic surveillance and epidemiology, additional training in using the workbooks for analysis and evidence-based decision making may be in order. CPH staff directors claimed that more training in analytical skills was needed, especially for newly hired staff.</p> <p>In order to address the health systems factors that act as barriers in Georgia, it will be critical to identify and assess the various accountability roles that actors in the surveillance and response system play. Three types of questions should be considered in order to improve the situation:</p> <ul style="list-style-type: none"> • who is accountable for implementing • who is accountable for financing the various functions • to whom are they accountable

#5 - Project Optimize Albania

Project Optimize Albania	
Field	Description
1. Country	Albania
2. Brief description of the intervention	<p>Immunization Information System (IIS). The project developed and implemented an online Immunization Information System that can record immunization data and manage vaccine stock. The new system—named IIS—can schedule and record child immunizations, as well as manage vaccine stock and storage. The aim of the project was to measure the impact of accurate and timely immunization data on immunization and vaccine stock management.</p> <p>The objectives of the system are to:</p> <ol style="list-style-type: none"> 1. Help ensure timely and equal access to immunization by all children. 2. Generate accurate and useful data that can be used to improve the management of the vaccination program. 3. Improve vaccine stock management by providing better control of wastage and buffer stocks, and by enabling vaccine supply to be more closely matched with demand. 4. Reduce the administrative burden of health workers by automating time-consuming tasks.
3. Timing and frequency of the activities	Nov 2008 – Jan 2013, training for IIS occurred 3 months prior to the rollout of the new IIS.
4. Scale of the intervention	Pilot conducted in Shkoder district (24 nurses involved)
5. Who is involved	<p>Staff at all levels (national, district, maternity hospital, and health center) can access IIS, although their access rights are determined by their role and by their level. Additionally:</p> <ul style="list-style-type: none"> • The head of the Department of Epidemiology and Control of Infectious Diseases at the IPH championed the project within the IPH and the MOH, and made key decisions when necessary. • The Albanian Expanded Programme on Immunization (EPI) manager assumed the role of project coordinator, and was responsible for the definition of user requirements and functional design in coordination with other users of the system. • Two staff at Shkoder district, the chief epidemiologist and the head of vaccinators, assumed responsibility for the implementation, monitoring, and evaluation of the pilot system in Shkoder. They were also instrumental in defining system design and needs. • A local information technology (IT) company, INET Albania, was hired through a competitive process to develop the application and database based on local requirements and needs. • Project Optimize (WHO/PATH) provided technical and financial assistance to facilitate the project. • 24 nurses within Shkoder district participated in piloting the IIS.
6. How successful were the interventions?	<p>It has produced more accurate and timely data, and has also demonstrated that these data can be effectively used by health care workers. Additional benefits include:</p> <ul style="list-style-type: none"> • Managers can now base strategic decisions on the data the system provides them. They can find answers, discuss issues, and make decisions in a timely manner.

	<ul style="list-style-type: none"> Supervisors now have new tools to better understand the challenges faced by health workers, to assess their performance, and to help them improve. Supervisors can now answer questions such as: how many unimmunized children does each center have, and what are the resources required to find and vaccinate them? What is the wastage for each center, and how much buffer stock do they keep? Vaccinators can collaborate more effectively between each other. Overall, IIS empowers vaccinators to improve the quality of their work as it provides them with concrete tasks (unvaccinated children) to focus on, instead of a rather abstract coverage indicator.
<p>7. What are the enablers/ drivers?</p>	<p>The automation of analysis (i.e. by the IIS generating an immunization schedule for a child as soon as the child is registered) simplifies the health workers task of sorting through registration records on a monthly basis in order to develop vaccination schedules and correlate the required stock needed to accommodate the schedule.</p> <p>Also the inclusion of the end-users in the development of the IIS.</p>
<p>8. What are the challenges/barriers?</p>	<ol style="list-style-type: none"> Delays in development – the company developing IIS was challenged by having end-users-rather than developers-defining software functionality Reliability of the system – initial overloading of the system at launch caused frequent crashes. The need for interoperability – the IIS was developed in isolation of the larger health system HMIS. Distribution of workload – larger health facilities had a more extensive data migration from previous years due to caseload figures Connectivity issues – continual challenge, mobile options might assist, but long-term solutions are needed Ongoing funding requirements – routine maintenance and scale-up costs will need to be internally generated and sustained
<p>9. Recommendations</p>	<ol style="list-style-type: none"> It is not necessary to reinvent the wheel—many other countries have implemented immunization information systems or are planning to do so. At the start of the IIS project in Albania, not enough time was spent exploring what could be learned from similar projects elsewhere. Public health officials often lack the tools and the guidance to undertake complex information systems projects. Without collaboration within the context of Optimize, it would have been much harder for the Albanian IPH to successfully develop and implement a software system like IIS. There is a need for close collaboration between IT and health staff. This is not always easy, but in the Albania project, the formal documentation of user requirements helped to develop a common understanding from the start. When the system was tested and did not meet expectations, the NIP manager was able to point to these requirements. They helped her to take control of the project. System development is a highly iterative process, requiring both formal and informal testing. In all phases of development, valuable feedback from users and managers needs to be captured and incorporated. Conversations with partners and stakeholders must begin early, so that everybody feels they are stakeholders in the project and want to make it work. Equally important is the need to involve future users of the system

early in the project.

6. Computerizing processes that are well understood is easier than implementing a system that introduces a new process or activity. In the case of Albania, the stock management process was relatively informal, and health center staff did not typically keep a stock ledger or register stock transactions in any other way. This meant that new stock management processes required by the IIS system were less well understood by the system users.

7. New abilities mean new challenges—before the system was available, district staff had little information about stock management and only knew that overall coverage was high. New information about unimmunized children, wastage, and stock levels now leads to more work for them, but better overall performance of the immunization program.

Based on the Albania experience, countries embarking on a similar effort should have the following conditions in place:

1. A registry culture, in which health workers already register children in a paper book or card system. As we discovered in Albania, supporting existing processes with a system is much easier than implementing new processes through an information system.
2. A method of identifying children or their parents. This can be through formal national identification cards, names, dates and places of birth, telephone number, etc. It can also leverage the existing health or immunization cards on which a number or a barcode could be added.
3. A minimal level of Internet access, either through computers or cell phones, at least down to the district level. Remote health centers can be served through appropriate paper systems.
4. Access to the knowledge and tools to acquire or develop, scale, and maintain a computerized information system. Based on the Albania experience, we realize that not many countries will have the resources to develop a system from scratch.

#6 - Project Optimize Senegal - Computerized LMIS for Moving Warehouse

Project Optimize Senegal – Computerized LMIS for Moving Warehouse	
Field	Description
1. Country	Senegal
2. Brief description of the intervention	<p>The moving warehouse demonstration project tested a new LMIS that links moving warehouse trucks to other health information systems, enabling fast and accurate data flow on vaccine stock and other health products distributed by the moving warehouse.</p> <p>Moving warehouse trucks were equipped with laptop computers and a wireless Internet connection, enabling staff to access the new LMIS and update information on vaccine stock. By doing so, they can share data with district management teams and regional and national storage facilities. With each monthly delivery, moving warehouse staff record in the LMIS the health center's current vaccine stock levels as well as the number of vaccines administered that month. They then top up the health center's vaccine stock to the required level.</p>
3. Timing/frequency of the activities	June 2009 – Aug. 2012
4. Scale of the intervention	Saint-Louis Region
5. Who is involved	LMIS training was provided to moving warehouse staff members, PNA store managers, and district EPI supervisors
6. How successful were the interventions?	During this time, no stockouts have been recorded at the national or regional level.
7. What are the enablers/drivers?	The most commonly cited factors of acceptability included the availability of vaccines and other health products and decreased workload.
8. What are the challenges/Barriers?	<p>Although the moving warehouse is now supported by the region's medical management teams and district health management teams, the latter have not taken advantage of data provided by the moving warehouse team on existing stock levels and quantities of vaccines, drugs, and other public health products distributed to health posts. Taking advantage of these data would have enabled them to more closely monitor stock levels and movements at the district and regional level.</p> <p>District and regional health management teams have been more interested in data on coverage and disease incidence because this information is requested from them by their supervisors to assess their performance. But because of the ongoing strike by health workers, the data have been unavailable. The lack of outcome and impact data that interests EPI supervisors the most is likely the cause of their lack of interest in input and process data, including vaccine management data.</p> <p>Consequently, their scheduling, monitoring, and supervision responsibilities received a lower priority, leaving the moving warehouse without proper oversight and supervision.</p>
9. Recommendations	Potential stakeholders are convinced by facts and data providing evidence of success and often wait for such evidence before fully engaging in a new system. It was only after evidence of successful vaccine deliveries by the moving warehouse for nearly one year that other public health programs (reproductive health, AIDS, malaria, and TB) started to include their products. Similarly, district health committees who initially did not want the moving warehouse to deliver drugs intended to be sold to clients only started including these drugs in the moving warehouse after seeing one year of moving warehouse implementation.

#7 - Project Optimize South Sudan - Logistimo

Project Optimize South Sudan - Logistimo	
Field	Description
1. Country	South Sudan
2. Brief description of the intervention	<p>The goal of the activity was to test the feasibility and usefulness of implementing a mobile and cloud-based vaccine stock management information system capable of providing EPI staff at all levels timely access to vaccine stock and demand data. The objectives of the system are:</p> <ul style="list-style-type: none"> • To generate accurate and useful data that can be used to improve the management of the vaccination program. • To improve vaccine stock management by providing better control over buffer stocks and wastage, enabling vaccine supply to be more closely matched with demand. • To improve accountability of health workers to report on consumption, stock status, and wastage. <p>The Logistimo mobile phone application, called LogiMobile, can be used on common, low-cost mobile phones; the application itself requires only two hours of training for the operator to become proficient. Using a simple graphical interface, county stock managers record vaccine stock levels by navigating a standard mobile phone interface.</p>
3. Timing and frequency of the activities	March 2012 – May 2013
4. Scale of the intervention	Central Stores (National), Central Equatoria (Regional) and Juba, Kajo Keji, Lainya, Morobo, Terekeka and Yei (County/District)
5. Who is involved	National, regional, and district government officials
6. How successful were the interventions?	<p>A cloud-based LMIS that uses mobile phones to register stock transactions and submit orders for additional stock has the potential to simplify stock ordering, saving time currently spent by stock managers preparing and sending paper orders. It also has the potential to make stock data more accessible, enabling state managers to make ordering or dispatch decisions according to reliable and easy-to-understand data in real time. These were the observed results.</p> <p>After a slow start in early 2012, the system use took off after the recruitment of a local coordinator in September 2013. This success was not uniform, however; by the end of the project, two states and two counties still did not use the system at all, mostly because of staff turnover.</p>
7. What are the enablers/drivers?	<p>Helped users to understand vaccine needs, establish safety stock margins, and optimize order quantities: Rational levels of stock are maintained between a minimum of one month and a maximum of four months. By providing real-time visibility on stock balances, as well as the data necessary to estimate demand (including average monthly consumption for each vaccine), Logistimo enables users to make better-informed decisions on the quantities of vaccine stock to order, as the system automatically calculates the safety stock level of each antigen.</p> <p>Provided an alert system: Stock managers in South Sudan received instant notifications through SMS and email on a weekly and monthly basis, including:</p>

	<ul style="list-style-type: none"> • Orders—fulfillment due, no order activity, order created, order expired/untouched, order modified, and order status changed. • Inventory—no inventory activity, out of stock, stock count differs from current stock, stock counted, stock issued, stock received, stock wasted, and unsafe stock (< MIN). <p>These alert messages served as reminder, which has helped to regularize stock data and improve consistency in inventory transactions.</p> <p>Made the ordering process easier and faster: Life was made easier for people because no paper orders need to be prepared and sent to the higher levels. The logistics of sending paper forms in South Sudan are complicated, while the phone network is readily available</p>
<p>8. What are the challenges/ barriers?</p>	<p>Staff turnover inhibited 2 counties from using the system</p>
<p>9. Recommendations</p>	<p>The implementation activity showed that new technology, including mobile phones and cloud-based systems, are feasible in even the most challenging conditions and are quite acceptable by system users. They can also make a real difference for program management and performance. Critical success factors were:</p> <ul style="list-style-type: none"> • Responsiveness to user needs and requirements to make sure that software responds to these needs. • Local ownership and support from management. • Training and refresher training of all users, with lots of post-implementation support. <p>However, longer-term sustainability is not assured, and the system will likely only be used to the extent that immunization partners support it.</p>

#8 - Project Optimize Tunisia - Computerized Logistics Management Information System (LMIS)

