

In the mood for wiping out vaccine-preventable diseases

Ciro de Quadros has led some of the most successful immunization campaigns in the history of public health. He tells Fiona Fleck why, in some ways, it's harder to eliminate vaccine-preventable diseases today than it was in the past.

Q: How did you become interested in immunization?

A: After I got my MD degree in 1966, I worked at a health centre in a small town in the Amazon region, then studied epidemiology and got involved in a new national centre for epidemiology, a kind of "Brazilian CDC" (Centers for Disease Control and Prevention). But the centre never took off because people working there were accused of being communists by the military dictatorship. Through the centre, I got involved in the smallpox campaign which had started in Brazil.

In 1969 three other colleagues and I did some of the first trials of the surveillance and containment strategy. The smallpox programme in Brazil was based on mass vaccination but did not have enough resources to mass vaccinate people in every state. So we chose four states where we set up surveillance and containment units. I was in charge of the unit in Paraná, a state of some eight million people and where in 7 or 8 months we identified over 1000 smallpox cases and vaccinated their contacts, about 30 000 people. As a result, transmission was interrupted. We published the research in this journal. That was my first experience with an immunization programme.

Q: What is surveillance and containment and how did you help to develop this approach?

A: The smallpox programme in Brazil started in 1966 with mass vaccination campaigns, which aim to vaccinate every single person. But when Donald A Henderson came to Geneva to head the WHO Smallpox Eradication Programme – before I worked on smallpox – he and his team realized that some countries with high levels of vaccination coverage still had smallpox outbreaks and that mass vaccination was not working everywhere. They knew that people with smallpox had pock marks on their faces and that these people usually knew where they got infected, because they had seen someone else like that. They said that if you could trace the chain of transmission from one patient to another over several generations and vaccinate all of the people who had come into contact



Courtesy of
Ciro de Quadros

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Ciro de Quadros is the executive vice president of the Sabin Vaccine Institute, where he heads the vaccine advocacy and education programme. Before he took up that post in 2003, he held leading positions in immunization at the World Health Organization (WHO)/Pan American Health Organization (PAHO) between 1970 and 2002, including as the first head of the American region's Expanded Programme on Immunization. From 1970 to 1976, he served as WHO's chief epidemiologist for the smallpox programme in Ethiopia. He holds several academic posts, has published extensively in peer-reviewed journals on immunization and related issues and serves on many expert health committees. He completed his medical and public health studies in Brazil.

with the smallpox patients, you could stop the chain of transmission. That is how surveillance and containment works. In Brazil, surveillance and containment proved to be a fantastic strategy and it was tested in studies in West Africa and India with the same success. That's why it became the final strategy of the global smallpox programme.

Q: Today Brazil is struggling to fill physicians' posts in remote areas. What motivated you to work in such places?

A: When I applied to study at the National School of Public Health, a professor there advised me to work in the field first. A foundation called the Special Service for Public Health (*Serviço Especial de Saúde Pública*) was working in remote areas of Brazil and needed doctors. They sent me to head a health centre in the Amazon Region, in a town called Altamira of about 4000 people in Pará state. All we had was a community nurse, a laboratory technician, a sanitarian and an administrator to take care of the health of that community. Vaccine coverage rates were not very high, maybe about 50% or 60%, and we only had a few vaccines: diphtheria–tetanus–pertussis (DTP), tetanus toxoid and bacille Calmette–Guérin (BCG) [for tuberculosis]. In the early 1970s, the picture was similar all over the developing world. Still, our small team managed to increase coverage to nearly 100% during my first year.

We identified the traditional birth attendants in the area, who would trav-

el to the health centre and spend one day a week with us. They reported the births in their areas and we recorded close to 100% of these, then gave the attendants sterilized materials to use in their next deliveries. We had a good system for recording and follow-up and if kids didn't come for a second or third dose, the nurse or sanitarian would visit the family to make sure they got it. We also sent the sanitarian to people's homes to improve sanitation by building latrines and connecting the water supply.

Q: This year marks 40 years of the Expanded Programme on Immunization (EPI). In 1977, you went to work at PAHO to launch the programme in the Americas, how did you begin?

A: When the programme was approved by the World Health Assembly (WHA) in 1974, nothing happened for three years. Vaccination coverage was very low, below 10% in many parts of the developing world and only three vaccines were in use in most countries – DTP, tetanus toxoid and BCG. Most countries in the region didn't even have an immunization programme and were just responding to outbreaks. My task was to get the countries to organize themselves. First, we asked them to appoint an immunization manager to run their programmes. Within a year they had done this. Then we trained the managers so that they could train their staff.

Q: The Americas was the first WHO region to be certified polio-free in 1994, and it has kept measles at bay since 2002. Why has the Expanded Programme on Immunization been so successful in the Americas?

