DIRECTIONS IN GLOBAL HEALTH

VOLUME 5, ISSUE 1 MAY 2008

Sharing PATH's work with global health colleagues

Expanding access to safe water

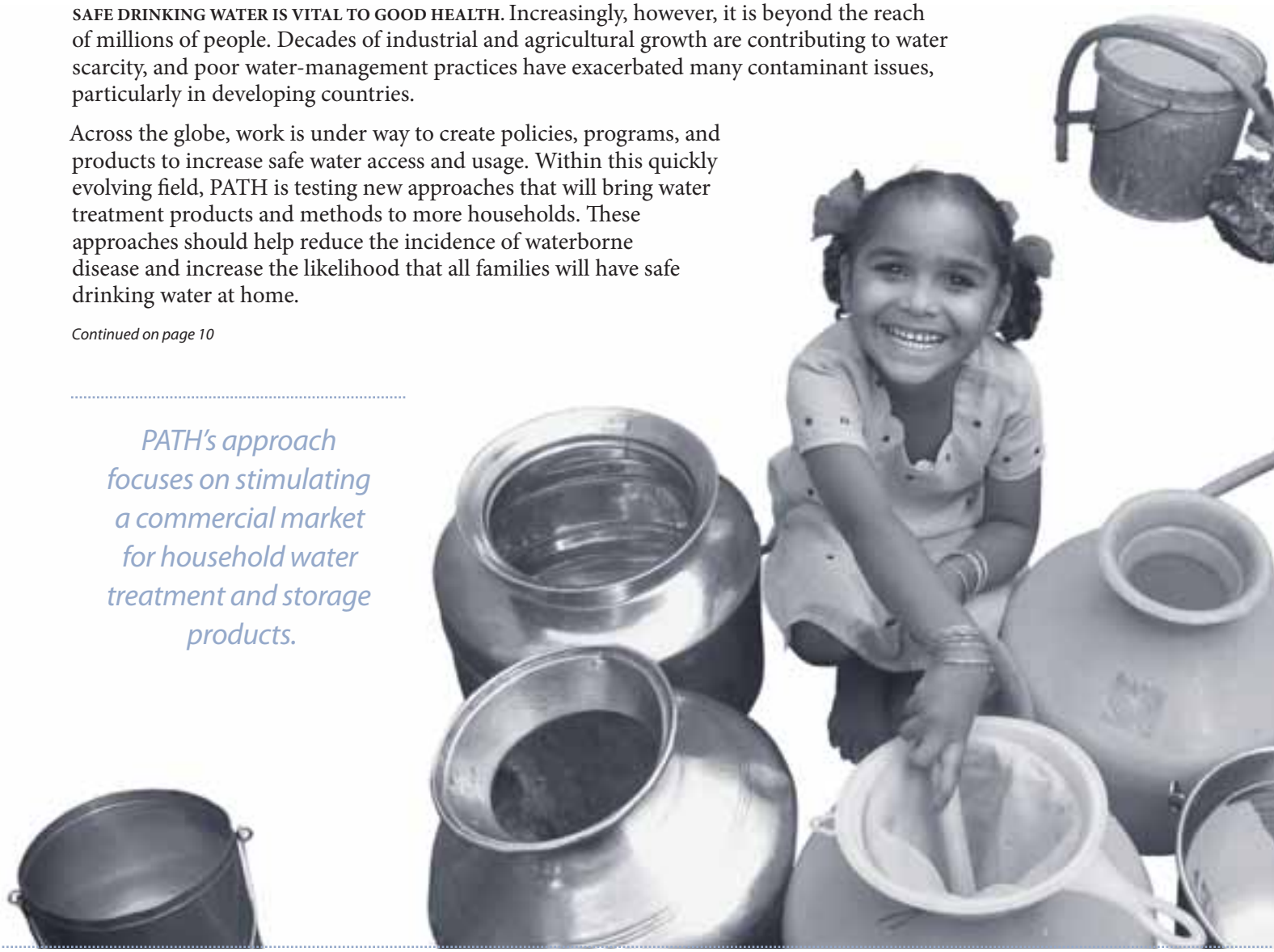
Project seeks to reduce disease in world's poorest communities

SAFE DRINKING WATER IS VITAL TO GOOD HEALTH. Increasingly, however, it is beyond the reach of millions of people. Decades of industrial and agricultural growth are contributing to water scarcity, and poor water-management practices have exacerbated many contaminant issues, particularly in developing countries.