Project Optimize Tunisia - Computerized Logistics Management Information System (LMIS)	
Field	Description
1. Country	Tunisia
2. Brief description of the intervention	<p>The goal of the computerized logistics management information system (LMIS) project was to introduce a system to track and trace vaccines in real time throughout the supply chain. This would help to improve the efficiency of vaccine and stock management and help to mitigate the risk of overstocking, expiry, and vaccine wastage. This work was intended to demonstrate the benefits of transitioning from a paper-based system to a computerized system that links national, regional, and district levels. Such a networked, information-driven supply chain would enable the exchange of real-time data on vaccine forecasting, stock management, and order status, thus helping to ensure the timely delivery of vaccines.</p> <p>VSSM is an open-source software application developed by the World Health Organization (WHO) to enable immunization program managers and vaccine store staff to manage vaccines and related supplies. Although the focus is on vaccines, the application can be used to manage health supplies, particularly those provided through primary health care services.</p>
3. Timing frequency of the activities	Dec. 2010 – Nov. 2011, training workshops occurred one month prior to the rollout of the national system
4. Scale of the intervention	The application was installed at the Computer Center of the Ministry of Public Health (CIMSP). With all regions and districts already connected to a national health information system, any health center with an Internet connection could access the application.
5. Who is involved	Because the wVSSM was installed on a server located at the CIMSP, any health facility with an Internet connection and a PC could install the system and use it. The national, regional, and district levels of the system have all been linked, and complete stock-management information for vaccines can be seen in real time at each level.
6. How successful were the interventions?	The LMIS demonstrated success at improving the extent of evidence-based vaccine forecasting. At the regional level, significant improvements in data accuracy were found in Sousse and Kasserine. Major improvements were also documented in the three pilot districts. Respondents also noted improved organization and communication as a factor of acceptability
7. What are the enablers/drivers?	A key to getting this intervention off on the right track was developing a full landscape analysis of the advantages and disadvantages of the information systems in place and conducting workshops to define user requirements. Without a thorough understanding of users' needs and expectations for an improved LMIS, we could well have provided a solution that would not have met those needs. Another key activity was to fully landscape existing software that could respond to the needs and avoid having to recreate something from scratch. We were lucky to identify a tool that required only modest development investment to bring it to a web-based version.
8. What are the challenges/barriers?	<p>Funding for hosting wVSSM – the costs of hosting the system, even though within the MOH, were still a consideration, which wasn't expected.</p> <p>Establishing Internet connectivity – vaccine storage points in Kasserine and in the three districts did not have a direct Internet connection.</p> <p>Unreliable connectivity - When the Internet connection was down, users could not use the wVSSM. Thus, many sites continued to use the paper-based LMIS instead of the wVSSM until Internet reliability could be improved. Although connectivity remained an issue throughout the demonstration period, an offline</p>

	<p>module of the wVSSM was developed by consultants so information could be entered in the wVSSM offline and then synchronized once the connection was reestablished wVSSM training.</p> <p>Although users were generally excited and eager to move from a paper to a paperless system using the wVSSM, many did not know how to use a computer. Several rounds of training were required because workshops needed to include basic computer instruction.</p> <p>Delays - Because of the intricate link between the streamlining and integrating demonstration project and the wVSSM project, delays in the former hindered the implementation of the latter.</p> <p>Ensuring that users actively used wVSSM - Because using any new software can initially create more work (new system to learn) before eventually reducing the LMIS data management burden, the temptation to continue operating the paper system in parallel was high. This problem was worsened by unreliable Internet connectivity (see Section 5.8.3), as it was impossible to use wVSSM when an Internet connection could not be made.</p>
<p>9. Recommendations</p>	<p>Overall, a general lesson learned was that any intervention to set up an LMIS will likely take more time than expected.</p> <p>The importance of expert knowledge at the national level - it is essential for one or more people at the national level to develop expert knowledge and skills related to the software. A challenge with any information system using a software application developed at the international level is to ensure that at least one person at the national level is proficient in the system and able to: (a) conduct training activities, (b) support installation of the software and respond to troubleshooting issues, and (c) access the source codes to be able to program local adaptations to the software.</p> <p>Don't overlook the need for basic IT training - Users need basic training on use of IT as well as on use of the software—a major difficulty in implementing the wVSSM software was that many users did not have basic computer skills. Multiple training sessions were required to get users (especially at regional and district levels) to be proficient in using a computer and the software.</p> <p>Unreliable Internet connectivity can cause major problems - The initial version of the software could not be used if the Internet connection was down, whether due to a power outage or problems with the service provider. In the end, the paper-based LMIS was kept alongside the wVSSM, and information was retroactively entered into the wVSSM.</p> <p>Consider technical limitations - For national and regional levels, the wVSSM was a very good LMIS solution. At lower levels of the system, a web-based LMIS was rather impractical—too cumbersome in terms of IT equipment and slow/unreliable Internet service.</p> <p>The complexity of the system needs to be adjustable - The wVSSM is a very powerful software tool, but many of its options are not needed at lower levels. The LMIS should have the potential to hide options so that users at lower levels (at a district store, for instance) do not feel overwhelmed by the dashboard.</p> <p>Upgrading to newer version is not straightforward - A newer version of the LMIS (version 2.0) became available during the demonstration, and the DSSB faced a difficult decision about whether to upgrade its software. Tunisia had made local adaptations to wVSSM version 1.0, and these adaptations were not available in version 2.0. To upgrade its software, the DSSB would need to recruit a local software developer to ensure that local adaptations in version 1.0 were available in version 2.0</p>

#9 - Project Optimize Vietnam - Digital Immunization Registry

Project Optimize Vietnam - Digital Immunization Registry	
Field	Description
1. Country	Vietnam
2. Brief description of the intervention	<p>Optimize collaborated with NEPI to demonstrate the benefits of using computer and mobile phone technology to record immunization registry (IR) data, tracking individual children due for immunization and recording the vaccinations they have received. The goal was to evaluate how a digital registry might improve the ability to track children due for vaccination and how it might shorten the time required for recording and reporting immunizations compared to a paper-based registry. This system differs from the VaxTrak system described in Chapter 3 in that the IR system manages data about individual children, while the VaxTrak system manages data about vaccines and about immunizations aggregated at a facility level.</p> <p>The Optimize team developed an easy-to-use software program with mobile-phone and computer-based applications with the following goals in mind:</p> <ul style="list-style-type: none"> • Increasing accuracy and timeliness of immunization records. • Improving the rate of on-time immunization. • Reducing the amount of time needed for reporting. <p>Nokia C3 mobile phones were distributed to commune health workers, and they were trained on how to use the phone- and computer-based software. After the training, health workers began using the software to track and report immunizations. Newborn children are registered in the system. The software then generates a monthly list of children due for immunization and automatically sends reminders to parents by short message service (SMS) a few days before immunization day. After immunization, the health care worker updates the system record for each child vaccinated. As soon as information is uploaded to the database, authorized users from the commune to the national level can access it.</p>
3. Timing and frequency of the activities	Dec. 2010 to Oct. 2012
4. Scale of the intervention	District-level (Mo Cay Nam District) with 17 sub-district locations (communes)
5. Who is involved?	Public health workers at facility level were the recipients of the training. But Vietnam's National Institute of Hygiene and Epidemiology and National Expanded Programme on Immunization were involved.
6. How successful were the interventions?	<p>The team found that the time spent to enter data after every immunization session during the intervention was similar to the amount of time needed to enter data into the paper-based registry (1–4 hours, depending on the size of the commune). However, the time for generating the monthly immunization report was greatly reduced from about 30 minutes without the software to 2 minutes with the software.</p> <p>In addition to time savings during report generation, there are several advantages of having IR data in an electronic format:</p> <ul style="list-style-type: none"> • Lists of children due for immunization in a given month can be quickly generated without needing to page through the IR to manually count. • Automatically generated SMS reminders to parents can replace the tedious job of creating handwritten appointment forms for each child as practiced in some communes. • Districts can access the data electronically at any time they have Internet

	<p>access, so they do not need to wait for the communes to report.</p> <ul style="list-style-type: none"> • If a child from another commune in the pilot district appears on immunization day, health workers can look up the child’s immunization history and see what vaccines she needs. <p>To evaluate the effect on the timely delivery of vaccines, the team compared the rate of on-time delivery of bacillus Calmette-Guérin (BCG) and pentavalent DTP-hepatitis B-<i>Haemophilus influenzae</i> type b vaccine before and after the intervention. The on-time vaccination rates for all the doses increased.</p>
<p>7. What are the enablers/drivers?</p>	<p>Vietnam has developed a strong mobile phone and data network, reaching almost every location in the country, and mobile phone penetration is very high within the population. In addition, more and more CHCs are going online, and have personal computers and Internet connections that allow them to use web-based applications.</p> <p>Factors that contributed to the e-Registry’s acceptability:</p> <ul style="list-style-type: none"> • Easy to use, user-friendly interface. • Convenience and flexibility of web-based application—health workers can access the data anytime and anywhere they have Internet access. • Helps health workers track and manage every child’s immunization events. • SMS reminders to parents increase the rate of on-time immunization. • Data are more accurate than in the paper-based system. • Increases timeliness of report and reduces time spent generating the report. <p>Factors that contributed to its feasibility:</p> <ul style="list-style-type: none"> • Software is compatible with most commune health workers’ IT skills. • Availability of computer and Internet connection at commune centers. • Mobile phone fee is reasonably priced. • More than 90 percent of the population has mobile phones, so SMS reminders to parents are effective in most cases.
<p>8. What are the challenges/barriers?</p>	<p>Despite these improvements, there were some challenges. For example, experience using mobile phones and computers varied among users, and health workers with limited experience faced a steep learning curve, some never reaching a comfortable level of skill during the pilot period. Sustained technical support for commune workers is needed to ensure success with new software technologies.</p> <p>Factors that diminish acceptability:</p> <ul style="list-style-type: none"> • Small font and keyboard size in mobile interface make it challenging for older health workers. • Internet is unstable in some communes. <p>Factors that diminish feasibility:</p> <ul style="list-style-type: none"> • CHCs have no income and national immunization budget is limited, so the cost of scaling up the equipment would require donor support. • Health workers at CHCs do not have sufficient experience with using computers.
<p>9. Recommendations</p>	<p>The immunization registry intervention was implemented at all 17 commune health centers and the district center in Mo Cay Nam at the cost of approximately \$1,500 per facility. Training accounted for 35% of the investment, and product or software development accounted for 33% (Figure 2). Project monitoring costs were not included in these investment costs.</p> <p>Similar to the VaxTrak software, early project planning and IR development took longer than originally planned, resulting in less time for monitoring and for users to learn the system.</p> <p>The IR was implemented at CHCs, where users had different levels of experience using mobile phones—some had never used the SMS function of their phones,</p>

while others were very adept at mobile-based applications. There was a similar range of computer experience. Users for whom the digital equipment was novel had a very steep learning curve and some did not have time within the monitoring period to become comfortable with the technology. Others quickly adapted to the technology, were able to problem-solve within the system, and expressed a strong appreciation for working electronically. Projects working at small health centers with new mobile- or personal computer-based applications should ensure that there is adequate technical support to help users, especially technologically naïve users, overcome their difficulties without becoming frustrated.

During the IR implementation, Optimize was surprised to find that even within a single district, there was some variation in the way communes reported indicators. Small differences in reporting practice can present challenges to software applications. One example was the way that HepB and BCG birth doses were recorded. Some communes reported the birth doses of all the children in the commune regardless of where the immunization was administered, and others reported only those birth doses that were administered within the CHC. Resolving these types of reporting differences requires that: 1) someone discovers the differences; 2) program leaders communicate a clear direction; and 3) users comply with directions.

Implementation of software technologies such as the IR requires long-term technical support in order to be sustainable. Since the commune level has not yet used many information technologies, the NEPI structure does not currently provide information technology (IT) support at commune level. Providing more technical support to commune health workers would require significant commitment from the MOH to provide the budget and management guidance needed.

#10 - Project Optimize Vietnam– Fee-based Immunization Reporting

Project Optimize Vietnam– Fee-based Immunization Reporting	
Field	Description
1. Country	Vietnam
2. Brief description of the intervention	<p>Optimize collaborated with Vietnam’s General Department of Preventive Medicine (GDPM) to develop and pilot a web-based application that enables users to report fee-based immunization services being provided. The goal was to improve the information at the national level about immunizations being delivered outside the free national immunization program, and to help providers of fee-based immunization services comply with existing national regulations that require reporting of these services to GDPM.</p> <p>The development of specific forms, procedures, and a web-based reporting system for fee-based immunization would help enable the reporting of sufficient, precise, and timely information to the MOH for immunization management. This information could be used by GDPM, provincial health departments, and NEPI for planning, immunization quality monitoring, and service-quality management. The proposed solution would involve three activities:</p> <ul style="list-style-type: none"> • Optimize working with GDPM to develop reporting forms and procedures. • Optimize working with GDPM to develop and deliver supportive supervision training for Department of Health staff at the provincial level. • Optimize contracting for development of custom software to digitize the forms and provide for web-based reporting by fee-based immunization providers to the MOH.
3. Timing and frequency of the activities	Oct. 2009 to Nov. 2012
4. Scale of the intervention	Four provinces in Vietnam were chosen to pilot the web application—Can Tho and Ho Chi Minh City in the south, Thua Thien Hue in the central region, and Thanh Hoa in the north. They were chosen to provide a mix of urban city locations and more rural provincial sites. Ho Chi Minh City was included because it has the highest number of private-sector providers in Vietnam. All chosen localities were known to have fee-based immunization services available.
5. Who is involved	GDPM staff played a key role and collaborated with NEPI staff along with involvement of the private sector providing immunization services within the target areas. Specifically, staff at fee-based immunization facilities, EPI officers at district medical centers, health officials at the provincial level and GDPM staff.
6. How successful were the interventions?	<p>The software was designed to perform the following functions:</p> <ul style="list-style-type: none"> • Manage data entry based on the four reporting forms. • Manage data entry based on the EPI’s existing reporting forms for immunization of children and women. • Aggregate and report data according to the need at each level.
7. What are the enablers/drivers?	<p>Data quality, secure data storage, and reporting improvement were the most cited reasons for the acceptability of the fee-based immunization reporting software. Other reasons included reported decrease in workload and that the software was user friendly.</p> <p>One of the reported reasons for acceptability was the improvement in data quality, including the secure data storage and the availability of these data. Users thought the software has a friendly and easy-to-use interface, and does not require a high level of computer skills. In particular, the software was viewed as helping users to access accurate data wherever they have Internet access. In addition, these data filled a knowledge gap that existed about which vaccines are</p>

