



World Chronicle

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“Eradicating Polio and Fighting Infectious Diseases”

This year the World Health Organization (WHO) – working with such partners as UNICEF, Rotary International and the U.S. Center for Disease Control (CDC) – aims to eradicate the crippling disease of polio.

Leading the polio eradication effort is one of the world’s experts in fighting diseases such as smallpox, SARS and Ebola: Dr. David Heymann, the guest on this edition of World Chronicle.

Will this effort succeed, when previous targets set for eradicating polio have not been met? What obstacles does the eradication effort face, and how costly is it? Is humanity increasingly threatened by possible outbreaks of infectious diseases like polio and SARS? These are some of the questions raised during the discussion.

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ANNOUNCER: From the United Nations in New York, an unedited interview programme on global issues. This is **World Chronicle**. And here is the host of today's **World Chronicle**.

JENKINS: Hello, I'm Tony Jenkins and this is World Chronicle.

Fighting deadly or crippling diseases...it's a battle the World Health Organization – WHO – is involved in, and one that even the most severe critics of the United Nations can get behind.

Smallpox is now medical history – but can the same be true of Polio? Will the world be rid of this crippling disease by the end of this year?

Our guest today is one of the world's experts on infectious diseases and the leader of WHO's effort to eradicate polio, Dr. David Heymann.

Dr. Heymann, welcome. I seem to recall that the plan was to eradicate polio by the year 2000. We're now in 2004. What happened?

DR. HEYMANN: Well, targets are always ambitious and this target was a very ambitious target - to eradicate the disease between 1988 and 2000. The target was not met. And now, we've seen that we can meet that target, we believe by the end of 2004.

JENKINS: I noticed that in launching this new campaign to eradicate the disease by the end of this year, you also talk of a caveat; you're worried that if you don't do it this year, that you're going to lose control of the programme, it's going to slip out of control; polio is going to become more widespread again. Why do you feel that?

DR. HEYMANN: Well, at present polio remains endemic in six countries. That means that those six countries haven't yet cleaned up polio. But what's happened this year is that polio has spread from those countries to seven countries, which had eradicated polio, and now which have polio again. So we're seeing that countries that are endemic were not only harming their own populations, but now the disease is spreading to neighbouring countries and ruining work that those countries did to eradicate the disease there.

JENKINS: So, are you afraid that because you're seeing the disease start to slip out of control, that countries that have been helping until now - I think the effort has cost something like three billion dollars so far - that countries will say, "We're wasting our money", and then they'll turn away and look at some of other sort of priority?

DR. HEYMANN: Our job is to encourage them not to do that, to protect their investment. And by protecting their investment we mean getting rid of the disease this year or at the latest in mid-2005. And we believe we can do that. We still have very strong primary partners which are, WHO, UNICEF, Rotary International and CDC, the Centre for Disease Control and Prevention from the U.S.

JENKINS: Joining us in the studio are Betsy Pisk of the Washington Times and Louis Hamann of the Canadian Broadcasting Corporation, CBC.

HAMANN: Dr. Heymann you've mentioned six countries that are still problematic. One of those countries obviously is Nigeria, that's been in the news lately. What is the problem exactly in Nigeria?

DR. HEYMANN: In Nigeria there is a problem now in low quality immunization campaigns, which means that the vaccines are not reaching the children that they need to reach. This is occurring because there's a great concern in the states in Northern Nigeria that the vaccine may not be pure, that it may be contaminated. And this concern has drifted down into the communities and the communities are very concerned that the children are not being vaccinated.

HAMANN: And how do you trying to overcome that problem, I mean, has WHO been culturally sensitive enough to overcome problems like those?

DR. HEYMANN: Actually, the polio eradication programme is a programme of countries - countries are doing the work. We support those countries along with UNICEF. And UNICEF and WHO are now very active in Northern Nigeria working with the government, and with religious leaders, with community leaders, trying to help them understand that this vaccine is a safe vaccine. The vaccine used in Northern Nigeria is the same vaccine used throughout the world for polio eradication; it's safe, it's pure.

HAMANN: Are they buying your argument?

DR. HEYMANN: Well, the government has set up some panels. They set up a national or a federal panel and then some state level panels. And those panels are right now examining the vaccine and laboratories both within and outside Nigeria. And the outside laboratories have shown that the vaccine is pure. So we believe that from the Minister of Health in his talk last week in Geneva, we believe that this problem will soon be resolved.

JENKINS: Betsy you want to jump in?

PISIK: Yeah, I do. The Nigerian issue is interesting because it also piggybacks under their concern I understand that the vaccine can cause AIDS, that it can contribute to other problems. How did that happen?

DR. HEYMANN: Well the theory that HIV was caused by polio vaccine is a theory that surfaced back in the 1990s. And this is...the theory was that the vaccine was made from monkey kidney cells and that these cells were infected with HIV and then it transmitted to humans. This has been disproven by an expert international panel, which actually took the

vaccine used at that time, which were under cold storage, and showed that there was no HIV or other contaminating agent in them.

PISIK: But the fact is that people are suspicious now or reluctant to bring their children in for vaccination. This is an attitude that's got to be worrisome.

DR. HEYMANN: It is very worrisome and thank goodness there's a UNICEF and thank goodness there's a government, a federal government which is working to solve the problem, and we believe that within the next few weeks it will be solved.

PISIK: You mentioned that there are half a dozen other countries that are at risk of re-infection or...picking this up again. Can you explain a little bit about how that would happen?

