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Immunization basics

FINAL PROJECT REPORT



IMMUNIZATIONbasics

was a five-year project implemented by JSI Research & Training Institute, Inc. in collaboration with Abt Associates, Inc., the Academy for Education Development (AED), and the Manoff Group, Inc.

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All photos in this report were taken by IMMUNIZATIONbasics Staff

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ACRONYMS

AED	Academy for Educational Development
ARI	Acute respiratory infection
BASICS	USAID's Basic Support for Institutionalizing Child Survival Project
BCG	Bacille Calmette-Guerin vaccine against tuberculosis
CDC	US Centers for Disease Control and Prevention
CES	Coverage Evaluation Survey
CI	Communications Initiative
cMYP	Comprehensive Multi-Year Plan
CSO	Civil society organization
DHS	Demographic and Health Survey
DPT	Diphtheria, pertussis and tetanus vaccine
DTPHepBHib	Diphtheria, tetanus, pertussis, hepatitis B and hib
DRC	Democratic Republic of Congo
EPI	Expanded Program on Immunization
GAPP	Global Action Plan against Pneumonia
GAVI	Global Alliance for Vaccines and Immunization
GIVS	Global Immunization Vision and Strategy
HF	Health facility
Hib	<i>Haemophilus influenzae</i> type b disease
HSS	Health systems strengthening
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency
HPV	Human papillomavirus
ICC	Inter-agency Coordinating Committee
IFFIm	International Finance Facility for Immunization
IMCI	Integrated management of childhood illness
INS	Injection safety support
ISS	Immunization Services Support (GAVI country support)
JE	Japanese Encephalitis
JSI	JSI Research & Training Institute, Inc.
LGA	Local government area (a Nigerian administrative jurisdiction)
MCH	Maternal and child health
MCHIP	Maternal and Child Health Integrated Program
MCHW	Maternal and child health week
MDG	Millennium Development Goal
MICS	Multiple indicator cluster survey
MLM	Mid-level management
MNT	Maternal and neonatal tetanus
MoH	Ministry of Health

MoHFP	Ministry of Health and Family Planning
MoHFW	Ministry of Health and Family Welfare
NIP	National Immunization Program
OPV	Oral poliovirus vaccine
PCV	Pneumococcal conjugate vaccine
PDA	Personal digital assistant
PEI	Polio Eradication Initiative
PHC	Primary health care
PIRI	Periodic intensification of routine immunization
Pneumo (conj)	Pneumococcal conjugate
REACH	USAID's Resources for Child Health Project
RED	Reaching Every District
REW	Reaching Every Ward
SAGE	WHO's Strategic Advisory Group of Experts
SISCa	Servisu Integradu da Saúde Comunitária or 'Integrated Community Health Services' (in Timor-Leste)
SSD	Service de Santé de District (District Health Office)
TAIS	Timor-Leste Asistencia Integrada Saúde or "Timor-Leste Integrated Health Assistance"
TB	Tuberculosis
TSHIP	Targeted States High Impact Project
UCI	Universal Childhood Immunization
UNICEF	United Nations' Children's Fund
USAID	United States Agency for International Development
VAR	Vaccine against measles
VPPAG	Vaccine Presentation and Packaging Advisory Group
WHO	World Health Organization
WHO/AFRO	World Health Organization/Regional Office for Africa
WHO/HQ	World Health Organization/Headquarters
WHO/SEARO	World Health Organization/South East Asia Regional Office
YF	Yellow fever

I. INTRODUCTION

Immunization currently reaches over three quarters of the world's children, thus preventing more than three million child deaths in developing countries each year. Widespread and increased use of the existing vaccines could prevent another two million child deaths annually.¹ The United States Government (USG) has been a dynamic force in supporting this worldwide immunization achievement by providing technical assistance, financial support, and procurement of essential equipment and supplies. Globally, the United States Agency for International Development (USAID) is a major bilateral supporter of the Global Alliance for Vaccines and Immunizations (GAVI Alliance), a global public-private partnership for immunization. USAID also supports immunization through the global Polio Eradication Initiative (PEI) and through many of its country programs.

In 2004, USAID initiated the IMMUNIZATIONbasics² (2004–2009) project to serve as its primary vehicle for immunization technical support. IMMUNIZATIONbasics followed a long history of USAID global technical support projects focused on routine immunization, including the Resources for Child Health projects (REACH I and II) from 1985–1993 and the Basics Support for Institutionalizing Child Health projects (BASICS I and II) from 1993–2004.³

IMMUNIZATIONbasics worked intensively in ten countries: Benin, the Democratic Republic of Congo, Djibouti, Timor-Leste, India, Indonesia, Madagascar, Nigeria, Rwanda, and southern Sudan. The project aimed to improve the capacity of ministries of health and collaborating organizations to deliver and maintain the coverage of quality routine immunization services. Through close collaboration with host-country governments and international organizations, IMMUNIZATIONbasics linked its programming to important global initiatives, including the GAVI Alliance, the WHO/UNICEF



Dr. Paul Manumpilps among a group of Timorese villagers during an EPI outreach activity.

Global Immunization Vision and Strategy (GIVS), the Global Polio Eradication Initiative (PEI), and the Africa Measles Initiative.

¹ GAVI Alliance, Geneva, 17 September 2009, http://www.gavialliance.org/media_centre/press_releases/2009_09_17_challenges_ahead.php

² IMMUNIZATIONbasics was created by USAID's cooperative agreement GHS-A-00-04-00004-00 and managed by JSI Research & Training Institute, Inc., with Abt Associates, Inc., Academy for Educational Development, and The Manoff Group, Inc.

³ USAID's global technical support for immunization continues through the new Maternal and Child Health Integrated Program (MCHIP), with the former IMMUNIZATIONbasics staff members serving on MCHIP's immunization team.

One of IMMUNIZATIONbasics' most successful strategies centered on promoting and revitalizing WHO's Reaching Every District (RED) approach to improving national immunization systems, particularly in areas with very low coverage. RED featured in many of IMMUNIZATIONbasics country programs, as well as in its work with WHO, UNICEF, and other partners across Africa. This work included multi-country evaluations of the RED approach in 2005 and 2007 with the WHO Regional Office for Africa (WHO/AFRO), UNICEF and the US Centers for Disease Control (CDC). IMMUNIZATIONbasics also worked with WHO/AFRO on a revised set of RED guidelines and a new RED monitoring tool that are being adapted for use by national immunization programs across the region.



IMMUNIZATIONbasics team and USAID/Washington with awards from WHO/AFRO for "Outstanding contribution toward improving immunization coverage in Africa"

Also in the Africa region, IMMUNIZATIONbasics supported national immunization program reviews and coverage surveys, worked with countries to develop their comprehensive multi-year plans (cMYP) for immunization, and provided technical support to them during preparation of their GAVI Alliance applications. Most noteworthy in the final year of the program was IMMUNIZATIONbasics' support to Rwanda, the first country in Africa to introduce pneumococcal conjugate vaccine with GAVI Alliance support. In recognition of IMMUNIZATIONbasics' support to the region, at its Annual African Regional Conference on Immunization in Harare, Zimbabwe in 2009, WHO/AFRO presented an award to IMMUNIZATIONbasics for "Outstanding contribution toward improving immunization coverage in Africa."

IMMUNIZATIONbasics also worked outside Africa. In India, IMMUNIZATIONbasics played an important role in policy and strategy development at the national level and in multiple states. Working with the BASICS project in Timor Leste from 2005 through 2009, IMMUNIZATIONbasics was instrumental in helping the world's newest country rebuild its primary health care and immunization systems. As part of its co-share requirement, IMMUNIZATIONbasics partners also evaluated a number of GAVI Alliance funding windows, helped to launch GAVI's health system strengthening (HSS) and civil society organization (CSO) funding windows and conducted a five-country tracking study to document lessons learned and the initial results of GAVI's HSS. Similar global level work was also carried out as co-share activity, including a WHO guidance of the periodic intensification of routine immunization (PIRI).

This final report presents an overview of these and other IMMUNIZATIONbasics accomplishments over the project's five years. It highlights the project's technical priorities and strategies for maximizing impact and, in the final chapter, offers insight on future support for routine immunization and the introduction of new and underused vaccines.

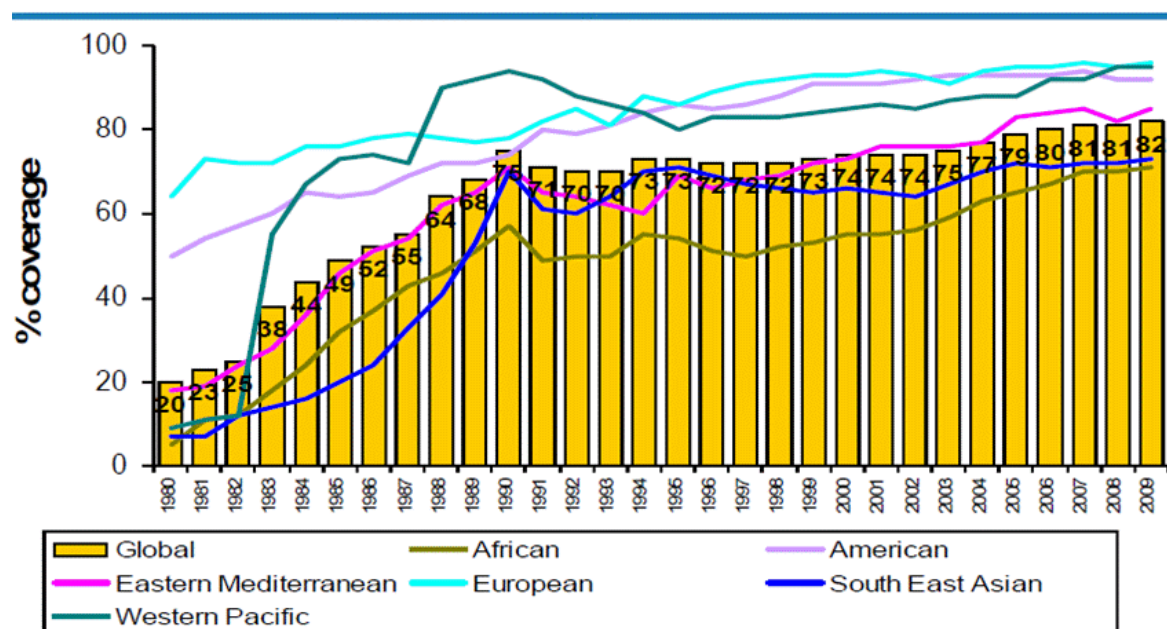
II. THE GLOBAL CONTEXT: IMMUNIZATION TRENDS AND INITIATIVES

The global effort to establish national immunization programs, known as the Expanded Program on Immunization (EPI), began in the 1980s. In this period, WHO and UNICEF set a target of immunizing 80% of the world's children by 1990 through the Universal Childhood Immunization (UCI) initiative. This global initiative generated substantial donor funding and technical support and, through a vertical approach to organizing service delivery in most countries, rapidly increased immunization coverage.

The coverage rates shown below in Figure 1 show the impressive gains, but tell only a part of the story.

Figure 1: Global Immunization Coverage from 1980–2009

GLOBAL COVERAGE ESTIMATED AT 82% IN 2009



Source: WHO/UNICEF coverage estimates 1980–2009, July 2010.

Although UCI increased global coverage dramatically, after 1990 many donors and governments began diverting their attention and resources from immunization to other health priorities and broader health sector reforms. In this environment of decreased and uncertain funding, national immunization programs were also challenged with additional and globally-expanding immunization initiatives. For example, during the 1990s, global immunization priorities shifted to “accelerated disease control,” specifically: polio eradication, measles mortality reduction, and maternal and neonatal tetanus elimination. These initiatives focused on periodic mass vaccination campaigns but initially gave limited attention and resources to routine immunization services. As a result, routine immunization coverage rates stagnated or fell in many countries, and by 2000, fewer than half of Africa’s infants were fully protected from diseases prevented by the most commonly-available vaccines.

In 2000, a public-private global partnership of governments, foundations, nongovernmental organizations, multilateral donors, and private sector entities created the Global Alliance for Vaccines and Immunization (GAVI Alliance). Initially, the GAVI Alliance aimed at only funding the introduction of new and underused vaccines in the poorest countries. However, Alliance members soon recognized that many countries still lacked effective health delivery systems and were therefore unable to reach all families with new vaccines. Furthermore, in light of the HIV/AIDS epidemic and the prevalence of hepatitis virus in many countries, injection safety was an increasing concern.

The GAVI Alliance responded to these concerns by creating new funding windows, which allowed countries to apply for immunization services support (ISS) and injection safety support (INS). During GAVI Alliance's first five-year phase, many people became concerned that countries would not be able to sustain donor investments in new vaccines. As a result, the GAVI Alliance, WHO, USAID, World Bank, and others increased attention to the need for multi-year immunization and financial sustainability plans.



New children are born every day and need the protection afforded by vaccination

Shortly after the GAVI Alliance was established, WHO and UNICEF developed their Global Immunization Vision and Strategy (GIVS) that outlined goals for improving routine immunization systems. GIVS provided countries with a set of recommendations for achieving 90% national immunization coverage and 80% coverage in all districts by 2010. To put GIVS into action, WHO and several GAVI Alliance partners, including USAID, through the BASICS project, developed the Reaching Every District (RED) approach in 2002. RED, discussed in detail later in this report, aims at improving district-level management and the sustainable delivery of quality routine immunization services.

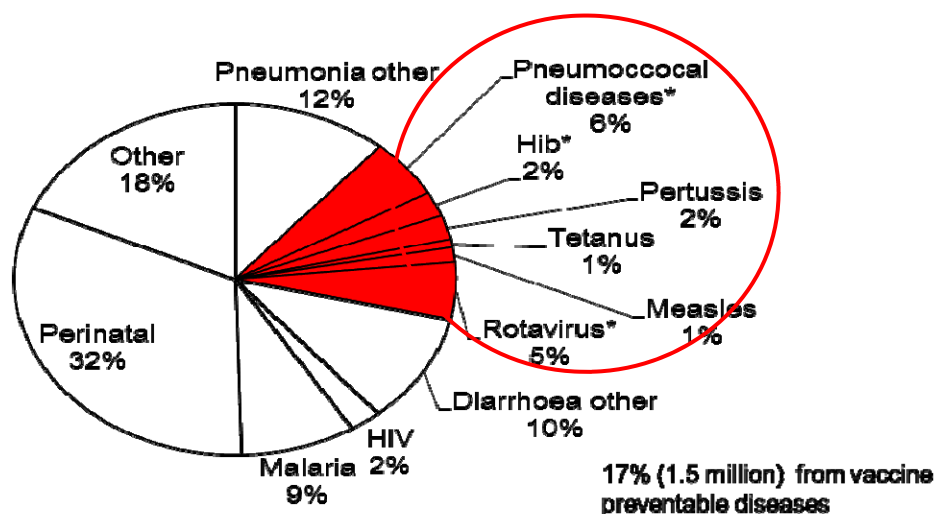
When USAID awarded the IMMUNIZATIONbasics cooperative agreement in 2004, many developing countries still had routine immunization coverage rates below 60%. Coverage rates also varied widely among regions and districts, and they often fluctuated from year-to-year, even in the same country. As a result, every year tens of millions of children were not being protected from vaccine-preventable diseases, and low routine immunization coverage was making it impossible to achieve global disease control goals.

III. NEW VACCINES AND THE POTENTIAL TO SAVE EVEN MORE LIVES

Between 2001 and 2009, the GAVI Alliance helped more than 60 countries introduce *Haemophilus influenzae* type b (Hib) vaccine. A major cause of childhood meningitis and pneumonia, worldwide Hib disease causes more than 3 million infections and 400,000 deaths each year—160,000 child deaths annually in Africa alone.⁴ The GAVI Alliance has begun supporting the introduction of two additional vaccines: one to fight pneumonia and the other to prevent rotavirus infection, one of the primary causes of diarrheal disease. With these new vaccines, the role of immunization becomes even more central than ever to child health. In fact, an estimated one in every four child deaths could now be prevented by immunization as shown in Figure 2.

Figure 2 : Causes of Child Deaths

8.8 Million Under Five Deaths



Source: Black RE et al, *Global, regional, and national causes of child mortality in 2008: a systematic analysis*, *Lancet*. 2010 Jun 5;375 (9730):1969-87. Epub 2010 May 11.

* WHO/IVB estimates

With new more expensive vaccines available to more countries, weak routine immunization systems and long-term financing have become major concerns at the global level. In fact, strengthening routine immunization systems and guaranteeing access to these and other new, life-saving vaccines present considerable challenges. In order to increase vaccine availability to the populations that need them, the international community must continue to work collaboratively to address variations in coverage across regions and countries. Governments must focus not only on increasing coverage rates, but also on maintaining high coverage. Unless there is both constant attention and consistent resources for immunization, the successes achieved in recent decades will erode. And with more children born each year, simply maintaining a constant coverage rate requires vaccinating higher and higher numbers of children.

⁴ Hib disease and prevention in Africa," GAVI Alliance and the Hib Initiative, 2009.

IMMUNIZATIONbasics worked from 2004 to 2009 to help the countries it served overcome these remaining barriers to sustainable coverage with both new and traditional EPI vaccines. The project also worked globally and regionally, and had the opportunity to influence many of the policies and programs that will guide investments in new vaccines and immunization programs in the years to come. IMMUNIZATIONbasics' technical approach and results are described in the following chapters.