Across the globe, work is under way to create policies, programs, and products to increase safe water access and usage. Within this quickly evolving field, PATH is testing new approaches that will bring water treatment products and methods to more households. These approaches should help reduce the incidence of waterborne disease and increase the likelihood that all families will have safe drinking water at home.

Continued on page 10

PATH's approach focuses on stimulating a commercial market for household water treatment and storage products.



Dr. Jhansi Rani Ghanta and A. Mahender

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PATH
A catalyst for global health

Nutrition

Improving nutrition for infants and young children

Early interventions strengthen outcomes for mothers and children

Project name
Infant and Young Child Nutrition

Location
Global

Methods
Advocacy, behavior change communication, capacity-building, operations research, technical assistance

Partners
CARE, the Manoff Group, and the University Research Co., LLC

Funder
US Agency for International Development

For more information

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Increasing the availability of and access to nutritious foods for children is essential to preventing malnutrition.

Aurelio Ayala III

Nutrition is critical to the rapid growth and development that take place during pregnancy, infancy, and early childhood.

POOR NUTRITION IN EARLY CHILDHOOD increases the severity of common childhood diseases and the risk of death. It can also lead to stunted growth, a permanent physical and mental condition that affects an estimated 178 million children and undermines their productivity, health, and life expectancy.[1]

Many of the 3.5 million maternal and child deaths that are attributed to undernutrition each year could be averted through improved nutrition and feeding practices.[1] Proven practices that begin during pregnancy and continue through a child's second year of life—when nutritional requirements are the highest and children are most at risk of illness—show the greatest promise in alleviating these effects.[2]

To increase use of these interventions among many of the world's most vulnerable populations, PATH and its partners are implementing the Infant and Young Child Nutrition (IYCN) project. The project promotes and supports interventions that protect and improve nutritional status during these critical years, including advocating for optimal breastfeeding and complementary feeding practices, improving access to high-quality complementary foods for children, and supporting improved nutrition policies and services.

Feeding practices for HIV-positive mothers

Providing high-quality support to HIV-positive mothers and their infants, young children, and orphans and vulnerable children (OVC) is the cornerstone of the project. With appropriate support, these groups have a lower risk of

HIV transmission and malnutrition and an increased chance for survival.

As part of this effort, the team is integrating World Health Organization (WHO) guidelines* for breastfeeding and replacement feeding into programs in Côte d'Ivoire, Haiti, Kenya, Lesotho, Swaziland, and Zambia. (The project will begin supporting additional countries later in 2008.) IYCN also supports high-quality health care for children of HIV-positive women and OVC through their first two years, as this helps increase the chances for HIV-free survival.

To encourage these practices, the team provides ministries of health and other partners with technical assistance in training, behavior change communication, and monitoring and evaluation. The project team also develops training and support materials on appropriate infant feeding practices for health workers and lay counselors and caregivers. These resources are helping strengthen nutrition assessment and counseling services. They are also informing policies aimed at preventing mother-to-child-transmission of HIV and increasing OVC access to health services.

Increasing the quality and use of fortified complementary foods

From 6 to 24 months of age, children need food that complements the nutrients they receive through breast milk. Increasing the availability of and access to nutritious foods for children is essential to preventing malnutrition, especially in the many developing countries that lack a sufficient supply of nutrient-rich food for daily consumption.

*WHO recommends that HIV-positive mothers breastfeed exclusively for the first six months unless replacement-feeding—i.e., commercial infant formula—is acceptable, feasible, affordable, sustainable, and safe (AFASS). When replacement feeding is AFASS, avoidance of all breastfeeding by HIV-positive women is recommended.[3]

Fortified complementary food products have the potential to be both cost-effective and nutritionally beneficial in low-resource settings. To support efforts to develop and market the products, the team works with the Global Alliance for Improved Nutrition to increase the availability, consumption, and appropriate use of fortified complementary foods in several Asian and African countries. In some African countries, project staff are also working with the President's Emergency Plan for AIDS Relief to help identify and develop cost-effective and appropriate supplementary foods for vulnerable populations.

National and community efforts

From the community to national levels, the IYCN team advocates for improved nutrition policies and services. In Haiti, Lesotho, and Madagascar, for example, the team works with ministries of health to incorporate recommendations into national policies and guidelines, which are subsequently incorporated into training curricula for health workers. The team is also collaborating with other in-country partners to link nutrition interventions with education, agriculture, and other activities to help strengthen, sustain, and integrate existing nutrition messages throughout the community.

To ensure that mothers and caregivers of children under two years have up-to-date information, project resources support counseling and supervision on optimal feeding practices and nutrition messages for lay counselors, volunteers, and community representatives. In Madagascar, trained health workers and community volunteers support pregnant women and new mothers by providing information about support groups and promoting optimal feeding practices.

