



PATH (Mike Wong)

Controlling tuberculosis

Regional initiatives support the global effort

Active tuberculosis threatens the very young, the very old, and those with weakened immune systems—including the millions affected by the AIDS epidemic. Although most of the approximately two billion people who carry the pathogen that causes tuberculosis (TB) will never become sick, those who do are extremely vulnerable and may experience severe illness. Drug resistance, a major challenge to treatment, is increasing rapidly, as are the numbers of people co-infected with HIV and TB.¹

As an active member of the Stop TB Partnership, a coalition of more than

500 organizations dedicated to eliminating TB as a public health threat by 2050, PATH works in the regions most affected by TB to bring internationally recommended treatment strategies more effectively to more people. Through multiple efforts—from strengthening policies and professional networks to building staff capacity and laboratory systems—PATH is working to reach the global goals for TB control.

Expanding DOTS in Eastern Europe

Eastern Europe has the lowest level of coverage with DOTS—the TB control strategy recommended by the World Health Organization—and the second-lowest treatment success rates in the world. Challenges include a lack of government support, weak and fragmented health systems, high levels of multidrug-resistant TB (MDR-TB), and pervasive stigma associated with the disease.

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Evolution of the Uniject™ device

Unlocking the potential of a versatile technology

Project name

Uniject prefilled injection device

Location

Global

Methods

Technology development and introduction

Partners

Multiple private-sector and public-sector partners, including BD, BIOL, Gland Pharma, National Institutes of Health, Pfizer, Tulane University, Saving Newborn Lives, United Nations Children's Fund, and the US Agency for International Development (USAID)

Primary funder

USAID, through the HealthTech program

For more information

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More than two decades ago, PATH began work on a prefilled, autodisable injection device. The target was a simple tool designed to meet persistent challenges posed by widespread distribution of vaccines and other medications in low-resource settings.

The result—the Uniject device—has become an important part of vaccination campaigns in the developing world, with more than 53 million devices distributed. Today, the Uniject device is reaching new markets, with potential impact in novel vaccines, contraception, and maternal and child health.

The inception of a new technology

In the early 1980s, PATH began developing new designs for syringes that would meet the needs of developing-country health systems. Through many cycles of refinement and testing, PATH's engineers crafted the Uniject device—a simple tool that addresses a number of complex issues, from infection prevention to ease of use in remote areas.

The Uniject design uses a plastic blister filled with the required dose of a vaccine or medication for one injection. The device requires no or little training; health workers push in the cap to activate it, insert the needle, and squeeze the blister. A one-way valve expels the vaccine or drug and prevents uptake of other contents, reducing the risk of infection transmission. Because the device is prefilled with a single dose of medication, it reduces the need for multidose vials (a source of vaccine waste) and simplifies storage.

Global and local demonstrations of utility

In 1987, the Evaluation Panel for Injection Technologies, a panel of experts assembled by the World Health Organization (WHO), identified Uniject as one of the most promising devices to support immunization programs. Soon, PATH began to test Uniject's effectiveness and acceptability in the field.

In a study with the Pan American Health Organization and the Bolivian Ministry of Health, traditional birth attendants used Uniject to administer tetanus toxoid vaccine to women. The study showed that community health workers—people who had never given injections before—could safely provide vaccinations with the Uniject device.

In a larger-scale evaluation in Indonesia, midwives used the Uniject device to administer tetanus toxoid vaccine to women and hepatitis B vaccine to infants at birth in rural areas. For the first time, midwives could provide essential immunization to newborns at home and reach women in areas where the risk of maternal and neonatal tetanus was highest. The Uniject device was ready to move into commercial use—a process that required collaboration from across the public-private boundary.

Essential partnerships with the private sector

The earliest Uniject prototypes were developed with help from the private sector. The pharmaceutical manufacturer Merck contributed the initial design for a nonreusable syringe, and Horizon Medical, Inc., was an early partner in refining the device and developing the manufacturing specifications and processes necessary for mass production.

