

## OVERVIEW

## Albania pilots an immunization information system

The Albanian Ministry of Health, in collaboration with [project Optimize](#), developed a registry-based immunization information system (IIS) and piloted it in Shkoder district. This factsheet illustrates how the data the new system produces is used to improve the management of the vaccination program, how it is changing the way people collaborate, how it ensures timely and equal access to immunization for all children, and how it reduces the administrative burden on staff.

Before IIS, nurses made monthly lists of children due to be vaccinated by reviewing the health center's paper-based immunization registries. They used these lists to schedule the vaccinations, notify parents, and determine how much vaccine to order. They then recorded every vaccination on up to six forms and registers. At the end of each quarterly period, nurses produced vaccination coverage reports and sent these to the district head of vaccinators, who reviewed and aggregated them.

**Planning the month's vaccinations**

A nurse examines her immunization registers to determine which children need to be vaccinated the following month.

**Collecting the required vaccines**

A nurse receives the vaccines for the month's planned vaccinations from the district head of vaccinators.

**Taking the vaccines to children**

Health post vaccinators transport vaccines for the monthly sessions in their village.



#### **Administering a vaccine**

A child is given a checkup before being vaccinated. The nurse must fill out six different forms and registers for each vaccination encounter.



#### **Determining vaccination coverage**

A nurse consults her immunization registry to count each vaccination administered during the previous quarter to produce a coverage report.



#### **Aggregating coverage data**

The district head of vaccinators aggregates all health center coverage reports to determine the overall rate.

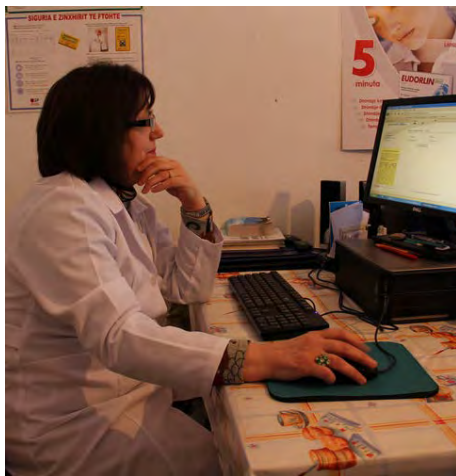
### **Why change**

Despite the hard work of health staff, some errors in data collection and reporting were inevitable. There was also no easy way to keep track of children who move to another area of the country. In addition, staff at the national level only received summarized data that was not helpful to manage and improve the program. For example, they only received aggregated coverage estimates by district when what they needed to know was who the unvaccinated children were, which community they belonged to, where they lived, and why they had not been vaccinated. With the introduction of new and more expensive vaccines, there was also a desire to better control the distribution and administration of vaccines. Therefore, the Albanian Ministry of Health, in partnership with project Optimize, developed and implemented an IIS to provide this management information and automate much of the nurse's administrative work.

### **How the work of health staff has changed**

Data about newborns and their caretakers (typically parents or guardians) is now registered in a central database. As soon as children are entered into the system, a schedule of their future immunization appointments is generated. When appointments are due, the children are automatically included in the monthly plan of the health center responsible for the child. This removes the need for nurses to review their immunization registries to find children due to be vaccinated. Instead, nurses can use the monthly plan to organize their work. As caretaker details are stored by IIS, nurses can send text messages or call them to confirm their appointments. The monthly plan also calculates the total number of vaccine doses required; this information helps nurses determine the right vaccine quantities to order.