Looking ahead

The IYCN team is continually monitoring and evaluating its work to ensure that these experiences are used to scale up nutrition interventions using best implementation practices. Future project activities include strengthening these existing interventions and sharing good practices with nutrition program managers in developing countries. Collectively, these efforts should improve infant/young child feeding and maternal nutrition practices—and ensure healthier beginnings for mothers and children around the world. ■

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PATH/ Jesse Schubert

Good nutrition improves health and life expectancy.

Stabilizing vaccines for broader use

New technologies ease the burden on the cold chain

Project name
Thermostable vaccines for developing countries

Location
Global

Methods
Technology development and introduction

Partners
Aktiv-Dry, Arecor Limited, Aridis, BD, Crucell, HTD Biosystems, Indian Immunologicals Limited, Nektar Therapeutics, Niro A/S, Novartis Vaccines and Diagnostics, Serum Institute of India, Spring Valley Laboratories, Statens Seruminstitut, University of Colorado

Funder
Bill & Melinda Gates Foundation

For more information

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To learn more, visit www.path.org/vaccine-delivery.php.

ONE OF THE BIGGEST CHALLENGES to proper vaccine storage in the developing world is temperature regulation in both tropical and cold climates. Poorly functioning refrigeration equipment, frequent power outages, ice-lined refrigeration equipment, and the need to transport vaccines to remote regions create the risk of warming or freezing during transportation and storage, which can significantly reduce vaccine potency. As a result, vaccine is often wasted if damage is suspected, or children may be at risk of receiving ineffective immunizations.

PATH and its partners are developing thermostable vaccines for common childhood illnesses that can stand up to extreme temperatures and that require fewer resources to protect their potency. Such vaccines, once integrated into immunization programs, have the potential to greatly extend the reach of vital immunizations around the world.

The fragile cold chain

Maintaining vaccines in the vaccine cold chain is a substantial burden. Keeping vaccines at the recommended temperature range of 2°C to 8°C costs millions of dollars each year and involves major commitments for purchasing equipment and instituting handling procedures. Despite these investments, many vaccines still are not safely stored.[1]

Intermittent electricity to supply refrigeration in rural health centers or difficulties in transport to remote villages can allow vaccines to be exposed to excess heat and become damaged. Poorly functioning refrigerators, use of ice in carrying

Umit Kartoglu

Thermostable vaccines can withstand interruptions in the cold chain during transport and storage and expand the reach of vital immunizations.

containers or refrigerator linings, and cold climates can cause the vaccines to freeze and lose potency.

Freezing can occur at all levels of the cold chain and can significantly reduce the potency of many important vaccines, including the hepatitis B and diphtheria–pertussis–tetanus (DPT) vaccines. In six studies that traced shipments of freeze-sensitive vaccines from central stores to points of administration, 75 to 100 percent of the vaccine was exposed to freezing temperatures at least once during distribution.[1]

An economic analysis conducted by PATH in three countries in Africa and Asia indicates that thermostable vaccines are potentially cost-effective interventions in low-resource settings, as they maintain vaccine effectiveness and reduce costs associated with vaccine wastage and cold chain supplies and equipment.[2]

Applying new technologies to vital vaccines

PATH is facilitating research on several methods to improve vaccine thermostability. Our technology staff performed initial proof-of-concept work with common children's vaccines used in public health programs in developing countries—including those for measles, hepatitis B, diphtheria, tetanus, pertussis, *Haemophilus influenzae* type b (Hib), and meningococcal A disease. The team also reviewed numerous stabilization technologies and is now collaborating with vaccine manufacturers and technical partners to apply the technologies to both new and existing vaccines.

PATH is focusing on three stabilization approaches, including:

- Spray-drying of vaccines and sugar glassification. Vaccines are stabilized in an amorphous glass to achieve stability at extreme temperatures. This approach can be used with vaccines that are administered orally or through inhalation or are reconstituted for injection.
- Freeze stabilization of vaccines containing aluminum adjuvant, which are sensitive to freezing. This method, developed by PATH, uses common ingredients to guard against freeze damage.
- Heat stabilization of vaccines. One such technology, developed by a PATH partner, uses stabilizing and buffering ingredients to protect vaccines from heat damage.

To advance the spray-drying approach, PATH is also analyzing and developing methods to safely deliver stabilized vaccines in powder format. For example, PATH is exploring dual-chamber, single-dose containers that can automatically reconstitute dried vaccine before injection.