Ultimately, however, collaboration with BD—the world's largest manufacturer of syringes—was the most important force in bringing Uniject into the global market. When PATH and Horizon licensed Uniject to BD in 1996, the licensing

agreement specified that BD would supply Uniject devices to vaccine and pharmaceutical producers at preferential prices for use in developing-country programs. BD has since forged critical relationships with independent suppliers of filling, packaging, and inspection equipment, giving vaccine and pharmaceutical companies a range of options for procuring and installing Uniject-compatible production systems. In parallel, PATH has continued its efforts to establish Uniject as a delivery system for vaccines and drugs with particular importance to developing-world health.

Expanding the reach of vaccine programs

The Uniject device has already had significant successes with hepatitis B and tetanus vaccines. In 2003, the Indonesian government delivered hepatitis B vaccine to approximately 5 million newborns using the Uniject device. Today, Uniject is used throughout the country to deliver this lifesaving vaccine. UNICEF has also identified the Uniject device as an important tool in eliminating maternal and neonatal tetanus in high-risk areas around the world, adopting the technology for tetanus eradication campaigns in Afghanistan, Burkina Faso, Ghana, Mali, Somalia, and Sudan.

The global health community is now moving Uniject from targeted regional use to integration into global immunization programs. WHO has added use of Uniject to its recommendations for packaging for future pneumococcal vaccines, which may have the additional effect of accelerating its adoption by vaccine producers.

New applications mark the success of long-term efforts

After many years of development, testing, and negotiation, the Uniject device is finding footholds in an array of applications. As the global health community pinpoints solutions for maternal, child, and women's health—all focal points for the Millennium Development Goals—governments and public-sector entities are integrating the device into local and worldwide initiatives:

- The Argentinian Food and Drug Administration (FDA) is on course to approve the use of oxytocin in Uniject by the end of 2007, the first country-level FDA approval for this application. Oxytocin is the preferred drug for management of postpartum hemorrhage, the leading cause of maternal mortality in the developing world.

- PATH is providing critical technical support enabling the National Institutes of Health and Tulane University to investigate the use of the Uniject device to deliver betamethasone—a medication that helps develop the lungs of premature babies and increase their chance of survival.
- In Nepal, PATH will soon supply gentamicin in Uniject for evaluation by the Nepal Family Health Project, providing a new tool for reducing the impact of neonatal sepsis in remote locations.
- The world's leading supplier of injectable contraceptives, Pfizer, has agreed to make available a popular injectable contraceptive in Uniject. This could greatly increase access to such contraceptives in community-based distribution programs in rural Africa and elsewhere.

Uniject is a promising vehicle for new drugs and vaccines that meet developing-world needs across the spectrum of health care. It takes many years, however, to bring a multipurpose solution to the point of widespread adoption—and impact. Foresight, persistence, and especially collaboration are key to the success of this and other solutions. ■



The Uniject™ injection device, which effectively alleviates obstacles to vaccine and drug delivery in developing countries, is finding a role in immunization and maternal and child health in settings around the world.

Uniject is a trademark of BD.

More newborns gain access to hepatitis B vaccine

Out-of-the-cold-chain approach expands program reach in Vietnam

Project name

Improving Routine Immunization Services

Location

Vietnam

Methods

Clinical study, capacity building

Partner

Vietnam National Expanded Program on Immunization

Funder

Bill & Melinda Gates Foundation

For more information

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Newborn babies in Vietnam now have a greater chance of receiving a vaccine that will protect them against one of the most prevalent diseases in the country: hepatitis B.

One in six women in Vietnam has a current hepatitis B infection,¹ and many of these women will transmit the infection to their newborns at birth. Despite a national policy of vaccinating all newborns against hepatitis B at birth, however, fewer than half of babies in the country's rural areas receive the vaccine within 24 hours of birth, the ideal timeframe. Access to the vaccine is often limited by the difficulty of maintaining the vaccine cold chain in rural settings.