Child Health Center	Leandra Hajmel	
Vaccine	Schedule	Preliminary Dates
HepB-Hib-DTP - 1	2 Muaj	07/06/2012
OPV - 1	2 Muaj	07/06/2012
Pneumo - 1	2 Muaj	07/06/2012
Pneumo - 2	4 Muaj	07/08/2012
HepB-Hib-DTP - 2	4 Muaj	07/08/2012
OPV - 2	4 Muaj	07/08/2012
Pneumo - 3	6 Muaj	07/10/2012
HepB-Hib-DTP - 3	6 Muaj	07/10/2012
OPV - 3	6 Muaj	07/10/2012
MMR - 1	1 Vjec	07/04/2013
DTP - R1	2 Vjec	07/04/2014
OPV - R1	2 Vjec	07/04/2014
MMR - R1	5 Vjec	07/04/2017
OPV - R2	6 Vjec	07/04/2018
DT - R2	6 Vjec	07/04/2018



Child	Ceretaker	Vaccine	Vaccine Schedule	Preliminary Date	SMS	Data e Vaktimit	Loti / Vaktimes
Ariel Ibrahim	Kujtim Ibrahim	Hep-B-1	Ne Lindje	15/06/2004	+		*****
Ariel Ibrahim	Kujtim Ibrahim	BCG	Ne Lindje	15/06/2004	+		*****
Ariel Ibrahim	Kujtim Ibrahim	DTP-1	2 Muaj	15/08/2004	+		*****
Ariel Ibrahim	Kujtim Ibrahim	Hep-B-2	2 Muaj	15/08/2004	+		*****
Ariel Ibrahim	Kujtim Ibrahim	OPV - 1	2 Muaj	15/08/2004	+		*****
Ariel Ibrahim	Kujtim Ibrahim	DTP-2	4 Muaj	15/10/2004	+		*****
Ariel Ibrahim	Kujtim Ibrahim	Hep-B-3	6 Muaj	15/12/2004	+		*****
Ariel Ibrahim	Kujtim Ibrahim	DTP-3	6 Muaj	15/12/2004	+		*****
Ariel Ibrahim	Kujtim Ibrahim	FR-1	1 Vjec	15/06/2005	+		*****
Ariel Ibrahim	Kujtim Ibrahim	DTP - R1	2 Vjec	15/06/2006	+		*****

Vaccine Doses Required

Vaccine Code	Quantity
BCG	1
DT	2
DTP	35
DTPe	4
FR	2
Hep-B	3
HepB-HB-DTP	20
MMR	36
OPV	70
Pneumo	20

**A child's immunization schedule**  
IIS automatically generates the future immunization appointments for newborns entered into the system.

**Consulting the monthly plan**  
A nurse signs in to IIS through a web browser to view her monthly plan.

**Determining how much vaccine is required**  
The monthly plan groups all appointments for a nurse that month. The bottom box shows the vaccines that will be needed.

As children are vaccinated, nurses with access to a computer can update their immunization status directly into the monthly plan by completing the vaccination date and the vaccine lot they used. Because IIS is also used for stock management, the system can show the lots every health center should have in store and deduct their balance every time a nurse uses a certain lot for immunization.

The district head of vaccinators also prints out the monthly plans for every health center and health post and distributes them to nurses together with the vaccines. In this way, nurses who do not have access to a computer can use the paper plan to organize their work and report back on the vaccinations they have administered by making note of the vaccination date and the lot they used in the columns provided on the form. Some nurses also started testing a mobile phone application that offers most of the functionality of the web-based system.



Child	Ceretaker	Vaccine	Schedule	Address	Date	Data e Vaktimit	Va Lot
Ndoj	Florinda Ndoj	BCG	Ne Lindje	Lezhe	15/06/2011		
Ndoj	Florinda Ndoj	HepB - 0	Ne Lindje	Lezhe	15/06/2011		
Jonuzi	Saide Jonuzi	BCG	Ne Lindje	Pisris	15/06/2011		
Jonuzi	Saide Jonuzi	HepB - 0	Ne Lindje	Pisris	15/06/2011		
Subotaj	Leureta Subotaj	HepB - 0	Ne Lindje	Mari Lule	15/06/2011		
Subotaj	Leureta Subotaj	BCG	Ne Lindje	Mari Lule	15/06/2011		
Fari	Onona Fari	HepB - 0	Ne Lindje	Ndoc Mazi	15/06/2011		
Fari	Onona Fari	BCG	Ne Lindje	Ndoc Mazi	15/06/2011		
Smekaj	GRISELA Smekaj	BCG	Ne Lindje	Gruemire	15/06/2011		
Smekaj	GRISELA Smekaj	HepB - 0	Ne Lindje	Gruemire	15/06/2011		
Karakaco	Alma Karakaco	HepB - 0	Ne Lindje	L.Perash	15/06/2011		
Karakaco	Alma Karakaco	BCG	Ne Lindje	L.Perash	15/06/2011		
Serubtha	Zamaida Serubtha	HepB - 0	Ne Lindje	Salo Helli	15/06/2011		