Success with several vaccines, methods

PATH's work has led to a significant enhancement in the thermostability of liquid hepatitis B vaccine through freeze and heat stabilization. In addition, successful proof-of-concept studies have been completed for freeze stabilization of DTP and DTP–hepatitis B–Hib vaccines. PATH has also made marked progress in improving the stability of meningococcal A vaccine through spray-drying.

PATH plans to apply the technologies to other vaccines and is working with vaccine manufacturers to use thermostable methods with future vaccines that contain aluminum adjuvant.

PATH / Mike Wang

PATH installed a new in-house spray-drying laboratory to accelerate early feasibility testing with stabilized vaccines.

Next steps to expand access to vaccines

PATH is currently transferring stabilization technologies to two vaccine manufacturers for use in commercial childhood vaccines and has placed the freeze-protection technology in the public domain to maximize its accessibility. PATH has also established an in-house spray-drying laboratory to expedite early feasibility work with a variety of vaccines. Plans are in place to spray-dry oral vaccines for bacterial diarrheal diseases.

PATH's research has paved the way for vaccine producers to apply a broad portfolio of stabilization technologies to many vaccines. Free from the constraints of refrigeration for all or part of their shelf life, stabilized vaccines could ensure that children receive fully potent vaccines, which can be delivered safely and transported further into remote areas, reaching children who might not otherwise have had a chance of protection. ■

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Assessing the toll of Japanese encephalitis

Surveillance efforts inform prevention strategies

Project name
Japanese Encephalitis Project

Location
Asia and the Western Pacific

Methods
Surveillance, demand and cost-effectiveness analysis, technical assistance, technology evaluation, advocacy

Partners
Ministries of health, nongovernmental organizations, Armed Forces Research Institute of Medical Services, Chengdu Institute of Biological Products, International Vaccine Institute, UNICEF, University of Liverpool, University of Melbourne, US Centers for Disease Control and Prevention, World Bank, World Health Organization

Funder
Bill & Melinda Gates Foundation

For more information

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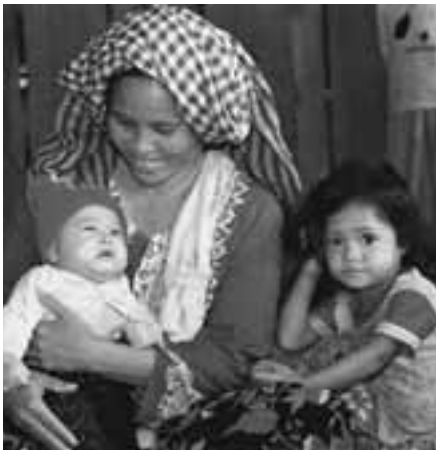
To view a slideshow or learn more about JE, visit www.path.org/projects/japanese_encephalitis_project.php.

RELIABLE, COUNTRY-SPECIFIC DATA about the incidence of Japanese encephalitis (JE) are crucial to increasing awareness of the disease and driving policies for prevention and control. PATH is working to inform evidence-based decision-making by establishing robust, sustainable surveillance systems in affected countries. In collaboration with national governments and other partners, PATH is helping policymakers translate the resulting information into control strategies that are appropriate for their countries.

Strengthening surveillance to raise awareness

Historically, awareness of JE has been limited, and stronger data have been needed to build support for disease-control policies throughout Asia and the Western Pacific, where JE hits hardest. Although a vaccine has been available for decades, many governments have lacked information about the disease's toll in their countries and whether immunization would be worth the cost.

Current estimates indicate that up to 50,000 cases of JE are reported worldwide each year, most often in children. Up to a third of infected individuals die, and at least a third of survivors are left with permanent disabilities, making JE the leading cause of viral neurological disease and disability in Asia.[1] Because of inadequate reporting in endemic countries, however, the World Health Organization (WHO) believes the actual number of JE cases is higher than reported.[2]



Heng Chivoan

Most cases of Japanese encephalitis occur in children.

In Indonesia, Cambodia, and other endemic countries, PATH is supporting surveillance activities that are assessing the JE burden, helping policymakers monitor the impact of control measures, and informing decisions about vaccine introduction.

Testing assumptions in Indonesia

JE was confirmed in Indonesia in the late 1960s, but limited surveillance and misconceptions about disease risk deterred support for prevention efforts. Many officials believed the disease was likely isolated to areas where pigs were raised, as pigs had been recognized as hosts of the virus.

To test this assumption and capture accurate disease-burden data, the Indonesian government partnered with PATH to conduct a two-year country-wide surveillance project. The work took place in 15 hospitals and 17 health centers across six provinces. Using WHO's

JE surveillance standards, the team identified suspected cases of JE, and the National Institute of Health Research and Development's laboratory in Jakarta tested samples and confirmed the findings.