To increase the number of newborns receiving hepatitis B vaccine, PATH and Vietnam's National Expanded Program on Immunization (NEPI) modeled a strategy in rural Thanh Hoa province to demonstrate that hepatitis B vaccine remains safe and effective even when stored outside of the cold chain.

Providing hepatitis B vaccine in the first hours of life

Immunizing infants is especially important to reducing the hepatitis B burden because young children are the most likely to develop chronic infection.

About 25 percent of children chronically infected by the age of 4 years will die from liver cancer or cirrhosis.² The World Health Organization (WHO) therefore recommends that newborns be vaccinated within 24 hours of birth. Administering the first vaccine dose to children during their first day of life has been shown to prevent 80 to 95 percent of mother-to-child transmissions.

In many areas of Vietnam, nearly all newborns already receive their first dose of hepatitis B vaccine within 24 hours of birth. But other provinces, including Thanh Hoa, face particular challenges in providing newborns with access to the vaccine. In this mountainous region of north-central Vietnam, many babies are born at home or in commune-level health centers that lack refrigeration or sufficient resources for continuously operating refrigerators, which makes it difficult to maintain the cold chain. Health workers or family members must travel to higher-level health facilities at their own expense to obtain the vaccine.

Unlike most vaccines, the hepatitis B vaccine is heat stable, meaning that in tropical climates it can be stored at room temperature for up to a month without losing effectiveness. At the same time, the vaccine is extremely sensitive to fluctuations within the cold chain—efficacy decreases or is lost when exposed to temperatures below 0°C.



Hepatitis B vaccine can be stored at room temperature for a month without losing its effectiveness.

Beyond the cold chain

In 2005, PATH partnered with NEPI to increase coverage rates for newborns in Thanh Hoa province. The team piloted a strategy in which vaccines are kept out of the cold chain before they are used to immunize newborns.

Single-dose vials of hepatitis B vaccine were labeled with vaccine vial monitors, which indicate a vaccine's exposure to heat over time. Commune health center

staff collected a supply of the vaccine from district cold stores twice a month. At commune health centers without refrigerators, staff stored the vaccine at room temperature in a dark box for up to two weeks. Infants born at the centers were immunized on site, and health workers delivered the vaccine to the 20 percent of babies born at home.

Over the course of the 15-month project, more than 10,000 newborns were immunized: 3,000 babies born in four district hospitals, who were given vaccine stored within the cold chain, and 7,000 infants born at home or in commune health centers, who were given vaccine stored out of the cold chain. PATH used blood tests from a sample of babies in both groups to measure the protective levels of antibodies generated by the vaccine.

An effective strategy to protect against hepatitis B

Results of the project confirm that hepatitis B vaccine can provide effective protection when kept out of the cold chain for up to two weeks. PATH and NEPI found that children vaccinated with a non-refrigerated birth dose demonstrated an immune response as strong as those using vaccine stored in the cold chain.

The project also provided a significant boost to the number of newborns being vaccinated in Thanh Hoa province. Before the study, only 45 percent of the province's neonates received the hepatitis B vaccine within 72 hours of birth. After the study, 83 percent received a dose within 24 hours, and 89 percent received it within 72 hours, with no significant difference in the coverage between hospital births and home or commune health center births.

Commune health staff provided positive feedback about the new approach, and mothers said they were satisfied and hoped to see the model expanded nationwide.

Paving the way for broad-scale implementation

These results show promise for implementing an out-of-the-cold-chain strategy for hepatitis B vaccine throughout Vietnam and in other countries that face similar challenges.

Based on these and other study results, WHO has issued operational field guidelines for delivering the birth dose of hepatitis B vaccine



Philippe Blanc

In Vietnam, PATH showed that hepatitis B vaccine stored out of the cold chain still provides effective protection for neonates. Infants born in rural areas now have a greater chance of receiving the vaccine.

that include information about the out-of-the-cold-chain approach. In addition, PATH has supported NEPI in adapting these guidelines for use in Vietnam. Once the guidelines are approved by Vietnam's Ministry of Health, the out-of-the-cold-chain strategy will be widely implemented in rural and mountainous areas of the country.