**Distributing vaccines and monthly plans**  
A commune health center nurse receives his vaccines for the month from the district supervisor, together with the monthly plans for all the villages in his area.

**Distributing vaccines and a monthly plan**  
Together with the required vaccines, the health center nurse passes on a copy of the monthly plan to a village health post nurse.

**Monthly report printouts**  
The printout of the monthly plan allows the nurse to record the date and vaccine lot used for each vaccination.

Of course, not every vaccination can be planned for and so IIS enables nurses to retrieve and update the vaccination records of any child in the system, for example using the 10-digit national identification code of the mother or the child's name or date of birth. Children who move within Albania can thus be reassigned to their new health center.

## Benefits

IIS simplifies the monthly planning and reporting required of nurses, but there are other benefits to tracking the immunization status of individual children. Firstly, IIS not only generates coverage reports automatically, it is also able to show exactly which children have been registered but have not yet received all their doses. This enables nurses to actively look for and quickly identify these defaulters. Timeliness of vaccinations has already increased in the IIS pilot district.

Mbulesa Vaksinale - IIS

Birthdate - From Date: 01/01/2010 To Date: 01/12/2010  
 Vaccine:

DSHP Shkoder

View Not Vaccinated Children	Vaccine	Immunized	Planned	Pe
	BCG	1551	1600	96
	HepB - 0	1519	1600	95
	HepB-Hib-DTP - 1	1568	1600	97
	HepB-Hib-DTP - 2	1564	1600	97
	HepB-Hib-DTP - 3	1560	1600	97
	OPV - 1	1569	1600	97
	OPV - 2	1562	1607	97
	OPV - 3	1554	1605	96
	MMR - 1	1522	1604	94

List Not Immunized Children - IIS

Health Center:

1	2	3	4	5	6	7	8	9	10	...	E Fundit
LastName	FirstName	Health Center	District	Caretaker	BirthDa						
Grina	Albert	Nicaj-Shoshe	Shkoder	Zef Grina	20/02/2						
Grina	Diella	Nicaj-Shoshe	Shkoder	Gjergj Grina	27/05/2						
Lami	Mira	Nicaj-Shoshe	Shkoder	Lek Lami	01/04/2						
NIKJA	KLEVIST	Vau Dejes fshat	Shkoder	GJERGJ NIKJA	28/01/2						
Hila	Klaus	Perlat Rexhepi	Shkoder	Elton Hila	23/03/2						
Zefi	Kledisa	Melgush	Shkoder	Lodovik Zefi	06/06/2						
Bakalli	Tea	Partizani	Shkoder	Rudina Bakalli	15/07/2						
Shegaj	Ergi	Melgush	Shkoder	Ermira Shegaj	31/07/2						
Grina	Diana	Nicaj-Shoshe	Shkoder	Gjergj Grina	04/09/2						
Meti	Odesa	Partizani	Shkoder	Ermira Meti	18/05/2						
Gjonaj	Flavio	Koman	Shkoder	Xhevahir Gjonaj	21/11/2						



**Calculating coverage**  
 The immunization status of children in any given cohort can be calculated automatically.

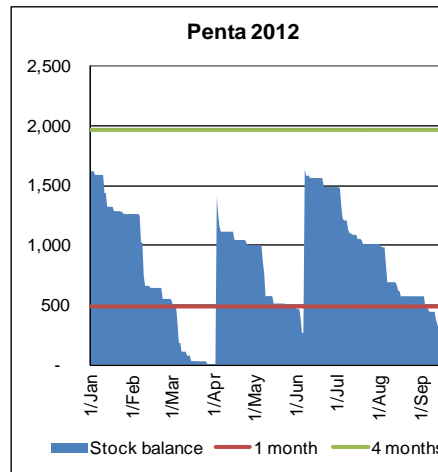
**Identifying defaulters**  
 Children who miss a certain vaccine dose can be easily identified.