The resulting data revealed the impact of JE in Indonesia: 16 percent of cases resulted in fatalities, and almost one third of survivors became disabled. JE cases were identified across the country, which heightened awareness of the disease as a public health priority.

The findings also increased the government's support for a coordinated, national control effort that includes dedicated surveillance and pilot JE vaccine-introduction activities in Bali. Disease awareness and recognition also have increased among medical staff and public health managers, who are advocating for national control efforts, potentially including introduction of the vaccine in other high-risk areas.

Informing Cambodia's national immunization plan

JE is recognized as endemic in Cambodia, but research into disease burden has been sporadic over the past decade, mainly because of unstable funding and limited access to adequate laboratory testing. In 2006, PATH collaborated with the Cambodian Ministry of Health and national disease-control officials to implement surveillance activities in five provincial sites.

Working with an existing system that records meningo–encephalitis (ME) cases, the National Institute of Public Health's laboratory tested the serum and cerebrospinal fluid samples from ME cases. The facility confirmed JE in 17 percent of the samples and in all five surveillance sites. In addition, the results identified a seasonal pattern of JE transmission and the highest risk group for contracting the disease: children under ten years of age.

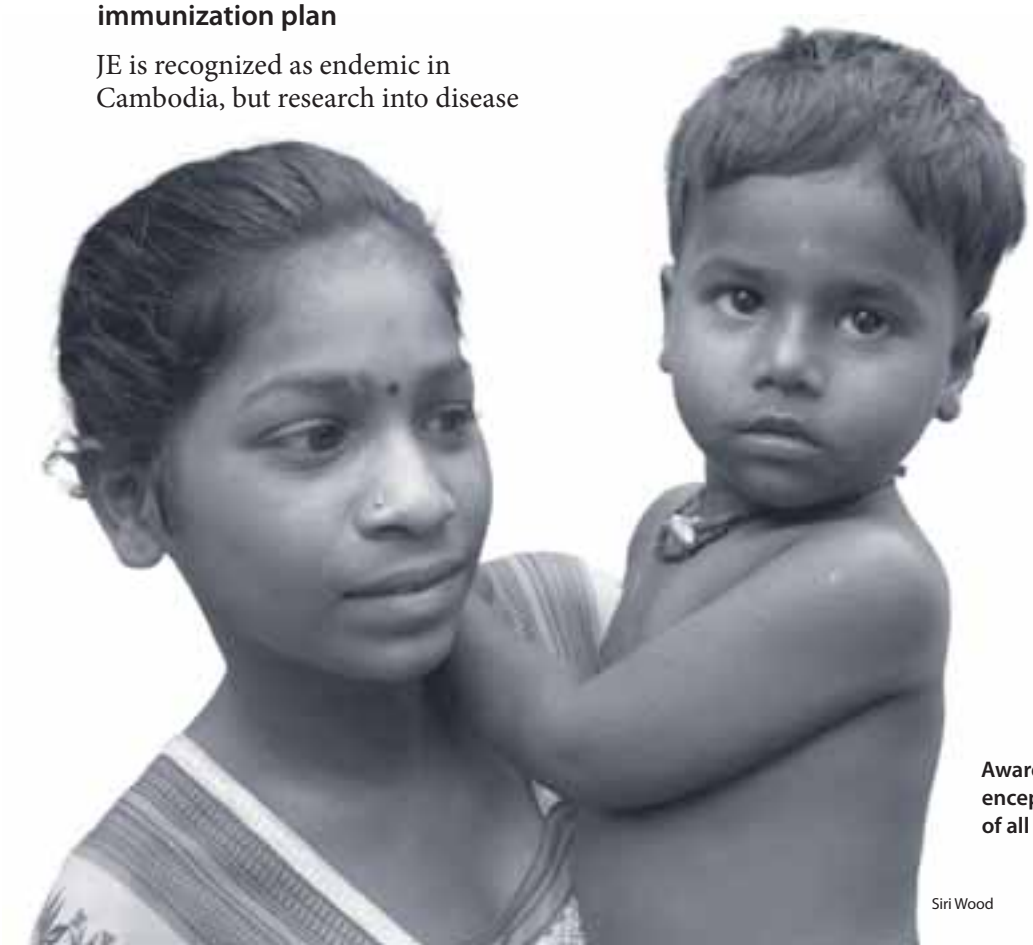
To inform public health managers and other decision-makers, PATH worked with government staff to conduct a national JE workshop that reviewed first-year surveillance results, addressed challenges, and recommended additional data needs. Ultimately, the group recognized the need to develop a national JE immunization plan.