When the new strategy takes hold, women who give birth in rural parts of Vietnam may no longer need to worry about how they will protect their children from hepatitis B. PATH and its partners have modeled a plan that can help prevent disease in any region, rural or urban. ■

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Promoting condom use among young people

Peers counsel peers on STI and pregnancy protection

Project names

Vinnitsia Safe Behavior Peer Education Project, Youth Condom Utilization Project

Locations

Ukraine, Ghana

Methods

Behavior change communication, operations research

Partners

Ukraine: United Nations Population Fund (UNFPA), Kyiv International Institute of Sociology, Vinnitsia Family Planning Association, Kyiv School of Equal Opportunities

Ghana: Ghana Social Marketing Foundation

Funder

UNFPA

For more information

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Condom-promotion messages saturate the populations of many developing countries, yet relatively few people actually use condoms to protect themselves from sexually transmitted infections (STIs) or unwanted pregnancy. Dual-protection messages that emphasize the benefit of condoms for both STI and pregnancy prevention may be an important tool in promoting condom use, especially among young people.

Working in both Ukraine and Ghana, PATH incorporated dual-protection messaging into operations research on condom use among youth. Researchers trained peer educators to promote condom use and then evaluated how programs affect condom-related behavior among young people.

Meeting the needs of vocational school students

Ukraine has one of the fastest-growing HIV epidemics in the world. The majority of the country's young people are sexually active, but they lack sufficient knowledge of how HIV is transmitted. They are at increasingly high risk of acquiring HIV through heterosexual transmission, and they face high rates of both STIs and abortions.¹

In 2004, a PATH research team randomly selected 17 of the 33 vocational schools in Vinnitsia Oblast, a predominantly rural area in central Ukraine, and implemented a behavior change communication intervention using peer education. Focusing on increased condom use among 15- to 24-year-olds, the study was designed to determine how a dual-protection message embedded into a peer-education approach affects condom knowledge, attitudes, and use.

From October 2005 to February 2006, the team trained 79 youth to deliver condom-promotion messages to 4,691 first-year students attending the participating schools. Peer-educator teams delivered four sessions on a range of topics: sex, STIs, unwanted pregnancy and abortion, HIV/AIDS, safe behavior, and dual protection. Students received illustrated pamphlets on dual protection. They also learned through games, role plays, lectures and discussions, and optional safe-behavior promotion events, such as interactive theater, discotheques, talk shows, and videos.

Three months after the intervention ended, the research team surveyed 1,689 students from 18 vocational schools that did and did not participate in the program. Results from multiple regression analysis revealed that the emphasis on dual protection had achieved a significant effect among youth who said they never use condoms. Young people who participated in the intervention and those who understood that condoms protect them from STIs and pregnancy were more likely to use condoms in the future. In addition, youth were more likely to use condoms if they understood how to use them correctly and if they felt they could jointly decide about condom use with their partner. The study also confirmed that young people who are embarrassed to buy condoms or associate them with promiscuity are less likely to use them.

Reaching out-of-school youth with lifesaving messages

In Ghana, about 45 percent of the population aged 15 years and older receives no formal education.² Youth who are not in school appear to be more sexually active than their in-school counterparts; study data show that the odds of out-of-school youth having sex are two to three times greater than those of in-school

youth.³ Despite the availability and knowledge of condoms, however, one study showed that only 15 percent of out-of-school Ghanaian youth reported using condoms in the last three months.⁴

To explore the impact of programs focused on increasing condom use among these out-of-school youth, PATH launched the Youth Condom Utilization Project (YouthCUP) in Ghana's Volta region. The study aimed to determine which type of promotional messages would most effectively increase condom use among sexually active, out-of-school youth aged 15 to 24 years.