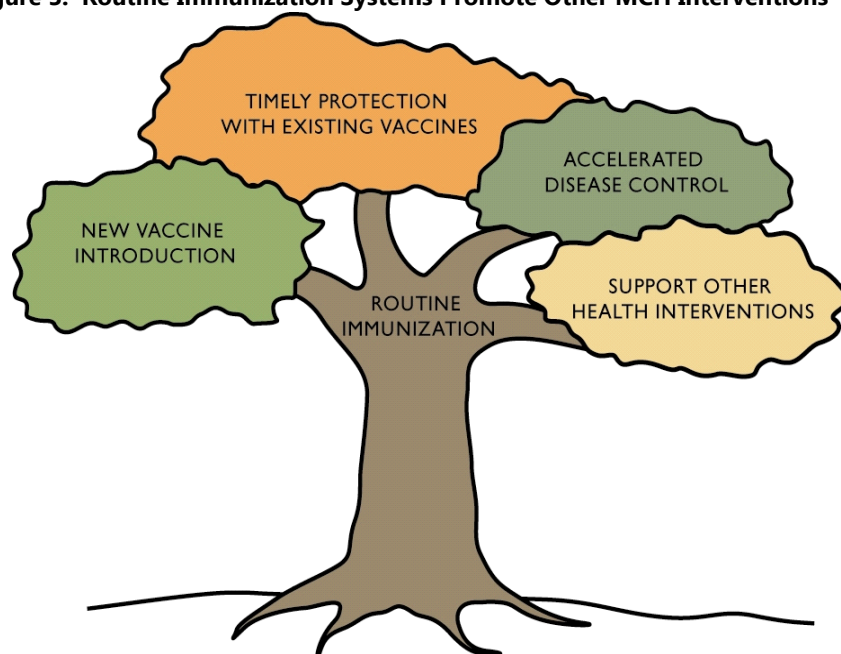
IV. IMMUNIZATIONBASICS' TECHNICAL APPROACH

IMMUNIZATIONbasics worked strategically with many partners at the global, regional, national, and sub-national levels to promote the delivery of efficient and more effective routine immunization services. The project's technical strategy focused on four priorities:

- Priority 1:** Strengthening *routine immunization* through the Reaching Every District (RED) strategy and other proven approaches
- Priority 2:** Supporting the introduction of *new and under-used vaccines* and technologies
- Priority 3:** Sustaining the impact of *accelerated disease control* through routine immunization
- Priority 4:** Increasing reliable *financing* and improving the financial management of routine immunization programs

During the project's five years, IMMUNIZATIONbasics focused on strengthening **routine immunization systems**, while influencing policies and strategies evolving at the global level. In fact, one of IMMUNIZATIONbasics' most important roles was ensuring that concerns from the field and operational realities were considered during the formulation of global policies and strategies. This approach promoted more effective policies and more effective implementation of those policies across countries.

Figure 3: Routine Immunization Systems Promote Other MCH Interventions



In addition, IMMUNIZATIONbasics promoted routine immunization programs as a platform for the delivery of other maternal and child health interventions, many of which have lower utilization rates than immunization. The figure below illustrates how a strong, functional routine immunization system can support other health interventions, assist in accelerating disease control, ensure successful introduction of new vaccines, and provide timely protection with existing vaccines.

IMMUNIZATIONbasics played an important role in ensuring that field concerns and realities were considered in the formulation of global strategies and policies.

IMMUNIZATIONbasics supported routine immunization within the contextual framework of needs and expectations of country counterparts, USAID missions, and USAID/Washington. Although strengthening and sustaining routine immunization systems was central to all of IMMUNIZATIONbasics' work, the project demonstrated great flexibility in how it proceeded in each country. Factors contributing to country-specific direction included the:

- Status of the immunization program, which varied from less than 25% coverage and a focus on polio eradication in Nigeria to more than 90% coverage in Rwanda
- Guidance from USAID, the priorities of the Ministry of Health and partners
- Operational parameters within the country
- Existing roles and interests of other technical assistance partners
- Available funding

Working with USAID and host countries, IMMUNIZATIONbasics made deliberate, strategic decisions to maximize the use of scarce resources in each country. All country programs promoted the use of data by

health workers to identify priorities on the ground and guide program actions. With its small team of immunization experts at headquarters and in the field, IMMUNIZATIONbasics emphasized close collaboration with both country and global level counterparts to achieve results. The following chapters describe some of the project's achievements according to its technical priorities.



A health worker records vaccinations in her well-organized work space

V. ROUTINE IMMUNIZATION—REACHING EVERY DISTRICT (RED)

Reaching Every District (RED) served as a driving force for strengthening routine immunization in nearly all of the project's country programs. In response to stagnating and declining immunization coverage rates, the GAVI Alliance partners—including WHO, UNICEF, and USAID/BASICS—introduced the RED approach in 2002. RED focuses at the district level and addresses systemic issues, such as the collection and use of data, health worker training and supervision, and community involvement in immunization services. Priority attention is usually directed at areas and districts with the lowest coverage and/or largest numbers of unimmunized children.

THE FIVE COMPONENTS OF REACHING EVERY DISTRICT (RED)

1. **Planning and Management of Resources**—*better management of human and financial resources*
2. **Reaching Target Populations**—*improving access to immunization services*
3. **Linking Services with Communities**—*partnering with communities to promote better services*
4. **Supportive Supervision**—*regular onsite teaching, with timely feedback and follow-up for health staff*
5. **Monitoring for Action**—*using tools and providing feedback locally for continuous self assessment and improvement*

The RED approach consists of five mutually reinforcing components. Improvements in one component will almost certainly advance the remaining components.

RED was designed to be tailored to each country's context. Therefore, the level of focus on each of the five components varies from country to country. When applying the RED approach, both health officials and health workers are encouraged to use coverage and other key immunization data to identify districts with poor access to, and use of, immunization services. Districts and health facilities use their own data to define the critical problems, from which they develop micro plans that include active and practical solutions.

IMMUNIZATIONbasics' work with the RED approach focused primarily on: 1) evaluating the degree of implementation and the effectiveness of RED in the WHO Africa region; 2) expanding and strengthening the RED approach implementation in five focus countries; and 3) updating and promoting use of the RED guidelines and monitoring tools in Africa and Asia.

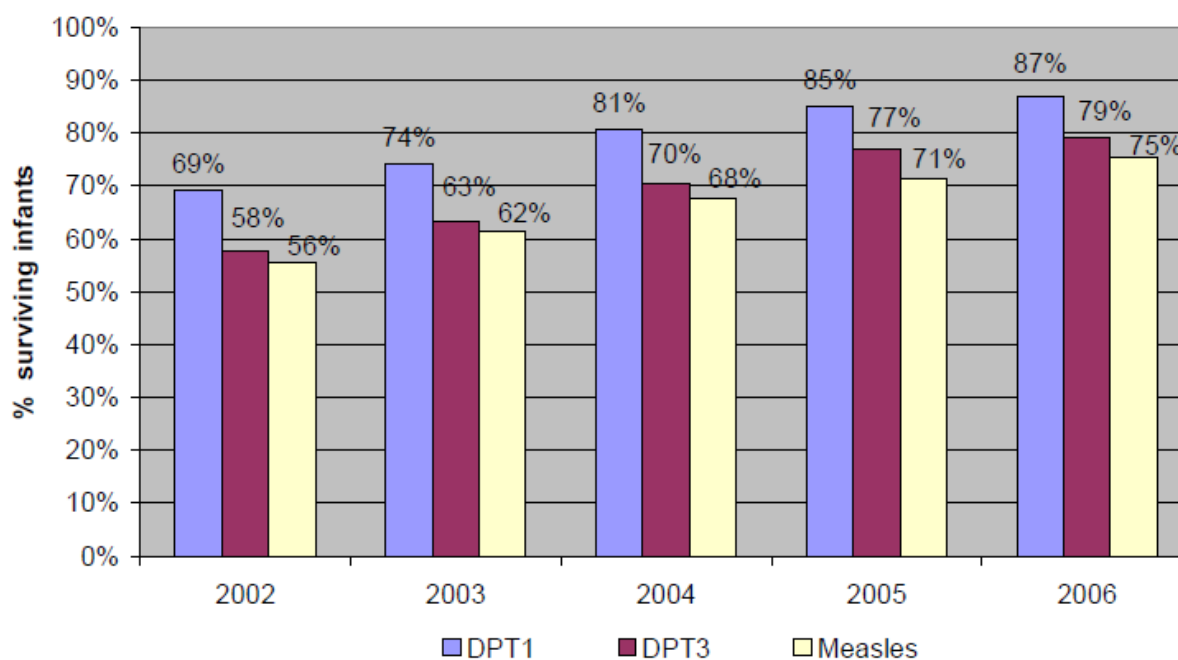
REGIONAL EVALUATION OF RED

IMMUNIZATIONbasics, together with WHO, UNICEF, and the CDC, conducted multi-country evaluations of RED in the WHO Africa region in 2005 and 2007. These evaluations reviewed the status of the RED approach and determined the progress on improving immunization services and coverage rates. In the 2005 evaluation, project staff participated in two of five country missions. In the 2007 evaluation, IMMUNIZATIONbasics participated directly in five of the nine country studies, managed the desk review of data from 27 countries, and compiled the final evaluation report.

The 2007 evaluation found progress in the nine countries studied. Countries had continued to expand their implementation of RED, and although other factors also contributed positively, immunization coverage had clearly increased between 2002 and 2006. As shown in Figure 4, DPT1 coverage, an indicator for access to immunization services, increased from 69% for children less than one year of age in 2002 to 87% in 2006. Similarly, DPT3 coverage, an indicator showing use of immunization services, increased from 58% to 79% over the same period.

"The [2007] evaluation showed that the RED approach can be an important tool for addressing immunization performance and strengthening district management of immunization."

Figure 4: DPT and Measles Coverage for Infants in Nine Countries



Included in the 2007 Evaluation of RED, 2002 - 2006

Source: "In-depth Evaluation of the Reaching Every District Approach in the Africa Region", WHO, et al., 2007

The evaluation also found that although most districts had improved their immunization performance, countries still needed to improve on implementing all five of the RED components. For example, although more than 80% of all health facilities visited in the nine countries reported having had at least one district-level supervision visit during the previous three months, feedback and follow-up after these visits were weak. As a result, the evaluation team recommended revising the RED guidelines to include more specific standards and indicators for monitoring and supervising the five RED components. The review team also recommended improving the definition and assessment of effective integration of immunization with other health services.

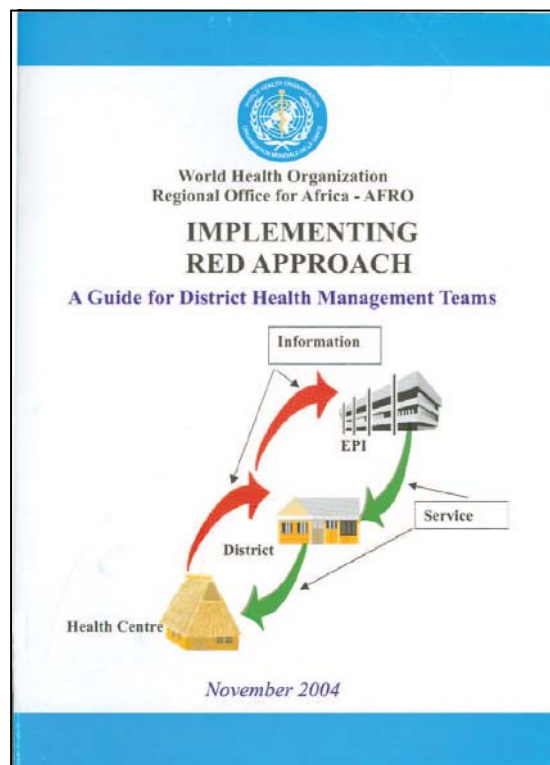
The 2007 RED evaluation team issued the following call to action:

"Although regional immunization coverage has increased significantly, intensified efforts will be needed to achieve the ambitious immunization coverage goals set forth in the GIVS (Global Immunization Vision and Strategy) and the mortality reduction goals set forth in the MDGs (Millennium Development Goals). The evaluation showed that the RED approach can be an important tool for addressing immunization performance and strengthening the district management of immunization and other maternal and child health services."

GLOBAL CONTRIBUTIONS TO RED GUIDELINES AND TOOLS

Experiences at the country level and from the 2005 and 2007 RED evaluations confirmed the positive impact of RED on routine immunization systems but also revealed problems with its implementation. IMMUNIZATIONbasics prioritized working with partners at the global and regional level to further improve the RED guidelines and tools.

During 2008, IMMUNIZATIONbasics worked intensively with WHO/AFRO and its sub-regional, inter-country support teams (IST) and UNICEF to revise and expand the RED guide, *Implementing the Reaching Every District Approach: A Guide for District Health Management Teams*. Findings from the 2007 evaluation and from the project's collective experience working with countries to introduce the RED approach served as the basis for these revisions.



Also in response to recommendations from the 2007 RED evaluation, IMMUNIZATIONbasics worked closely with WHO/AFRO to develop and field test a set of core indicators and a tool for monitoring RED implementation and the strength of a country's routine immunization services. IMMUNIZATIONbasics field tested and helped introduce the core indicators and monitoring tool, which are designed to measure the implementation of each of the RED components, as well as the expected results of RED.

Specifically, the core indicators measure immunization processes that can be critical in adjusting service delivery strategies, strengthening community linkages, improving logistics, updating microplans and taking other important steps to improve routine immunization services. The RED monitoring tool incorporates these indicators and uses readily available immunization data to rank districts and population groups according to their access to and utilization of routine immunization services.



Implementing RED principles should alleviate such overcrowded conditions

In the final year of the project, IMMUNIZATIONbasics worked with WHO/AFRO to publish the revised RED guide and the new monitoring tool in English, French, and Portuguese so that they could be disseminated across Africa.⁵ To further promote the use of these newly developed tools, IMMUNIZATIONbasics and WHO/AFRO co-facilitated various sessions on the updated RED guide during 2009 meetings for immunization program managers in WHO/AFRO's Central, Western, and Southern/Eastern sub-regions. Later in the year, IMMUNIZATIONbasics and WHO/AFRO co-facilitated the first of several multi-country adaptation workshops for select African francophone countries. By the end of the project, the focus had shifted to helping countries adapt and use the updated RED guide and monitoring tool. And, where possible, IMMUNIZATIONbasics and WHO/AFRO encouraged countries to apply the RED approach to increasing the utilization of other maternal and child health interventions as well.

Details on the tools and methodology related to this approach for making RED operational are available on the web at <http://immunizationbasics.jsi.com/Resources.htm>.

⁵ The RED guide and monitoring tool are available on WHO's website at http://www.who.int/immunization_delivery/systems_policy/red/en

VI. EXPANDING AND STRENGTHENING RED IN COUNTRIES

IMMUNIZATIONbasics provided direct technical assistance to the following five countries for the implementation of RED or RED components: Nigeria, Madagascar, India, Timor-Leste, and Democratic Republic of Congo (DRC). In each of these five countries, IMMUNIZATIONbasics paid particular attention to improving micro-planning, supportive supervision, and the management and use of data. The following country case studies, one in a country (Nigeria) with chronically low immunization coverage, one in a country (Madagascar) with relatively higher (but stagnant) coverage, and a third in the Democratic Republic of Congo, illustrate how IMMUNIZATIONbasics tailored activities to respond to each country's particular challenges.

NIGERIA: OPERATIONALIZING THE REACHING EVERY WARD APPROACH

Geographic Focus: IMMUNIZATIONbasics worked at the national level and provided in-depth technical support in two northern states: Bauchi and Sokoto. These two states have a combined population of approximately nine million people and 43 local government areas (LGAs). The total population of Nigeria is approximately 140 million.

Timeframe: October 2006–June 2009

Staffing: Sixteen managers and technical staff members were dispersed among three offices in Abuja, Bauchi, and Sokoto. The team was led by a country director and two national technical officers. A state coordinator and at least three field coordinators were the backbone of the project in each state. These technical team members were joined by a monitoring and evaluation officer and a small team of administrative, financial and operations staff in each of the three offices.

Country Context: Nigeria has a long history of low immunization coverage. Findings from the 2008 Demographic and Health Survey (DHS) showed national coverage of fully-



Country map complements of the CIA World Fact Book

immunized children at only 23%. In an effort to revitalize the country's weak routine immunization system and increase the number of immunized children and women, the Nigeria Ministry of Health (MoH) adopted WHO's RED approach in 2004 and renamed it Reaching Every Ward (REW). In 2006, Nigeria developed its REW implementation guide and tools. Health workers in all states and LGAs received training on REW in 2007.

NIGERIA: OPERATIONALIZING THE REACHING EVERY WARD APPROACH

What did IMMUNIZATIONbasics do? Starting in 2007, Bauchi and Sokoto states, together with IMMUNIZATIONbasics, initiated a step-by-step process for putting REW into action. The ultimate goal of this effort centered on achieving a stronger primary health care system to reduce the number of children dying from vaccine-preventable diseases.

To make REW operational in all 43 LGAs, IMMUNIZATIONbasics Nigeria concentrated on establishing a firm foundation for correcting the health system's underlying problems and for building sustained capacity. Ownership and continuous involvement at the local administrative level and the health facility level played a key role in introducing and sustaining quality improvements. To encourage replication and to magnify results beyond the project's two focus states, the Nigeria project staff also involved national program managers and immunization partners from other states throughout the life of the project.

The Nigeria team focused on improving management capacity at the LGA level. The first step in this process involved the state MoH in a statewide assessment of immunization services. The team then built the capacity of the LGAs and their health facilities to provide better quality immunization services and, eventually, expand those services to reach more women and children.