JE activities in Cambodia are now shifting from disease surveillance to vaccine introduction. To support these control measures, PATH is working with government leaders to collect information on issues such as the cost-effectiveness of JE vaccine and the financial implications of initiating a JE immunization program. This information will inform a national immunization plan that is likely to include JE vaccine introduction in 2009.

Ensuring long-term protection

PATH now provides ongoing support to seven national programs and WHO regional offices that are developing and strengthening surveillance systems and planning JE control activities. To ensure that an affordable option is ready if and when endemic countries introduce a JE vaccine, PATH has also negotiated public-sector pricing with the vaccine manufacturer.

Sharing results and lessons learned from this work will help ensure that countries affected by JE have access to information-gathering and dissemination models. In turn, these activities should build political will for controlling JE and protecting the children who are most at risk. ■



Awareness and recognition of Japanese encephalitis are increasing. More than half of all cases lead to death or disability.

Siri Wood

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Family planning

Meeting the demand for reproductive health supplies

Coalition improves access to vital contraceptives, medicines

Project name
Reproductive Health Supplies Coalition

Location
Global

Methods
Advocacy, information-sharing, public-private partnerships, communication, procurement, capacity-building, systems strengthening

Partners
More than 45 public- and private-sector partners

Funder
Bill & Melinda Gates Foundation

For more information

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To learn more about the Reproductive Health Supplies Coalition, visit their website at www.rhsupplies.org.

PATH and its partners ensure basic reproductive health supplies for people in developing countries.

PATH/Carib Nelson

POOR REPRODUCTIVE HEALTH represents a significant burden for many developing countries, yet the supply of contraceptives and reproductive health medicines often falls short of demand. While certain reproductive health indicators have improved in the developing world in the last 40 years, many people still cannot access the basic supplies they need to prevent unwanted pregnancies, ensure safe deliveries, or manage and treat sexually transmitted infections (STIs).

PATH and other global partners established the Reproductive Health Supplies Coalition in 2004 to confront and address this supply gap. This partnership of public, private, and nongovernmental organizations works to ensure that all people in developing countries can access and use affordable, high-quality supplies to guarantee their better reproductive health.

Addressing the supply challenge

An adequate provision of supplies is a prerequisite for successful reproductive health programs.[1] These supplies include contraceptives for family planning, diagnostics and medicines to treat STIs, and medicines and equipment for healthy pregnancy and delivery. Numerous factors, including insufficient resources, poor supply chain management, and lack of global coordination and information sharing, contribute to the challenge of meeting the worldwide demand for reproductive health supplies. For example, more than 200 million women in developing countries need, but are not using, modern contraception.[2] In the next ten years, the number of contraceptive users is projected to increase by more than 20 percent as more people enter reproductive age and need these medicines and supplies, further adding to the challenge.[3]

The Reproductive Health Supplies Coalition brings together more than 45 agencies and groups with critical roles in providing reproductive health supplies to countries that need them. Together, these groups increase the flow of resources to developing countries, strengthen supply chain systems, and build

A resource for navigating the supply continuum

Countries will soon find it easier to navigate the array of software tools available for supply chain management. The Reproductive Health Supplies Coalition is assessing the relative strengths and appropriateness of existing software tools so that countries can make more informed selection of their software needs. The Coalition hopes the results of this exercise will promote idea sharing among countries and improve supply chain management worldwide. Watch the Coalition's website at www.rhsupplies.org for results of the assessment later this year.

PATH/Satvir Malhotra

The Reproductive Health Supplies Coalition helps countries obtain, store, and distribute contraceptives and other commodities, such as these boxes of condoms in India.

effective partnerships with key supply stakeholders. PATH, which has worked with supply issues since its inception 30 years ago, serves as the Coalition's Brussels, Belgium-based secretariat.

Increasing resources

The Coalition works with donors and partners to ensure the supply of reproductive health commodities. The group advocates for increased funding from the international community, helps country-level stakeholders access their share of that funding, and encourages more efficient use of the private sector, which accounts for about 80 percent of the developing-world market for reproductive supplies. Through collaboration with technical specialists, policymakers, special interest groups, and civil society, the Coalition has developed advocacy materials to help stakeholders make a better case for the supplies they need. The group has identified strategies to facilitate overall market growth, greater equity through the better targeting of subsidies, and wider private-sector involvement.