More than 90 trained peer educators delivered promotional messages to hundreds of youth at three intervention sites. Each site focused on a different message: pregnancy prevention only, STI prevention only, and both pregnancy and STI prevention. A fourth site served as a control group. During a four-month period in 2005, the peer educators combined educational talks with various condom-promotion activities, including quiz competitions, music shows, and theater. They also used message-specific job aids, including a wooden penis model for condom demonstrations and samples of male and female condoms.

After the intervention, PATH surveyed 541 participants from the project sites, including 184 youth who reported having sexual intercourse within the past month. Researchers used logistic regression analysis on the 184 youth to measure the overall intervention effects. Results showed that young people were more likely to use condoms at last sex if they were younger, had personal contact with a peer educator, said they always used condoms in the past six months, and participated actively in condom use decision-making.

The responses indicated that peer educators who transmitted any message about the benefits of condoms were crucially effective in increasing condom use. Neither single- nor dual-protection condom-promotion messages were more effective in persuading out-of-school youth to use condoms, however; young people who were surveyed and had used condoms at last sex did so regardless of the message.

Content makes the difference

The content of condom-promotion messages—whether they focus on pregnancy and STI prevention together or alone—appears to be as important as the method in which the messages are communicated. Furthermore, when shared through a peer, healthy messages can help young people respond positively to condom education—suggesting that programs can craft and deliver condom-promotion messages that can help young people safeguard their lives. ■

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Research spurs action

Peers involved in PATH's operations research study in Ukraine were an important resource for condom-promotion efforts—both within and beyond the project. After the conclusion of this study among vocational youth, peer



educators established My Life, a nongovernmental organization for youth that promotes healthy lifestyles. Youth conducted interactive seminars at vocational and high schools and created an interactive theater with performances on drug abuse, HIV/AIDS, and induced abortion. The Vinnytsia Oblast Department of Education and Science has since recommended expanding the peer-education interventions to the vocational schools not involved in the project, and some vocational schools extended the project to second- and third-year students.

Strengthening health systems through procurement

Team builds local capacity to secure supplies and services

Project name

PATH's procurement team

Location

Global

Methods

Procurement, logistics management, training, and capacity building

Partners

John Snow, Inc.; Initiatives; Partnership for Supply Chain Management; International HIV/AIDS Alliance; and others

Funders

US Agency for International Development, Bill & Melinda Gates Foundation, World Health Organization, US Centers for Disease Control and Prevention, United Nations Population Fund

For more information

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As global financing mechanisms increase country-level responsibility for health care systems, effective procurement practices are viewed as increasingly fundamental components of health sector development. In the absence of strong procurement capacity within the medicine supply chain, for example, public health workers could face stockouts, low-quality medicines or supplies, or even expired or counterfeit goods. Such threats can place people at risk, undermine confidence in public health services, and drain limited resources.

PATH has a robust history of building procurement capacity in a range of settings. Today, we support commodity programs ranging from the President's Emergency Plan for AIDS Relief and the President's Malaria Initiative to country efforts supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria. In all of our work, we strengthen human resources and systems, inform policies and practices, and foster coordination of efforts so countries can more efficiently manage supplies.

PATH's approach

For nearly 20 years, PATH has assisted public-sector programs in carrying out large-scale procurement of medicines, supplies, and equipment for health programs and provided technical assistance to support system efficiencies. Our understanding of programmatic issues and the technical aspects of essential health supplies strengthens these programs' ability to implement activities in a cost-effective and timely manner.

To ensure that critical health commodities reach the people who need them, we work to strengthen links among procurement activities, financing mechanisms, and logistics and distribution systems. This work can involve developing technical specifications, prequalifying products, issuing bids, negotiating contracts, arranging logistics, managing contracts, and monitoring supplier performance. In a number of countries, these activities have resulted in the provision of safe, effective health commodities at reasonable prices, enabling countries to maximize the benefit of scarce health care dollars. PATH's procurement staff work closely with local counterparts at every stage to support the development and use of appropriate tools to plan, implement, and monitor their activities, allowing them to eventually assume greater responsibility and ownership of their procurement functions.