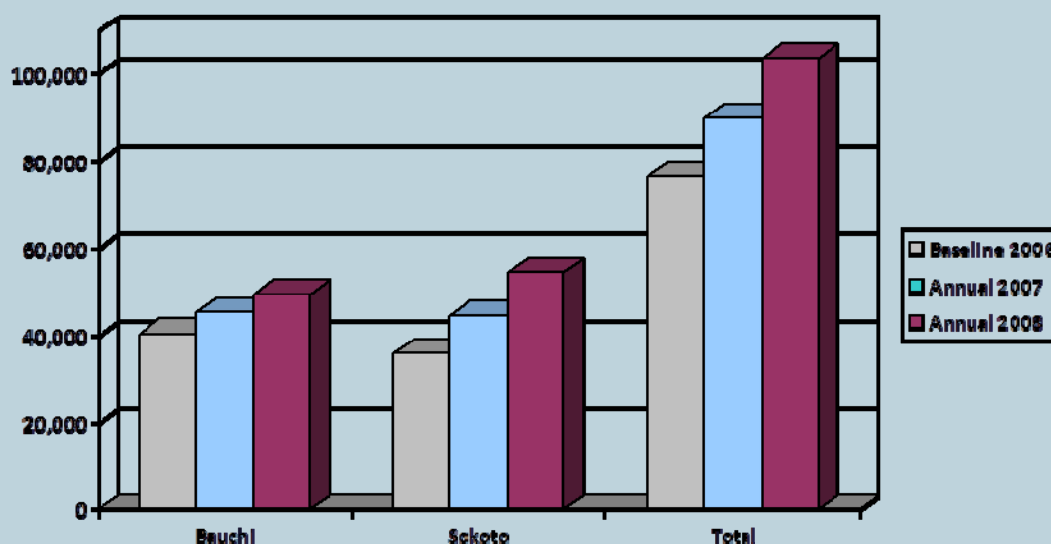
IMMUNIZATIONbasics then worked with the states and LGAs to increase community involvement and demand for routine immunization services only after ensuring that a minimum standard of quality and regular vaccination services had been achieved. A supportive supervision system and health workers who were trained in immunization techniques were other important prerequisites. Thereafter, regular monitoring and health worker and supervisor self-assessment served as fundamental tools for establishing and sustaining quality immunization services.

Figure 5: Seven Steps for Making REW Operational



NIGERIA: OPERATIONALIZING THE REACHING EVERY WARD APPROACH

Figure 6: Number of Children Receiving DPT3 in Bauchi and Sokoto States, 2006 – 2008



The process developed in Nigeria required more than two years of extensive work. It can be summarized by the seven interrelated steps shown in Figure 5.

What were the results? Without external funding, both Bauchi and Sokoto states showed steady, sustained progress toward expanding the availability of immunization services and increasing the number of children protected against vaccine-preventable diseases. Significantly, all 43 LGAs in the two states increased the number of their health facilities providing routine immunization services and, as a result, the number of

children protected against diphtheria, pertussis, and tetanus increased by 36% in the two states within two years.

To put this achievement in a context, both states significantly increased services and the numbers of children protected without mass campaigns and using their own resources. As IMMUNIZATIONbasics provided only capacity building and technical support, all LGAs increased services according to what they could financially *sustain* and in line with their limited logistics and human resource capacities.

What did we learn? IMMUNIZATIONbasics' experiences in Nigeria emphasized that improving a health service involves continuous effort, strong partnership, and capacity building. In Bauchi and Sokoto states, a participatory and team-centered approach worked to ensure both ownership of the process and commitment to follow-up on objectives. The project learned many lessons,

The number of children protected against diphtheria, pertussis and tetanus increased by 36% in these two states in Nigeria within two years.

NIGERIA: OPERATIONALIZING THE REACHING EVERY WARD APPROACH

but the following stand out:

- LGA and health facility staff should collect baseline information together.**
 In Nigeria, this helped the local administration and health officials to better understand the weak status of routine immunization in their LGA. Subsequently, these joint assessments contributed to the preparation of more realistic plans to rebuild the routine immunization system.
- Health staff should help in determining the performance standards against which they are supervised.** Involving health staff in this important step results in their better understanding of the tasks they need to perform and their commitment to providing quality immunization services.
- Peer motivators are a powerful tool to spark change.** IMMUNIZATIONbasics team members identified natural leaders from the LGAs and health facilities and engaged them as peer motivators. These peer motivators helped to carry forward the REW process and humanized it by showing other LGA officials and health workers what they had been able to accomplish with similar resources and under similar constraints. Field visits to operational LGAs also revealed the value of applying local monitoring and problem-solving techniques in managing immunization services.

The REW approach developed in Nigeria is not exclusive to immunization. All public

health initiatives need effective planning, monitoring and supervision, increased access to services, community links and well-trained health workers. The seven steps to improving routine immunization services can easily be adopted and applied to improve the quality and coverage of other evidence-based interventions.



The "Reaching Every Ward" approach in Nigeria provided essential information for families and health workers

Targeted States High Impact Project (TSHIP), the USAID bilateral health project in Nigeria, has adopted the methods and tools developed under IMMUNIZATIONbasics in Nigeria for strengthening maternal and child health (MCH) services.

Additional information about IMMUNIZATIONbasics and samples of program tools can be found on the IMMUNIZATIONbasics legacy website at <http://immunizationbasics.jsi.com/Nigeria.htm>.

MADAGASCAR: EXTENDING THE RED APPROACH COUNTRYWIDE

Geographic Focus: IMMUNIZATIONbasics' work spanned the entire country, which has a population of just over 20.6 million.

Timeframe: December 2006–July 2009

Staffing: A national technical advisor, based in Antananarivo, led activities in Madagascar and was supported by a financial assistant. The national technical officer was an active member of the Madagascar Inter-agency Coordinating Committee (ICC) and its technical committee to strengthen routine immunization at the national level and in poorer performing regions and districts. A U.S.-based senior technical officer provided both remote and periodic in-country technical support.

Country Context: When IMMUNIZATIONbasics began working in Madagascar, the country had better immunization coverage than other countries in the region. In 2006, the WHO/UNICEF estimate for DPT3 coverage was 77% in Madagascar compared to 69% for the African region. The official country estimates for DPT3 were even higher at 93%; however, the national immunization program recognized the need for further improvements in the quality of Madagascar's reported coverage data and in its routine immunization services, particularly variations in service quality at all levels.

What did IMMUNIZATIONbasics do?

IMMUNIZATIONbasics initially participated as part of the external team of experts for a national EPI review, which examined Madagascar's immunization program performance, identified gaps, and targeted low-performing regions for technical support. Based on the findings from this review, IMMUNIZATIONba-

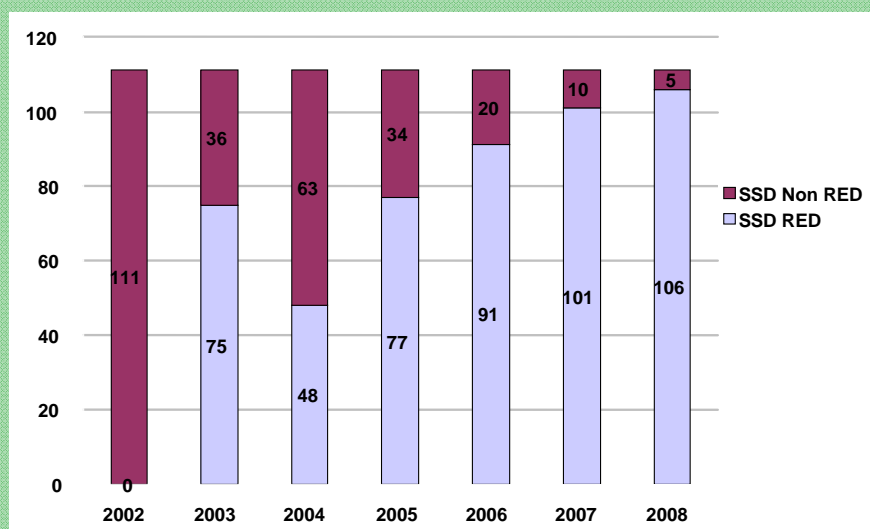


Country map complements of the CIA World Fact Book

sics tailored its technical assistance to help extend the RED approach to all districts in Madagascar. Assistance focused on: 1) improving RED quality, including strengthening active tracking to identify drop-outs and children who were not immunized; 2) emphasizing the use of immunization monitoring tools and community involvement; and 3) intensifying supervision and improving the immunization-related knowledge and skills of health workers.

MADAGASCAR: EXTENDING THE RED APPROACH COUNTRYWIDE

Figure 7: Extension of RED approach in districts (SSD) from 2002 – 2008



Source: Routine administrative reports, Service de Vaccination, MOHFP - 2009, Madagascar.

By 2008, IMMUNIZATIONbasics had worked with the Ministry of Health and its partners to fully and successfully implement the RED approach in all but five of the country's 111 districts (Figure 7). The remaining five districts represented poorer-performing and cyclone-affected districts and required additional technical and logistics assistance.

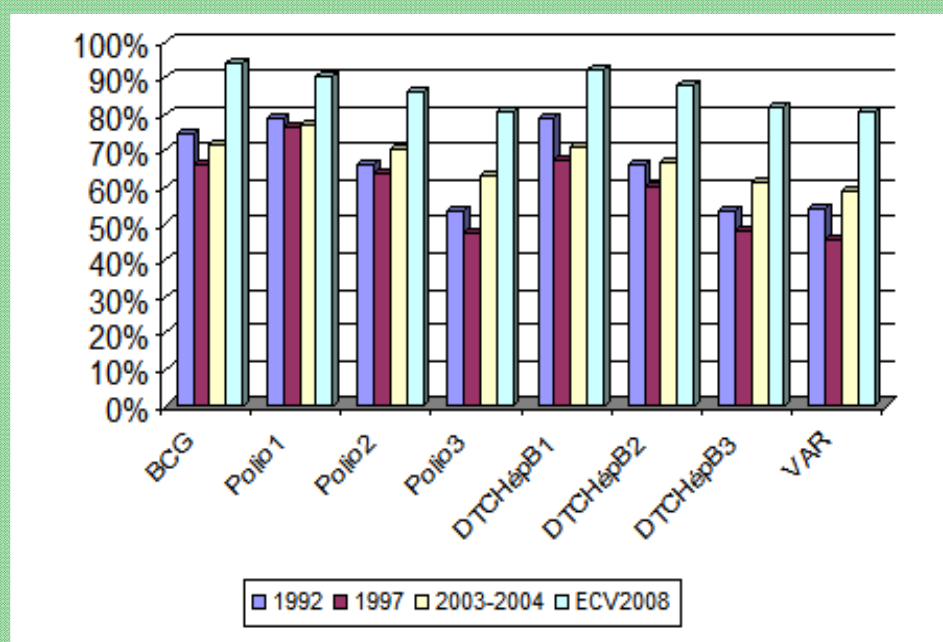
IMMUNIZATIONbasics assisted the national immunization program and its ICC partners in planning and conducting the 2008 National Immunization Coverage Survey. This was followed by a comprehensive analysis of reported coverage data (from routine reports and the coverage survey) and joint field visits with Ministry of Health counterparts to poorer-performing regions and districts. Visits addressed problems in data quality and reporting, the use of a computerized immunization data collection tool, and the routine analysis and use of immunization program data for local-level decision-making.

Capacity-building efforts in the regions included trainings for regional and district mid-level managers using the WHO EPI Mid-Level Management Course and Data Quality Self-Assessment tools, use of a comprehensive EPI checklist and an integrated supervision checklist during the Maternal and Child Health (MCH) Weeks, carried out twice-yearly across Madagascar. IMMUNIZATIONbasics also studied the effects of the periodic MCH Weeks on routine immunization and piloted the use of personal digital assistant devices (PDA) to improve supervision.

PDAs were first introduced in Madagascar during the nationwide measles campaign in 2007. Subsequently, WHO provided additional PDAs to the regional health teams for use during routine EPI and integrated MCH supervision visits. In 2008 and 2009, IMMUNIZATIONbasics co-facilitated PDA trainings for regional EPI and MCH program managers in various regions. The team also assisted with

MADAGASCAR: EXTENDING THE RED APPROACH COUNTRYWIDE

Figure 8: National Coverage by Antigen (card and maternal recall)



Source: Madagascar National Immunization Coverage Survey, April 2008 and previous DHS data

supportive supervision visits in several districts, using the PDAs and documenting the experience. Findings on the use of this technology were shared with the ICC as well as WHO's East and Southern Africa sub-regional office. IMMUNIZATIONbasics was invited to present on this promising practice to more than 60 international health professionals at a session on the use of new technology for health at the Global Health Council Conference in May 2009.

The 2008 National Immunization Coverage Survey cited RED as one of the factors contributing to Madagascar's increased immunization coverage.

What was achieved? During the time that IMMUNIZATIONbasics was active in Madagascar, national immunization coverage rates improved. In fact, the 2008 National Immunization Coverage Survey cited RED as one of the factors that contributed to increased immunization. The survey showed increases in coverage for all antigens (Figure 8), including national DTPHepB3 coverage to 82% and measles to 81% (from 61.5% and 59%, respectively reported in the 2003-2004 DHS).⁶ Although there were many other inputs to the national immunization program during this period, IMMUNIZATIONbasics' work is believed to have been a significant factor in coverage improvements.

⁶ With GAVI Alliance support, Madagascar in 2008 shifted from the DPTHePB vaccine to using the pentavalent vaccine (DPTHePBHib).

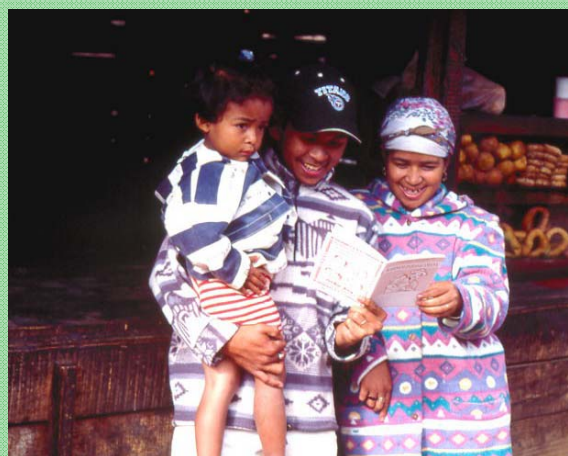
MADAGASCAR: EXTENDING THE RED APPROACH COUNTRYWIDE

What did we learn? Strong community involvement and continuous capacity building are required to strengthen staff skills in routine immunization. Technical assistance must be tailored to the context of each region and district, and it must encourage data quality and the use of data for targeting interventions and resources. While the team learned many lessons from its experience in Madagascar, three are highlighted below.

- Routine immunization support in Madagascar was most effective when regional and district performance was taken into account.** Technical assistance in regions and districts with immunization coverage above 80% focused on strengthening monitoring, supervision, and community linkages with services from the planning stages to ensure sustainability. Districts with coverage less than 80% (or whose coverage had fluctuated) required further situational analysis of the problems and needed strategies to increase access and/or utilization. Although ensuring that all RED components were being sufficiently and consistently addressed proved to be important, poorer performing districts also benefited from greater priority being given by the technical advisors to supportive supervision, the tracking and follow-up of unimmunized children and drop outs, and stronger linkages between communities and available services.
- Supervisory visits provide an opportunity to address community involvement.** Advocacy with community leaders and engaging mobilizers to support routine immunization activities and follow-up on immunization drop-outs are highly

effective strategies. Districts should use supervisory visit and routine reporting to identify examples of effective community involvement and outreach strategies from stronger performing health centers. These effective practices can then be shared with poorer-performing health centers to help improve their community activities.

- “New” technologies (such as the PDA or smart phone) are most effective when recipients can comfortably use them and the associated tools, and when their use is based on an already-functioning and sustainable support system.** The use of PDA technology for data collection and reporting requires support. Simply providing the equipment does not mean that people will be able to use it or that its use will be sustainable. Technology experts must be present in-country to train, monitor, support, and encourage ownership of the technology by those who are supposed to use it. This is particularly true when specially-funded initiatives or studies come to an end, as they did in Madagascar.



Well-designed child health booklets serve as both a medical record and an educational resource

DEMOCRATIC REPUBLIC OF CONGO: INTRODUCING AND EXPANDING RED

Geographic Focus: IMMUNIZATIONbasics worked at national level and in the 80 health zones supported by the USAID bilateral health project, AXxes, and the USAID/Global Leadership and Management Support (LMS) program.

Timeframe: 2004–2006 country office; 2007–2009 periodic technical support only.

Country Context: DRC is a large, diverse country that has endured political instability and war for many years. The national immunization program (EPI) made great strides in improving routine immunization coverage between the late 1990's and 2005. USAID provided resident technical assistance to the EPI for more than a decade, first through BASICS and then, beginning in 2004, through IMMUNIZATIONbasics. In 2004, the GAVI Alliance was already providing DRC with ISS, INS, and yellow fever vaccine.

Staffing: IMMUNIZATIONbasics had a staff of four in its Kinshasa office—a senior technical advisor, a data management specialist, a finance/admin officer, and a driver. At the end of 2005, USAID/DRC shifted its available funding to the new USAID bilateral health project, AXxes. The IMMUNIZATIONbasics team based in DRC continued working with funding from the mission, USAID/Global Health, and USAID Africa Bureau through the fall of 2006. At that point, the senior technical advisor was transferred to IMMUNIZATIONbasics headquarters, where he assumed a regional post and the DRC office was closed. The regional immunization advisor continued to provide periodic technical support to the EPI and the AXxes and LMS projects through the end of 2009.

What did IMMUNIZATIONbasics do? The IMMUNIZATIONbasics team provided continu-



Country map complements of the CIA World Fact Book

ous support to DRC's national immunization program and its ICC partners. In addition to planning, supervising, monitoring, and evaluating the country's immunization services, the team also participated in capacity building at subnational level and helped the EPI prepare its applications to the GAVI Alliance for new vaccines.