	<p>most popular among consumers of fee-based immunization.</p> <p>Another factor of acceptability reported by respondents was reduced workload. In terms of reporting, respondents attributed the availability of accurate reports to the effectiveness of the immunization system as a whole.</p> <p>Additionally, respondents listed reasons for feasibility of the software, including availability of equipment (computer and Internet) even at the commune level, easy-to-use interface, and support for implementation from higher authorities.</p>
<p>8. What are the challenges/ barriers?</p>	<p>The most common factors of unacceptability of this software included some difficulties in the functions of inputting data and processing reports. For example, new vaccines and biological products that had been recently granted import license were not appearing in the vaccine menu as the menu was not being updated in a timely manner. Also, the formatting for the Excel printouts was not working well, so users often had to adjust it manually before printing.</p> <p>Other reasons for unacceptability reported by respondents included the lack of computer literacy of staff using the software and the short time this intervention was implemented.</p> <p>The most commonly cited reason for unfeasibility included the lack of availability of computers and the unreliability or inaccessibility of Internet for the users. This included many people sharing computers, which could result in the loss of data.</p>
<p>9. Recommendations</p>	<p>Similar to the VaxTrak, the software development took longer than originally planned, resulting in less time for monitoring and support to users by the project team and for users to learn the system. One of the causes for delay in the case of the fee-based immunization reporting system was a decision by Optimize and GDPM to change software developer mid-way through the project. GDPM was not satisfied with the early software demonstrations, and another developer was identified that exhibited a better understanding of what GDPM leaders wanted, and more flexibility to create it. This significant mid-course change in the project was costly in terms of both time and financial resources, but we believe that it was necessary in order to reach a satisfactory outcome for the project within the time frame allowed.</p> <p>Although the MOH decision on fee-based immunization includes the requirement for reporting, there is no specific regulation within the MOH for exactly what should be reported by fee-based immunization providers, nor any specified mechanism for doing so. This resulted in several challenges for the project. First was the need to develop new reporting forms without models from which to build. The second was the lack of a consistent understanding of terms and metrics used in the reporting forms, due to lack of familiarity of practitioners with the types of information that the MOH wants to track. The third challenge was that because fee-based providers were not reporting aggregated data to health authorities at the beginning of the project, the introduction of the fee-based immunization reporting system added to their work burden.</p> <p>A condition further complicating use of the fee-based immunization reporting system was a perceived disincentive for providers to report these services, which currently provide income for the health system.</p> <p>The project organized a number of training sessions for users at all levels. However, for various reasons, often the staff who would be responsible for using the fee-based immunization reporting system were missing from the training session. As a result, the project training was incomplete, and some users never received proper training.</p> <p>The vaccines loaded into the system were based on the list of vaccines officially registered by the Vietnam Drug Administration. However, over the course of the demonstration, there were some new vaccines circulating in some project sites that</p>

	<p>had just received import license and had not been loaded into the system. This was frustrating for users, who could not find in the system all the vaccines they needed to report. This situation points to the need to develop an updating function within the MOH so that new vaccines registered by the Drug Administration are communicated to GDPM so that they can be made available within the reporting system in a timely manner.</p> <p>Optimize had hoped that in the course of the project, we would be able to link the database that contains information about fee-based immunization with the database from the VaxTrak system with information about the EPI immunizations. At the national level, this would provide a clearer picture of immunization throughout the country. Unfortunately, there was not enough time to reach this goal under the Optimize project term.</p>
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#11 – Project Optimize Vietnam - VaxTrak - Computerized LMIS

Project Optimize Vietnam - VaxTrak - Computerized LMIS	
Field	Description
1. Country	Vietnam
2. Brief description of the intervention	Optimize collaborated with The National Expanded Program on Immunization (NEPI) to pilot a computerized logistics management information system (VaxTrak) that helps immunization health workers track vaccine stock as it is received and dispatched throughout the system and that facilitates monthly reporting on immunizations given. The goal was to increase the accuracy and timeliness of vaccine inventory and immunization reports, to reduce the amount of time health care workers spend on reporting duties, and to increase the availability of the data, especially for upper levels at different locations. Note: The VaxTrak system helps manage vaccine stock data and aggregated immunization information, in contrast to the immunization registry (IR) software, which tracks individual immunization records.
3. Timing and frequency of the activities	July 2010 – Oct. 2012
4. Scale of the intervention	The VaxTrak tool was introduced in three provinces—Phu Tho (north), Quang Tri (central), and Ben Tre (south)—as well as at the regional and national levels. Once installation and training were completed in October 2011, immunization workers at the participating locations began using VaxTrak for registering vaccine receipts and dispatches, and reporting immunizations administered. After the first three months of implementation, based on feedback from users, NEPI leadership decided to enter into a second phase of the intervention, expanding the number of participating provinces to 13 in total, and adding all 13 districts in Phu Tho province to pilot the software at the district level. Due to human resource limitations, Optimize could not monitor all locations, but of those added in the second phase, the project monitoring was expanded to an additional three provinces and two districts: Can Tho, Hue, and Thanh Hoa provinces; and Tan Son and Phu Tho Town districts in Phu Tho province.
5. Who is involved	Health workers (facility-level), district, regional/provincial and national levels. All people involved with the tracking of vaccines into the country and all the way to the end user.
6. How successful were the interventions?	Accuracy of vaccine stock data: In the baseline survey before implementing VaxTrak, the sets of vaccine in the vaccine ledger matching the actual stock on hand was only 30 of 39 (77 percent accurate) in the three provincial stores. After one year of the VaxTrak intervention, the accuracy of vaccine data improved, with 40 of 40 (100 percent accurate) sets in the software matching the stock on hand. Reporting process before and after VaxTrak: To create immunization reports with VaxTrak, the reporting district workers input and save data to the “Immunization Report” application of the system. The province can then quickly generate reports that compile all the reporting districts’ data. The software includes various reporting formats according to NEPI requirements. Time burden of compiling reports: We conducted observations before and after the VaxTrak intervention at five facilities (three provincial and two districts). From these data, we found that at the provincial level, the average time health workers spent on the child immunization report changed from 22 minutes before VaxTrak implementation to 16 minutes using VaxTrak. For the vaccine use report, the average time spent changed from 88 minutes to 43 minutes. At the district level, the average time spent on the child immunization reports changed from 39

	<p>minutes before implementation to 23 minutes after VaxTrak implementation, and for woman immunization reports, the change was from 10 minutes to 8 minutes. The final observed child immunization report in Phu Tho (which was the only province where VaxTrak was implemented down to the district level) took only 5 minutes to complete, compared to 22 minutes before VaxTrak implementation. This demonstrates that the ability of the software to save time in the immunization program increases as its use is expanded down to lower levels.</p>
<p>7. What are the enablers/drivers?</p>	<p>Some reasons that health workers gave for responding that the VaxTrak is “acceptable” or “very acceptable” included: the Vietnamese interface is easy to use; because it is online, it is convenient to access the data anywhere and anytime users have Internet access. Users at the regional and national levels liked being able to see the real-time balance of vaccines at all locations under their responsibility, with lot number and expiration date information included. The most commonly cited reason was how user friendly the software was. Another reoccurring reason for acceptability was the reporting functions the software added. Some respondents mentioned they felt it helps them manage vaccines more accurately and effectively. Respondents mentioned an increase in timeliness of reporting, and since the software automatically aggregates reports from input data, the time they need to complete reports is reduced. Some also like the graphical presentation of data provided by VaxTrak. Reasons listed by respondents for the feasibility of the VaxTrak software included the fact that the equipment (computers, Internet) was largely available and that it fit well in the situation of use at the various levels, as well as support given by leadership for the use of the software.</p>
<p>8. What are the challenges/barriers?</p>	<p>The difficulty of learning the software and increased time to do so was listed as a reason for unacceptability. In addition, the implementation was just applied at the provincial level (except in Phu Tho province); thus, the provincial staff had increased work burden. Also, Vaxtrak did not meet the requirements of some locations because its printed reporting forms did not match the financial form being used in that location. This happened in cases where the accounting department and planning department used forms that varied from other provinces. Finally, this system was a burden to some users at the provincial level because there was another software program in use simultaneously.</p>
<p>9. Recommendations</p>	<p>The respondents were asked to consider pros and cons of the software system with regard to scale-up. Factors favoring scale-up that respondents listed included high user acceptability and the availability of computer and Internet connections at most health facilities. Some of the challenges to scale-up or continuation given included the work required to keep staff trained (in places with high turnover rates), the lack of budget for monitoring and supporting the system in the early stages of implementation, and unstable or unavailable Internet connections in some remote areas. In addition, some respondents listed difficulties with the reporting form functions of the software. Development and introduction of the VaxTrak software took significantly more time than originally planned. There were a number of reasons why delays occurred: it took longer than planned to bring together users to provide input to the system requirements; review of intermediate deliverables from the software developer tended to take longer than planned; and there was more iteration to the program during development than planned. Many small delays contributed</p>

to a launch date that was significantly later than originally planned. In the end, this resulted in having less time than expected for the intervention to run in the field sites, which meant that users had less time to learn the software before the end of the project.

Based on our observations, it took about five months for users to become competent with the software. We recommend that project managers build more time into the schedule to allow for unexpected delays and that they plan a four- to five-month normalization period before monitoring begins in earnest in order to realistically evaluate a software system.

The vaccine tracking function of the VaxTrak software relies on users at the origin of a vaccine shipment to input data about that shipment into the system. Then when the shipment arrives at its destination, a user can search the VaxTrak system, find that shipment's data, and electronically confirm receipt. Because shipments originate at a high level, users at the national and/or regional level must initiate shipments in the VaxTrak system. However, because early interventions took place in only a few provinces, a very small portion of shipments that were being sent by the upper levels needed to be put into VaxTrak, and the storekeepers did not have much motivation to enter the data at all. As a result, when shipments arrived at the provinces, often there were no data in the system corresponding to the shipment—thus, provincial workers could not use the system, and reverted to using only the paper-based system. This problem has not been resolved and still hinders the use of the vaccine tracking function at the provincial level. One solution under consideration is to initiate VaxTrak use at the provincial level and train users in provinces to enter received vaccine into the system rather than accepting shipment data that were input at one of the higher levels.

Optimize tested three different applications in Vietnam: the VaxTrak system described in this chapter, the IR described in Chapter 5, and the fee-based immunization reporting system described in Chapter 4. During this time, NEPI was also in the midst of several other software projects, including working with WHO on new vaccine stock management software and with a local vendor on an immunization reporting tool.

Though NEPI welcomed the opportunity to evaluate the advantages and disadvantages of several different tools, the variety did create a challenge for users, especially at higher levels where multiple interventions were taking place. NEPI recommends caution when evaluating different software applications at the same time—clear instructions and communication with users are important for success.