In 2006, for example, PATH provided in-country technical assistance under the DELIVER project to assist the Government of Jordan in procuring condoms for its reproductive health program. The PATH team collaborated with in-country staff and their partners to draft technical specifications and standard operating procedures, identify risk-management issues related to condom quality assurance (QA), and provide recommendations for strengthening the in-country condom QA system.

Supporting the people in the system

To build capacity in countries with a limited number of skilled procurement staff, PATH develops specialized training materials and guidelines to capture best practices and share knowledge. Our staff have reached hundreds of procurement professionals in more than 30 countries through assessments, strategy development, training, and skill-based support.

PATH is currently working with groups such as the US Agency for International Development (USAID), various United Nations agencies, and organizations already supporting procurement efforts to conceptualize, develop, and disseminate a comprehensive toolkit that addresses procurement of reproductive health supplies. The toolkit is aimed at strengthening staff capacity in product and supplier selection and QA and will serve as a cornerstone for future trainings on effective procurement systems.

Policies that help, rather than hinder

Supportive national policies are essential to the operational aspects of procurement as well as program sustainability. Because import taxes and duties, customs requirements, and product quality requirements can have a direct impact on the procurement efficiency and cost of medicines, PATH works with in-country staff and key decision-makers to advocate for policies that help support the process and to develop experience-based plans to help anticipate or overcome obstacles.

For example, PATH is collaborating with the World Health Organization and the United Nations Population Fund to develop and facilitate workshops for national procurement and regulatory staff that address the process to prequalify manufacturers of reproductive health medicines and devices. The workshops guide participants on effective use of this process within the procurement context.

Coordinating country efforts

PATH also looks for opportunities to link the efforts of governments and other groups procuring similar types of commodities. These efforts can simplify logistics and increase purchasing power.

Since 2004, for example, PATH has been working with several ministries of health in Africa and the Caribbean to introduce appropriate supplies for promoting injection safety. The Making Medical Injections Safer project addresses the link between syringe reuse and the lack of available supplies. The team developed a procurement strategy for introducing safety syringes and pooling the procurement needs of several countries to secure reduced international pricing. Working in close collaboration with the

project's prime contractor, John Snow, Inc., PATH identified specific sustainability challenges and developed tools to measure needs and improve procurement planning.

As a result of these efforts, more than 100 million people in 11 countries have gained reliable access to safe injection supplies in more than 100 district, state, and specialized health facilities, and the safety of an estimated 150 million injections per year has been improved.¹ The strategy has also been instrumental in supporting national safety-syringe policies in Uganda and Nigeria.

Building on success

PATH's procurement activities have improved the cost, quality, and delivery of health care supplies in more than 30 developing countries. Our future activities will continue to focus on building capacity for the long-term management of commodities, ensuring that health systems are ready and equipped to provide consistent and high-quality care. ■

Increasing knowledge and improving service delivery

PATH has developed and contributed to an array of materials supporting best practices and standards for global procurement efforts. Collaborating with organizations such as USAID and John Snow, Inc., these manuals, training curricula, and quality assurance guidelines provide the information programs and organizations need to strengthen and institutionalize procurement skills and the systems they support.



Visit the publications section of the PATH website (www.path.org) to learn more about these and other materials.

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Project name

Tuberculosis (TB) country support

Locations

Cambodia, Kenya, Tanzania, Ukraine, Vietnam

Methods

Advocacy, communication, and social mobilization; capacity-building; training; technical assistance

Partners

Stop TB Secretariat and working groups, World Health Organization, ministries of health, national TB control programs, nongovernmental organizations, private-sector groups

Funders

Global Fund to Fight AIDS, Tuberculosis and Malaria; US Agency for International Development; Stop TB Partnership

For more information

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Since 2001, PATH and its partners have worked to improve TB control in Ukraine by supporting the development of related legislation and policies, training government officials in TB-related strategic planning, and building the capacity of providers and laboratory staff. PATH has trained 3,300 providers in DOTS, strengthened laboratory networks, enhanced quality control, implemented communication activities to reduce stigma and encourage health-seeking behaviors, and improved surveillance and data management and analysis.