Strengthening systems

Ensuring the flow of supplies from producers to end users requires a functional, efficient supply chain. The Coalition works with governments, member organizations, and other partners to ensure that systems are in place for effective supply procurement, storage, and distribution. One such system is Reproductive Health Interchange, a free, Internet-based tool accessible through the Coalition's new website (www.rhsupplies.org) that allows countries and programs to track shipments and improve planning and coordination. When systems fail, as they occasionally do, the Coalition also offers back-up mechanisms. The Countries at Risk Group, for example, brings together the world's leading donor agencies every month to identify and avert looming supply stock-outs in developing countries.

Building partnerships

The Coalition forges partnerships throughout the global health community, including with private foundations, governments, technical agencies, industry, and the commercial sector. Since its founding, the Coalition has been renowned for the active engagement and support of its members. The members collaborate in organized working groups to strengthen reproductive health supply systems, bring about changes and improvements to the supply market, and mobilize funding for supplies.

Through its monthly newsletter, website, and semiannual membership meetings, the Coalition keeps partners abreast of supply issues and plays a key role in enabling them to take common action. In 2006 it secured the commitment of its members to procure only products that have either been prequalified by the World Health Organization (WHO) or approved by a stringent regulatory drug agency. PATH has joined with WHO and the United Nations Population Fund to hold workshops about the prequalification process.

Plans for the future

The Coalition is now focusing on strategic communications and outreach, pursuing its long-term financial sustainability, and working with its membership to maximize knowledge and resources for reproductive health supplies. As the Coalition grows, it offers hope for people everywhere to access the supplies they need to improve their reproductive health. ■

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Expanding access to safe water, *from page 1*

An emerging market

PATH's approach focuses on stimulating a commercial market for household water treatment and storage (HWTS) products. Research shows that treating water in the home is effective and can eliminate or reduce the risk of re-contamination. Household treatment and storage can also reduce diarrheal disease by 40 percent or more[1]—a benefit that could save thousands of lives.

Of the many products that safely treat and store water, only a few are practical for low-resource settings. Most products are too expensive for the majority of households, may require electrical power or plumbing, or are not distributed beyond the upper- and middle-class concentrations in urban centers. They also may be complicated, burdensome, or associated with objectionable tastes or odors. Typical consumers may not understand or have access to the products, or they may be persuaded to buy ineffectual products from unscrupulous or misinformed shopkeepers and sales agents.

A commercial market for affordable products could provide the solution for putting HWTS supplies in the hands of low-income, "base of the pyramid" consumers—defined as the four billion people who earn less than US$2,000 a year.[2] The private sector is already turning its attention to these markets; companies are effective. In addition, financing models such as cooperative or self-help groups and microfinance institutions may be needed to foster market growth.

Demonstrating prospects for growth and profit to commercial partners will be essential to growing a HWTS market. Companies in India already have successfully created vast new markets among low-income consumers for soaps, shampoos, and other products, however, so a path for safe water initiatives has been established.

India: a pilot for safe water

Safe water is in short supply in India, where an estimated one-fifth of diseases are water-related.[4] Saltwater, metals, pesticides, raw sewage, and other pollutants contaminate the country's groundwater, while the monsoons that supply or supplement most household water exacerbate sanitation-related pollution. In urban areas, 85 percent of the population has access to drinking water, but only 20 percent of the water meets accepted health and safety standards.[5] Most households, especially poor and rural households, do not purify their water or store it safely.[6]

PATH plans to implement a pilot market for affordable household water treatment and storage (HWTS) products in India that can be scaled up to serve the needs of poor communities around the world. PATH selected India for the pilot project because the country is home to an established industrial base and robust consumer economy. In addition, bottled water and water purification devices are growth industries, and consumers can choose from an array of HWTS products. As in many other developing countries, however, most of these HWTS products are targeted to middle- and upper-class households and fail to meet the needs of the poor. Few are simple to use, durable, and transportable to rural areas.

PATH will work with commercial partners and others to develop introduction strategies that consider consumers' education, distribution, and financing methods. A portfolio of products that are effective and suitable to consumers' needs must be identified. Because people often judge water quality on aesthetic attributes such as color and smell, HWTS promoters may need to apply time-intensive approaches—such as using microscopes or testing kits—to demonstrate that water is contaminated and that available products are

PATH / Glenn Austin

Safely treating and storing water at home can drastically cut illness caused by waterborne diseases. PATH is devising methods to bring treatment and storage tools to more households worldwide, beginning in India.

finding that base-of-the pyramid households have some money to spend on discretionary items and aspire to have the same goods and choices as wealthier households.[3]

Because of its size, this market segment holds considerable buying power and the potential to fuel a financially sustainable market for HWTS initiatives. In turn, a sustainable market would offer consumers competitive pricing, commercial incentives, and entrepreneurial opportunities. By creating both demand and a feedback mechanism for product improvements, this emerging market could potentially be scaled up to reach diverse geographic areas and consumer populations.

