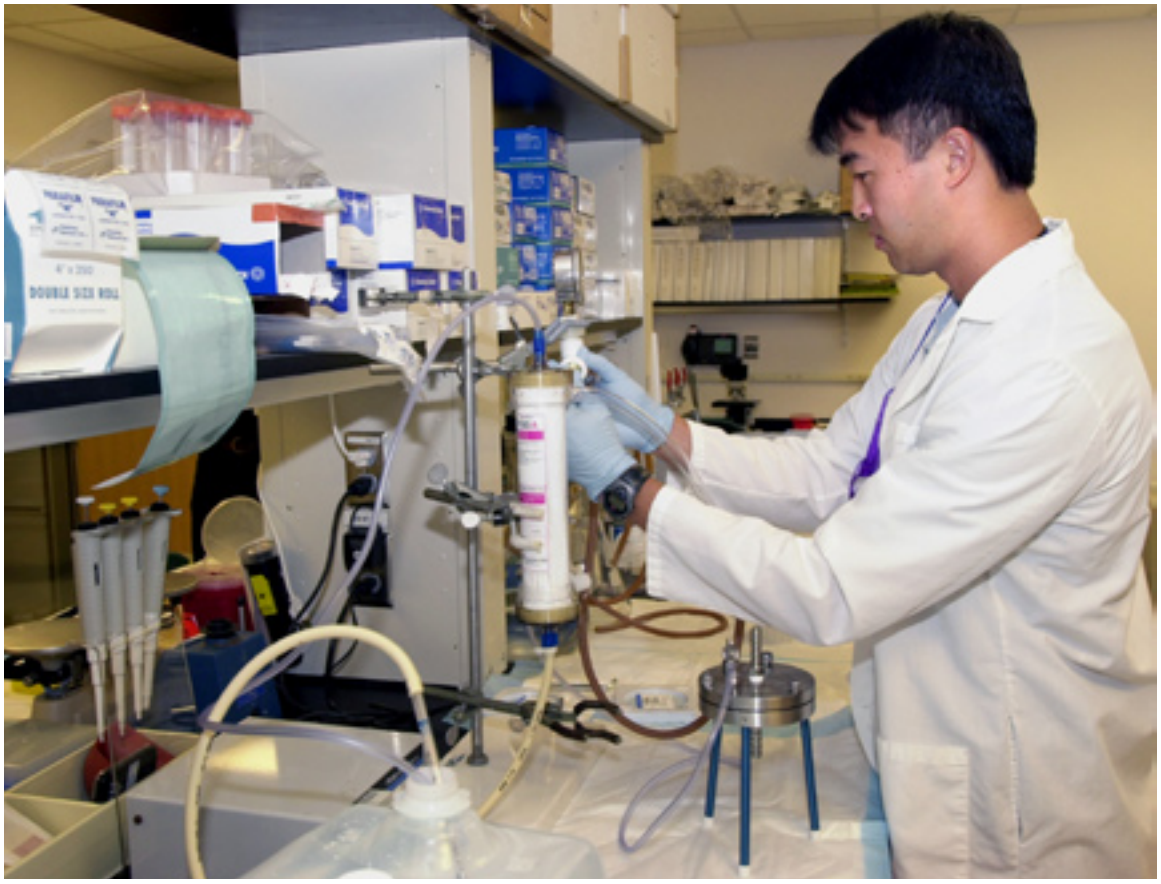
One Dose at a Time

An Interview With Vance Dietz, Steven Stewart, and Karen Wilkins



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A biologist works in the Parasitic Diseases Laboratory at the U.S. Centers for Disease Control and Prevention in Georgia. The laboratory houses approximately 40 employees who provide state-of-the art diagnostic services to support investigation of parasitic disease outbreaks and research on these diseases.

Achieving universal, routine childhood immunization has been a goal pursued with dedication by many agencies, donors, and individuals for decades. It's a goal easily stated, but one that is achieved and sustained only with extensive logistical activities, supplies, equipment, and personnel.

Global Issues *managing editor Charlene Porter discussed the challenges of establishing routine immunization programs with specialists at the Global Immunization Division of the U.S. Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia. Dr. Vance Dietz is chief of the Global Measles Branch. Steven Stewart is a health communications specialist. Karen Wilkins is a public health advisor.*

These three CDC professionals have worked extensively in Africa, Central and South America, and South and East Asia, helping communities in developing nations strengthen their childhood immunization programs. Collectively they have spent more than 30 years working to protect children from vaccine-preventable diseases.