#12 - MEASURE Evaluation – GIS for Resource Allocation

MEASURE Evaluation – GIS for Resource Allocation	
Field	Description
1. Country	Tanzania
2. Brief description of the intervention	<p>MEASURE Evaluation’s Linking Data with Action Tools has been adopted to support better use of information on Iringa’s HIV situation for program planning and decision making in selected councils. This framework assists program managers and policy-makers to better understand the vital need for good data to support decision making. The Framework benefits all health stakeholders by prioritizing decisions and data-collection activities.</p> <p>The project implemented a series of DDU and GIS intervention that included: developing maps, assessing constraints to data use, conducting DDU/GIS trainings, and providing DDU/GIS on –site mentoring to solidify mapmaking skills and ensure implementation of the action plans.</p> <p>The project conducted a regional workshop where the 7 Steps to Improve HIV/AIDS Programs’ document was used to guide discussions around prioritizing actions to improve HIV service distribution and address transmission hot spots.</p>
3. Timing and frequency of the activities	Data collection took place 2011-2012. Then developing maps, workshops and training were implemented between 2012 and 2013.
4. Scale of the intervention	Mufundi district in Iringa
5. Who is involved	The District Executive Director’s office in Mufundi, District AIDS Control Coordinator, Council Health Management Team (CHMT), and district hospital (public).
6. How successful were the interventions?	<p>Mufundi district CHMT used maps in a national Council Comprehensive Health Plan presentation to show district priority.</p> <p>One council member used “service coverage” map to identify the need for additional HIV/AIDS care and treatment (C&T) sites in the district. The use of the service coverage map resulted in mobilizing funds for four new C&T sites.</p> <p>Another CHMT used a “hot spot distribution” map to successfully advocate for increased distribution of condoms in a village with notable unmet need. Additional condoms were provided by partners and government of Tanzania.</p> <p>Mufundi District Hospital used data to determine that inefficient service delivery was due to high care and treatment demand. Using the “facility distribution” map the hospital selected a facility, builds its C&T capacity and transferred patients without increasing the transportation burden. This has reduced Mufundi District Hospital staff workload and improving efficiencies and quality of care. In addition, the expanded C&T site was able to take on new patients, resulting in an overall increase in C&T service coverage.</p>
7. What are the enablers/drivers?	Having buy-in from the officials in both regional and district level helped the degree of participants’ engagement in the mentoring activities. The relationships and commitment built in several areas, especially in Mufundi District, were critical to the positive results achieved. The District AIDS Control Coordinator having the capacity and knowledge to use information accurately and effectively resulted in increased budget for C&T.
8. What are the challenges/barriers?	Lack of individuals with computer literacy and strong database management skills had implication on the GIS training. Therefore, the project had to refocus the training/mentoring activities.
9. Any supporting documentation?	Case study report under preparation. http://www.cpc.unc.edu/measure/publications/ms-11-46-b

#13 - MEASURE Evaluation – Cote d'Ivoire

MEASURE Evaluation Cote d'Ivoire	
Field	Description
1. Country	Cote d'Ivoire
2. Brief description of the intervention	<p>Implemented 8 interventions in line with the conceptual framework and logic model for improving the use of information in decision making:</p> <ol style="list-style-type: none"> a) Assessing the data use context - using PRISM b) Engaging data users and data producers –identify and define long term roles and processes for user/producer engagement – creating joint forums <ul style="list-style-type: none"> • Facilitate and support quarterly strategic information coordination meetings at national and regional levels. The regional level SI meetings brought together district program managers and data manager to discuss data and develop data use plan. • In addition, convened a meeting with decision makers, program managers and M&E specialists from all the ministries working in HIV/AIDS programs to identify barriers to data-informed decision making and flow of information, provided solutions and develop action plan to address the problems. c) Improving data quality - develop standard data reports/ dashboards that are targeted to key audiences, undertake DQAs and improve data feedback mechanisms <ul style="list-style-type: none"> • Conducted DQAs and RDQAs at the national and subnational levels. Trained a cadre of professionals to teach others to conduct these assessments. • Standardization and institutionalization of DQAs and RDQAs - developed national ToR and implementation guidelines; integrated data quality in routine supervision; developed national supervision guidelines; developed standardized data management procedures for health and non-health data; and produced feedback bulletin. d) Improving data availability – data access, analysis, interpretation, presentation and communication <ul style="list-style-type: none"> • Developed an ART electronic medical record system called SIGDEP. The database provides customized reports which allowed immediate synthesis of data and the generation of tailored communication products. e) Identifying information needs <ul style="list-style-type: none"> • Identified information most relevant to decision making. f) Build capacity in data use core components <ul style="list-style-type: none"> • Conducted several trainings in the PRISM framework and tools, M&E and data quality control, data demand and use of information, and leadership and management. • Established partnerships and incorporate DDU concepts into in-service and pre-service training institutions (INFAS, ENSEA and INSP) • Launched a leadership Development Program (LDP) for M&E units in the four Ministries to produce leaders who could lead and sustain a culture of data use through advocating and fundraising. g) Strengthen the organizations data use infrastructure - put in place operating procedures/policies, management systems, and HR support <ul style="list-style-type: none"> • Provided standardized protocols, tools and guidelines to ensure sustainability of improving data quality. • Created new M&E positions at regional and district levels; and build capacity to implement and manage M&E and data use interventions. h) Monitor and evaluate data use interventions- <ul style="list-style-type: none"> • In April 2012, a follow on PRISM assessment was conducted in 10 health regions, 20 districts, and 190 health facilities.

3. Timing and frequency of the activities	2008-2012
4. Scale of the intervention	Nationwide
5. Who is involved	<p>MEASURE Evaluation in collaboration with MoH has led the process. Partners involved includes: MoH and Ministry of Social Affairs program managers; National HIV Care and Treatment program (PNPEC); National OVC program (PNOEV); policy makers from the Ministries, program managers, regional and district health managers and data producers (data managers and M&E focal persons).</p>
6. How successful were the interventions?	<p>Results of the HIV epidemic trend analysis are used to prioritize targeted interventions with key populations for next national HIV and AIDS strategic plan.</p> <p>The 2012 PRISM assessment recorded the following RHIS performance improvements:</p> <ul style="list-style-type: none"> • An increase of data accuracy from 43% to 60% at the facility level between 2008 and 2012; and a two fold increase at the district level from 40% to 81% • Data use score increased from 44% to 70% at district level while the score at the facility level remains unchanged compared to 2008 (38%) • An increase for all components of the HMIS management functions for both health facility and district levels, most notably for the promotion of culture of information at the facility level (from 17% to 71%) and governance at district level (from 46% to 60%); and availability of trained staff on RHIS and availability of computers at intermediate levels were good in general along with a two-fold increase in the percentage of districts connected to the Internet from 2008 to 2012. <p>SIGDEP has facilitated availability of data particularly on HIV patients under ART. As part of SIGDEP, dashboards are produced to quickly synthesize and present data in formats that are more accessible for decision making. As a result MOH is able to produce national HIV report and feedback bulletin.</p> <p>Through the implementation of the national supervision guideline, supervisors from district level feedback synthesized data to lower levels which allowed facilities to understand how their work was contributing to district level targets and objectives.</p> <p>Provision of supervisory feedback from district level to health facilities has increased from 7% in 2008 to 29% in 2012.</p>
7. What are the enablers/drivers?	<p>The meeting and communication between data producers and users facilitated linking data with decision making. In most of the cases, for the first time data users (program, regional and district health managers) saw their own data produced differently (other than raw numbers) and expressed new interest in the information related to their activities.</p>
8. What are the challenges/barriers?	<p>The insufficiency of MOH leadership due in part to the limited financial resources to continue this activity on a regular basis throughout the year; also the lack of national guidelines on the use of information for decision making.</p>
9. Any supporting documentation?	

#14 - MEASURE Evaluation- Nigeria

MEASURE Evaluation - Nigeria	
Field	Description
1. Country	Nigeria
2. Brief description of the intervention	<p>MEASURE Evaluation in collaboration with NACA and the State Action Committees on AIDS (SACAs) provided technical guidance and capacity building to improve the national and states capacity to collect timely and quality data and use information for evidence based-decision making. The project specifically worked with NACA to develop a routine information system for HIV/AIDS (NNRIMS).</p> <p>In 2006 MEASURE Evaluation trained the States, and supervised training of Local Government Agency (LGA) and service providers in the implementation of the NNRIMS particularly focused on data collection, analysis and use of information.</p>
3. Timing and frequency of the activities	February 2006 – June 2007
4. Scale of the intervention	Doma local government agency (district), Nasarawa State.
5. Who is involved	Public sector, NACA, SACAs, and Doma local government agency.
6. How successful were the interventions?	<p>The NNRIMS quarterly report was used to inform local government chairman on the status of HIV services and indicators. The report included ART, HIV/TB collaboration VCT, PMTCT, OVC, HBC, BCC/prevention and training. After reviewing the report the Chairman concerned with number of people tested HIV positive at the VCT centers allocated additional budget (1million Naira) to procure 480 HIV test kits and to expand VCT sites in the LGA.</p> <p>This is an evidence of how routine data is used to engage policy maker or local governors which resulted in action to scale-up HIV/AIDS counseling and testing service enabling more people to get access to the service.</p>
7. What are the enablers/drivers?	LACA HIV/AIDS M&E officer took the initiative and shared the NNRIMS quarterly report with Doma LGA Chairman.
8. What are the challenges/barriers?	
9. Any supporting documentation?	<p>MEASURE Evaluation. Using NNRIMS data to inform resource allocation. <i>Power point presentation</i></p> <p>MEASURE Evaluation. 2007. MEASURE Evaluation Year 4 Results Reporting draft (<i>gray literature</i>)</p>

#15 - MEASURE Evaluation HMIS Scale-Up Project -Ethiopia

MEASURE Evaluation HMIS Scale-Up Project -Ethiopia	
Field	Description
1. Country	Ethiopia
2. Brief description of the intervention	<p>Establish a computerized HMIS data processing and reporting system at regional, zonal and woreda levels in SNNPR with the objective of standardizing, integrating and simplifying information on services provided by health facilities.</p> <p>Enhancing the information architecture– developed and installed a desktop application to support decentralized and yet synchronized data management. eHMIS is comprised of the following interrelated tools:</p> <ul style="list-style-type: none"> • Health system reference database (HSRD)- provided health facility master list • HMIS report status tracker • Data entry module • Aggregation module • Performance report • Decision support system (DSS) • Data synchronization tool <p>Mobile version of eHMIS known as Mobile Decision Support System (MEDSS) is developed and selectively provided to zonal, special woreda and regional health bureau heads.</p> <p>Developed and installed electronic medical catalog system (eMCS) in 19 hospitals and 9 health centers of SNNPR.</p> <p>Electronic integrated disease surveillance response system (eIDSR) piloted in SNNPR.</p> <p>Provided IT equipment and building local staff capacity to the IT application.</p> <p>Putting in place HMIS coordinator, M&E/HMIS and ICT officers at the RHB.</p> <p>Building country capacity</p> <ul style="list-style-type: none"> • Provided training on HMIS from zone to woreda to health facility level. This training targeted not only HMIS focal persons but also heads of administrative units and the Core Process Owners (program/department heads) to ensure that every manager understands the HMIS, data collection procedures, HMIS indicators and thereby, is able to utilize HMIS data for program monitoring and management. • Trained health planners at district, zone and regional level on using eHMIS as source for setting annual targets. • Provided supportive supervision and mentoring using supervisory checklist developed by the RHB - the zonal and woreda HMIS focal persons take part in the supportive supervision and provide on-site feedback to the health facilities. <p>Strengthening culture of HMIS information use</p> <ul style="list-style-type: none"> • Conducted PRISM assessment and a study on decision making practices in health administrative units in 2011-2012 which led to institutionalizing Performance Review Teams (PRTs) at every tier from RHB to health facility level; • At national level the project developed HMIS information use guide and training manual;

	<ul style="list-style-type: none"> • Advocacy and sensitization of RHB and ZHD managers for using eHMIS as source of performance data for planning. <p>Also the project implemented a Community Health Information System (CHIS) to enable health extension workers to provide an integrated package of preventive and curative health services to families. The interventions under the CHIS includes: developing a national CHIS guideline and training manual; providing ToT; printing and distributing family folders, and health cards; introducing tickler file system; and supportive supervision.</p>
3. Timing and frequency of the activities	September 2009 – present
4. Scale of the intervention	<p>Most of the HMIS scale-up activities are implemented in the Southern Nations Nationalities Region (SNNPR). The CHIS is being implemented in both SNNPR and Oromiya regions.</p> <p>The project also provided technical and strategic support to Federal MOH in many occasions.</p>
5. Who is involved	Public sector lead by Regional Health Bureaus and Federal MOH.
6. How successful were the interventions?	<p>SNNPR Regional Health Bureau (RHB) in Ethiopia has shown increased capacity to independently produce weekly HMIS reports, monthly IDSR reports, present data, and conduct regular health performance reviews.</p> <p>Improved information gathering – there is almost 100% reporting completeness in SNNPR with all health facilities submitting their HMIS monthly report to the woredas. The eHMIS making HMIS data available and accessible on time.</p> <p>Used HMIS data for planning – During the 2013 woreda based planning exercise, the eHMIS enabled woredas in SNNPR to access HMIS database to determine their baseline and set annual performance targets. This provided managers a single data source to monitor performance against target.</p> <p>Using data for performance monitoring - During the 2012 Annual Review Meeting of SNNPR, the regional and zonal performance data was taken mostly taken from HMIS reflecting reliance on HMIS for programmatic performance monitoring.</p> <p>Public health managers access the CHIS data and use it for planning and monitoring services. CHIS enabled individual IDs, appointment scheduling and defaulters tracing for vaccination, ANC and family planning services; allowed HEWs to plan and provide more targeted, family-oriented services; and facilitated strong partnership with community networks.</p> <p>One of the Zonal Health Bureau mobilized government fund to bridge in the training gap – funded CHIS training for 250 HEWs, health center and district health managers within the zone.</p>
7. What are the enablers/drivers?	<p>Promoting and building regional ownership –the regional health bureau (RHB) driving the system to get the desired benefits from it; taking responsibility for HMIS successes and failures; and maintaining the capacity to manage the HMIS resources and controls and financial decisions for HMIS implementation.</p> <p>The RHB provided leadership in the form of planning, managing and financing the system while MEASURE Evaluation provided the technical assistance for developing it.</p>

	<p>The RHB has established a TWG comprising various partners assisting the region to implement/improve HIS, data quality and information use. In 2011, the RHB through the TWG mobilized funds from partners to procure HMIS material worth over US\$1million. The TWG came together in April 2013 to decide on how to scale-up training on HMIS information use.</p> <p>There is political will and openness to adapt the HMIS to the region’s local context. For example, the RHB leadership made decision to include fourth antenatal visit in the reporting system with the intention to monitor progress towards better pregnancy service coverage in the region.</p> <p>Usability of eHMIS- it offers an efficient to use system; it takes less time to accomplish data entry, transmission, aggregation, and analysis. Also easier to learn by the end user.</p>
<p>8. What are the challenges/ barriers?</p>	<p>Budget constraint is one of the factors which created sustained reliance on external assistance for HMIS supplies, supportive supervision and monitoring.</p>
<p>9. Any supporting documentation?</p>	<p>Wannaw F, Azim T. 2013. Technical Report on Electronic Health Management Information System (eHMIS). http://www.cpc.unc.edu/measure/publications/sr1377</p> <p>MEASURE Evaluation. 2013. USAID HMIS Scale Up Project in Ethiopia. <i>Project brochure</i>.</p> <p>MEASURE Evaluation. 2013. Annual Report: July 2012 to June 2013.</p>

