Improving immunization registration, coverage and monitoring in Viet Nam – PATH’s Digital Immunization Registry (IR) System

Viet Nam’s public health system currently uses a paper-based immunization registry system. Health workers based at the commune health centres (CHCs) compile handwritten lists of children and pregnant women due for vaccinations and inform them through home visits or mail. When the vaccines have been administered, the details are recorded by hand and compiled in monthly reports, which are sent to the district health centre. But this system is time-consuming and prone to errors, which can cause delays, leaving children and pregnant women at greater risk of contracting vaccine-preventable diseases. Data inaccuracies also make planning difficult, leading to poor management of vaccine stocks and overall lack of efficiency.

PATH’s new Digital Immunization Registry System (Digital IR) allows for real-time access to immunization data and easy generation of reports at the CHC and district levels. It also allows for faster and more accurate recording and reporting of immunization details; improves the timely delivery of services; and facilitates programme monitoring. This system is designed to ultimately replace the current paper-based immunization registry, thereby increasing efficiency at all levels of the health system (commune, district, provincial and national) and reducing the workload of health staff.

How Digital IR works

Digital IR eliminates the need for handwritten lists, calculations and reports by providing CHCs with a web-based application that is accessible on computers and smartphones. Newborns and pregnant women are registered by a health worker via a computer or smartphone. The system then sends text message (SMS) reminders to parents about monthly child immunization days, and tracks the vaccines they receive. Digital IR also generates information on the types and numbers of vaccines CHCs need to administer every month, thus avoiding stock-outs, and provides lists of individuals due for vaccinations.

Supporting national public health programming

The Digital IR project supports Viet Nam’s Expanded Programme on Immunization (EPI) and efforts to mainstream technology solutions in health management, as highlighted in the Ministry of Health’s Five-year health sector development plan 2011–2015 (1). The system’s ability to track pregnant women’s due dates and tetanus toxoid vaccination dates will contribute to the Government’s efforts to ensure more than 90% coverage in pregnant women. Digital registration of newborns will also assist the National EPI by providing the actual number of births for careful planning and accurate monitoring of childhood immunization coverage, instead of the crude birth rate.

The Digital IR pilot project in Ben Tre Province, Southern Viet Nam, aims to provide the Government and the Ministry of Health with evidence of the value that can be added by this system, and this model can eventually be scaled up nationwide. Both the National EPI and the programme in the Southern Region (Southern EPI) will help coordinate the pilot project activities by providing technical support in software development, training sessions for trainers and health workers, and remote support and field visits. They
will also participate in workshops to hear feedback from end-users and address any issues that arise during early implementation. Based on the lessons learnt, National EPI and Southern EPI will consider regional and nationwide scale-up of Digital IR.

**Partnerships for support and sustainability**

PATH is collaborating with relevant national health programmes – National EPI and Southern EPI – to implement this project, and will foster their continued commitment. Given the limited capacity of the current Global System for Mobile Communications (GSM) to accommodate SMS messages sent during the project, PATH has partnered with a service provider that has better capacity to manage the increased number of SMS messages when the project is scaled up. Through the project, PATH will build a long-term partnership between National EPI and the country’s largest telecommunications company to maintain continuous SMS provision, supporting future nationwide implementation.

**IWG catalytic grant for mHealth programme scale-up**

PATH’s Viet Nam office was awarded a grant to scale up the Digital IR programme in Viet Nam by the United Nations Innovation Working Group’s (IWG’s) catalytic grant competition for maternal, newborn and child mobile health (mHealth), managed by the United Nations Foundation. PATH was successful in the grant competition because it employs an effective delivery strategy for an evidence-based maternal and child health intervention, combined with creative financing strategies to promote sustainability – elements that are critical for mHealth tools to contribute to Millennium Development Goals 4 and 5.¹ Through IWG, PATH is receiving assistance from the World Health Organization’s Department of Reproductive Health and Research to optimize scale-up of the Digital IR programme while contributing to the mHealth evidence base and best practices on implementation and scale-up. Please visit http://www.who.int/reproductivehealth/topics/mhealth/en/ or www.path.org for more information.