PATH is testing new approaches that will bring water treatment products and methods to more households.

Catalyzing an initial market

PATH aims to harness these commercial forces to provide a portfolio of HWTS products to low-income consumers through a self-sustaining market, initially in India. The team is currently analyzing gaps in existing HWTS distribution systems, evaluating HWTS product options, meeting with potential partners and stakeholders, and exploring the global feasibility of multiple implementation models.

Since launching this effort in December 2006, the team has initiated research and discussions on the global water market, produced a literature review, and studied more than 150 HWTS options. PATH may improve on existing products or work with various technology partners to advance or create new products.

Having selected India as the location for pilot market implementation (see sidebar), PATH plans to establish partnerships in early 2008 and implement a test market in India in 2009. Staff are also conducting research in Cambodia, Ghana, Tanzania, and Vietnam to evaluate the HWTS market, products, and household and consumer behaviors.

Prospects for change

A sustainable market for more affordable and effective HWTS products will increase the developing world's access to safe water. When combined with increased consumer knowledge, these products could become regular fixtures in millions of households and offer a widespread solution to the global need for safe water. ■

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Project name
Safe Water Project

Locations
Cambodia, Ghana, India, Tanzania, Vietnam

Methods
Market strategy development and implementation; technology assessment, advancement, optimization, and introduction; qualitative and quantitative research; behavior change communication

Partners
Initial partners include RTI International, Johns Hopkins University, Massachusetts Institute of Technology, Emory University, and PATH's Safe Water Project Technical Advisory Group

Funder
Bill & Melinda Gates Foundation

For more information

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Read more about PATH's work in safe water at www.path.org/projects/safe_water.php.

Increasing reach, leveraging knowledge

PATH continues to broaden and deepen its work. We are grateful to the many donors and partners that make these efforts possible. To learn more about these efforts, visit www.path.org.

New projects

Vaccines for pandemic influenza

PATH is now supporting rapid development of vaccines to protect against a potential influenza pandemic. PATH will work with public- and private-sector partners to advance the development of new, safe, and effective influenza vaccines that can be produced quickly and economically.

Center for Point-of-Care Diagnostics for Global Health

The new Center for Point-of-Care Diagnostics for Global Health, a collaboration of PATH and the University of Washington, will improve the availability, accessibility, and affordability of point-of-care diagnostic tests for use in low-resource settings. The center will focus on clinical needs assessments, exploratory technology projects, clinical testing of prototypes, and training.

Optimize: shaping the future of immunization

A new partnership between PATH and the World Health Organization (WHO) will evaluate and improve the future of supply and delivery systems for vaccines and other health products in low- and middle-income countries.

New insights

Findings on malaria control move across borders

In collaboration with the Zambian Government, the Malaria Control and Evaluation Partnership in Africa (MACEPA) conducted its first multi-country shared learning workshop. Program leaders and partners from Ethiopia, Tanzania, and Zimbabwe came to Zambia for hands-on training in state-of-the-art tools and methods for planning and monitoring indoor residual spraying. Learn more at www.macepalearningcommunity.org.

Symposium highlights cervical cancer recommendations

Alliance for Cervical Cancer Prevention (ACCP) partners sponsored a symposium to explain key findings and recommendations from studies in more than 20 countries in Africa, Asia, and Latin America. Find out more at www.alliance-cxca.org/english/event08.html.

A new look for *Directions*

What do you think of our refreshed design? Let us know! Send your comments to publications@path.org.

Introducing PATH's updated website

We've redesigned the PATH website to serve our audiences better. New pages, videos, slideshows, and staff profiles let visitors explore particular fields of interest. A front page in the new "For our colleagues" section highlights tools and resources developed especially for the global health community, and our publications catalog—which contains more than 550 manuals, curricula, white papers, presentations, and videos—has been refined to allow for easier browsing by subject, title, series, language, or region.

Please visit the new site—www.path.org—and let us know us what you think!

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. For more information, please visit www.path.org.

Directions in Global Health shares information about PATH's programmatic work with colleagues around the world. To subscribe, please send your contact information to publications@path.org. To learn more about PATH's work, visit the PATH website or sign up to receive our email updates by contacting publications@path.org.

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Printed on recycled paper
ISSN 1549-8662