#16 - MEASURE Evaluation - Botswana

MEASURE Evaluation - Botswana	
Field	Description
1. Country	Botswana
2. Brief description of the intervention	<p>MEASURE Evaluation is requested to provide technical assistance to the Botswana MoH on data quality by USAID mission. This is aimed at setting up generic SOPs for data quality within 39 health providences of Botswana.</p> <p>The intervention includes: customizing the DQA and RDQA tools; pre-testing the tools in the field with several levels of the health system; consensus building workshops to tailor the SOPs to local needs; preparing two SOPs (DQA and application of routine data quality audits); preparing curricula for training staff from central MoH and districts.</p>
3. Timing and frequency of the activities	2012 -2013
4. Scale of the intervention	National
5. Who is involved	MOH, NACA
6. How successful were the interventions?	<p>Two generic SOPs for DQA and RDQA developed, prepared a user manual for the tool.</p> <p>Created local capacity to regularly undertake data quality assurance activities- trained 25 staff; identified champions to become ToT who cascaded the training to other program staff and districts.</p> <p>The MoH budgeted for number of trainings planned for next year (to be led by the local trainers)</p> <p>USAID requested the adoption of the RDQA tools to be used by USG for their SAP and APR – ongoing</p>
7. What are the enablers/drivers?	<p>Leadership and ownership of the process by MoH was the key for the observed successful implementation and sustainability of the activities. To begin with the demand/request for support in improving data quality within Botswana health sector originated from the MoH. The Health Chief Officer from M&E unit in MoH were very engaged and spearheaded the whole process by bringing on board the national programs and implementing partners. The MoH covered all the logistics costs of the workshops and trainings. In addition, allocated budget to print and distribute the SOPs.</p>
8. What are the challenges/barriers?	
9. Any supporting documentation?	<p>Boone David et al. 2013. Botswana’s integration of data quality assurance into standard operating procedures: Adaptation of the routine data quality assessment tool.</p> <p>MEASURE Evaluation III- Botswana year 4 quarterly reports. 2013.</p>

#17 - SC4CCM – Supply Chains for Community Case Management - Malawi

SC4CCM – Supply Chains for Community Case Management - Malawi	
Field	Description
1. Country	Malawi
2. Brief description of the intervention	Introduced an Enhanced Management intervention that has two parts – cStock and DPATs. cStock, a SMS and web-based, open-source logistics management information system for reporting, calculating resupply, managing and monitoring all community-level health products. Also introduce District Product Availability Teams (DPATs) that meet monthly to review data and decide on actions to take to improve performance. The DPATs have a performance plan that includes a goal and performance targets which they monitor every month.
3. Timing and frequency of the activities	Roll out training to 3 initial districts was from June to December 2011. Midline evaluation was conducted in January/February 2013.
4. Scale of the intervention	Scale up is ongoing and will reach 21 of the 29 districts by end of 2013. Funding has been secured for another 2 districts in early 2014 and we hope the final 6 districts will be funded in the next few months.
5. Who is involved	SC4CCM has been leading the effort but has been working closely with MOH and is in the process of handing over the MOH. MOH is the official owner of the software now. Dimagi was the software developer. WHO and Save the Children have been assisting with scale up.
6. How successful were the interventions?	cStock was particularly successful in the three districts where it was paired with another intervention that used team-based, quality improvement approach by forming District Product Availability Teams (DPATs) that used the data to improve supply chain performance. cStock was also introduced in other districts without the DPATs and was not as successful at improving SC performance in those districts. <ul style="list-style-type: none"> ✓ Reporting rates in cStock were above 90% in these districts. (vs. 43% at BL) ✓ 91% of Drug Store in Charges use stock to inform resupply quantities ✓ 56% of CHW supervisors use cStock data for performance monitoring ✓ 100% of District & CHW Supervisors reported finding product availability teams useful ✓ 92% of CHW Supervisors know their recognition plan
7. What are the enablers/drivers?	Enablers: High ownership of mobile phones (99%) among CHWs, 100% of HCWs reported that had network coverage at least sometimes and 90% had access to a phone charger at least sometimes (80% always). cStock is simple and easy to use. There is a toll-free phone line to send the SMS report to. CHWs only report two data items each month. cStock displays simple, easy to read reports on the dashboards for use by district and central level managers.
8. What are the challenges/barriers?	Economic crisis significantly affected the buying power of available drug budget at district level, resulting in less available effective funding for procurement and district purchasing. Irregularity of the fuel supply in the country, which created significant challenges with the timing of intervention training/roll out, and also product distribution and supportive supervision to the re-supply points.
9. Any supporting documentation?	SC4CCM. 2013. Malawi Community Health Supply Chain Midline Evaluation Report. Arlington, VA: SC4CCM

#18 - USAID | DELIVER Project Task Orders 4 & 7: The ILS Gateway - SMS Reporting System for Reproductive Health

USAID DELIVER Project Task Orders 4 & 7: The ILS Gateway - SMS Reporting System for Reproductive Health	
Field	Description
1. Country	Tanzania
2. Brief description of the intervention	<p>Facility-level data was not available for decision making; even district officials did not have access to stock status data, leaving them with little information to use for making decisions. The project designed a mobile health alert and reporting system, called ILSGateway, to increase the availability and visibility of logistics data and improve the use of logistics data for supply chain decision making. The project used GIS and data dashboards to map supply chain and contraceptive security indicators, and other data, to track performance and visually display data to promote informed advocacy and decision making.</p> <p>Provided training to build requisite computer skills among health workers, particularly at the district level.</p> <p>Work is ongoing to instill a data culture among health workers.</p>
3. Timing and frequency of the activities	The ILS Gateway was piloted in 2010 in one region South of Tanzania with an initial commodity list of six reproductive health commodities. The list subsequently expanded to 20 commodities identified by the MOHSW.
4. Scale of the intervention	Started in 2011 with a pilot in one district and then rolled out throughout the country covering around 4,000 (more than 80%) health facilities.
5. Who is involved?	USAID DELIVER project in close collaboration with MOHSW has been leading the effort. Dimagi has developed the software.
6. How successful were the interventions?	<p>Expanded accessibility and visibility of logistics data.</p> <p>Increased reporting rate and adherence to reporting groups - 88% of the facilities report on time.</p> <p>Improved timeliness of ordering and stock management. Health facility staff members receive reminders through their mobile phones to count and report stock status, as well as to place orders for medical supplies. Health care facilities can now effectively order products based on their needs and budget.</p> <p>Growing use of data for supply chain management – of the facilities implementing the ILSGateway 45% increased availability of family planning commodities</p> <p>ILSGateway combines logistics data for Tanzania’s public health supply needs into one integrated system, making it an ideal tool for decision makers, who plan and procure commodities for the entire country.</p> <p>Increased accountability, transparency and responsibility.</p> <p>GIS reports enabled stock redistribution</p>
7. What are the enablers/drivers?	The system was developed with an eye on sustainability, enabling health facility personnel to use personal cell phones to send logistics data via text message (SMS) to a toll-free number. This data is then transmitted to a website that analyzes and displays the information to decision makers in real time. It reduced the cost of supplying phone and monitoring usage of those phones. In addition it required less training on the hardware as the users are already familiar with their phones.

8. What are the challenges/barriers?	
9. Any supporting documentation?	Using mHealth technologies to improve the availability of essential medicines. <i>Power Point Presentation.</i>

#19 - USAID | DELIVER Project – Use of Mobile Technology for Supply Chain Early Warning System

USAID DELIVER Project – Use of Mobile Technology for Supply Chain Early Warning System	
Field	Description
1. Country	Ghana
2. Brief description of the intervention	<p>Designed mHealth system known as the 'Early Warning System' (EWS) where commodity managers at facility levels use simple mobile phone technology to report on stock levels of selected family planning, HIV and malaria commodities, and thereby provide information on stock status to guide logistics decision making at all levels.</p> <p>A list of tracer commodities was developed, considering those that are of basic importance to service delivery in each programmatic area, to keep the number of products manageable.</p> <p>Negotiated and acquired a tool free short code for submission of data into the system at no cost to providers.</p> <p>From the inception stage through to implementation of the pilot EWS, stakeholder consultation has been a regular feature.</p> <p>A training curriculum was developed by Dimagi and a 3-day training of trainers provided to relevant departments at central level and to district health information officers, district public health nurses, and district pharmacists.</p>
3. Timing and frequency of the activities	<p>In April 2011 the software pretested in selected facilities in the Dangme East district, followed by training of facility staff by late April.</p> <p>In 2011 the pilot implementation of the system commenced in selected facilities of the 7 DELIVER supported regions and 3 FRHP supported regions. Then in December 2011, the project conducted an assessment of the pilot.</p>
4. Scale of the intervention	The intervention is being implemented in all regions of Ghana with DELIVER project focusing on 7 regions and the remaining 3 covered by Focus Regional Health Project (FRHP).
5. Who is involved?	USAID DELIVER project and Focus Regional Health Project (FRHP) collaborated with relevant stakeholders within the Ghana Health Service such as the Stores, Supplies and Drug Management Division (SSDM), Policy, Planning, Monitoring and Evaluation Division (PPME), National AIDS Control Program (NACP), Family Health Division (FHD) and the National Malaria Control Program (NMCP) to explore the possibility of using communications technology to enhance logistics data reporting, visibility and utilization for improved supply chain functioning.
6. How successful were the interventions?	<p>Providing near real-time stock status – with the introduction of the EWS, there is visibility (real time) of stock status information, through weekly submission of stock status reports, for management use.</p> <p>The system has been beneficial at the facility level in stock management and documentation particularly in the use of stock keeping records and regular stock taking (weekly) aimed at avoiding stock outs as far as feasible.</p> <p>Improving supervision and feedback - The system provides the opportunity for communication and support for commodity management from a higher level to the facility through feedback and supportive visits to health facilities.</p>
7. What are the enablers/ drivers?	
8. What are the challenges/	There are still challenges in regular submission of paper based logistics reports from the facilities to the regional medical stores. Facilities submit reports only when requisitions are

barriers?	being made. Though service providers are texting their data as required there is poor utilization of the system by program managers for appropriate decision making in ensuring commodity availability at higher levels (managers at the central, regional, and program levels are not using the system as expected)
9. Any supporting documentation?	Assessment if pilot on the use of mobile phone technology for supply chain early warning system. <i>Final draft EWS Report</i>

#20 - Universal Immunization through Improving Family Health Services (UI-FHS)

Universal Immunization through Improving Family Health Services (UI-FHS)	
Field	Description
1. Country	Ethiopia
2. Brief description of the intervention	<p>UI-FHS is a 3.5 year learning grant awarded in July 2011 by the Bill & Melinda Gates Foundation and implemented by JSI Research & Training Institute (JSI). The project goal is to learn, document and share evidence with the Ministry of Health and other stakeholders on how universal immunization could be achieved through affordable, sustainable and practical approaches to continuously reach all women and children with lifesaving potent vaccines. The project was designed in collaboration with the Ethiopian FMOH after recognizing the lack of adequate evidence of what it takes to reach and sustain high immunization coverage in Ethiopia. To achieve the goal, UI-FHS is focusing on operationalizing RED (reaching every district) by integrating strengthening elements of Quality Improvement (QI) and Plan-Do-Study-Act (PDSA) performance improvement within each component of RED. The "RED-QI" approach is a process that supports addressing larger priority problems (e.g. persistently high drop-out rates) using small, rapid, doable changes that can quickly be tested and vetted for adoption, adaption or abandonment at local level (see 2 pager on RED-QI for more details). Learning and activities are taking place in three "learning" woredas: Arbegona, Assaieta and Hintalo Wajerate in SNNP, Afar and Tigray regions respectively.</p>
3. Timing and frequency of the activities	<p>UI-FHS has been ongoing since Sept. 2011 and expected to come to an end in March 2015. Activities include:</p> <ul style="list-style-type: none"> • A rapid assessment in the first year of the project to identify key programmatic and community/cultural issues and existing promising practices in each of the three learning woredas to help design woreda-specific quality improvement approaches, (see rapid assessment report/briefer for rapid assessment findings) • Sero survey/Coverage survey/KAP in three woredas in March 2013: results not yet disseminated • Quality improvement trainings for coaches and for QI teams in the three woredas are ongoing since May 2013 • Learning sessions (LS) at PCHU level are ongoing. We plan to do seven LS quarterly per woreda, by the end of the project. • Peer learning exchanges between the three woredas to exchange best practices. Conducted the first one in August 2013. • Costed scale-out plan for sustainable universal immunization based on evidence from three woredas. The costed plan will be designed and refined during the life of the project and will inform the decision of the FMOH whether to scale out the RED-QI approach or not.
4. Scale of the intervention	<p>UI-FHS is rather a learning grant than an intervention project. The project is national in nature but operates in three selected learning woredas in three different regions. The project works within the existing health system focusing on the Health Extension Program (HEP) and the primary health care units (PHCUs).</p>