The Reaching Every District approach was renamed Reaching Every Zone (REZ) and introduced in DRC beginning in 2004, using a phased approach. In the first year 161 health zones were included, the following year 178 new zones were added, and in the third year the strategy was introduced in the remaining health zones. By the end of 2006, the basics of the RED approach had been introduced in more than 500 zones. DRC used its GAVI ISS investment and reward shares to support the introductory phase and the rapid expansion of REZ that took place after 2005.

The IMMUNIZATIONbasics team supported the REZ expansion and documented the results in

DEMOCRATIC REPUBLIC OF CONGO: INTRODUCING AND EXPANDING RED

the report “Documentation of the REZ approach in the assisted health zones.”⁷ Also, in 2005 and 2007, WHO, UNICEF, CDC and IMMUNIZATIONbasics included DRC as a country case study in the evaluations of RED in the Africa Region.⁸

IMMUNIZATIONbasics championed Provincial ICCs to increase support for routine immunization services at subnational level. The Provincial ICC approach was tried in Eastern, Western, and Oriental provinces, and the results were documented by IMMUNIZATIONbasics in the paper: “Strengthening the Interagency Coordination Committee in Provinces”.⁹ This report/case study was produced in French and English and widely distributed in DRC.

IMMUNIZATIONbasics also worked to improve data quality and data use in decision making at all levels. Through 2006, the project team played a critical role in helping the immunization program to compile, analyze, and present its routine immunization data during semi-annual EPI reviews, ICC technical working group meetings, and special MoH and donor planning meetings. Both before and after the country office closed, IMMUNIZATIONbasics helped to facilitate DRC’s semi-annual EPI review meetings and drafted the annual memoranda of understanding between the MoH and its ICC partners.

An activity that grew in importance after 2007 was building the immunization capacity of AXxes project team members. After a one-year break in USAID funding, AXxes and USAID/DRC approached IMMUNIZATIONbasics and requested that the project dedicate more of its

time to mentoring AXxes staff. AXxes’ parent organization, Interfaith Medical Association (IMA), subsequently issued a subagreement that partially reimbursed JSI for the costs of its staff time and travel. This collaboration between IMMUNIZATIONbasics and AXxes continued through the end of the IMMUNIZATIONbasics project.

Finally, DRC was one of the countries studied in depth by the IMMUNIZATIONbasics partners during the GAVI ISS Evaluation in 2007 and the GAVI Health Systems Support Tracking Study in 2008/9. Although these studies were not directly funded by USAID, they provided additional information and shed light on some of the issues that DRC was and is facing still.

What was achieved? DRC was one of the first countries in Africa to be approved by the GAVI Alliance for pneumococcal conjugate vaccine introduction. DRC was also among the first to receive GAVI HSS and CSO funding. After 2000, support from the GAVI Alliance fueled the dramatic increase in immunization coverage. Figure 9 shows the changes in routine immunization coverage in the DRC’s districts from January 2001 to May 2008.

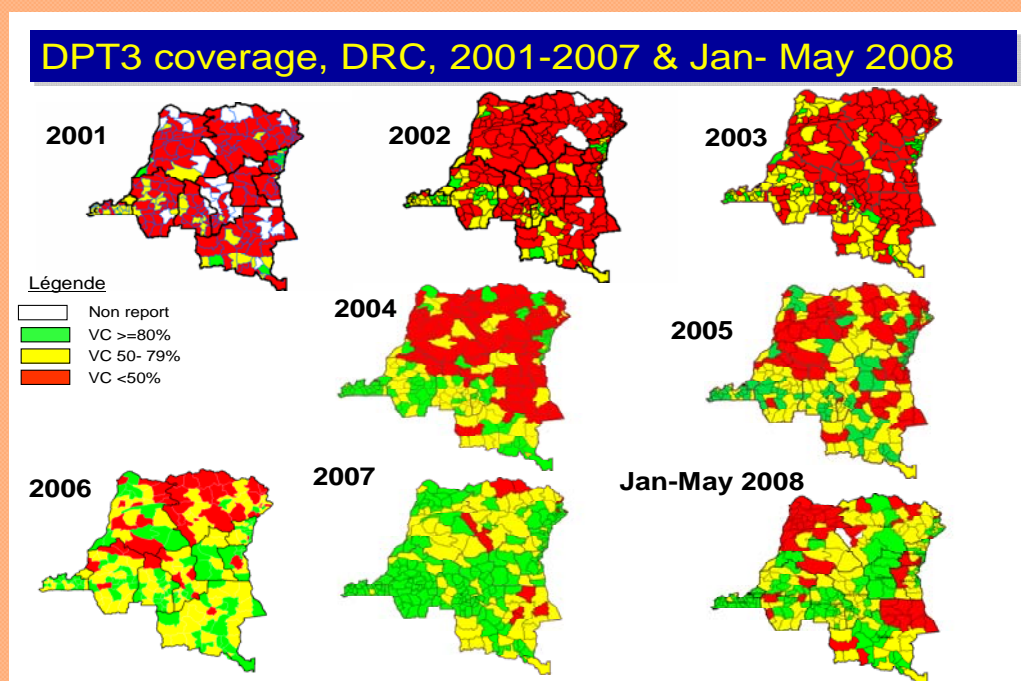
The progress made by the EPI and ICC partners was beginning to erode when IMMUNIZATIONbasics closed its office in 2006. The WHO/UNICEF coverage estimate increased almost 10% from 2007 to 2008, but the increase was questioned. Subsequently, wild polio virus was reintroduced, an indication of the large pool of susceptible children that were missed by the

⁷ See Annex DRC1

⁸ http://www.who.int/immunization_delivery/systems_policy/AFRO-REDevaluationreport_2005.pdf
http://www.immunizationbasics.jsi.com/Docs/AFRO_RED_Eval_Dec07.pdf

DEMOCRATIC REPUBLIC OF CONGO: INTRODUCING AND EXPANDING RED

Figure 9: DPT3 Coverage in DRC 2001-2008



immunization program. Despite aggressive control efforts, polio virus had been circulating for more than 12 months at the end of the IMMUNIZATIONbasics agreement in 2009.

What did we learn? When GAVI ISS payments were frozen worldwide in 2008, DRC's EPI experienced a period of decline. Moving vaccines and supplies to the health zones, funding annual micro planning workshops in health zones, and conducting supportive supervision visits all became serious problems due to a lack of funding.

The difficult issues that DRC was facing in 2009 can only be resolved through increased advocacy, donor coordination, and greater MoH leadership and investment. When GAVI cash support once again becomes available, the

IMMUNIZATIONbasics team sincerely hopes that DRC will have a rational plan for its use and a transparent financial system in place for its management.

Incentives should be part of the GAVI Alliance funding windows so that governments are encouraged and rewarded for increasing their investments in immunization and discouraged from becoming too dependent on GAVI Alliance grants. In fact, preventing countries from becoming dependent on GAVI funding should be one of the GAVI Alliance goals for its next phase of support.

VII. BUILDING CAPACITY TO DELIVER QUALITY IMMUNIZATION SERVICES

IMMUNIZATIONbasics focused on building the capacity of ministries of health and their national immunization programs to plan, manage, and improve routine immunization systems. The project also invested in building the capacity of individual providers to deliver and promote routine immunization services. In addition, the project contributed to developing and/or updating standard EPI training packages at global and regional level and to building the capacity of front-line health workers through training courses, supportive supervision with on-the-job training and mentoring, and the use of review meetings and other gatherings to reinforce knowledge and skills.

Building on USAID's investment at the global level during the predecessor REACH and BASICS projects, IMMUNIZATIONbasics continued contributing to a number of WHO training packages. Because of the project's extensive experience working to improve community links and service delivery, WHO asked IMMUNIZATIONbasics to participate in developing and revising existing training materials for mid-level management (MLM). IMMUNIZATIONbasics co-authored the WHO/MLM Module 2: "Partnering with Communities," and developed a companion training guide. The project also provided technical input on MLM Module 4: "Supportive Supervision," and Module 5: "Monitoring the Immunization System" and field-tested these modules during two regional training workshops organized by WHO/Geneva and WHO/SEARO (South East Asia Regional Office). WHO published the updated MLM modules in 2008 and they are now used globally.¹⁰

In all ten of its focus countries, IMMUNIZATIONbasics worked on capacity building at national, district, and health facility levels by organizing and supporting micro-planning workshops, MLM training courses, data quality self-assessment (DQS) exercises, district situation assessment, and supportive supervision. In all countries, IMMUNIZATIONbasics strove to develop national and local immunization capacity by:

- Adapting or designing new training courses
- Designing and improving job aids, including quick reference guides for health workers and managers
- Promoting supportive supervision, which includes on-the-job mentoring and training
- Setting performance standards for both external and self-assessment, as described in the Nigeria country summary
- Promoting routine review meetings between immunization managers and service providers
- Facilitating peer-to-peer technical support

IMMUNIZATIONbasics' country programs applied capacity-building techniques in different combinations and with varying levels of intensity. The following country summary describes IMMUNIZATIONbasics' capacity-building approach in India.

¹⁰ The MLM modules can also be found on WHO's website at http://www.who.int/immunization_delivery/systems_policy/training/en/index1.html

INDIA: BUILDING CAPACITY THROUGH SUPPORTIVE SUPERVISION

Geographic Focus: IMMUNIZATIONbasics worked at the national level and in the USAID focus states (at the time) of Uttarakhand, Rajasthan, Jharkhand, Uttar Pradesh (UP), with greater intensity in the latter two. The total population of India is 1.2 billion, making it the world's second-most-populous country. The population of Jharkhand is 26.9 million, and Uttar Pradesh, the most populous state in India, has more than 190 million people.

Timeframe: October 2004–September 2009 (resident staff for four years)

Staffing: The IMMUNIZATIONbasics team of eight included a country representative, a national immunization and health systems advisor, an immunization technical officer, and state representatives located in both Uttar Pradesh and Jharkhand. Two finance and administrative staff members were based in the New Delhi office. A senior technical advisor provided supplemental support to the India team from the project's US office.

Country Context: When IMMUNIZATIONbasics started working in India in 2004, polio eradication was the top immunization priority. Few health workers and supervisors responsible for routine immunization sessions had received formal training on routine immunization. Although the Ministry of Health and Family Welfare (MoHFW) had developed a unique approach for improving supportive supervision, this approach had not been widely introduced. Immunization coverage had not improved significantly in more than a decade and there were signs that it had decreased, particularly in the poorer-performing northern states where IMMUNIZATIONbasics focused its work.



What did IMMUNIZATIONbasics do? IMMUNIZATIONbasics supported India's Ministry of Health and Family Welfare (MoHFW) and its Universal Immunization Program (UIP) in providing quality routine immunization services nationally and in the USAID focus states. In collaboration with the MoHFW, WHO and other partners, IMMUNIZATIONbasics prioritized capacity building and worked at the national and state level to fill the gaps in updated routine immunization training materials and job aids. The project also participated in developing and rolling out national policies and plans for the introduction of Japanese encephalitis vaccine, AEFI surveillance, neonatal tetanus elimination, and other national immunization priorities. Below are a few of the highlights from India's capacity-building approach.

One of IMMUNIZATIONbasics' most important national contributions was drafting, testing, and helping to roll out routine immunization training packages for auxiliary health workers, medical officers, female community volunteers, and AnganWadi workers. By the end of the project,

INDIA: BUILDING CAPACITY THROUGH SUPPORTIVE SUPERVISION



In Jharkand, India, a health care worker holds a baby ready to be immunized.

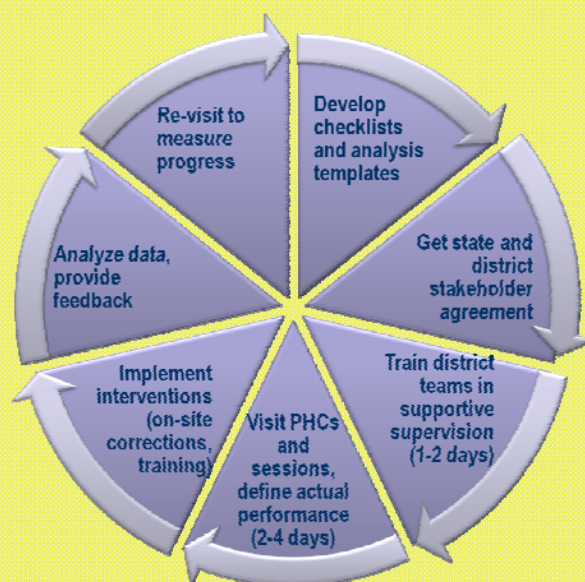
these handbooks and training tools had reached approximately 212,000 health workers and medical officers nationwide. The project team also invested their time in helping the MoHFW, states, and partners to update and train their own staff members in the basics of immunization program management.

In addition to formal training courses, IMMUNIZATIONbasics devoted considerable effort to devising a supportive supervision process to improve the quality of routine immunization services in the states and districts. Supportive supervision is a participatory process that helps health workers perform their duties according to program benchmarks. The cornerstone of this kind of supervision is working with health workers and managers to establish goals, monitor performance, recognize good practices, and identify and correct problems.

In India, IMMUNIZATIONbasics and its partners fine-tuned an existing model for supportive supervision¹¹ and took it several steps further as part of a district review process. The resulting approach included stakeholder meetings for consensus building, capacity building for district and health facility managers, use of performance standards and supervision checklists during facility and community visits, on the job training and mentoring of health workers during visits, and immediate district data analysis and feedback sessions with district managers. Another im-

portant characteristic of the process was the involvement of not only the state government but also the nongovernmental partner agencies working in each state.

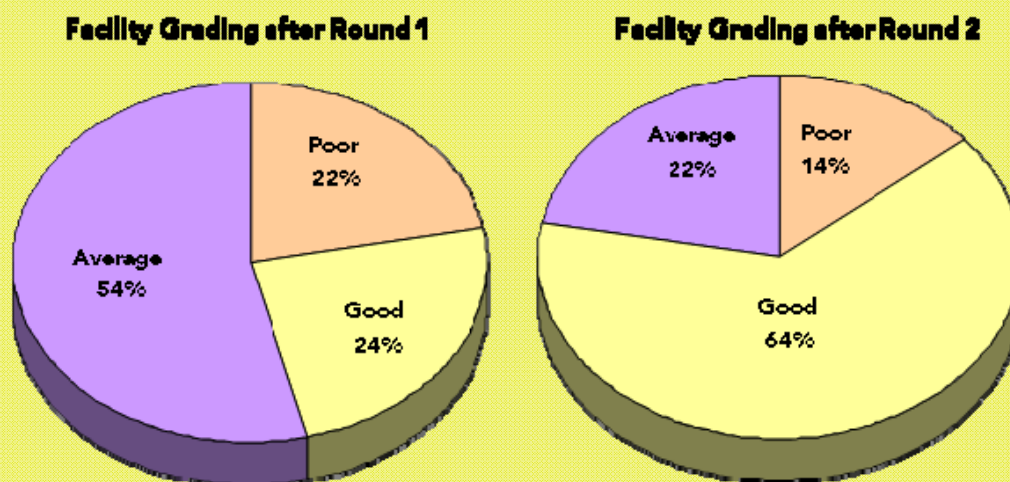
Figure 10: Supportive Supervision Process



¹¹ IMMUNIZATIONbasics modeled its supportive supervision approach on a prototype that PATH successfully implemented in the state of Andhra Pradesh.

INDIA: BUILDING CAPACITY THROUGH SUPPORTIVE SUPERVISION

Figure 11: Jharkhand Facility Grading after 2 Rounds



This circular process, shown in Figure 10, allowed immediate feedback to state and district officials and encouraged joint problem solving. Also, because health facilities were ranked by performance indicators and the process was repeated every three-to-six months, it became an important program monitoring tool and was used both to recognize district improvement and identify and address remaining gaps.

The success of this approach can be seen in the data collected from health facilities in three districts in Jharkhand during two rounds of supportive supervision visits conducted in 2007 and 2008 (see Figure 11). Although much more effort is needed to strengthen routine immunization in India, results from Jharkhand are promising, as the overall quality of services improved considerably in a relatively short period of time.

Another of IMMUNIZATIONbasics' important capacity-building contributions was related to the development of a set of needs-driven job aids and microplanning tools that supplement

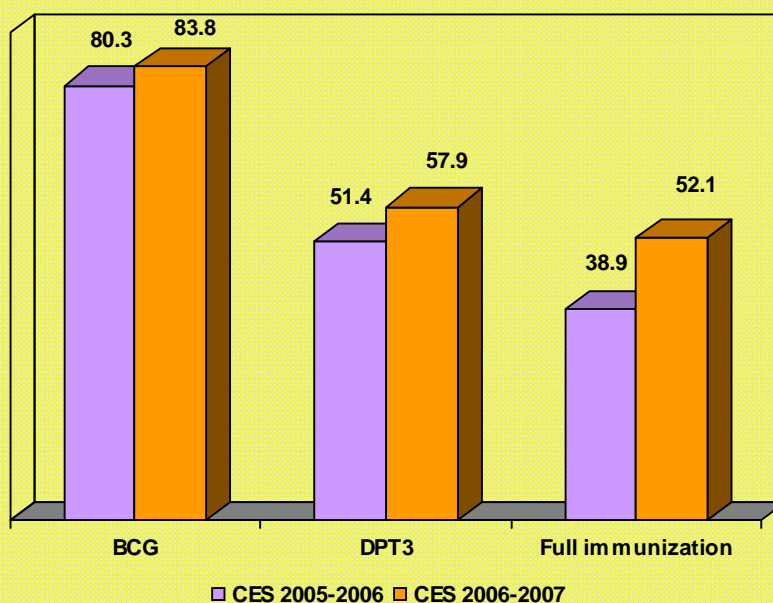
the training and supportive supervision approaches described above. Job aids were developed as simple posters, laminated reference sheets, or stickers to remind health providers and their supervisors of the correct practices and procedures in vaccine handling, cold chain management, waste management, defaulter tracking, planning, and so forth.