**Ensuring that all children are vaccinated**  
 A "patronage nurse" visits the home of a child to remind the parent of an upcoming or missed vaccination appointment.

Secondly, coverage rates are now more accurate, with previous rates shown to be implausibly high. More importantly, analysis of immunization records reveals in more detail the reasons why some children are not being immunized, which community they belong to, and to what extent factors like parental refusal play a role (reasons for refusing a vaccination can be entered into IIS).

Thirdly, IIS manages the stock of vaccines and consumables, which allows the Ministry of Health to monitor levels of buffer stock, expiry dates, and distribution and usage of ever more expensive vaccines. Because IIS can calculate how many children need to be vaccinated each month, the quantities of vaccine that need to be distributed and kept in stock can be kept to a minimum. By linking the vaccine lots to individual child records, lots can be traced through the stores and eventually to any children who have received a dose from a particular lot. This is essential for issues of vaccine safety.

Finally, there are also benefits for parents, as they are able to access the system themselves to download a vaccination certificate for their child, required for school and visa applications.



VAKSINA	KATEGORI	LARI	CALORI	Q. Prodhektoria	Plasti	DATA e VAKSIMIT	SHALLI
BIG	NA LINDJE	03/02/1984	112	Kohimari	Shkollor	03/04/2012	
HEB - 3	NA LINDJE	20/03/87	142.7	Vakcinat	Shkollor	03/04/2012	
HEB-Hib-DTP - 1	3 Muaj						
OPV - 1	3 Muaj						
HEB-Hib-DTP - 2	4 Muaj						
OPV - 2	4 Muaj						
HEB-Hib-DTP - 3	5 Muaj						
OPV - 3	5 Muaj						
HEB-Hib-DTP - 4	6 Muaj						
OPV - 4	6 Muaj						
HEB-Hib-DTP - 5	7 Muaj						
OPV - 5	7 Muaj						
HEB-Hib-DTP - 6	8 Muaj						
OPV - 6	8 Muaj						
HEB-Hib-DTP - 7	9 Muaj						
OPV - 7	9 Muaj						
HEB-Hib-DTP - 8	10 Muaj						
OPV - 8	10 Muaj						
HEB-Hib-DTP - 9	11 Muaj						
OPV - 9	11 Muaj						
HEB-Hib-DTP - 10	12 Muaj						
OPV - 10	12 Muaj						

**Accessing IIS through smartphones**  
Some nurses without access to the Internet use an Android application on a smartphone to access the system. The screen above shows part of a monthly plan for a nurse.

**Monitoring vaccine stock**  
Supervisors can monitor stock balances and wastage using the IIS, and so manage stock more efficiently. The chart shows stock levels in a district store compared to recommended minimum and maximum levels.

**Vaccination certificates**  
A child's vaccination certificate can be downloaded by parents. It keeps track of the lots used and shows the cost of each dose.

**Feasibility beyond Albania**

Immunization managers in many low- and middle-income countries are looking for ways to improve their immunization systems, and some have developed or are exploring registry-based systems like the IIS. The following conditions would facilitate the implementation of such a system:

- A registry culture in which health workers already tend to register children in a paper book or on a card. Supporting existing processes is easier than implementing new ones through an information system.
- Some way to identify children or their parents through national ID numbers, names, dates and places of birth, telephone numbers, etc. A number or a barcode could also be added to existing immunization cards.
- 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.
- Access to the knowledge, tools, and support to acquire or develop, scale, and maintain a computerized information system.