<p>5. Who is involved?</p>	<p>UI-FHS works in collaboration with the Federal, Regional, Zonal and Woreda health authorities and all health facilities in the learning woredas. In addition, UI-FHS partners with key stake holders and organizations working on and around immunization services. The Center for Vaccine Development (CVD) in the University of Maryland, Baltimore and the Ethiopian Health and Nutrition Research Institute (EHNRI) are implementing partners engaged in some components of the project.</p>
<p>6. How successful were the interventions?</p>	<p>The project is progressing and half-way through in to the development of a national routine immunization improvement model that would potentially be at scale in the country.</p>
<p>7. What are the enablers/drivers?</p>	<p>The availability of functional Health Extension Program and community organizations such as women development army (HDA) provides an opportunity to try to implement innovative ideas and promising practices, quality improvement tools and approaches.</p>
<p>8. What are the challenges/barriers?</p>	<p>The learning woredas vary from each other in terms of health systems strength, geographical and socio cultural factors. The pastoral way of life and inadequate health infrastructure in one of the woredas is a serious barrier. The rapid assessment report can provide more details about the differences/challenges in each of the three woredas.</p>
<p>9. Any supporting documentation?</p>	<p>To view UI-FHS project details, please visit: https://intranet.jsi.com/JSIProjects/DisplayProject.cfm?dbIProjDescID=8901</p> <p>To view UI-FHS publications (QI-RED briefer/ UI-FHS Rapid Assessment report/ Rapid Assessment Briefer/ UI-FHS brochure) please visit: https://intranet.jsi.com/JSIIntranet/Archive/ListDocuments.cfm?select=project&id=8901</p> <p>UI-FHS publications are also available on UI-FHS internet website: http://uifhs.jsi.com/</p>

#21 - TSHIP - Nigeria Targeted States High-Impact Project

TSHIP - Nigeria Targeted States High- Impact Project (Sokoto, Bauchi)	
Field	Description
1. Country	Nigeria
2. Brief description of the intervention	<p>Improved health practices and outcomes among the most vulnerable groups; namely, women of childbearing age, pregnant women, infants and children under five; reductions in the maternal and infant mortality rates and increases in contraceptive prevalence rates in Sokoto and Bauchi. Improved health systems, including health information systems, use of data for decision-making, use of standards-based health management, improved health facilities and logistics systems and improved overall capacity to plan, manage and evaluate primary health care programs. Strengthened policy environment at the State and LGA levels, improved allocation of resources for primary health care, as well as more efficient and effective utilization of resources. Empowered communities and key stakeholders, including religious leaders, social and political decision-makers, and private sector; more active involvement of women in primary health care programs and social mobilization.</p> <p>The enabling environment interventions are framed around three approaches that contribute to creating a sustainable and conducive environment for the delivery of MNCH/family planning/RH services, namely (i) policy development and engagement; (ii) advocacy; and (iii) demand creation activities. The demand creation thematic area engaged TSHIP's key stakeholders such as the SMOH and its agencies including policy makers, community, traditional and religious leaders to create demand and improve access to MNCH/family planning/RH services both at the community and health facility level. Several policies were developed and disseminated in the last four years. The two states were supported to finalized and disseminate the SHSDP, not only that the ministries of health in the two states were supported to advocate for release of fund to implement some planned intervention. An example is the State Drugs Management Agency (DMA) in Bauchi. The agency began procuring drugs and commodities for use in general hospitals in the states.</p>
3. Timing and frequency of the activities	2009 – 2014
4. Scale of the intervention	Two target states – Bauchi and Sokoto
5. Who is involved	Working with State Governments and LGAs, health facilities
6. How successful were the interventions?	<p>Improved allocation of resources for primary health care and more efficient and effective utilization of resources.</p> <p>TSHIP recorded notable progress toward enhancing governance, promoting stewardship and entrenching accountability within the public healthcare systems of the focus states. In Bauchi and Sokoto, multi-level advocacy to key actors within the health sector continued to help leverage resources for MNCH in the state. Sokoto and Bauchi developed essential medicines and medical consumables lists incorporating life-saving medicines such as chlorhexidine (CHX) 4%, misoprostol, antibiotics, magnesium sulphate injection, oral rehydration salts (ORS) and zinc tablet. A major achievement recorded in Sokoto State was the approval and procurement of 56,832 doses of misoprostol from Marie Stopes International and 56,823 of chlorhexidine from Nepal through a local company (Gongoni). After sustained advocacy from TSHIP and project communities, Sokoto state government procured these drugs using N18.5m of its own funds. In Bauchi, this was demonstrated by the State Government's approval of N37m for the quarterly procurement of 75,000 doses each of misoprostol and chlorhexidine,</p>

in line with the FMOH 'saving one million lives initiative'.

In both states, TSHIP's efforts at facilitating improvements in healthcare financing informed a consultancy to review existing approaches in both states and generate an evidence-based PHC financing mechanism for the state. Key findings of these assessments showed that 95% of annual total LGA revenues accrued are from consolidated federal government allocation with internally generated revenue (IGR) accounted for only 2% of total expected revenue in the last three years. TSHIP has recognized the need to develop a mechanism to support governance systems for health at LGA levels through institutional quarterly or semi-annual budget performance review and tracking. Additionally, the Project will support LGAs to explore alternative healthcare financing mechanisms to fill existing gaps in resource allocations (finance, human, infrastructure, drugs etc.). Furthermore, in PY5, the Project will support LGAs to explore additional sources of health financing through the conditional cash transfer (CCT) of SURE-P, community-based national health insurance scheme, donations and philanthropy. Also during the quarter, the Sokoto MoLG committed funds to purchase essential equipment and distributed same to 230 PHCs in the state while the twenty- three LGAs increased their allocation for routine immunization from N50,000.00 to N200,000.00 monthly.

TSHIP continued to support both states in building the capacity of health workers to provide quality services, strengthening the delivery of child healthcare services and strengthening the commodity supply chain system. Performance measurement in service utilization is done through indicators, for example, 295,471 infants received three doses of diphtheria, pertusis, and tetanus (DPT3) during the year in Bauchi (127,255) and Sokoto (158,216) states. Overall, this represents an achievement of 87 percent of the annual target set for PY4 (N=323,500). The project is intensifying its technical support to the states to improve the systems offering immunization services.

The strategies used by TSHIP in promoting the use of data for decision are outlined below:

We first worked with program managers (for each program, like malaria) to review and identify key performance indicators (number/percentage of confirm malaria cases that were treated with ACT, vaccine use rate, ANC visits, etc.) that will be used to measure progress over time. During this period, we supported the program managers to develop realistic targets for each indicator, identify relevant data sources as well as frequency of data collection and reporting. Additionally, we developed and agreed on specific timeline to review and discuss performance of these indicators. The review meetings usually happened at the state level (though effort was made to institute the meetings in some selected LGAs but we have not been consistent on that). For example, malaria, disease surveillance and immunization programs have been very consistent with conducting performance review meetings on a monthly basis. Since the performance data is disaggregated by ward and by health facility, the managers were able to use this data in improving distribution of vaccine and commodities in the state and in targeting underperforming health facilities for follow-up visits. In the other hand, TSHIP also summarized performance data in pamphlets (AKA advocacy briefs) and organized advocacy events targeted for traditional and religious leaders (gate keepers to the communities). During these events, factors that negatively impact on the performance of selected indicators were reviewed and action plans with key roles were developed.

With respect to use of standards-based health management, the project to applied the

	<p>standards-based management recognition (SBM-R) approach to selected hospitals and primary health care facilities. For example, in Bauchi 23 general hospitals were assessed using the SBM-R with a focus on improving quality of care in 12 areas of service delivery. The result of the assessment when compared with the two previous assessments showed remarkable improvement in quality of health care provision in all the 23 facilities. The project also supported the State Primary Health Care Development Agency in Sokoto to conduct follow-up internal SBM-R assessments of MSS primary health care centers. In this quarter, ten SBM-R PHCs (out of the 35), showed some improvements in ANC, family planning and infection prevention.</p> <p>-Strengthened policy environment at the State and LGA levels,</p> <ul style="list-style-type: none"> · The enabling environment interventions are framed around three approaches that contribute to creating a sustainable and conducive environment for the delivery of MNCH/family planning/RH services, namely (i) policy development and engagement; (ii) advocacy; and (iii) demand creation activities. The demand creation thematic area engaged TSHIP's key stakeholders such as the SMOH and its agencies including policy makers, community, traditional and religious leaders to create demand and improve access to MNCH/family planning/RH services both at the community and health facility level. Several policies were developed and disseminated in the last four years. The two states were supported to finalized and disseminate the SHSDP, not only that the ministries of health in the two states were supported to advocate for release of fund to implement some planned intervention. For example, the State Drugs Management Agency (DMA) in Bauchi. The agency began procuring drugs and commodities for use in general hospitals in the states.
<p>7. What are the enablers/ drivers?</p>	<p>Committed leadership; advocacy</p>
<p>8. What are the challenges/ barriers?</p>	<p>Entrenched practices; resistance to change; infrastructure</p>

#22 - Liberia Rebuilding Basic Health Services

Liberia Rebuilding Basic Health Services	
Field	Description
1. Country	Liberia
2. Brief description of the intervention	<p>Rebuilding Basic Health Services (RBHS) is a 5-year project funded by United States Agency for International Development (USAID) and implemented by JSI Research & Training Institute, Inc. (JSI) and its partners JHPIEGO, the John Hopkins University Center for Community Programs (CCP), and Management Sciences for Health (MSH).</p> <p>A major component of RBHS is to support the MOHSW in increasing access to quality basic health services and strengthening the decentralized management of the health system through PBC of NGOs in seven counties. In February-March 2009 an RBHS Request for Proposals (RFP) was developed to contract NGOs to provide management support to 105 health facilities. These contracts are performance based. The primary role of the contracted NGOs is to contribute to improving BPHS access through the following three objectives:</p> <ol style="list-style-type: none"> 1. Ensuring delivery of evidence-based BPHS services 2. Expansion of selected BPHS services to communities 3. Strengthening the capacity of County Health Teams to manage a decentralized health system <p>RBHS introduction of performance-based contracting and the ongoing involvement of the MOHSW (particularly the MOHSW Performance Based Financing working group) in this process are intended to contribute to lessons learned for the MOHSW's own performance based contracts. The MOHSW, funded through a Pool Fund (with donors such as the Department For International Development (DFID) and Irish Aid), intended to follow a similar PBC approach in October 2009 for NGOs to provide continued support to 46 additional health facilities, and released their own RFP in July 2009.</p> <p>-Reform of RHIS</p> <p>Based on the PRISM assessment results, RBHS has supported the MOHSW HMIS, M&E, and Research (HMER) Division to strengthen both the production of quality data and the use of HMIS information for decision making. The RBHS strategy for health information system strengthening involves: (1) improving staff capacity; (2) creating an organizational environment conducive to the use of information for decision making; and (3) improving the system components required for HMIS functionality.</p>
3. Timing and frequency of the activities	2008 - 2013
4. Scale of the intervention	National level and 9 counties
5. Who is involved	Ministry of Health and Social Welfare, contracting NGOs, health facilities in counties.
6. How successful were the interventions?	<p><i>RHIS Reform</i></p> <p>RBHS has made a significant progress in building individual, organizational, and system capacity of the HMER division of MOHSW as well as that of the county teams. The problem solving workshops in particular were very successful. Participants changed their ways of thinking about the link between problem identification and problem solving. The workshops were well attended and appreciated by the participants. The participants responded to an urgent need for CHTs to receive methodological support in their daily decision making</p>

	<p>processes. RBHS carefully documented all proceedings of the workshop and plans to write a summary report after the Lofa workshop.</p> <p>The county and central level M&E and HMIS staff has developed capacity to use DHIS2 for data entry, analysis and generation of various reports. For the first time, HMER held a DHIS2 demonstration to senior central MOHSW staff which was both appreciated and applauded. Also, both the uploading of population data to DHIS2 and the successful migration of DHIS1 legacy data to DHIS2 are great achievements, facilitating the analysis of data and use of information.</p>
<p>7. What are the enablers/drivers?</p>	
<p>8. What are the challenges/barriers?</p>	<p><i>Lessons learnt on selecting performance indicators in Liberia</i></p> <p>Many different performance indicators were considered for measuring progress toward achievement of the relevant objectives of the Scope of Work of the NGOs. The selection of appropriate performance indicators was particularly difficult in Liberia as the NGOs are not responsible for delivering the health services but are contracted to provide management support to MOHSW health facilities. Consequently, not everything is under the control of the NGOs, such as the management (e.g., hiring and firing) of MOHSW employed staff or the provision of certain supplies such as Insecticide Treated Nets (ITNs), and therefore the ability to influence certain changes at community and/or provider level may be more complicated. As a result, some indicators were not suitable to be linked to performance incentives as they could not be sufficiently influenced by the NGOs. For that reason, the Scope of Work was developed concurrently with identification of performance indicators and due consideration was given whether NGOs were in a position to influence the indicators. Additional measures, such as agreements between the NGOs and CHTs describing respective roles and responsibilities, will need to be implemented to achieve the improved health system performance. A key lesson learned is that utilizing performance based contracting in the case of management contracting is especially challenging. Selection of performance indicators requires substantial consideration to ensure they will be feasible to achieve.</p> <p><i>RHIS reform</i></p> <ul style="list-style-type: none"> • Scheduling of various activities in coordination between counties, central HMER and RBHS has proven difficult because of many competing priorities • Use of information is a continuing process that needs strong leadership and commitment. • Although progress has been made, HMER's capacity to handle to DHIS2 software is still limited due to the low number of capable staff. Hence, additional efforts will be needed to expand the capacity of the HMIS team on DHIS2 administration and database administration.