A: We had meetings to introduce countries to the concept of the Expanded Programme on Immunization and soon all of them started moving in that direction. We brought together all the country managers and everyone else from the governments working in epidemiology, primary health care, maternal and child health, financing and so on, and we asked them: "What are the problems that you have when trying to implement immunization programmes in your countries and what are the solutions?" We listed the problems – how to improve coverage, do surveillance and organize the cold chain – and analysed them. Then we produced a publication called *Immunization and primary health care: problems and solutions (PAHO Scientific Publication No. 417)* and started working on those problems and solutions. PAHO still does this today.

Q: You were criticized in the early years of the Expanded Programme on Immunization, how did you win over your detractors?

A: At a cocktail party at PAHO in 1979, Dr [Halfdan] Mahler, the Director-General of WHO at the time, told me that he would never let a programme like smallpox dominate WHO's work so much again. But, by the time we launched the programme to wipe out polio in the Americas in 1985, he supported us. During the first three years, we demonstrated that our strategies were stopping polio transmission and that led to calls within WHO to eradicate polio globally. At the meeting in 1988 in Talloires (France) that led to the WHA resolution to eradicate polio, Mahler joined the heads of other international organizations and ministers of health and was very supportive of polio eradication.

Q: In the 1980s, armed conflict threatened to undermine the Expanded Programme of Immunization in the Americas. How did you deal with this?

A: We had lots of security problems during the decade of the civil wars. We had lots of problems in Colombia, El Salvador, Peru and other countries and tried to work with UNICEF and other

partners and with conflict groups to find a resolution. We were lucky that we could broker peace days between the warring factions. The first one was in El Salvador in 1985, when everybody participated in the national immunization day – even the guerrillas – and that became known as a "day of tranquillity". Dr [Carlyle Guerra de] Macedo, who headed PAHO at the time, called this "a bridge for peace" because we overcame problems through the discussion of health issues. Today, the situation in Nigeria, and particularly in Afghanistan and Pakistan, is more complex than in Latin America. I know that the Global Polio Eradication Initiative is dealing with those issues, and it's not easy.

Q: What challenges does the Expanded Programme on Immunization face today?

A: We launched the polio campaign in 1985 and had the last case in 1991 in the Americas. The target was 1990 – we were eight months late. We didn't encourage independent programme initiatives, like those you see today on the global level. For example, a Global Polio Eradication Initiative that is not part of the Expanded Programme on Immunization or a Measles & Rubella Initiative that may work independently of this programme. We integrated all programmes for vaccine-preventable diseases as far as possible. So, national polio campaigns included other vaccines, such as measles, DTP and tetanus toxoid. Many countries were so keen to wipe out measles they managed to control measles – and some even stopped measles transmission – during the polio campaign. We said: "Don't do that now, finish polio first", but some countries were just in the mood for wiping out measles.

Q: What is your advice?

A: Avoid fragmentation. There are so many actors in the same field today: the GAVI Alliance, the [Bill & Melinda] Gates Foundation, the nongovernmental organizations and civil society – you need to coordinate them all. Also, with the advent of GAVI, another major challenge is financing vaccines for the middle-income countries. They cannot afford the expensive new vaccines, but there is nothing like GAVI to help them. The industry is trying to divide the world and their tiered pricing strategy has been damaging because many middle-income countries cannot

afford these vaccines. They need new mechanisms to make these vaccines available, such as the PAHO revolving fund, created in 1979 and that today has a capitalization of about US\$ 100 million, and they get reduced prices by purchasing in bulk.

Q: You are on the Polio Independent Monitoring Board and have led the Global Vaccine Action Plan (GVAP) process in the past. Why is the Decade of Vaccines and the GVAP making slow progress?

A: The GVAP represents a fantastic initiative, but follow up has been weak. WHO's regional offices need to prepare or finalize their "regional vaccine action plans" and countries need to be supported in the preparation of their "national vaccine action plans". Hurdles to implementation need to be overcome, such as insufficient budget allocation and lack of coordination among partners.

Q: Why the delay?

A: First you need to transform the GVAP into regional and national vaccine action plans. For example, at a recent meeting of the Expanded Programme on Immunization managers from Africa, I asked how many of them had read the GVAP that was approved two years ago and that serves as a template for regions and countries. The answer was "none" because apparently they are not well briefed on the GVAP. It's already four years into the decade: we need to accelerate progress. WHO needs to be more forceful on that.

Q: Which experience in your career had the most powerful effect on your work?

A: Until today I bring with me all the lessons of the smallpox eradication programme: that you must have a clear goal, everyone needs to understand that goal, everybody must work together to achieve that, you must have permanent research and feedback to the field, and you must have the resources and political support. Those are the principles we brought to the Expanded Programme on Immunization and that has been my experience throughout my public health career.

Q: Is there anything you would have done differently?

A: Nothing. I am so happy to have participated in so many great initiatives with such fantastic people, it was a fantastic ride that I had until now. ■