The availability and use of tools, notably at the facility level, is critical for improving health staff practices.

Tools were developed in prototype, tested in the districts and health facilities, and given to the states to brand and reproduce with their own resources. This was a highly successful strategy, largely because the Government of India's National Rural Health Mission provided significant resources to the states for their immunization programs and this was seen as a good investment. However, energetic advoca-

INDIA: BUILDING CAPACITY THROUGH SUPPORTIVE SUPERVISION

Figure 12: Immunization Coverage for Jharkhand (%)



Source: UNICEF, Coverage Evaluation Survey 2005-2006 and 2006-2007.

cy by IMMUNIZATIONbasics with the states and at the national level also proved important.

In addition to capacity building, numerous factors affect immunization coverage. Improvements in vaccine availability, service delivery strategies, data quality and management, in general, are required to strengthen routine immunization in India. However, the figures from Jharkhand, seen in Figure 12, are encouraging and suggest that improved training and supportive supervision may be contributing to increased coverage in the state.

What did we learn?

- **Working with partners greatly increased the impact and accelerated the uptake of the supportive supervision and training approaches** described

above. By working with CARE, WHO, UNICEF, NGOs, and other USAID-funded projects at the national level and in the states, IMMUNIZATIONbasics contributed to policies, plans, training programs, and job aids that were rolled-out nationwide by all of the partners. Multi-partner reviews and supportive supervision exercises generated almost immediate commitment to address problems. Common knowledge of operational issues in the districts made interagency coordination more effective at state level. Finally, because of their involvement with the supportive supervision model that IMMUNIZATIONbasics introduced, organizations such as CARE and UNICEF, and the Jharkhand Health Department itself, agreed to fund the expansion of the model.

INDIA: BUILDING CAPACITY THROUGH SUPPORTIVE SUPERVISION

- **Sharing the results of multiple rounds of supportive supervision with decision-makers' resulted in their buy-in and willingness to allocate budget for recurrent costs.** India's National Rural Health Mission is making significant resources available to the states and districts for their health programs. By sharing the results of multiple rounds of supportive supervision with those who manage these resources at state level, IMMUNIZATIONbasics was able to demonstrate improved performance of health workers and immunization coverage. This motivated district and state managers to allocate budget for supervision when developing their annual program implementation plans.
- **Observation provides the most accurate information about performance.** Supervisory visits should include observations of health workers as they perform their regular tasks of screening and immunizing infants and pregnant women. Strengths and weaknesses should be noted, without intervention, as the health worker performs the job. Observations should be discussed when there is time to identify and solve problems.
- **Feedback sessions at the end of district supervision visits are motivational; all health facility staff should come**



A supportive supervisor provides feedback and facilitates discussion with the facility staff

together to discuss finding and recommend next steps. A group discussion ensures that measurable performance goals are consensual and that staff feel that their opinions are respected. The feedback sessions and repeat visits are also important opportunities for all health workers to participate, not just those who were visited.

IMMUNIZATIONbasics India was involved in many different activities and initiatives. For more details on the job aids and tools mentioned above and links to other relevant reports and products, go to: <http://www.immunizationbasics.jsi.com/India>.

VIII. SUPPORT FOR NATIONAL COVERAGE SURVEYS, EPI REVIEWS, AND OTHER POLICY-RELATED ACTIVITIES

IMMUNIZATIONbasics worked with national immunization programs in several countries and partnered with WHO/AFRO, UNICEF, and others to conduct coverage surveys, EPI reviews, and other policy-related activities, all of which were national in focus. The project team provided technical support to the ministries of health of Benin, Djibouti, Madagascar, Rwanda, and Timor Leste during national immunization coverage surveys and/or external EPI reviews. IMMUNIZATIONbasics also contributed significantly to the strengthening of South Sudan's struggling immunization system through an extended consultancy in late 2009, prior to the close of the project. These achievements are listed in chronological order.

- **Rwanda/National Immunization Coverage Survey (2007)**—IMMUNIZATIONbasics provided technical leadership for a national coverage survey which confirmed Rwanda's routine immunization coverage at over 90%. This was a precursor to the Ministry of Health's request that the project assist it in planning for introduction of pneumococcal vaccine.
- **Djibouti/National EPI Review (2007)**—USAID/Djibouti requested IMMUNIZATIONbasics technical assistance to the Ministry of Health for an external EPI review. The review was preceded by an assessment visit and was conducted with WHO/EMRO regional staff, UNICEF, and PESCE, USAID's bilateral health project at the time. Following the national review, visiting IMMUNIZATIONbasics staff facilitated an EPI planning process which led to a joint EPI plan that was signed by the Ministry and partners.
- **South Sudan/EPI Assessment and Policy Formulation (2008/2009)**—USAID/South Sudan requested IMMUNIZATIONbasics technical support after a bilateral program review showed serious weaknesses in the national immunization program. At the time, USAID's own NGO grantees, the implementers of the bilateral project, were having difficulty with basic EPI functions, including obtaining vaccines on time and in sufficient quantities. In 2008, IMMUNIZATIONbasics conducted a rapid assessment of the situation with the MoH, then sent an experienced consultant to the country for several months to assist the national EPI manager with a number of tasks, including the drafting of a national EPI policy (the country's first), assessing needs at subnational level, and adapting important capacity-building tools, including the Reaching Every District Guide. At the end of this consultancy, the MoH requested a long-term EPI advisor and the USAID mission put the funding for this position into the new MCHIP award in the form of field support.
- **Benin/National EPI Review and Coverage Survey (2008)**—IMMUNIZATIONbasics worked with Benin's Ministry of Health, WHO/AFRO's Inter-Country Support Team, UNICEF, Agence de Medecine Preventive (AMP), and others on a national coverage survey and external EPI review. According to the 2006 Demographic and Health Survey (DHS), immunization coverage was faltering. The DHS showed crude DTP3 coverage of 67% at time of survey, but the MoH was not convinced because its own administrative records showed 93% DTP3 coverage in the same year and similarly high rates in preceding years. The 2008 coverage survey supported by IMMUNIZATIONbasics and the ICC partners found 82% crude DTP3 coverage. Although this partially con-

firmed the MoH suspicion that the DHS findings were incorrect, it also highlighted serious data quality and regional differences in coverage. The EPI review used the coverage survey data, along with district visits and in-depth interviews, to pinpoint the causes of these problems and recommend solutions. IMMUNIZATIONbasics provided technical leadership for the EPI review, with the MoH and AMP leading the coverage survey.

- **Timor Leste/National EPI and Surveillance Review (2009)**—IMMUNIZATIONbasics co-managed the USAID-funded TAIS project in Timor Leste from 2005 to 2009. Toward the end of IMMUNIZATIONbasics' tenure, the project worked with UNICEF, WHO, and others on an external review of the national immunization program and the quality of the country's surveillance system for acute flaccid paralysis and vaccine-preventable diseases. This multi-partner activity was followed by revisions to the cMYP and resulted in better coordination among donors in their support of the national immunization program.

EPI reviews, coverage surveys, and other assessments (including vaccine management and data quality assessments), when conducted with partners at national or subnational level, can lead to improved planning and coordination of donor support. Given the expense, special care must be given to ensuring that their findings are of highest quality and also that practical recommendations are generated and used in subsequent planning. Support is often needed, not only to plan and manage the exercises themselves, but also to facilitate the use of their findings with the stakeholders.

Coverage surveys are no longer carried out on a routine basis in most countries and this is a loss. IMMUNIZATIONbasics found itself supporting coverage surveys in Benin, Madagascar, and Rwanda when their ministries of health reacted negatively to annual WHO/UNICEF coverage estimates. These estimates were used by the GAVI Alliance through 2010 to determine a country's eligibility for new vaccines and annual ISS reward payments, so declining or stagnating coverage could mean a reduction in GAVI Alliance revenues.

WHO/UNICEF estimates come from each country's own administrative reports and recent population-based survey findings such as those from the DHS, MICS and 30-cluster immunization coverage surveys. Consequently, when a DHS or MICS shows declining coverage, countries will often request technical support to validate or refute the findings. The standard 30-cluster coverage survey can be conducted with limited technical support to provide useful data not only on coverage but also on the quality of the immunization services provided to the population. Information about program quality, even in a strong immunization program, helps managers to identify and address weaknesses.

IMMUNIZATIONbasics encourages USAID and others to make more regular use of the WHO 30-cluster coverage survey and other standardized tools including the WHO Data Quality Self Assessment and Vaccine Management Assessment tools.

IX. EXPLORING ALTERNATIVE WAYS TO DELIVER IMMUNIZATION SERVICES

PERIODIC INTENSIFICATION OF ROUTINE IMMUNIZATION (PIRI)

In previous decades, immunizations were provided primarily through routine services and mass campaigns. Today, a variety of periodic activities are used in more than 100 countries to augment routine immunization services. In other words, non-routine service delivery is being used to provide routine services. Activities vary widely across countries in terms of scope and emphasis, and go by many names, such as Child Health Days, Maternal and Child Health Weeks, European Immunization Week, and Vaccination Week.

In 2006, IMMUNIZATIONbasics conducted a desk review on periodic intensification for routine immunization (PIRI) activities to better understand the characteristics of these different approaches. The review looked at how widely they are implemented; their frequency; the health interventions they include; the extent to which they have been institutionalized; the funding mechanisms used; and operational issues. The findings, along with experiences from the field, are summarized in a joint

IMMUNIZATIONbasics/WHO monograph, "Periodic Intensification of Routine Immunization: Lessons Learned and Implications for Action."¹² The findings in the monograph were supplemented with observations from country visits and captured in an article that will be submitted to a peer-reviewed journal (such as the Bulletin of the World Health Organization.)

This review continued beyond 2009 and was jointly supported by WHO and USAID through the IMMUNIZATIONbasics agreement. IMMUNIZATIONbasics also worked in several of the focus countries with Ministry of Health, WHO, UNICEF, and other colleagues to plan and carry out PIRI activities. The following case study describes IMMUNIZATIONbasics' work with the PIRI campaign in Madagascar.

Many countries now conduct periodic intensification of routine immunization (PIRI) activities. Documenting these activities will further advance understanding about how PIRI will affect a country's ability to sustain increased routine immunization coverage.

¹² A pre-print release of this document can be found at www.immunizationbasics.jsi.com/Docs/PIRImonograph_Feb09.pdf

MADAGASCAR: MATERNAL AND CHILD HEALTH WEEKS

Geographic Focus: IMMUNIZATIONbasics' work spanned the entire country, which has a population of just over 20.6 million.

Timeframe: December 2006–July 2009

Staffing: A national technical advisor, based in Antananarivo, led activities in Madagascar for the IMMUNIZATIONbasics project. He was an active member of the Madagascar Inter-agency Coordinating Committee (ICC) and the immunization technical committee. His work focused on strengthening routine EPI at the national level and in poorer-performing regions and districts.

Country Context: Madagascar's Millennium Development Goals (MDGs) for immunization are to achieve a coverage rate of at least 84% for all antigens, maintain the DPT1 to DPT3 drop-out rate below 10%, and ensure immunization outreach services to at least 50% of the population who live more than ten kilometers away from a basic health center. In order to reach these goals, the country aims to improve traditional health services while incorporating alternative ways to deliver immunization services. For instance, biannual Maternal and Child Health Weeks (MCHWs) have been implemented since October 2006 to reinforce integration and comprehensive care.

What did IMMUNIZATIONbasics do?

IMMUNIZATIONbasics assisted in preparing, implementing, supervising, and evaluating every round of MCHWs from 2005 to 2009. Specifically, the team conducted supervisory visits and provided feedback using the MCHW checklist and providing additional attention to the measles prevention component. The team

also reviewed routine immunization data, discussed activities, and identified priorities for strengthening the immunization program in the visited areas. IMMUNIZATIONbasics also provided recommendations on how to better integrate routine immunization with the MCHWs and improve immunization monitoring and data use.



A mother brings her child for vaccination and other services at a maternal and Child Health Week in Madagascar

Findings indicated that Madagascar's MCHWs contributed to increased coverage rates. However, these increases were evident only when there were community mobilizers, well-organized services, and a tracking system in place. It was essential that MCHW services reach members of the target population (children under one-year-of-age and women of childbearing age) who were not being reached by the regular immunization program.

MCH Weeks presented an opportunity to provide immunization services to the most isolated areas.

MADAGASCAR'S MATERNAL AND CHILD HEALTH WEEKS

In areas where the routine system was not functioning well enough to identify children and women who had yet to be immunized, the MCHW may have contributed to increasing immunization coverage during the month when the MCHW was conducted. However, this coverage was sustained only when additional effort was made to follow-up with the target population through the routine immunization services and when there was improved tracking between the MCHWs.

What did we learn?

- MCHWs were an opportunity to provide immunization services to the most isolated areas of Madagascar. They were an occasion to motivate parents to bring their children to the local health center for routine immunizations.
- There was active community involvement in the MCHW but not in the routine immunization services. Additional challenges included poor drop-out tracking and the failure to use coverage data to identify and address missed opportunities. Efforts at the regional, district, and health facility level were needed to strengthen data analysis, as was advocacy and community mobilization to strengthen links to routine services.
- The provision of family planning services during the same events that provided tetanus toxoid to child-bearing age women led to confusion and mistrust. These activities were subsequently unlinked.

SCHOOL-BASED IMMUNIZATION PROGRAMS

The WHO/UNICEF Global Immunization Vision and Strategy (GIVS) aims to “protect more children in a changing world,” by expanding “vaccination beyond the traditional target group.” School-based immunization is one such strategy to reach older children. At WHO/Geneva’s request, IMMUNIZATIONbasics visited Indonesia and Sri Lanka to document their longstanding school-based immunization programs and to guide other countries in establishing such programs. In both case studies, the elements that were found to be essential to a successful school immunization program included: having an official policy in place, high-level advocacy, available financing, a high level of school enrollment, and vaccine availability with proper storage and safe disposal practices. This documentation provides a valuable reference on strategies for reaching older children and early adolescents with tetanus, human papillomavirus, and other vaccines, as well as other health interventions. Full reports on the school-based immunization programs in Indonesia and Sri Lanka can be found at: http://www.who.int/immunization_delivery/systems_policy/school-based-immunization/en/index.html.

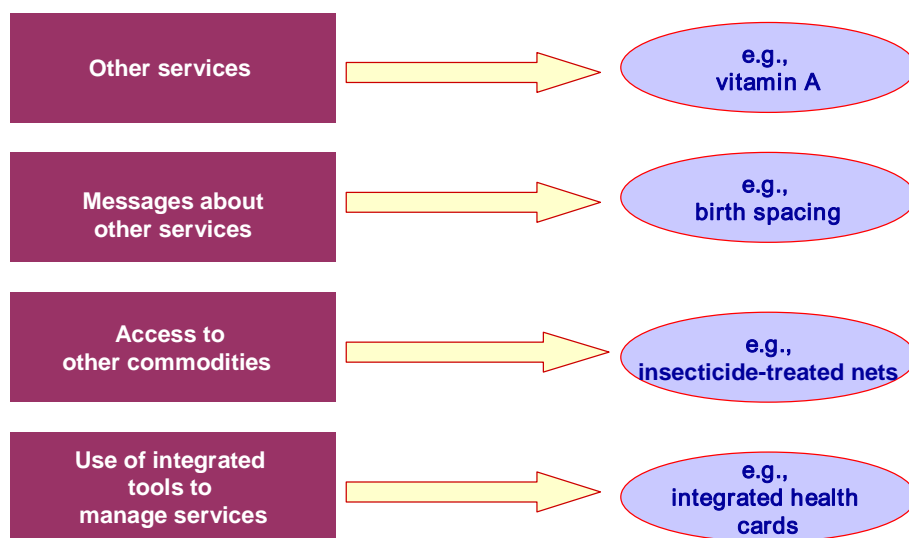
LINKING IMMUNIZATION TO OTHER HEALTH INTERVENTIONS

In addition to protection against vaccine-preventable diseases, routine immunization provides an opportunity to help deliver other health services both to immunization clients (infants, young children, women of childbearing age), and to the caregivers who bring them for services. Routine immunization alone affords five such opportunities in the first year of a child's life and periodic immunization campaigns can provide additional opportunities.

Over the past decade there has been encouraging progress on linking or integrating immunization with other health interventions. In 2007, WHO reported that half of the 84 countries providing vitamin A supplementation to their populations did so by giving vitamin A along with either routine immunization services or immunization campaigns. Today, providing other health interventions with immunization during periodic immunization campaigns has almost become standard practice.

Figure 13 suggests ways in which routine immunization serves as a platform for meeting the preventive health care needs of women and children.

Figure 13: Immunization Services as a Platform for Other Health Interventions



The following country summary describes how IMMUNIZATIONbasics approached the issue of linking Timor Leste's immunization service with other child-health interventions. As with all of the project's work, IMMUNIZATIONbasics pursued this objective while working to strengthen Timor Leste's routine immunization system.

TIMOR-LESTE: COUNTRY SUMMARY

Geographic Focus: IMMUNIZATIONbasics supported the national immunization program across all districts and activities. The Timor-Leste Integrated Health Assistance (TAIS) project, to which IMMUNIZATIONbasics was attached, worked more intensively in the districts of Manatutu, Oecusse, and Aileu. Timor-Leste has a population of approximately 1.1 million.

Timeframe: Four years, 2005–2009

Staffing: An expatriate chief of party and administrator led the project from Dili. Twenty-seven local hires were shared between BASICS and IMMUNIZATIONbasics with 12 administrative and 15 technical staff. Two local staff members were seconded to the health promotion unit in the Ministry of Health. One immunization officer worked exclusively on immunization.