Question: Large-scale immunization programs are found in all developing countries with functioning governments, but what are some of the difficulties that developing countries have in sustaining universal vaccination programs?

Dietz: One of the principal issues in sustaining programs is having good political commitment. This is crucial to ensure that sufficient funding is available for immunization programs. Another important issue for sustaining programs is the presence of technically competent staff of sufficient

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A mother and son meet with a UNICEF physician at a health outreach center on a remote island in the Bay of Bengal. The 2004 Indian Ocean tsunami killed an estimated 3,500 people in the Nicobar archipelago. In the disaster aftermath, international donors have continued their work to provide basic food, shelter, and medical supplies; prevent malaria and other airborne diseases; and immunize children under five years of age.

number to run, manage, and guide these immunization programs.

Countries also need a sufficiently developed infrastructure with broad geographical coverage to actually deliver needed vaccinations and provide access to immunization services.

That being said, in almost every country, the infrastructure cannot reach all of its population either due to geographical isolation, such as in mountainous areas or river areas, or to poor urban slums. So an immunization program needs a strategy to reach those who do not have access, some sort of outreach strategy.

These are the key issues, and they become more acute during times of crisis; for example, when there's war, famine, civil unrest, or natural disaster. Inherent issues regarding the infrastructure and political commitment are the primary determinants, and in times of crisis they become more acute.

Q: Lacking some of these elements or in the face of crises, have you seen countries lose ground in their immunization programs?

Dietz: Yes. Colombia, for example, had a very good immunization program up to the late 1980s. They were innovative and the leaders in immunization in the region. Then, with the widening of the civil war that spread throughout rural areas, it wasn't safe for immunization teams to enter and vaccinate kids. That situation led to a downfall in many areas of the immunization program. So that's an example of how immunization suffers in wartime.

Then there's the case of diminishing political commitment. In the early 1990s, Venezuela mounted immunization programs through the measles elimination initiative in the Americas. They implemented many of the strategies, successfully reached very low levels of disease occurrence, and had an absence of circulation of measles. Then, from a lack of follow up and a lessened political commitment to fund the program, the immunization coverage fell and there was a huge outbreak of measles in 2002.

Stewart: When people are displaced because of natural disasters, they're at high risk from infectious diseases. We've seen that in earthquake areas in Pakistan, after the 2004 tsunami in Indonesia, and in other serious disasters. If there is quick response from the ministry of health and international donors to provide immunization services, you can prevent outbreaks.

Wilkins: I would just add one thing. When we talk about political commitment, we don't mean solely at country level. The international community also has an important role to play. Through the 1980s, right up until 1990, the World Health Organization's [WHO] Expanded Immunization Programme [EPI] had a lot of donor support, a lot of focus on immunization, and rates of coverage increased fairly rapidly. Then the donors got tired of that and went on to other things, so countries were left on their own. Or in some cases, donors brought in new and different priorities and were funding different initiatives in the countries. So the immunization coverage did backslide in a lot of countries that hadn't built up their own interest in immunization.

Things are turning around now, but the international community has a role to play in sustaining political, long-term commitment to help strengthen these programs, create the demand, and make sure the infrastructure is stable.

Dietz: I think the landscape has changed from the days when a handful of donor nations and U.N. agencies led the global immunization effort. I think the formation of the Global Alliance for Vaccines and Immunization [GAVI] has been responsible for it in a lot of ways. A variety of partners are providing funding and new initiatives are on the horizon.

Q: Let's go from this overview down to the micro view.

What are the challenges faced by a clinic in a rural area of a developing country that is just beginning to establish itself as a provider of regular immunizations?

Wilkins: Dr. Dietz mentioned earlier that the staff in this clinic must be qualified. They need to have training. They need to be supervised. They need to have the vaccine. They need to have needles and syringes. They need to keep those supplies cold, so they need to have refrigerators at least within a reasonable distance, and different countries define that differently. They also need to have created the demand among the mothers, so they have clients. The mothers, the children, the fathers have to accept immunization because in some countries some people might actually block mothers from taking children to receive vaccinations.

Buildings where clinics are housed are in some cases fairly rudimentary. They may be one room; they may be five rooms. They might just have a table underneath a tree, or they might be vaccinating in someone's house. It depends very much on where they are. But the absolute requirements are the trained personnel, needles, syringes, cold vaccines, and training.