#23 - Enhanced Strategic Information Project (ESI)

Enhanced Strategic Information Project (ESI)	
Field	Description
1. Country	South Africa
2. Brief description of the intervention	<p>In 2008, recognizing the need for improved and standardized methods of data collection and sharing, USAID enlisted JSI to manage the Enhancing Strategic Information (ESI) Project. One objective of the project was to build capacity among PEPFAR implementing partners to collect quality data, report it to a central database, and utilize it for evidence-based program planning.</p> <p>ESI was tasked with building the capacity of PEPFAR partners to utilize the Evidence-Based Health Management Framework—an organizational strategy based on using data for decision-making—to improve HIV services, including services for the prevention of mother-to-child transmission (PMTCT). Building capacity required the rigorous training of staff in effective employment of the new information system. ESI thus instituted a multi-level training system that taught data collectors how to routinely collect pertinent, accurate information and taught program managers how to better understand, manage, and apply the data to their program planning.</p>
3. Timing and frequency of the activities	2008 – 2013
4. Scale of the intervention	Nation-wide, focal regions
5. Who is involved	MOH, PEPFAR partners
6. How successful were the interventions?	<p>ESI trained data collectors and program managers together to instill a shared understanding of program objectives and to ensure that accurate and appropriate data was being collected. This method of training proved invaluable to the adoption of the new systems and transformed the attitudes of health clinic and program staff members about the value of good data.</p> <p>The strategic use of monitoring and evaluation and the application of the new skills in synthesizing and utilizing data revolutionized the way many who received the training thought about their work. After the trainings, organizational managers saw how accurate, up-to-date data and sound EBHM could be used for short- and long-term planning to extend HIV and AIDS services to more people that need them.</p> <p>The trainings were so successful and well-regarded that three ESI courses—Evidence-Based Health Management (EBHM); Facilitation and Mentoring; and Basic Monitoring and Evaluation—have gained accreditation from the University of Pretoria.</p>
7. What are the enablers/drivers?	Partnerships
8. What are the challenges/barriers?	ESI trainers found that one of the major impediments to effective information management was a communication breakdown between data collectors and program administrators; data collectors did not fully understand the context or objectives for which they were collecting data, and program managers did not know how to synthesize the often incomplete data that was being collected for decision-making.

#24 - Uganda Program for Human and Holistic Development (UPHOLD)

Uganda Program for Human and Holistic Development (UPHOLD)	
Field	Description
1. Country	Uganda
2. Brief description of the intervention	<p>UPHOLD was a six-year program (October 2002 to September 2008) funded by the United States Agency for International Development (USAID) and supported by the Government of Uganda. The Program strengthened capacity in 34 districts for the improved delivery, planning, management, monitoring and effective use of social services in three integrated social sectors: health, education and HIV/AIDS. The Program's primary beneficiaries were Ugandan men, women and children.</p> <p>Performance Improvement – Decentralization of health system management and Use of LQA for monitoring performance at district level.</p> <p>Quality Assurance</p> <p>Private Sector Support</p> <p>Behaviour Change (BC) Communication and other BC Strategies</p> <p>Community Ownership and Involvement</p>
3. Timing and frequency of the activities	2002 -2008
4. Scale of the intervention	34 districts
5. Who is involved	Public sector health districts and facilities
6. How successful were the interventions?	<p>As a result of the child health component interventions, the 2004-2007 UPHOLD LQAS surveys indicate a positive trend in the proportion of children who received DPT3 in UPHOLD-supported districts through June 2007. When this support ended the 2007 result remained high at 81.1% compared to the national average of 64% reported in the UDHS 2006. UPHOLD-supported community-based growth promotion (CBGP) activities were first initiated in 2004 within 20 villages in Bugiri District, followed by a grant to CSOs already involved in growth promotion activities. The National Strategy for Rural Women's EUPHOLD supported community-based growth promotion (CBGP) activities were first initiated in 2004 within 20 villages in Bugiri District, followed by a grant to a CSO the National Strategy for Rural Women's Empowerment (NSWARU), already involved in growth promotion activities. In 2005, activities to promote CBGP as an entry point to a more integrated and holistic approach to improving child health at a communities, were scaled up to six districts (Luwero, Arua, Mayuge, Kiruhura and Ibanda districts). The approach was modeled on the village health team (VHT) concept of the MoH which aims to bridge the gap between the health service delivery system and the household. The intervention acts as a catalyst for solving problems of childhood illness, poor feeding practices and other health concerns at the household level. During the program's life 1,290 growth promoters covering 524 villages in the six selected districts were trained (Table 14). They were tasked and equipped to conduct monthly growth promotion sessions in their villages and providing counseling and referral support to mothers regarding the upbringing of their children. To this effect, UPHOLD developed a CBGP kit and procured for each growth promoter a toolkit consisting of: a village register; 16 child health counseling cards covering antenatal and newborn care, immunization malaria management and sick child care; a growth promotion handbook, a laminated chart for monitoring expected weight gain; reporting forms, a weighing scale; referral sheets for sick children; a T-shirt; and stationery items. By the end of the project, monthly weighing sessions were held for all children below the age of two living in the communities across the 524 villages, with over 15,000 children enrolled in the growth promotion program. The average reporting</p>

	<p>rate was 63% and the average monthly participation or attendance rate was recorded at 72%. Toward the end of 2007, 102 parish coordinators were selected from the growth promoters and along with the sub-county supervisors, they underwent a one-day training course on reporting requirements and quality control for CBGP after which they were expected to review and correct the monthly village summary reports, compile data and submit it to the sub-county coordinators.</p>
<p>7. What are the enablers/ drivers?</p>	<p>An integrated, multi-sectoral approach that builds human capacity and creates synergy between interventions; Strengthening effective partnerships and dialogue between the public sector, the private sector, civil society, families and communities; Building on the existing strengths and opportunities of Uganda’s wealth of human and socio-cultural resources; A behavior-centered orientation that focuses on understanding and strategically addressing human motivations and constraints in taking specific actions; Improving quality assurance systems; and Systems thinking based on strategic analysis and planning and creative processes.</p>
<p>8. What are the challenges/ barriers?</p>	<p>UPHOLD built capacity for CBGP at district, sub-county, parish and community levels in six districts. This has provided a firm foundation for the continuation and expansion of CBGP in Uganda. A strengthened involvement of the district health team and partnerships with interested NGO’s and CSOs will remain crucial to sustain adequate levels of support supervision, continuous capacity building, and monitoring and evaluation of growth promotion activities. UPHOLD enhanced linkages to other community based health activities and actions, e.g. the involvement of growth promoters in immunization and Child Days’ activities and the utilization of the CBGP/VHT structures and capacities for maternal and newborn care, which has great potential towards further improvement in child health. Training and support supervision, growth promoters provided standard health education messages to the mothers and caretakers. The good practice of drawing attention to a child’s growth and health on a monthly basis and providing tailored health information to mothers level made a positive impact in the growth and health of the community’s children. More support should therefore be provided to growth promoters to provide tailor-made behavioral change communication messages to caretakers.</p>

#25 - Strengthening TB and HIV & AIDS Responses in East Central Uganda (STAR-EC)

Strengthening TB and HIV & AIDS Responses in East Central Uganda (STAR-EC)	
Field	Description
1. Country	Uganda
2. Brief description of the intervention	STAR- EC conducts LQAS survey and HFA annually STAR-E LQAS in collaboration with STAR–EC introduced SPAI process - a structured process that facilitates use of LQAS, HFA and other data to analyze health service gaps.
3. Timing and frequency of the activities	2009-2014
4. Scale of the intervention	9 districts of E and C Uganda
5. Who is involved	Works through district based structures and civil society organizations
6. How successful were the interventions?	<p>Achievements:</p> <ul style="list-style-type: none"> • 6 District SPAI teams formed - one per district • 6 performance improvement plans developed • Conducted field supervision & quarterly meetings to assess progress • Enabled districts to monitor trends for prioritized indicators • More health workers were trained to offer HIV& AIDS and TB services • Scaled up services to underserved SAs – through outreaches (e.g. ART & HCT) • Conducted community dialogues to promote male involvement in HCT • Some of the proposed PI activities were integrated into the district annual work plans • Facilitated districts to advocate for resources from other development partners • Improved partnership between STAR-E LQAS and STAR-EC <p>The 2009 HFA results for Bugiri district indicated that only 52.4% of health facilities were reporting quality data on a timely manner</p> <ul style="list-style-type: none"> • Discussions of 2009 HFA results helped Bugiri district to identify causes of untimely reporting and incompleteness of HMIS reports • In response, the health facility in-charges, midwives and medical records officers were engaged in routine register update, data quality audit and data compilation • Follow-up HFAs showed marked improvement in timely data reporting from 52.4% (2009) to 79.3% (2010) and 81.3% (2011).
7. What are the enablers/ drivers?	<p>Enable districts discuss their LQAS /HFA results</p> <ul style="list-style-type: none"> • Identify health service gaps & set priorities • Create action plans to address the gaps • Train more national/district level SPAI facilitators • Conduct SPAI process early enough that activities needing funding can be integrated in district annual work plan • Mobilize resources for SPAI process workshop • Make use of available district resources to implement PI activities, and in extreme cases, seek external funding
8. What are the challenges/ barriers?	-Long workshops (key districts officials engaged for a week affected work)

	<ul style="list-style-type: none">-High workshop costs (hotel, per diem, transport.)-Lack of resources to implement some of the PI activities-Lack of commitment by some SPAI team members to attend quarterlyLack of funding for quarterly review meetings discourages SPAI team members from non-health department-Lack of trained SPAI process facilitators at district level-Some districts look at SPAI process as duplication of other processes (e.g. quarterly district performance reviews)
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#26 - ZdravPlus II Project - Central Asia Quality Health Project

ZdravPlus II Project - Central Asia Quality Health Project	
Field	Description
1. Countries	Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan
2. Brief description of the intervention	<p>ZdravPlus project supported an integrated and comprehensive approach to health systems strengthening and quality improvements in service delivery.</p> <p>Key Components:</p> <ul style="list-style-type: none"> •Stewardship: Strengthen national and local governance, leadership, and capacity to continue improvements in health services through the design and implementation of evidence-based policies, laws, and guidelines and cost-efficient institutional structures, roles, and relationships. •Resource use: Increase equitable access to health services and supplies, through the design and implementation of health financing mechanisms, including pooling of health funds, provider payment systems, health insurance, and basic benefit and outpatient drug benefit packages. •Service delivery: Improve the quality of services according to evidence-based practices at hospital and primary care facilities, through clinical training and mentoring and quality improvement and performance monitoring systems. •Population and community empowerment: Empower individuals and communities to take actions to maintain and improve their health status, and specifically to access, utilize, and benefit from health services of higher quality and at affordable costs. <p>Approaches:</p> <ul style="list-style-type: none"> -Strengthen governance, leadership, and capacity through the design and implementation of evidence-based policies, laws, and guidelines and cost-efficient institutional structures, roles, and relationships. -Increase equitable access to health services and supplies, through the design and implementation of health financing mechanisms, including pooling of health funds, provider payment systems, health insurance, and basic benefit and outpatient drug benefit packages. -Reform the primary health care (PHC) sector by engaging with and advocating change at every level of the health care system – at national ministries of health, at facilities, with health care workers, and with the general population - Work with ministries of health to gain national-level acceptance and support for reforms carried out in pilot sites by working on new health financing and payment mechanisms and on national-level decrees allowing PHC doctors to expand their scopes of practice -At facility level, restructuring the system to encourage the population to visit their primary care physician at out-patient facilities as opposed to going straight to the hospital. -Re-training primary-level health care workers in the principles and practices of family medicine – thus providing rationalized, better quality care focused on prevention at a lower cost to the system and the population.
3. Timing and frequency of the activities	2005-2009
4. Scale of the intervention	National, district, health facility, community
5. Who is involved	
6. How successful	New policy processes, provider payment systems, health information systems, and health management tools, products, and interventions have been implemented in four

were the interventions?	countries. ZdravPlusII has helped local governments introduce family medicine and strengthen primary health care through extensive training, expansion of scope of services, and development of quality improvement mechanisms. Communities have begun to understand their health care rights and responsibilities through open enrollment campaigns, health promotion activities, and community health programs. In Kyrgyzstan, a comprehensive, integrated health reform model that includes a single payer system has produced compelling results, making it a leader among the states of the former Soviet Union and providing globally relevant lessons learned.
7. What are the enablers/ drivers?	
8. What are the challenges/ barriers?	