These efforts are fostering lasting change. PATH's work helped expand DOTS coverage to eight Ukrainian oblasts (provinces) that have high rates of TB-HIV co-infection and account for 40 percent of the country's TB cases. With new funding, PATH will be expanding to two additional oblasts and strengthening collaboration between TB and HIV services.

Strengthening the private-sector response in Southeast Asia

During the last five years, countries in Southeast Asia have rapidly expanded their use of DOTS, significantly increased case detection, and reached target treatment success rates. Yet an estimated 35 percent of cases are not being reached through existing DOTS services, in part because countries' diversified health care systems mean that many health care providers are not connected to DOTS programs.

PATH is working to overcome this challenge in Cambodia by encouraging pharmacies to serve as a bridge between the public and private health sectors. In collaboration with Cambodia's National TB Program, PATH is working in six provinces to strengthen the capacity of pharmacists to recognize potential TB symptoms and refer clients for diagnosis and treatment.

Since the project began in 2005, PATH has trained nearly 800 pharmacy staff on DOTS and referrals. In turn, the number of pharmacy staff referring people with possible TB symptoms to DOTS services has increased significantly, with more than 70 percent making appropriate referrals. In some areas, up to 25 percent of referred clients are confirmed to have TB, suggesting that pharmacies are an excellent front-line detection point for undiagnosed cases. PATH is starting a similar project in Vietnam this year.

PATH also facilitated a workshop on advocacy, communication, and social mobilization (ACSM) strategies to support TB control goals in Asia. Teams of three to five representatives from national TB programs, province health services, and nongovernmental organizations in eight countries participated. Each country developed an action plan to ensure that funding for ACSM through the Global Fund to Fight AIDS, Tuberculosis and Malaria grants is used effectively—and thus more likely to achieve sustainable results. PATH will provide follow-up technical assistance to individual countries in the next year.

Integrating services in sub-Saharan Africa

Recent program expansion and improvements mean that Africa's nine high-TB burden countries—and nearly all countries in the region—now have a DOTS program. Significant challenges to TB control remain, however, particularly given the scope of the AIDS epidemic, stretched human resources, and stressed health care systems.

In Tanzania and Kenya, both high-burden countries, PATH is improving the quality of care by working closely with both the public and private health sectors to initiate and strengthen TB-HIV service integration to better meet the needs of co-infected people. PATH has partnered with national TB and AIDS programs to develop strategies to improve joint planning and surveillance; strengthen health

Reaching prison populations

Prisons in the former Soviet Union—which are typically overcrowded, poorly ventilated, and unhygienic—are high-risk areas for TB, particularly multidrug-resistant TB. To improve prison conditions in two oblasts, PATH implemented the first successful pilot project in the Ukrainian penitentiary system. Through this project, PATH expanded DOTS by training 54 prison and civil health staff; strengthened the laboratory system through trainings on sputum microscopy, culture, and monitoring; and supported the development of a referral system with civil TB care for discharged prisoners to ensure completion of treatment.

facility and referral systems; upgrade provider skills in communication, counseling, and service delivery; and improve facilities' capacity to diagnose and treat both diseases. These strategies are also being used to increase demand for services, improve treatment completion, increase knowledge, and reduce stigma.

In Tanzania, PATH is scaling up the introduction of integrated TB–HIV services through the public and private health sectors, expanding the availability of integrated services from 10 to 30 districts by the end of 2008. PATH has trained more than 250 health workers, increasing the reach of service delivery from 12 outlets in 2005 to 121 outlets in 2007. These and related activities are helping ensure that an estimated seven million people have access to integrated services.