Country Context: After independence in 2002, Timor-Leste faced multiple bouts of civil unrest, political violence and a troubled economy. Population-based coverage surveys in 2004 indicated that only about 15% of children 12–23 months of age had received three card-confirmed doses of DPT or one dose of measles vaccination. This figure rose to about 55% when the survey included the caregiver's memory of immunization. There was a high percentage of children with no immunizations and generally poor utilization of health facilities, even for curative care.

What did IMMUNIZATIONbasics do? IMMUNIZATIONbasics, together with BASICS, implemented TAIS, USAID's bilateral child health program in Timor-Leste. Designed to promote an integrated approach to child health, TAIS focused on capacity building and



Country map complements of the CIA World Fact Book

service delivery at both national and district levels, with emphasis on immunization, integrated management of childhood illnesses (IMCI), nutrition, neonatal health, and behavior change communication. TAIS promoted and created the platform for integrating immunization with other child health services.

Initially, TAIS developed supportive supervision procedures and tools for immunization. After successful introduction in the field, the project designed similar tools for nutrition and IMCI. TAIS then promoted integrated supervision visits by a team composed of individuals assigned to each program area. To address the vaccinators' difficulty correctly interpreting the immunization schedule, TAIS developed a weekly calendar to assist in calculating children's ages and intervals between vaccine doses. Health workers were also trained to use this calendar for other programs, such as vitamin A supplementation and antenatal care.

TAIS provided significant support on program management, training, and monitoring for the

TIMOR-LESTE COUNTRY SUMMARY

Ministry of Health's monthly integrated child health days in every sub-district, which were known as SISCas (Integrated Community Health Services). In addition, the project carried out an important knowledge, belief, and practice study on child health, including behavioral trials in which families tried new practices during a pilot period. This study led to the development of a unified national child-health behavior change communication strategy.

Because approximately 95% of Timor-Leste's population is Catholic, the reach of the church goes far beyond that of government health facilities and outreach sites. To make use of this resource, TAIS worked with the Ministry of Health and church officials to develop a booklet with clear, basic information about

Provider skills and attitudes concerning immunization, as well as IMCI, improved significantly through supportive supervision.

child health for reading during public announcements at the end of mass each Sunday. These messages were coordinated with the monthly health education theme during the monthly SISCa days.

What did we learn?

- **Consistent and active participation with the Ministry of Health and other partners builds credibility and facilitates imple-**

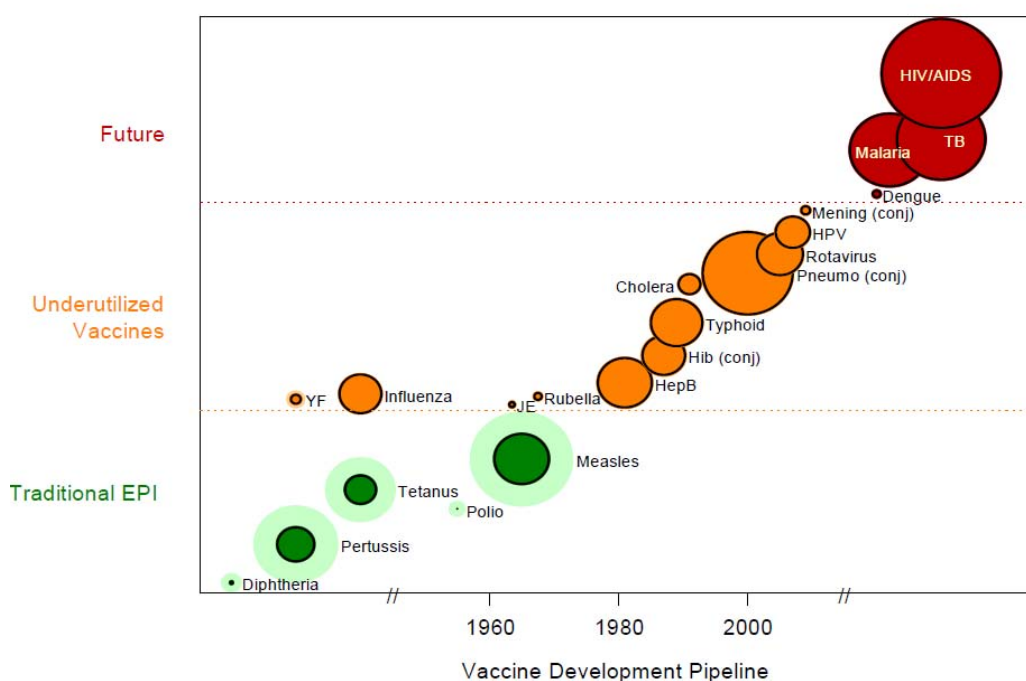
mentation. TAIS built strong relationships with the MoH and other donors by participating in technical working groups, maintaining flexibility to adapt to the MoH's evolving strategies and initiatives, and helping UNICEF and other partners achieve their specific priorities.

- **A two-pronged approach combining interventions at the national and district levels reinforces technical sharing and operational planning.** TAIS's presence at both the national policy level and in the districts facilitated sharing operational experiences from the field to the national level. This, in turn, contributed to the formulation of new national policies and initiatives that were more relevant to the field.
- **Focusing on supportive supervision was an excellent way to identify needs in the field and correct deficiencies.** Provider skills and attitudes concerning immunization, as well as IMCI, improved significantly through supportive supervision, which provided on-site refresher trainings, job aids, and reinforcement of awareness on national policies and procedures.
- **Donor flexibility greatly enhances project effectiveness.** The flexibility of USAID/Timor-Leste contributed greatly to the success of TAIS. The Mission was patient when the project had to modify strategies, move from one district to another because of civil unrest, and adjust to changing Ministry of Health priorities.

X. INTRODUCING NEW AND UNDERUSED VACCINES

Recent advances in vaccines, together with revitalized global support for immunization, have dramatically increased the potential of immunization to reduce childhood morbidity and mortality. Up to one-out-of-four childhood deaths can be averted through the use of vaccines that currently exist (see Figure 2). On top of these benefits, immunization's potential could be extended further. As shown in Figure 14, new and more effective vaccines for protecting additional age groups against deadly diseases are being developed. Some are already starting to be introduced.

Figure 14: The Evolving Vaccine Pipeline



*Area of circle is proportional to number of deaths (2002 data)
Shaded area is proportional to number of deaths prevented by vaccination.*

Source: WHO, The Evolving Vaccine Pipeline, February 2007.

At the same time, the introduction of new vaccines presents substantial challenges to planners and managers, particularly in low-resource countries. Lower and lower middle income countries are not able to introduce new vaccines without financial support. The vaccine market and large-scale financing efforts to sustain using new vaccines continues to evolve.

In 2009, the GAVI Alliance supported the introduction of new and under-utilized vaccines in 72 countries.

Operational issues associated with introducing new vaccines pose important challenges to immunization programs.

The poorest countries with the greatest burden of disease currently finance only one-third of their immunization programs, with limited prospects for increasing this proportion in the foreseeable future. With many new and more expensive vaccines in the development pipeline and with the uncertainty of long-term financing, financial planning at global and national level becomes increasingly important.

The operational issues associated with introducing new vaccines may be less apparent, but they still pose important challenges to immunization programs. This raises the questions: How can new vaccines be easily introduced, without overwhelming the routine immunization program or distracting from other immunization priorities and achievements?

Since 2000, there has been tremendous progress with new vaccine introduction. Initially, many countries began using vaccines that combine hepatitis B and/or Haemophilus influenzae type b with diphtheria-tetanus-pertussis (DTP) vaccine. These vaccines are highly compatible with existing cold chain and logistics management, and their introduction causes limited disruption to an immunization program. More recently, however, countries have started introducing pneumococcal and rotavirus vaccines. Initially, these vaccines involved bulky packaging and use of non-standard materials such as glass syringes, thus presenting substantial logistical challenges to immunization programs. IMMUNIZATIONbasics' work in Rwanda provided the opportunity to examine these issues while assisting the country to prepare for the introduction of pneumococcal vaccine.

RWANDA: PNEUMOCOCCAL VACCINE INTRODUCTION

Geographic Focus: Nationwide, population approximately 9.7 million.

Timeframe: Three years, 2007–2009

Staffing: There were no resident staff in Rwanda. Periodic country visits were made and continuous technical support was provided remotely from headquarters.

Country Context: In April 2009, with IMMUNIZATIONbasics technical support, Rwanda became the first African country to introduce pneumococcal vaccine. Rwanda has had one of the strongest immunization programs in Africa for many years. The government of Rwanda directs substantial commitment on maintaining and adding new vaccines to their national immunization program (NIP).

What did IMMUNIZATIONbasics do? IMMUNIZATIONbasics first supported Rwanda's NIP in November 2007. The project: 1) assisted in conducting a



Country map complements of the CIA World Fact Book

nationwide coverage survey to validate reported vaccination coverage figures; 2) helped develop and update Rwanda's comprehensive multi-year plan for immunization; and 3) provided continuous technical support to the Ministry of Health in applying for and introducing pneumococcal vaccine.

INTRODUCING PNEUMOCOCCAL VACCINE IN RWANDA

IMMUNIZATIONbasics worked closely with the NIP and WHO/AFRO to prepare Rwanda's application to the GAVI Alliance for pneumococcal vaccine. This work entailed reviewing the cMYP, developing a pneumococcal introduction plan, and helping to draft the application. Rwanda became the first African country



IMMUNIZATIONbasics provided key technical support for the introduction of pneumococcal vaccine in Rwanda

to be approved by GAVI to introduce pneumococcal vaccine in 2008.

Considerable work was required to prepare the immunization program for the introduction of the new pneumococcal vaccine prior to its arrival. The seven valent pneumococcal conjugate vaccine, PCV7, was the only vaccine product available to Rwanda at the time and PCV7 has unique product characteristics. Unlike other vaccines, PCV7 comes in pre-filled, single-dose glass syringes and does not come with vaccine vial temperature monitors. The pre-filled syringe occupies a high storage volume per dose in the cold chain and requires special high-temperature incinerators to destroy syringes after use.

IMMUNIZATIONbasics helped Rwanda's NIP estimate the impact of PCV7 on Rwanda's cold chain. This analysis contributed to USAID's decision to invest more than \$500,000 to expand cold chain storage capacity. It also helped managers and MoH officials realize that the frequency of vaccine deliveries to sites needed to increase in order to avoid overloading the cold chain.

To facilitate introducing pneumococcal vaccine, IMMUNIZATIONbasics helped to organize technical subcommittees on cold chain logistics, social mobilization, and waste management and disposal. The project also assisted in drafting a combination checklist/work plan to manage the introduction process, and worked with the national immunization program and others to revise all immunization technical guidelines and management tools.

IMMUNIZATIONbasics worked with the immunization program to draft key content for messages to inform parents, health workers, and community leaders about PCV7. With the help of a BCC specialist, the project then conducted a rapid inquiry of health worker and parent attitudes and beliefs about pneumococcal disease and vaccination. This allowed policymakers and health officials to better understand the perceptions and concerns of caregivers and health workers, and thereby make messages more effective.

IMMUNIZATIONbasics also played a key role in preparing health workers to administer the new vaccine. The project drafted the first training-of-trainers module, helped organize and train the central and district-level trainers, and helped develop a training methodology for health workers at the facility level.

INTRODUCING PNEUMOCOCCAL VACCINE IN RWANDA

What did we learn? The introduction of a new vaccine requires at least 12 months of preparation. New vaccines do NOT deliver themselves. There are many modifications that must be made, including those to vaccine schedules and other policies, to operational guidelines and to cold chain capacity and vaccine management. Health providers and program managers must be trained, cold chain must be enhanced in some cases, and the public must be aware that the vaccine is coming, what it is for, and how and to whom it will be offered. Underestimating the time required to prepare for a new vaccine can seriously undermine its successful introduction.

- **Cold chain and logistics considerations are important for any country planning to introduce a new vaccine.** This is doubly true when the vaccine product in question was not originally packaged for use in developing countries. As a member of the global Vaccine Presentation and Packaging Advisory Group (VPPAG), IMMUNIZATIONbasics included Rwanda's experience as part of an analysis of the impact of new vaccine products on cold chain and logistics management. Based on this analysis, logistics issues became an important consideration for vaccine manufacturers to address in their production processes. As a result of the VPPAG activities, vaccine presentation is now recognized as a central concern in the introduction of new vaccines.

- **New vaccine introduction requires training for all health workers involved in immunization activities.** Training should consider all of the operational aspects of immunization services in order to improve the quality of service.
- **Key messages should be developed and shared and address concerns of caregivers and health workers to increase acceptability of the new vaccine.** While most caregivers trusted the decision made by the MoH, they wanted reassurance that the vaccine was safe. Health workers must be able to discuss the importance and advantages of the new vaccine and explain that the side effects of the vaccine are less unpleasant than the consequences of the diseases against which it protects. Health workers should be trained on the delivery of key messages and offered opportunities to build their skills when providing messages to caregivers.

Health workers must be able to discuss with caregivers the importance and advantages of the new vaccine.

Annexes Rw1-Rw4 provide links to reports, success stories, and news clippings related to the new vaccine introduction in Rwanda.

XI. CONTRIBUTING TO GLOBAL IMMUNIZATION POLICIES AND PROGRAMS

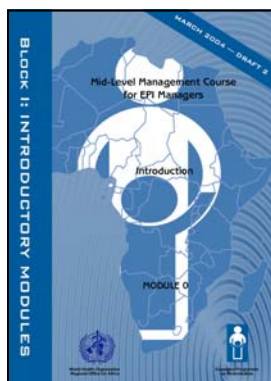
As a member of the WHO and GAVI Alliance advisory bodies, IMMUNIZATIONbasics regularly contributed its country-level experience to influence global policy. At the same time, the project contributed to countries by translating and customizing important global policies and making them relevant to a country's needs and resources.

PARTNERING WITH WHO

WHO's Scientific Advisory Group of Experts (SAGE) seeks to uncover reasons why some children continue to remain unimmunized. In support of this endeavor, IMMUNIZATIONbasics participated in a WHO-led, multi-agency review on "The Epidemiology of the Unimmunized Child" by reviewing the unpublished gray literature. The Swiss Tropical Institute re-analyzed DHS and MICS survey data, while the U.S. Centers for Disease Control and Prevention reviewed the published data. Each group prepared a report summarizing their findings, which they presented at a SAGE meeting in October 2009. SAGE will apply the findings from this review to formulate additional approaches for reaching unimmunized children through routine immunization programs and other mechanisms.



IMMbasics sought to bring field realities into global policy deliberations



In 2007, WHO revised its longstanding vaccination schedule to include the introduction of new vaccines and expand the age cohorts for some vaccines. Recognizing IMMUNIZATIONbasics' valuable experience working in countries, WHO asked the project to prepare a programmatic companion piece to guide national immunization managers on how to interpret and implement the revised immunization schedule, according to the ever-changing parameters for delivering routine immunizations. The resulting document, "WHO Recommendations for Routine Immunization: A User's Guide to the Summary Tables,"¹³ will assist country-level decision makers worldwide to make practical policy choices as they grapple with the many options in WHO's revised schedule.

WHO's Mid-Level Management (MLM) course covers the fundamentals of immunization for district-level managers. Previously, the course had paid limited attention to engaging communities in the planning and the delivery of immunization services, which is critical to increasing the use of immunization services. To address this deficiency (as mentioned earlier in this report), WHO asked IMMUNIZATIONbasics to prepare a new MLM module, "Partnering with Communities," as well as a companion facilitator's guide. In the past, most ministries of health and their technical supporters concentrated primarily on supply-side issues, not on stimulating *demand* for services, which originates within the community. This important new MLM module is now used for training worldwide (<http://www.who.int/immunization/documents/mlm/en/>).

¹³ A pre-print release of this document can be found at www.immunizationbasics.jsi.com/Docs/PIRImonograph_Feb09.pdf

IMMUNIZATIONbasics also served on WHO's Technologies and Logistics Advisory Group (TLAC), which made recommendations to WHO's Department of Immunization, Vaccines and Biologicals in Geneva. IMMUNIZATIONbasics led the TLAC subcommittee advising on the revision of WHO's multi-dose vaccine policy, which had become outdated due to changes in the duration of time which some opened vials of vaccine can be kept before being discarded. This revision of WHO's multi-dose vial policy became particularly important with the introduction of new vaccines with different formulations and presentations.

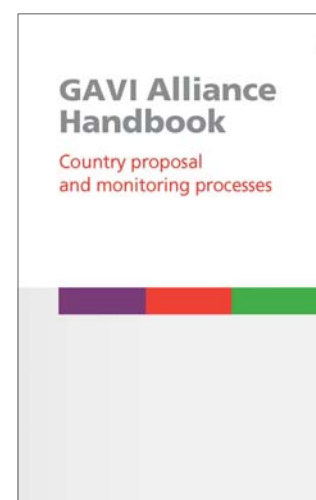
As described in Section IX, IMMUNIZATIONbasics also partnered with WHO on the documentation of country experiences with the periodic intensification of routine immunization (PIRI) and on country case studies in Indonesia and Sri Lanka that will guide countries interested in establishing or strengthening their school immunization programs in the future. See page 33 and Annexes GL8 and GL9. Most of the activities the IMMUNIZATIONbasics carried out with WHO were jointly funded by WHO and USAID.

PARTNERING WITH THE GAVI ALLIANCE

In 2005 and 2006, IMMUNIZATIONbasics contributed to the design of GAVI's health systems strengthening funding window as a member of the Health System Strengthening Reference Group. From 2006 to the end of the project in 2009, the project also helped establish GAVI's Civil Society Task Team, created to develop a civil society constituency for immunization and to provide civil society groups with a way to participate in GAVI's governance and implementation. This task team led to the establishment of a new financial mechanism for supporting civil society organizations (CSOs) in GAVI-eligible countries. IMMUNIZATIONbasics also served as a member of GAVI's co-financing design and allocation working group. The project team also took part in evaluating the first phase of GAVI funding. In 2006, staff served on a panel that advised the GAVI Board to invest resources to introduce pneumococcal and rotavirus vaccines.