#27 - Family Planning Region 1 Data System

Family Planning Region 1 Data System	
Field	Description
1. Country	USA
2. Brief description of the intervention	<p>JSI was contracted by the DHHS Region I Office of Family Planning in May 2000 to manage the design, development, implementation, and ongoing management of a regional data management system supporting health information exchange (HIE) for over 250 healthcare provider sites across New England.</p> <p>As part of this contract, JSI established and currently chairs the Regional Data Committee which serves as the Regional Health Information Organization (RHIO) for this project. The Data Committee is comprised of grantee and regional leadership staff. With JSI's guidance, the Data Committee created a set of functional and operational requirements to meet both existing federal, regional, and state data reporting needs. These requirements served as the functional requirements specification for the system. JSI used these specifications to support system design, development, and implementation efforts. The key features of the system include four data collection methods (scannable paper, PC-based application, web form and electronic file transfer from site legacy systems), data conversion to centralized formats, data storage and management, data analysis and reporting capabilities, HIPAA compliance, and features supporting ongoing system operations. JSI currently hosts and provides ongoing operational support for the system.</p>
3. Timing and frequency of the activities	2004 -2008
4. Scale of the intervention	250 health care provider sites across New England States
5. Who is involved	Private health care providers
6. How successful were the interventions?	The data system offers grantees significant enhancements in patient-level data collection, data analysis and reporting to meet federal, regional, and state reporting requirements.
7. What are the enablers/ drivers?	
8. What are the challenges/ barriers?	

#28 - Sene Project – PDAs for reporting on Immunization Services

Sene Project – PDAs for reporting on Immunization Services	
Field	Description
1. Country	Ghana
2. Brief description of the intervention	<p>The Sene District PDA Project involves the use of Pocket Digital Assistants (PDAs) to collect public health service data at the lowest level of service delivery in Ghana – Community-based Health Planning and Services (CHPS) zones. It is in the form of medical records to aid in following up clients to ensure continuity of care. The project also aims to produce accurate service data and reduce the time spent by service providers to compile inaccurate monthly data. The project has reached an advance stage in collecting data and use of data collected to ensure that every registered child completes his/her immunisation. The safe motherhood aspect of data collection i.e. antenatal care supervised delivery and postnatal care has been started but it is still in the rudimentary phase.</p> <p>Data is collected by the Community Health Officers at the CHPS zones by registering each child who receives immunisation service. The demographic details of the children are taken using the PDA. The children are given unique identification numbers generated by the community health nurse. Address of the child is captured so that the child can be traced for home visits.</p> <p>Every month this register is used to follow up children who are due for immunisation in the communities. For each community visit that the community health officer makes for an outreach clinic, she queries the database and has the names of the children who are due to be vaccinated and the type of vaccines they will be taking. This helps in the preparation in getting adequate vaccines for an outreach and also ensuring that she identifies and vaccinate every child in the community who is due to be vaccinated. This same data is synchronised with a computer at the District Health Directorate and an interface is used to generate the monthly immunisation facility report as required by the program. The generation of this electronic monthly immunisation reports has been estimated to save the community health nurse about five working days every month of report preparation, which can be used for service delivery. District Health Management Teams also gets immunisation reports promptly in order to make decisions on which community health nurses need extra support to reach their target populations</p> <p>Though the project is not implemented by either JSI or Path I thought it could also inform the BID initiative literature review and intervention designing. Here are the links for reference materials:</p> <p>http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3615810/#b9-ojphi-04-16 http://www.ghanahealthservice.org/includes/upload/publications/sene%20pda.pdf</p>
3. Timing and frequency of the activities	Since 2003
4. Scale of the intervention	Tested in one district (SENE), currently implementing in 2 others. Plan to scale nationwide.
5. Who is involved	Public health facilities/communities – Ghana Health Services
6. How successful were the interventions?	The introduction of the PDAs gave the community health officers more time for direct service delivery and gave them a tool to use to track and immunize children who defaulted. Looking at the data for the Pentavalent vaccine (against diphtheria, whooping cough, tetanus, hepatitis B and H. influenza), which is given at 6, 10, and 14 weeks after birth. The drop-out rate for this vaccine in the Sene District, calculated by subtracting the coverage at 14 weeks from the coverage at 6 weeks, fell from 5.3% to 1.8%. This indicator shows how well children are followed to

	<p>ensure that they complete their immunization schedule according to schedule. More accurate and timely EPI data are now being generated by the community health offices than before when they were using the paper based system. The processes affected are the registration of the children, the collation of service data and reporting. These have now been automated, freeing valuable time for direct service delivery by the community health officer.</p>
<p>7. What are the enablers/drivers?</p>	<p>Desire to reduce data collection/reporting burden in favor of patient care (PDA system estimated to reduce workload collecting data and reporting 5 days /month)</p>
<p>8. What are the challenges/barriers?</p>	<p>Electric power supply -Internet connectivity -Resistance to new technology -Lack of maintenance culture.</p>

#29 - WHO National Polio Surveillance Project RI Monitoring Forms

WHO National Polio Surveillance Project RI Monitoring Forms	
Field	Description
1. Country	India
2. Brief description of the intervention	<p>RI service quality monitoring tools; prepared by WHO National Polio Surveillance Project and the UNICEF Social Mobilization Network (India)</p> <p>Forms are used during supervision of static post RI sessions, house-to-house campaigns, and to assess capacity/service quality at block and district offices of National Immunization Program</p> <p>Use of service quality monitoring tools at different levels of the health system for Routine Immunization</p> <ul style="list-style-type: none"> • RI Session monitoring tool • RI House-house monitoring tool • Block and district monitoring tools • RI HMIS dashboard (coverage, surveillance estimates by state)
3. Timing and frequency of the activities	
4. Scale of the intervention	Regional, district, sub-district, health facility, community
5. Who is involved	Public and private (i.e. Rotary International)
6. How successful were the interventions?	
7. What are the enablers/drivers?	Information on service quality enables identification of gaps and accurate targeting of resources for system strengthening
8. What are the challenges/barriers?	<p>-Rapidly changing needs lead to constant modifications to tools and version control issues.</p> <p>-Requires dedicated staff time to employ.</p> <p>- Health workers/system that promote “comfortable” data over “reliable” data.</p>

#30 - East African Training Project (EATP)

East African Training Project (EATP) – CDC (Gates recommended project)	
Field	Description
1. Countries	Ethiopia, South Sudan, Uganda
2. Brief description of the intervention	<p>Objective - Try to keep polio out of the countries.</p> <p>Capacity building project focused on training and supervision</p> <ul style="list-style-type: none"> • Focal regions selected • Series of workshops (2-4 in a year) at district level and regional level • Participants include EPI managers and surveillance officers • Key activities in planning, managing and monitoring program activities • Usual aspect – in addition to workshops, participants were given (assigned or choose) <i>field projects</i>. These were structured as follows: <ul style="list-style-type: none"> ○ Job related activities at district level, for instance: <ul style="list-style-type: none"> ▪ Choose a sub-district area that's performing poorly and look into a particular component of low performance ▪ Review the surveillance data for vaccine preventable illnesses within a given area and work to identify solutions ○ Project mentors – hired domestically (though South Sudan had challenges identifying qualified candidates so project staff served in the role) <ul style="list-style-type: none"> ▪ Monthly site visit to supervise field projects to ensure progress is being made, along with the completion of the field project, and that reporting is occurring as expected ▪ Check in while they are doing on-the-job activities and see what challenges are being confronted, then do training to address those challenges ▪ Mentoring was broader than just completing a specific field project, but included overall capacity for improving the situation within the district • Data quality was a focus, but was not the objective of a given field project. Rather it was a supportive component that the mentors would address if it was perceived to be a challenge • Year 1 completed and additional funding was provided for Year 2 activities to continue in line with Year 1 within the same 3 countries • The structure regarding the Mentor program of START <ul style="list-style-type: none"> ○ formally hired as part of the project ○ Project officers in Ethiopia and Uganda gave an orientation – 3-5 days <ul style="list-style-type: none"> ▪ Some mentors had an Immunization background or at least familiarity with the EPI program in country ▪ Project background and objectives were shared ○ Additional orientation regarding technical assistance and the details pertaining to the field projects and how they were to monitor and provide feedback, both upward and downward ○ The mentors were to report back quarterly in capital city to project officer with routine email/phone communication occurring during the interim ○ All mentors in Ethiopia and Uganda were MDs or MPHs ○ Most had backgrounds in EPI, but some only had a background in public health ○ Logistically the program was working a lot of health facility level which had a huge financial costs, mobilization (i.e. ability to travel

	<p>independently at the local level) was quite limited</p> <ul style="list-style-type: none"> ○ Mentors have had some success with calling staff at facilities to enable remote supervision ○ START did not try to leverage mentors from districts demonstrating success. So the question was raised as how that might be possible. Steve will ask around CDC to see if other programs are doing that. Some immediate recommendations were: <ul style="list-style-type: none"> ▪ Non-monetary options: certificate, award, quarterly/annual meeting
3. Timing and frequency of the activities	Varied based on field project, but was targeted for monthly supervision visits and quarterly meetings between mentors and program supervisors
4. Scale of the intervention	District
5. Who is involved	EPI managers and surveillance officers (district level) and mentors that were hired as part of the project team
6. How successful were the interventions?	The interventions are ongoing, but initial success is being seen with the field projects.
7. What are the enablers/drivers?	<p>Having qualified mentors (PhD or MPH) who were familiar with the health context within the country, if not specifically the immunization program enabled the quality of the supervision to be established.</p> <p>Formal orientation training for the mentors helped to establish a standard set of expectations.</p> <p>Having the mentors routinely communicate with both the program staff and the mentees enabled progress to be closely tracked.</p> <p>Using cellphones to provide intermediary follow-up to mentees during the time between supervision visits.</p>
8. What are the challenges/barriers?	Quality mentors could not be identified in South Sudan so the existing project staff had to assume the additional responsibility.

#31 - Strengthening Technical Assistance for Routine Immunization Today (START)

Strengthening Technical Assistance for Routine Immunization Today (START) – CDC (Gates recommended project)	
Field	Description
1. Country	Uganda
2. Brief description of the intervention	<ol style="list-style-type: none"> 1. START is focused on capacity building for routine immunization through on-the-job training of district immunization staff <ol style="list-style-type: none"> a. Strictly focused on capacity building at district level b. Working with EPI officers at district level c. Assisting with EPI micro-planning via the RED strategy d. DQA and attempts to improve it e. Supportive supervision and monitoring f. Within each district they work with a limited number of facility staff to help with EPI micro-planning and data quality, not a comprehensive program for all staff 2. Data quality <ol style="list-style-type: none"> a. Data congruency between registers/tally sheets/reports getting submitted (@ facility level) b. District level is interested in quality of those reports c. Using the RED tool to address quality <ol style="list-style-type: none"> i. District level officers (data managers) ii. Limited understanding and use of the tool, though there's a lot of interest in it once they are exposed to it iii. Limited prioritization of data quality within the districts and facilities iv. The intention is for the data to assist in an individual's understanding of their sub-district areas regarding coverage and drop outs
3. Timing and frequency of the activities	Varies between districts
4. Scale of the intervention	District
5. Who is involved	EPI officers, within each district they work with a limited number of facility staff to help with EPI micro-planning and data quality, not a comprehensive program for all staff.
6. How successful were the interventions?	Yet to be assessed or evaluated
7. What are the enablers/drivers?	
8. What are the challenges/barriers?	Limited understanding and familiarity with the RED tool and micro-planning.

#32 – Common Requirements for Logistics Management Information Systems

Common Requirements for Logistics Management Information Systems	
Field	Description
1. Countries	Kenya, Rwanda, Senegal, Zambia, Albania, and Vietnam
2. Brief description of the intervention	The focus of this project is to create and apply a requirements development methodology that contributes to a model architecture. The project utilized the Collaborative Requirements Development Methodology (CRDM) which was designed to provide a general, adaptable, and repeatable methodology that can be applied to other health system domains at the global level and country level. It was conceived to be as beneficial at the country level for harmonizing diverse donors and programs across the health system as it would be to establish common reusable requirements at the global level. This project had two main objectives; 1) develop a general methodology for determining and documenting health information system user requirements; and 2) apply this methodology to produce requirements in supply chain as one of the core functional domains of a national health system.
3. Timing and frequency of the activities	June 2009 – July 2010, various workshops leveraging international partners and participants to structure the 3 main sets of activities (planning & research, workshops & field validation, and analysis & documentation)
4. Scale of the intervention	National (within the LMIS context)
5. Who is involved	WHO/EMP, Health Metrics Network, Rockefeller Foundation, UNICEF, Clinton Foundation, Rwanda MOH, The Partnership for Supply Chain Management (PFSCM)
6. How successful were the interventions?	The CRDM was effective in generating requirements that spanned multiple vertical programs and multiple countries. It demonstrated that while programs and countries are indeed different in many ways, when carefully examining the work of handling pharmaceuticals, vaccines, and medical supplies, there is a great deal more common and shared process than unique. This is a critical insight, as this sets the stage for health information systems to be informed by common requirements. Additionally, the following three points were identified: <ol style="list-style-type: none"> 1. Enable countries to save time and money and reduce the risk of software development projects by reusing common requirements vetted by others. 2. Enable developers of solutions to create software that is useful across programs and countries. 3. Enable donors to focus resources on health information system development projects that can be used across projects, countries, and programs.
7. What are the enablers/drivers?	Flexibility for the country to integrate various components, such as essential medicines, laboratory supplies, and medical supplies into the framework in a manner which is most suitable to the country context is one of the advantages of the CRDM. Moreover, it is robust enough to work for all health commodities, eliminates the need for multiple vertical systems, and can be expanded at a pace that meets the needs of each counter