**Partners:** National Expanded Programme on Immunization (National EPI), Southern Region Expanded Programme on Immunization (Southern EPI), Ben Tre Health Department, Ben Tre Provincial Preventive Medicine Centre and nine district preventive medicine centres

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¹ MDG 4 is to reduce child mortality; MDG 5 is to improve maternal health (www.unmillenniumproject.org/goals/gti.htm)

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**Reference:**


**Credits:**

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### MHEALTH & ICT Framework for RMNCH

**Mother & Adolescence**
- Pregnancy registration
- Vital registration
- Routine immunizations
- Postnatal new born
- Maternal health

**Child**
- Pregnancy registration
- Vital registration
- Routine immunizations
- Postnatal new born
- Maternal health

### RMNCH Essential Interventions

**Client education & behaviour change communication (BCC)**
- SMS reminders to notify pregnant women/parents about upcoming vaccination days

**Sensors & point-of-care diagnostics**
- Pregnant women/newborns are registered by health workers through electronic forms on web-based interface via either computer or smart phone

**Registries / vital events tracking**
- Electronic platform for data collection on immunization days for automatic generation of immunization reports, which are more accurate and timely

**Data collection & reporting**
- Digital forms to track vaccination information linked to the National EPI's Vaccine management and immunisation reporting system

**Electronic health records**
- Automatically generated list of due vaccinations for accurate calculation of vaccine stock required

**Electronic decision support**
- Provider workplanning & scheduling
- Alerts for scheduling based on automatically created list of due vaccinations

**Provider-to-provider communication**
- User groups, consultation

**Provider training & education**
- Human resource management

**Supply chain management**
- Financial transactions & incentives

### Health System Constraints
- Demand for services
- Loss to follow-up
- Lack of population enumeration
- Quality/unreliability of data
- Supply of commodities
- Effective resource allocation

### Implementation Strategy = Function + Purpose

**Project Partners**
- PATH Vietnam

**Project Scale**
- Binh Tan Province, Southern Vietnam at 9 (of 10) districts within the province for a total reach of 164 Community Health Centers (CHCs).
EXPANDING REACH OF IMMUNIZATION REGISTRATION IN VIETNAM

PATH VIETNAM

mHEALTH & ICT FRAMEWORK FOR RMNCH

MOTHER

CHILD

ADOLESCENCE

BEFORE PREGNANCY

PREGNANCY

BIRTH

POSTPARTUM MOTHER

MATERNAL HEALTH

POSTNATAL NEWBORN

INFANCY

CHILDMHEALTH & ICT FRAMEWORK FOR RMNCH

PART B

LEGEND:

- Home / Community
- Rural clinic
- District
- Project server
- National health system

SPECIFIC TOUCH POINTS

PREGNANT WOMAN/NEWBORN/CHILD

COMMUNITY HEALTH WORKER

SKILLED PROVIDER

SUPERVISOR

PROJECT SERVER

NATIONAL HEALTH SYSTEM

LOC

PROCESS KEY

Pregnant woman/newborn is registered by health workers.
Constraint: Registration process may be delayed or not completed due to the use of paper form.

New child case created in national HMIS.

List of due vaccinations is generated automatically and accessed via computer or smartphone.
Constraint: Manual preparation of due vaccinations from pregnancy/birth registry are prone to errors.

SMS reminders sent directly to client's phone notifying pregnant women/parents about upcoming vaccination days.

Pregnant women and parents with registered children come to commune health center for vaccination.
Constraint: Pregnant women/parents may not know if they/their child are due for vaccination.

LOC

PROCESS KEY

Health workers are adequately prepared to provide vaccinations for pregnant women and children.
Constraint: Incorrect estimate could lead to wasted or inadequate vaccine stocks.

Health workers enter vaccination information into immunization ledger
Constraint: Delays in data entry impact on the availability of data for decision-making.

Health workers prepare immunization reports
Constraint: Reports are time consuming and prone to errors when compiled manually.

PROJECT SERVER

Generates list of due vaccinations

Sends SMS reminders for upcoming vaccination days

Enters vaccination information into immunization register

Immunization report updated

SUPERVISOR

Updates record/schedules next appointment

Immunization report updated

NATIONAL HEALTH SYSTEM

New case created

List of due vaccinations is generated automatically and accessed via computer or smartphone.

SMS reminders sent directly to client's phone notifying pregnant women/parents about upcoming vaccination days.

Pregnant women and parents with registered children come to commune health center for vaccination.
Constraint: Pregnant women/parents may not know if they/their child are due for vaccination.