Q: Let's pursue the demand question, the willingness of the community to accept immunization as a good thing. How difficult a hurdle is that in the countries where you have worked?

Wilkins: Most of my experience has been very positive. People not so long ago saw whole villages wiped out due to measles, and the survivors remember that. If they understand that the vaccine prevents disease, they bring their children when immunizations are offered. And they'll come from a very long distance under adverse conditions. This has been my experience in the Democratic Republic of Congo and Burkina Faso.

Generally the demand is there if the mother knows what the vaccine does, where it is available, and when it is given. People who don't finish vaccination series are asked why in surveys. It's typically because the mother either didn't know that she needed to vaccinate her child or mistakenly thought she and the child had finished the vaccination series. Very rarely did mothers say they were afraid of an adverse event occurring as a result of the immunization.

Stewart: I agree. Once the knowledge is there about the value of vaccine, parents, particularly mothers, will go to great extremes to ensure their kids get immunized, walking great distances to vaccination sites, that kind of thing. It's really quite heroic some of the measures that people take.

But there are exceptions to that. We've seen, particularly with the polio program in recent years, examples where rumors can spread. This happens most easily among illiterate populations. In places like northern India and northern Nigeria, rumors that a particular vaccine is harmful to a child's health, or that it may cause sterility or even HIV, may prevent people from participating in an immunization program.

Dietz: One personal experience of mine on this subject—I remember working in Mexico in the state of Sinaloa with seasonal migrant workers from the mountains of Oaxaca and Chiapas in the south. They were all indigenous populations. Many of them don't speak Spanish and don't acknowledge Western medicine. We would have vaccination teams going to these camps of migrant workers, and the mothers would actually pick up their kids and run from the vaccinators because they were afraid, not just of the vaccines, but of any Western medicine. I think that's becoming less of an issue as time goes on, but it is something that can happen in isolated, indigenous populations who don't have a lot of interaction with Western medicine.

Q: How do these immunization efforts with their outreach to rural areas and isolated populations serve as a stepping stone to the delivery of higher levels of medical care through these same facilities?

Dietz: In many countries immunization programs are the most developed of any public health program, offering the greatest coverage of the population. A fundamental strategy of immunization programs is to reach the hard-to-reach or the isolated, so these programs begin as outreach, but then it's really important that they take other needed services or therapies to the community. One example of outreach, when we do mass immunization campaigns, we're also providing insecticide-treated bed nets to prevent malaria infection, vitamin A tablets to prevent blindness, and deworming medication. It's important that immunization services do that.

Wilkins: Outreach works to benefit both programs. It's being built on the platform of WHO's Expanded Immunization Programme because of the greater reach achieved through those programs, as Dr. Dietz mentioned. But we're finding in some places, people have turned out for immunization campaigns enough times before that now they're making the trip to get that antimalarial bed net. Or perhaps, they wouldn't have come for a drop of vitamin A, but they would come for a vaccine, so they get both. We're finding it's working to the benefit of both programs, and we're exploring with WHO and UNICEF [United Nations Children's Fund] ways to further advance those synergies.

Q: What has been CDC's ongoing role to help developing countries improve immunization services and extend programs to more and more children?

Dietz: CDC works through WHO and UNICEF in what's referred to as a multilateral manner, meaning that we go through these U.N. agencies, and they provide the global coordination and global recommendations which help standardize policies and procedures.

CDC provides financial support for routine immunization strengthening as well as substantial amounts for polio eradication and measles and rubella control. Much of the money for measles and polio goes directly for the actual purchase of vaccine. We also provide a considerable amount of technical assistance. We have staff that are actually seconded to WHO and UNICEF, assigned to headquarters of those agencies, and to regional and national WHO offices, which work directly with ministries of health to assess immunization programs and provide guidance on how to strengthen them. We are also very heavily involved in training surveillance staff and data managers at all levels in a health ministry, as well as staff who administer vaccines. We're also helping to and developing training materials, working with other countries at the national and district levels.

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An eight-year-old girl shows her vaccination certificate at a health center in Guinea Bissau. International assistance has helped to more than double the number of Guinean children receiving immunization coverage since 2001.

Stewart: Also, in the Global Immunization Division here in Atlanta, CDC has people who assist countries with developing annual plans of action, or even multiyear plans of action—what goals and objectives the country wants to have for the immunization program over a period of time, and what strategies will best meet those objectives.