IMMUNIZATIONbasics partners JSI Research & Training Institute, Inc. (JSI), Abt Associates, and Academy for Educational Development (AED), were awarded separate funding by the GAVI Alliance for a number of activities that contributed to the project's overarching objectives and to the future direction of the GAVI Alliance. Specifically, IMMUNIZATIONbasics staff worked with GAVI Alliance to:

- Revise the GAVI Alliance Handbook (2006, JSI and Abt)¹⁴
- Contribute to the analyses that led to bridge financing for new vaccines and GAVI's requirement that countries begin co-financing all new vaccines after 2005 (see next chapter)¹⁵
- Evaluate the GAVI immunization services support (ISS) funding window (second evaluation, 2007-08, Abt, JSI and AED)¹⁶



¹⁴ http://gavistg4.elca-services.com/media_centre/publications/handbook.php

¹⁵ <http://www.gavialliance.org/about/governance/programme-policies/co-financing/>

¹⁶ <http://www.gavialliance.org/results/evaluations/iss/>

¹⁷ <http://www.gavialliance.org/results/evaluations/ins/>

¹⁸ [Monitoring and Evaluation Study for the GAVI Alliance Support for CSOs - Final Report and Proposed Monitoring & Evaluation Plan. Prepared by JSI Evaluation Planning Team; August 1, 2008](#)

- Evaluate the GAVI injection safety (INS) funding window (2007-08, JSI)¹⁷
- Design a monitoring and evaluation framework for GAVI's financial support to CSOs (2007, JSI)¹⁸
- Design and implement the GAVI Health Systems Strengthening Tracking Study in six countries: Democratic Republic of Congo, Ethiopia, Kyrgyzstan, Nepal, Vietnam, and Zambia (2008/09, JSI and InDevelop-IPM)¹⁹
- Evaluate GAVI Phase One (2009, Abt)²⁰
- Prepare country case studies of the experiences of countries receiving CSO funding (2009, JSI)²¹

LESSONS LEARNED

In the past, USAID global technical assistance projects—REACH, BASICS, Partners in Health Reform [PHR and PHRplus])—regularly participated in and/or managed studies of the type listed above. As more funding has gone directly from USAID to the GAVI Alliance, however, less and less is available for this type of global technical support. As such, USAID's technical leadership of global assessments and studies, through projects such as IMMUNIZATIONbasics, is no longer financially possible.

The situation within GAVI was also changing dramatically during IMMUNIZATIONbasics, as the GAVI Alliance took steps to set itself up as an independent organization. As part of that process, a robust evaluation strategy and new procurement policies that insisted on open competition in selecting contractors were established.

Given the interests and expertise of IMMUNIZATIONbasics's partners and staff members, the decision was made earlier in IMMUNIZATIONbasics' tenure to respond to requests for proposals for GAVI Alliance studies and evaluations. Being in a position to implement these studies and evaluations meant competing with other contractors and spending time preparing and negotiating bids. The IMMUNIZATIONbasics' partners were very successful in this and we believe the results were worth the extra effort.

Through its involvement in the activities described above, IMMUNIZATIONbasics and USAID/Global Health gained a unique perspective on the evolution of the GAVI Alliance and its funding windows and on the decisions that were being made at WHO. The project team was therefore better able to bring field realities to global discussions and help countries influence and adapt to global decisions.



IMMbasics found that, almost everywhere, parents will bring their children for vaccinations as long as services are accessible, convenient, reliable, friendly, affordable and

¹⁹ <http://www.gavialliance.org/results/evaluations/hss-tracking-study/>

²⁰ <http://www.gavialliance.org/results/evaluations/gavi-first-evaluation-report/>

²¹ <http://www.jsi.com/JSIInternet/Resources/Publications/DownloadDocument.cfm?DBLDOCID=10667&DBLLANGID=3>

XII. IMMUNIZATION FINANCING

STATE OF IMMUNIZATION FINANCING IN 2005

The IMMUNIZATIONbasics project merged two key USAID priorities: strengthening routine immunization and improving the reliability and the management of immunization financing.

In late 2004, as the first phase of GAVI funding was coming to an end, IMMUNIZATIONbasics was beginning and financing for new and underused vaccines was a major concern. The price of the newly-introduced pentavalent vaccine (DPT/HepB+Hib) had not decreased as originally expected, and there was broad consensus that countries would not be able to absorb the vaccine costs. In addition, there was little information about how emerging policies might affect individual countries. Furthermore, because the GAVI Alliance had not approved future support, there was concern that the countries that had received pentavalent vaccine would exhaust their Phase One new vaccine support after 2005.

Concurrent with the concern over the future of vaccine financing, there was growing interest in extending GAVI support to health systems strengthening, as the Global Fund had begun to do in 2005. Opinions differed on the design, country eligibility criteria, and evaluation of the proposed health systems support. There was also a growing consensus that civil society organizations (CSOs) should be able to access GAVI funding for immunization promotion, but there was no mechanism for making such support available. These issues remained unresolved as the first phase of GAVI was coming to an end.

Given the need for continued funding, the GAVI Alliance initiated a series of discussions with industrialized governments to create a new funding mechanism that would advance money to countries through the GAVI Alliance. The British government spearheaded the effort by creating the International Finance Facility for Immunization (IFFIm), which sold bonds to investors using the backing of various governments and donors' multi-year funding commitments as guarantees. This allowed GAVI to expand its support to countries and to create a health systems strengthening account. An Advanced Market Commitment also assured future funding for pneumococcal and rotavirus vaccines, one of the GAVI Alliance and country priorities.

All of these and later policy discussions shaped IMMUNIZATIONbasics' agenda for immunization financing.

GLOBAL/REGIONAL FINANCING ACTIVITIES

While the GAVI Alliance was making decisions concerning its second phase (2005–2010), IMMUNIZATIONbasics worked with WHO and the World Bank on a series of analyses for bridge financing that would allow countries to continue receiving GAVI support during the period between GAVI Phases One and Two. Additionally, IMMUNIZATIONbasics contributed to several analyses on the impact of co-financing for new vaccines. This input resulted in GAVI's decision to require that countries commit to co-financing all future new vaccines in their GAVI applications.

IMMUNIZATIONbasics also worked with the World Bank and WHO on developing a set of training materials to help countries develop comprehensive multi-year plans (cMYPs) for their immunization programs.

These cMYPs merged the earlier financial sustainability plans with immunization multi-year plans and became a requirement for all new applications for GAVI support.

To facilitate the cMYP process across its regions, WHO asked IMMUNIZATIONbasics to develop training materials to help countries develop both the programmatic and the financing content for their cMYPs. IMMUNIZATIONbasics developed and introduced these materials during a regional workshop sponsored by the WHO South East Asia Regional Office (SEARO). The project then adapted and translated these training materials for use in West and Central Africa. Subsequently, the same materials were used by WHO and the World Bank in the European region, and in eastern and southern Africa.

COUNTRY FINANCING ACTIVITIES

IMMUNIZATIONbasics provided onsite and remote technical assistance to USAID missions and ministries of health who requested feedback on their GAVI applications. The project assisted the governments of Benin, Democratic Republic of Congo, Liberia, Madagascar, Mali, Nigeria, Rwanda, and Yemen with new vaccine applications, health systems strengthening (HSS) applications, injection safety applications, submissions of progress reports, and/or preparation of cMYPs, particularly the costing and financing tables. Only USAID/Rwanda dedicated field support funding specifically for immunization financing; in other countries, immunization financing support was provided remotely or in conjunction with other IMMUNIZATIONbasics work to strengthen routine immunization.

South East Asia Regional Workshop Sustainable Immunization Financing
19-23 June 2006
Centre for Health Economics, Chulalongkorn University, Bangkok, Thailand



In Rwanda, IMMUNIZATIONbasics provided technical assistance to the MoH during development of their cMYP, for training immunization staff on the use of the cMYP costing tool, and in reviewing their HSS application prior to submission to the GAVI Alliance (see Country Summary–Rwanda). The project also directed extensive technical assistance in its final year to Rwanda’s National Immunization Program on preparing their GAVI application for introducing pneumococcal vaccine nationwide.

LESSONS LEARNED

The financing landscape changed greatly during the project’s five years. Although some in the donor community may believe that financing for immunization is assured for years to come, prospects for sustaining immunization programs have, in fact, declined. Although GAVI application and planning requirements for new vaccines now include co-financing, plans are not necessarily commensurate with a country’s ability to pay and many governments are actually contributing less to their immunization programs now than they did five years ago. New vaccines are being introduced in countries without adequate financial planning. At the same time, many countries operate under the assumption that GAVI support will continue without end.

At the close of IMMUNIZATIONbasics, GAVI had committed \$4 billion through 2015, with 73% committed to new vaccines, 13% to health systems strengthening, and 10% for immunization services support. Yet many immunization programs still lack the logistical, programmatic, and financial capacity for delivering traditional and less expensive vaccines, let alone newer and more expensive ones. This poses a serious challenge as the GAVI Alliance determines its strategic direction for 2011-2015 and beyond.

The GAVI Alliance is in a position to encourage improved financial sustainability of national immunization programs. This might be done by monitoring and rewarding higher immunization program expenditures each year, or by setting and insisting that countries meet annual financing targets based on their economic indicators. One way or the other, the GAVI Alliance should monitor the total costs and proportional financing by governments of immunization program costs, not only the costs of new vaccines.

XIII. ACCELERATED DISEASE CONTROL AND ROUTINE IMMUNIZATION

Accelerated disease control initiatives during the project's duration included polio eradication, measles control, and maternal and neonatal tetanus elimination. All of these initiatives emphasized mass immunization campaigns while acknowledging the essential role of a well-functioning routine immunization system. At all levels, IMMUNIZATIONbasics sought to contribute to disease control initiatives in ways that also strengthened routine immunization.

MEASLES MORTALITY REDUCTION

The global effort to control measles has made remarkable progress. In 2008, the Measles Initiative, a partnership of the American Red Cross, WHO, UNICEF, United Nations Foundation and CDC, announced that measles deaths worldwide had fallen by 74% between 2000 and 2007. Sustaining this success, particularly with a worrisome funding gap and inadequate coverage rates in Southeast Asia, will be a considerable challenge.

Many immunization programs still lack the logistical, programmatic, and financial capacity for delivering vaccines.

IMMUNIZATIONbasics worked with the Measles Initiative and its stakeholders to better define the routine immunization component of measles mortality reduction strategies. The project shared experiences and recommendations with partners, particularly related to its work

on measles control in the Democratic Republic of Congo. IMMUNIZATIONbasics staff also provided input to the CDC's *Nine Opportunities to Enhance Synergy between Supplemental Immunization Activities and Routine Immunization Services*. Adapted from the polio eradication checklist for strengthening routine immunization that was developed by BASICS in 2000, national measles control programs in many countries now use this new measles guideline when strengthening their routine immunization programs.

IMMUNIZATIONbasics also contributed to the Measles Investment Case, which was prepared by the Measles Initiative to increase financial support to countries. The project produced an *aide memoire* for WHO Geneva entitled *Winning the Marathon against Measles*. This document promotes sustaining the measles control effort by encouraging countries to include measles mortality reduction activities in their comprehensive multi-year plans, which include detailed costing and identification of funding gaps.

POLIO ERADICATION

Global polio eradication has remained tantalizingly close for the past decade. However, at the end of the IMMUNIZATIONbasics agreement, four remaining endemic countries (Nigeria, India, Pakistan Afghanistan) continued to put other countries at high risk for reinfection.

Maintaining polio and tetanus eradication and sustaining measles mortality reduction will require effective routine immunization systems.

The global eradication effort must engage multiple audiences—from wealthy donors to poor mothers—in all countries in a sustained dialogue focused on questions such as: Why has eradication not yet been achieved? Why is there a continued need for large amounts of funding? Why must multiple, intensive door-to-door campaigns continue? Why has monovalent oral poliovirus vaccine (OPV) been substituted for the traditional trivalent vaccine? And finally, what are the requirements for post-eradication maintenance?

IMMUNIZATIONbasics directed much of its support on polio eradication communications through a sub-contract to the Communication Initiative (CI), which, in turn, worked with organizations in India and Nigeria. Major communication activities were aimed at making polio communication efforts more evidence-based; improving global knowledge-sharing about polio communication, and further engaging communities and local leadership in communication efforts.

Consequently, national communication reviews have been introduced as a central component for monitoring, evaluating, and planning polio eradication programs. Furthermore, progress has been made on establishing standard polio communication indicators, as called for by the World Health Assembly, the African Region's Task Force on Immunization, and multiple communication advisory groups.

IMMUNIZATIONbasics and CI also helped create a central knowledge repository for polio communication (www.comminit.com/en/polio) that includes nearly 500 summaries of polio communication documents and promotes knowledge sharing via electronic newsletters. Additionally, IMMUNIZATIONbasics initiated evidence-based social mobilization studies and documented community dialogue and key lessons through

POLIO COMMUNICATIONS AND THE COMMUNICATIONS INITIATIVE

Geographic Focus: IMMUNIZATIONbasics and its partner the Communications Initiative (CI) worked globally with the key PEI partners and CI's own network of development communications specialists on a number of polio communications activities. The project also provided direct support to Nigeria, India, DRC, Indonesia, Timor-Leste, and other countries where polio was either endemic or had been re-introduced after a break in transmission.

Timeframe: 2004-2009

Context: The Global Polio Eradication Initiative was launched in 1988 by the World Health Assembly. Rotary International, WHO, UNICEF, CDC, USAID, and many other bilateral

and private donors have supported the initiative. The original target date for eradication was 2000, but that target has been reset a number of times. Still, great progress has been made. By 2006, the annual case numbers had decreased by 99%, from an estimated 350,000 in 1988 to less than 2000 cases in 2009. But eradicating polio has proven to be more difficult and more expensive than anticipated. By 2006, there were still four countries that had never interrupted transmission of the wild polio virus, but each year between 12 and 23 countries reported polio cases due to imported polio viruses. Polio endemic countries during most of IMMUNIZATIONbasics were considered to be India, Nigeria, Pakistan, Afghanistan. Those experiencing re-importation were Angola, Bangla-

POLIO COMMUNICATIONS AND THE COMMUNICATIONS INITIATIVE

desh, Chad, Democratic Republic of Congo, Ethiopia, Indonesia, Nepal, Niger, Somalia, and Yemen.

What did IMMUNIZATIONbasics do?

In 2005, IMMUNIZATIONbasics entered into an agreement with CI, which had already been working with USAID and the BASICS II project to raise awareness about the importance of communications interventions for polio eradication. IMMUNIZATIONbasics provided technical assistance to USAID and its country missions, while also making CI's services available to facilitate country polio reviews and polio communications technical advisory group meetings. CI also redesigned its polio webpage, managed several polio and immunization-related e-lists, facilitated virtual discussion groups, compiled polio-related news reports from around the world, and published regular technical updates and electronic newsletters. Below are highlights from CI's end-of-project report:

Communication Reviews—Communication reviews were based on the model of polio technical advisory groups, which brought together independent international technical experts to review and advise polio-endemic countries and those where wild polio virus had been introduced. Eleven reviews were held, including two multi-country meetings in Cameroon and Zimbabwe, and country-specific reviews in India, Pakistan, Afghanistan, and Nigeria. Although it was a challenge to convince the medical/technical community of the important role of communications, the



Baby receiving his polio drops

level of acceptance increased and they have become an established part of each endemic country's planning process.

Indicator Development—Through the reviews and other bodies providing technical advice, there was an increased focus on the development and use of communication indicators. A set of indicators²² was developed as a starting point and used in Pakistan and Afghanistan, and to establish standard polio and immunization communication indicators in West Africa.

Knowledge Management—A group of experts provided advice on planning and review, and a web-based planning platform utilizing the CCAP framework was established to collect polio communication knowledge.²³ Additionally, e-mail newsletters provided technical updates and forwarded polio media coverage.

Focused Studies—Coordinating with

²² *Toward Polio Communication Indicators: A Discussion Document.* <http://www.comminit.com/en/node/268356/292>

²³ <http://www.comminit.com/en/polio>.

POLIO COMMUNICATIONS AND THE COMMUNICATIONS INITIATIVE

Healthlink Worldwide, CI helped to assess the extent to which SMNet mobilisers internalized and acted upon information on routine and polio immunization. Additionally, CI worked with Communication for Social Change Consortium to improve the effectiveness of community dialogues in selected high-risk parts of Nigeria.

Peer-Reviewed Paper—Peer-reviewed research enabled important lessons emerging from the review and knowledge sharing processes to reach a wider audience of technical and program experts. CI, USAID's Global Coordinator, and IMMUNIZATIONbasics worked on a series of polio communications articles that were published after the end of IMMUNIZATIONbasics by the Journal of Health Communications (see Annexes GL38 and GL39).

Research Dissemination—In March 2009, two meetings were held in Washington, D.C. to exchange ideas, findings and inform the research behind the peer-reviewed papers. The meetings also provided the opportunity for discussions on how the polio experience can benefit health communication and for sharing communication ideas and experiences amongst a range of health communicators and policy makers.

What did we learn? PEI communication strategies have focused primarily on mobilizing the public and community leaders for National Immunization Days. UNICEF is the

communications expert in most countries and the organization that leads communication technical committees and supports communication activities. Experience revealed that communication action needs to be strengthened by:

- Improving data-based monitoring and evaluation.
- Developing and utilizing measurable indicators.
- Improving communication skills and training for front-line workers.
- Recruiting adequate numbers of skilled communication staff at all levels in country programs.
- Placing communication expertise on national and international polio advisory bodies.
- Strengthening knowledge sharing and dissemination.
- Continuing to do research that captures the wealth of experience found in such a large and prolonged health initiative.