In Kenya, PATH provides support to and strengthens the capacity of the National TB and Leprosy control program at the central, province, and district levels and is supporting TB–HIV integration activities in 15 districts. Since the project began, more than 2,800 HIV-positive clients have received TB treatment, and more than 5,300 TB clients have been tested for HIV.

PATH is also training health facility staff to increase client access to care. To date, 35 additional facilities are providing HIV testing services, 65 additional facilities are providing TB–HIV treatment and care to HIV-positive clients, and 30 additional facilities are providing TB diagnostic services with 30 newly trained laboratory workers. PATH is also training laboratory staff and addressing laboratory equipment needs.

PATH facilitated six province-level joint planning meetings, bringing together representatives from TB and HIV services to improve integration, communication, and efficiency in planning. These meetings built participants' capacity to ensure that integrated services are now part of the standard planning process.

Looking ahead

PATH's TB efforts are improving policies, strengthening systems, and integrating services. In Ukraine, PATH will expand TB control activities to two new oblasts to reach the target of 50-percent coverage for high-quality DOTS services and 30-percent coverage for MDR-TB services; the team is also scaling up TB–HIV integration and decreasing stigma directed at people with TB and TB–HIV co-infection. In Asia, individual ACSM strategies will soon be finalized and used to guide the development of TB materials and activities. In Africa, PATH's capacity-building efforts will help ensure TB–HIV integration and the availability of high-quality services. These efforts are tailored to the needs of each region but aimed at a common goal: to eliminate TB as a public health problem. ■

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PATH is working in Kenya and Tanzania to integrate HIV and TB services and increase access to care.

Announcements and opportunities

PATH constantly expands its ongoing work and engages in new projects designed to fit the changing landscape of global health. We are grateful to the many donors that make these and other initiatives possible.

Major donation program includes nevirapine pouch

In October 2007, Boehringer Ingelheim announced that they will include PATH's nevirapine infant-dose pouch as a component of their nevirapine donation program. The pouch helps deliver an essential drug for prevention of mother-to-child transmission of HIV. This new commitment will make the pouch available at no cost to health clinics around the world.

Progress on malaria vaccine

The first study to test the RTS,S/AS02 malaria vaccine (GlaxoSmithKline Biologicals) in African infants yielded promising results. The vaccine, the most clinically advanced candidate supported by the PATH Malaria Vaccine Initiative, reduced new infections by 65 percent within three months after administration of all three doses of vaccine and reduced episodes of clinical malaria by 35 percent within six months after the first dose.

Expanded malaria control in Zambia

A partnership between the Government of Zambia and the Malaria Control and Evaluation Partnership (MACEPA) at PATH is helping Zambia's National Malaria Control Programme distribute more than 3.4 million bednets this year,

bringing the country close to its goal of 80 percent coverage.

MACEPA has also launched a Learning Community—a dynamic model for technical support and shared learning among African countries accelerating scale-up of their national malaria control programs. For more information, visit www.macepalearningcommunity.org.

Ultra Rice® fortified grains aid programs in Brazil

In 2008, new agreements with commercial partners will bring Ultra Rice grains fortified with a tailored nutrient content to Brazilian markets and generate a ready, local supply for two government-sponsored feeding trials in populations vulnerable to nutrient deficiencies.

New diagnostics center under way

With funding from the National Institutes of Health, PATH and the University of Washington are launching the Center to Advance Point-of-Care Diagnostics for Global Health. This new initiative will support the development of diagnostic tests that can be brought closer to point-of-care in low-resource areas.

Ultra Rice is a registered trademark in the United States of Bon Dente International, Inc.

PATH is an international, nonprofit organization that creates sustainable, culturally relevant solutions that enable communities worldwide to break longstanding cycles of poor health. By collaborating with diverse public- and private-sector partners, we help provide appropriate health technologies and vital strategies that change the way people think and act. Our work improves global health and well-being.

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