CDC public health specialists go out to other countries to help plan large-scale vaccination campaigns and activities that will help enhance routine coverage. We'll go out and monitor large-scale campaigns, as well as look at the performance of routine services. So there are folks at CDC who spend between two and six months abroad each year to help strengthen immunization programs with individual countries.

Q: What are some of the greatest recent successes in your mind in this entire global endeavor to expand routine childhood immunization?

Dietz: One of the most recent and important achievements involves our measles mortality reduction activities. This was the result of work by the Measles Initiative, a partnership involving the United States, U.N. agencies, and other organizations. We worked in priority countries to halve the amount of measles-related deaths by 2005 compared to 1999. The data suggest that that goal has been achieved ahead of time and under budget—that globally there is actually a 60 percent reduction in mortality.

Stewart: The 20-year campaign to eradicate polio is certainly one of the most significant achievements in this area too. CDC is a spearheading partner in that initiative—along with WHO, UNICEF, and Rotary International—and we estimate that about 5 million cases of paralytic polio have been prevented because of the polio eradication initiative, and probably at least a quarter of a million polio deaths during that period as well.

Q: Those are meaningful statistics, but as professionals who have worked many years towards these goals, is there a particular place where you have seen progress that heartens you in this work?

Wilkins: I was a teacher in the Peace Corps in what's now the Democratic Republic of Congo [DRC] starting in 1978. In 1980 the doctor at the hospital recruited me in to start routine immunization with him in the health zone I was working in. We went around from village to village to village—him driving the car, his wife and the hospital nurses giving some vaccines. We were his entire team, just driving from village to village. People came from every direction to get vaccinated in response to this modest effort started by

just one individual. At that time, programs existed mainly in the cities and a few zones, like the one I was in, where one person with initiative and a vehicle would start a vaccination program on his own.

Years later in 1988, my first job with CDC was to go back to DRC and work in the immunization program. By that time, there were 306 health zones in the country and 175 of them were considered functional. So the Congolese went from coverage that was probably 11 percent to 38 percent by 1990.

Now, despite all of the war and the conflict and everything that's gone on in the D.R. Congo, almost every zone—they have 515 zones by now—503 of them are considered functional, providing routine immunization services. Their routine coverage of the childhood population is now 70 percent for measles. That's not quite up to the 90 percent level that we want every country to achieve. But they've come so far from just 20 years ago. They've gone through all these years of political unrest and managed, despite that, to bring people together in the rebel health zones and in the government health zones to continue to vaccinate children and improve their program. ■

Peaceful Days, Better Lives

Immunization saves the lives of children, a fact so widely recognized that it has influenced events over the past 20 years in ways that diplomats, dialogues, and weapons have not. Appeals to protect the children have convinced warring factions to lay down their arms and rebel forces to open their strongholds to those who deliver vaccines to children in remote areas.

These negotiated lulls in fighting are known as "Days of Tranquility," and since 1985 warriors in bitter conflicts have agreed to temporary truces to make way for massive vaccination campaigns.

It began in 1985 amidst a wrenching civil war in El Salvador. Government security forces and rebels put away their arms for three days to allow 250,000 children to be vaccinated against polio, measles, diphtheria, tetanus, and whooping cough.

Lebanon in 1987, Sudan in 1989, Sierra Leone in 1998, Burundi in 2002—in these and dozens of other places in the more than two decades since the El Salvadoran war, temporary pauses in fighting have been negotiated for the sake of protecting children from disease.

At a U.N. conference in 2004, Sierra Leonean delegate Elisabeth Levalie described how health advocates managed to get to children for vaccinations in hard-to-reach conflict areas. "We had to immunize in the rebel-held areas. So we had to devise strategies: how to get to those people, how to build the confidence that is needed." A variety of tactics and contacts were used to create peaceful corridors, she said. "We used relatives of the rebels who were in government areas to take the message to them, we used women's groups, we did advocacy."

More than 20 years after they first began, Days of Tranquility serve as an oasis of peace where immunization can be safely delivered by thousands of vaccinators—44,000, in fact, in a November 2006 immunization campaign conducted in Sudan.

UNICEF representative Ted Chaiban worked to orchestrate that campaign, calling upon violence-prone communities to ensure the safety of health workers. "Safeguarding a child's health rises above any political differences that may exist in communities," he said as the campaign to reach almost 8 million children began. "It is imperative that where fighting continues, vaccinators and monitors are guaranteed safe access, and parents are able to present their children for vaccination." ■