For reports and documents describing the full range of CI activities and results, refer to Annex GL23.

MATERNAL AND NEONATAL TETANUS ELIMINATION (MNTE)

Maternal and neonatal tetanus (MNT) claims more than 200,000²⁴ lives worldwide each year, despite the fact that these deaths are easily preventable by the tetanus toxoid vaccine and clean umbilical cord care. Maternal and neonatal tetanus persists as public health problems in 48 countries,²⁵ mainly in Asia and Africa. Unfortunately, the survival rates for tetanus patients is low, even in places where appropriate medical care is available.

At global level, IMMUNIZATIONbasics staff serve on UNICEF's MNT Elimination Program Committee. At the country level, IMMUNIZATIONbasics helped plan and implement three rounds of national tetanus campaigns in Timor-Leste in 2008 and 2009. This included helping to develop campaign promotion materials (such as radio spots, technical materials, and games) and facilitating social mobilization and advocacy meetings in different districts and sub-districts. Improved awareness on the incidence and causes of MNT and the importance of immunization were important objectives.



Maternal and Neonatal Tetanus Elimination Program in Timor Leste

In India, IMMUNIZATIONbasics worked with the national and state immunization programs in a number of states during the project's duration to assess the degree to which the MNTE goal has been met. Because of India's size, MNTE is being pursued state-by-state. In addition to certification of MNTE status, IMMUNIZATIONbasics also participated in national review of MNTE progress.

CURRENT STATUS

Over the past decade, 8.4 million measles deaths have been prevented by routine immunization and an additional 4.3 million deaths prevented through mass campaigns. Thus, these two strategies have prevented a total of 12.7 million measles deaths since 2000. Yet strengthening routine immunization systems, while also planning, managing, and financing time-limited measles catch-up and follow-up campaigns will continue to be a challenge in the future.

Polio eradication has nearly been achieved, but the mass immunization campaign strategy that has been employed still leaves pockets of unvaccinated children and this is the major obstacle to global eradication. The annual fundraising that will be required to finish the job of eradication while simultaneously generating interest and funding to strengthen routine immunization will be an ongoing challenge, as well.

²⁴ WHO. Tetanus Vaccine: WHO position paper. Weekly Epidemiological Record 2006; 81: 198–208.

²⁵ *Maternal and neonatal tetanus*, Martha H Ropera, Jos H Vandelaerb, François L Gasse. Published online by The Lancet on 12 September 2007.



Maternal and Neonatal Tetanus Elimination Program, Astebe sub-district, Timor Leste—October 2008

In 2008, WHO estimated that 59,000 newborns died from neonatal tetanus, a 92% reduction since the late 1980s and a significant achievement. However, in the same year, 46 countries still had not eliminated MNT in all districts. MNTE has never had the attention nor the dedicated funding that measles and polio have had and progress has been slow.

LESSONS LEARNED

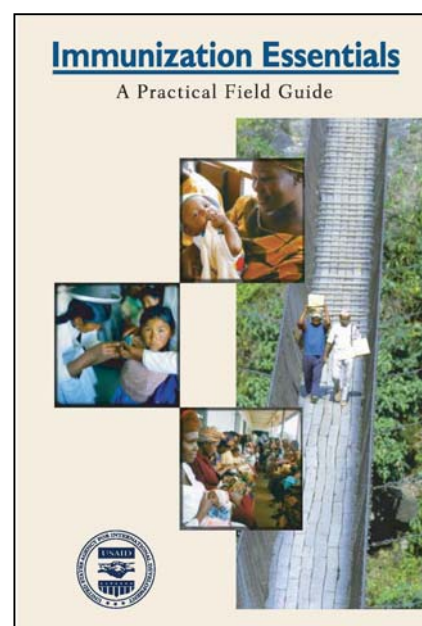
Successful disease eradication and control initiatives of all types depend on a balanced effort, which requires a strong public health system. This is maintained through long-term support for health staff and health facilities. An effective routine immunization system is the key to eradicating polio, eliminating measles, and reducing mortality from maternal and neonatal tetanus. The strengthening of routine immunization systems can and should be built into all future disease control initiatives.

XIV. SPREADING THE WORD ABOUT ROUTINE IMMUNIZATION

IMMUNIZATIONbasics continued the work of earlier USAID projects of making practical information about the importance of routine immunization programs and their management available to the public health community. The project focused many of its program learning and communications efforts on meeting the needs of USAID's own staff, particularly the new public health advisors assigned to USAID country missions. IMMUNIZATIONbasics also published peer-review journal articles to raise awareness about specific project priorities and contributed to several WHO publications that are available on the WHO website. The following paragraphs highlight some of the project's most significant products:

IMMUNIZATION ESSENTIALS: A PRACTICAL FIELD GUIDE

This reference manual was originally published by the REACH project in 1988 and was updated by BASICS and USAID in 2003. Responding to a request from UNICEF's Latin American Office, IMMUNIZATIONbasics facilitated adaptation of the manual for use in Latin America and then financed its translation and printing in Spanish. The project also updated the 2003 English version to include information about some of the newer vaccines and the GAVI Alliance and translated and printed it in French. Distribution was handled by USAID's AIM project during the life of the project. English, Spanish, and French versions were also posted on the USAID and JSI websites.²⁶



IMMUNIZATIONBASICS WEBSITE

Early in the project, IMMUNIZATIONbasics developed a project website that continues to be available in legacy form at <http://www.immunizationbasics.jsi.com>. The website was used to get information about the project, its purpose and work to a wide audience during the life of the project. Access to *Immunization Essentials* and the project's e-newsletter, *SnapShots*, was through the website, but one of its features was a resource center where project staff posted materials that they found useful in their own work and thought others might want to use as well. This was a unique feature of the IMMUNIZATIONbasics site, unlike other project and organizational websites, which tend to include only tools, reports, articles, and products that they produce. IMMUNIZATIONbasics used its website to increase visibility and access to references and materials produced, not only by the project and its partners, but by others.

²⁶http://www.usaid.gov/our_work/global_health/mch/publications/immunization_essentials.html
http://www.immunizationbasics.jsi.com/Resources_General.htm

SNAPSHOTS—AN E-NEWSLETTER FOR USAID STAFF

USAID health and program officers have different areas of technical focus and varying levels of experience and training on immunization. IMMUNIZATIONbasics focused its periodic e-newsletter, *SnapShots*, on meeting the needs of this group, in particular, for program-relevant information. The project published nine issues of *SnapShots*, on topics listed below. The newsletter was well-received, not only by USAID and its projects and grantees, but also by colleagues at WHO, the GAVI Alliance, and UNICEF.

IMMUNIZATIONbasics and USAID repurposed and reused a number of the issues, including the WHO/ UNICEF annual coverage estimates and how they are derived (Issue 2); the series of issues explaining different GAVI Alliance funding windows (Issues 1,3, 4, and 6); and the issue on linking immunization with other health interventions (Issue 5).

- Issue 1:** USAID and Global Alliance for Vaccines and Immunization (GAVI): Moving into Phase II (Nov. 2005).
- Issue 2:** Coverage Confusion! Trying to Make Sense of It (Feb. 2006).
- Issue 3:** GAVI Phase II: What USAID Missions and Projects Need to Know (July 2006).
- Issue 4:** GAVI New Vaccine Support (January 2007).
- Issue 5:** More juice from the squeeze: Linking immunization services with other health interventions (April 2007).
- Issue 6:** Update on the GAVI Alliance New Vaccine Support (August 2007).
- Issue 7:** Realizing the Potential of New Vaccines (March 2008).
- Issue 8:** Cold Chain and Logistics Management: An Essential Part of Safe and Effective Vaccination Programs (July 2008).
- Issue 9:** Working with Communities to Strengthen Immunization (June 2009).

All issues of *SnapShots* can be found on IMMUNIZATIONbasics' legacy website at <http://www.immunizationbasics.jsi.com/Newsletter/SnapShotsArchive.htm>.

JOURNAL ARTICLES AND OTHER PUBLICATIONS

To reach wider audiences with its program learning, IMMUNIZATIONbasics team members published articles and commentaries in peer-reviewed journals, and either led the development of or contributed to WHO and other publications. Whether articles or publications, all were produced in conjunction with the program activities that are described above and in collaboration with colleagues at WHO, CDC, UNICEF, and USAID. USAID encouraged publishing as another important way to raise awareness about the need for increased attention to and investment in routine immunization, polio communications, and other topics.

- Vaccinating the World's Children: A Public Health 'Best Buy' (Global HealthLink, October 2005, pp. 4, 5, 21 (www.globalhealth.org/images/pdf/HL_special.pdf).
- Immunizing the World's Children: Strong and Steady Wins the Race, Global Health Council, Field Notes, 2004 (www.globalhealth.org/reports/report.php3?id=188).
Reaching Every District Strategy Implementation in the Africa Region: Evaluation Report (WHO, USAID, CDC, UNICEF, 2005) (www.who.int/immunization_delivery/systems_policy/AFRO-REDevaluationreport_2005.pdf).
- In-Depth Evaluation of the RED Approach in the African Region (WHO, UNICEF, CDC, USAID/IMMUNIZATIONbasics, 2007) (www.immunizationbasics.jsi.com/Docs/AFRO_RED_Eval_Dec07.pdf).
- An evaluation of infant immunization in Africa: is a transformation in progress?; Bulletin of the World Health Organization, Volume 85, Number 6, June 2007 (www.who.int/bulletin/volumes/85/6/06-031526.pdf).
- Implementing the Reaching Every District Approach: A Guide for District Health Management Teams (WHO/AFRO, revised 2008) (www.immunizationbasics.jsi.com/Docs/AFRO-RED-Guide_2008_FINAL.pdf).
- Global Eradication of Polio. Journal of the American Medical Association, 301:14. 14 January 2009. (<http://jama.jamanetwork.com/article.aspx?volume=301&issue=2&page=161>).
- Periodic Intensification of Routine Immunization (PIRI): Lessons Learned and Implications for Action, IMMbasics/USAID/WHO, 2009. (www.immunizationbasics.jsi.com/Docs/PIRImonograph_Feb09.pdf).
- Has routine immunization in Africa become endangered? The Lancet Infectious Diseases, November 2009 ([www.thelancet.com/journals/laninf/article/PIIS1473-3099\(09\)70268-3/fulltext?_eventId=login](http://www.thelancet.com/journals/laninf/article/PIIS1473-3099(09)70268-3/fulltext?_eventId=login)).
- Reaching every district (RED) approach to strengthen routine immunization services: evaluation in the African region, 2005; Journal of Public Health, June 2009 (www.who.int/immunization/sage/8_Reaching_every_district_RED_approach_strengthen.pdf).
- Communication for Polio Eradication: Improving the Quality of Communication Programming Through Real-Time Monitoring & Evaluation in Journal of Health Communication, 15:9-24, 2010 (www.tandfonline.com/doi/abs/10.1080/10810731003695375).
- Using Data to Guide Action in Polio Health Communications: Experience From the Polio Eradication Initiative (PEI) in Journal of Health Communication, 15:48-65, 2010 (www.tandfonline.com/doi/abs/10.1080/10810731003698585).

XV. THE ROAD AHEAD

Recent technological and policy developments underscore the central role of immunization in maternal and child health programs. With growing global support for the introduction of effective vaccines against pneumonia and diarrheal disease, the traditional distinctions between vaccine-preventable diseases and other major childhood illnesses have become less meaningful.

New global approaches to child health programming, including the Global Action Plan for the Prevention and Control of Pneumonia (GAPP) and essential diarrheal disease control, place immunization at the center of multi-faceted strategies to reduce child mortality. At the same time, traditional concepts, such as targeting infants and young children, no longer hold, especially as the age cohort that can benefit from immunization continues to expand. For example, vaccination of pre-adolescent and young women (and men) with human papillomavirus (HPV) vaccine presents an exciting opportunity to prevent future cervical cancer.

A fundamental caveat remains for both new and traditional vaccines: vaccines are only as effective as the systems that deliver them. Realizing the full potential of immunization will always require high-quality services that are consistently available and reach all who are eligible. For childhood vaccines, this entails immunizing as early in life as possible through a routine immunization system. While occasional mass campaigns can augment the epidemiologic impact of some vaccines, routine immunization remains a cornerstone of prevention in the health system.

Today's donors, including USAID, support strengthening fragile routine immunization system, but stronger systems can only be maintained with reliable and sufficient resources. While more integrated approaches can increase the impact of immunization, they can negatively impact the gains of immunization programs if the resources and appropriate policies for immunization are neglected. The following summarize the key issues for the future of routine immunization.

- **Immunization should be part of an integrated health system framework to make more efficient use of resources.** At the same time, the particular programmatic and technical elements of immunization should not be lost within such a model. Governments and donors must guard against shifting priorities and should be wary of moving resources away from immunization once high vaccination coverage is achieved or risk a resurgence of vaccine-preventable diseases.
- **New vaccines for pneumonia and diarrheal disease hold great potential for further reducing childhood morbidity and mortality, but higher vaccine costs increase the risk that investment in routine immunization will not be sustained.** Solutions for long-term financing in low- and middle-income countries remain an urgent priority. Historical problems such as high drop-out rates take on even greater significance when children do not receive all recommended doses of costly vaccines (and consequently remain unprotected).
- **New vaccines that have not been packaged or presented for use in developing countries often have significant start-up and recurrent costs.** More often than not, these vaccines are bulkier than traditional EPI vaccines and require substantial expansion of the cold chain. They may also increase transport costs because more frequent delivery to service locations is required. As the new Advanced

Market Commitment-developed vaccines become available, these problems should diminish. However, the short- and long-term costs of new vaccine introduction still need to be determined.

- **A combined delivery strategy can effectively reach left-out populations with multiple interventions.** Today, many countries augment routine services using special events such as child health days or establish mobile services in isolated areas. These services often offer other health services to those who have been left out of the established public health system. At the same time, delivering an integrated package requires substantial long-term funding sources and imposes complex managerial challenges. Unless carefully planned with a long-term perspective, intensive and periodic events can ultimately divert attention and critical resources away from routine immunization services. More work and documentation is required to determine the optimal mix of delivery strategies in different settings.



We are in the midst of an era of dramatically increasing potential for vaccination to prevent child illness and death

- **The sustained success of existing and future disease control/eradication efforts will depend on the performance of routine immunization programs.** In the field of immunization, the global health community focuses primarily on episodic, well-funded, and highly-visible vaccination campaigns directed at individual diseases. The central role that a strong routine immunization program must play so that children continue to be immunized in a timely way with potent vaccines before the disease can strike is often recognized only rhetorically. Sufficient financial and human resources to strengthen the routine immunization program are not made available by external sources. As measles outbreaks have returned to Africa and the 2015 target date to achieve MDG goals approaches, the global community is tempted to declare a global goal of measles eradication, even as the likelihood of sustained eradication of polio is not yet assured. There is hope that the launch of the "Decade of Vaccines" by the Bill & Melinda Gates Foundation will redirect some attention to the pivotal role that routine immunization must play to reduce under-five mortality.

Partnerships among donors and within countries, such as the GAVI Alliance and the Measles Partnership, provide considerable financial and technical resources for the immunization effort. However, continuous advocacy with partners must be maintained to ensure that changing priorities and strategies do not overlook the need to invest in routine immunization. Rapid achievements of short-term targets cannot be sustained without continued investment in routine immunization. Solutions are not ultimately success stories.

Global partnership plays a critical role in the immunization agenda. The World Health Organization serves as the central technical agency, developing policy and providing technical leadership. UNICEF plays a key

role in procuring vaccines and cold chain equipment. The GAVI Alliance supports vaccine development, the introduction of new vaccines, and funding to overcome health system barriers to immunization. CDC provides technical support for disease surveillance and disease control initiatives. The Bill & Melinda Gates Foundation, a major supporter of the GAVI Alliance, supports the development and introduction of new vaccines and other technological innovations.

As a key bilateral donor, the U.S. government provides both technical and financial support for these global efforts through sizable grants to the GAVI Alliance, WHO, and UNICEF, and through its global and country projects, which included IMMUNIZATIONbasics and now includes MCHIP.

The road ahead for immunization is one of great potential. USAID can help to realize this potential through its continued support in the following areas:

- **Technical assistance on:**
 - a. planning the introduction of new vaccines
 - b. building health personnel capacity
 - c. improving the quality of services
 - d. reaching underserved populations
 - e. promoting the improved quality and use of data for better managing and monitoring immunization service performance
- **Global and country-level policy and strategy development** by influencing the process with critical field experience and perspectives
- **Engagement in high-level policy dialogue** to promote awareness and find solutions for the long-term financing of new vaccines
- **Continued coordination between partners and governments** to ensure that reliable resources are available and used to maintain high levels of immunization coverage
- **Greater engagement of civil society** in the delivery of immunization services, strengthening the links between the community and the health system to ensure optimal use of health services
- **Integration of immunization and other maternal and child health services** to maximize efficiencies, better meet the health needs of women and children, and protect past immunization gains

As morbidity and mortality from vaccine-preventable diseases decline, donors, governments, and communities may lose sight of the critical need for maintaining the successes they have achieved. While needs and resources will vary, both fragile and stronger routine immunization systems will require continued financial and technical support. Otherwise, the impressive achievements over the past three decades will erode. As a rural health nurse in Africa explained, “the resources and skills needed to provide high-quality and effective immunization services will be required for as long as babies are being born.”

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The IMMUNIZATIONbasics project ended in September 2009 after a three-month, no-cost extension and a one-year overlap with USAID's new Maternal Child Health Integrated Program (MCHIP). The work done by IMMUNIZATIONbasics and most of its team members continues under the MCHIP agreement.

Immunization basics



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