DR. HEYMANN: Well the polio virus causes crippling in one of every 200 or 300 children who are infected, one for every 200 infections gets crippled - so, there [are] lots of children who have the polio virus who aren't crippled and have no signs and symptoms. When they travel across borders, and infectious diseases don't respect borders, when they travel into neighboring countries they can then through the poor sanitation systems in those countries, transmit the disease to others because the diseases transmitted from human waste, contaminated drinking water or other agents in the community.

JENKINS: You said that there are some people who have the wrong idea about how the vaccine is made. If it's not made from...what did you say? – monkey's kidneys? How is it made?

DR. HEYMANN: Well back then, it was made from monkey kidney cells. Today it is made from pure cell lines; cells in the laboratory, which make the vaccine, so it's a different process today. But even back then, in examination of the vaccine, which was made back then, which was made under cold storage, there was no HIV.

JENKINS: If people aren't right to be worried about the sorts of concerns that they have in Nigeria and those aren't the only ones. I've heard that there's also a rumor that the vaccine can leave women infertile ...it's some sort of shot, I guess they might think it is. Those fears are unfounded, but in researching a little bit, it seems to me there is perhaps another concern, which is that if you eventually do eliminate polio the vaccine will remain in people's system and can be secreted from their bodies because it is in most of the countries where you have infections, it's a live vaccine, the oral vaccine. And this vaccine stays in people's bodies, and when it is secreted, it can get into the environment, it can latch on to other organisms in the environment and create a new wild string of polio. So can we ever talk about eradication of the

disease? Does eradication simply mean that kids will no longer become infected and become paralyzed, but the danger of being infected will always be there?

DR. HEYMANN: From what we know about these conversions of the virus that's in the vaccines to a wild poliovirus, it can cause paralysis. We understand that it is a very rare event. It happens about once each year we believe, although the evidence is still early.

JENKINS: What about these 19 cases in the Dominican Republic and Haiti last year?

DR. HEYMANN: That's right, there were cases in Dominican Republic and Haiti in 2000, there were cases in Madagascar, and then in the Philippines. Once each year since 2000 we've identified this because we now have the system, which is looking at all of the viruses in the world and seeing whether any of these come from vaccine. So, what this means is that we must as soon as we can stop using all polio vaccine, but we can't stop that until after polio transmission has been interrupted and polio is gone.

JENKINS: But we have to continue for years afterwards administering the injected form that...can you call it the dead virus?

DR. HEYMANN: That's right. The injected form is the dead virus. Some countries have actually decided that they would continue using a polio vaccine after polio has been certified as being eradicated. We leave that decision to countries. But, what's clear is that because all polio vaccine can become wild vaccine and wild virus in some instances – it must be stopped as soon as polio eradication has been certified.

HAMANN: I'd like to switch gears and maybe talk about SARS if I may - big topic in the news especially in Canada last year and elsewhere. Is SARS been taken care of or is it just that the media is no longer talking about it?

DR. HEYMANN: Well SARS for some reason spread around the world. We know that the virus that spread around the world - most of it originated from one person who came out of Guangdong province into Hong Kong. That person may have had a very special virus, one that may be had some mutations, which caused it to spread very easily and caused it to cause a very serious disease. The goal at that time was to stop this virus from becoming endemic – from becoming a permanent resident on human populations like TB or AIDS. We believe that was accomplished. Now China has identified some cases, which appear to be SARS from their laboratory tests, but clinically they're very mild cases, they're not quite so severe as the SARS last year. Whether there will be more SARS coming that's more severe, we don't know. But what's good is that there is good disease detection now around the world for SARS. Singapore identified a case, Taiwan identified a case, and now China has identified SARS. So there's

good detection systems. If those detection systems continue to work and contain the virus when it occurs, it won't spread.

HAMANN: How much of that has to do with the openness of China on this issue? Because I remember that when there was the breakout last year, I remember you saying specifically that one of the problems, or one of the key[s] to the solution was finding out and getting information from the Chinese government as to exactly where things stood. So, would you credit the Chinese government with really coming forward and coming clean on this as to the reason why maybe SARS today that the few cases that are left are milder cases, are not as threatening or at least WHO has been able to better manage the problem?

DR. HEYMANN: Yes, well you know, it was a confidence-building exercise with China, and China gained confidence in WHO, and we worked together very well. And now this year, China feels comfortable in reporting to WHO that they have SARS cases. They've also taken great measures now to make sure that this doesn't spread during the period of movement of their people during holiday seasons. So, China has taken a very great interest again in SARS, and in making sure that they are a good, responsible, world neighbor – not letting it spread elsewhere.

JENKINS: So they were slow to start but once they got in they were very serious about it.

DR. HEYMANN: That's right. Once China decided that they would work with the international community they stopped SARS very rapidly within China.

PISIK: So, from your perspective, what's the next step with SARS? It's obviously -you've got good detection going on, and it can be diagnosed, it sounds like very rapidly. What's next? Is there a vaccine on tap?

DR. HEYMANN: Well, there certainly are efforts to develop vaccines and there are efforts to look and see if there any existing drugs, which might be effective against SARS. But the most important is to make sure that it is detected and stopped rapidly – and that's what happened so far.

PISIK: Instead, another word on that, are there any medicines that are already identified as likely candidates?

DR. HEYMANN: There are some candidate drugs, but the most activity right now is going on in vaccine development - which is good because vaccines can prevent infection.

PISIK: How far are you away from developing one?

DR. HEYMANN: I can't give you that answer, I don't know?

JENKINS: I'm going to try and bring the discussion back to polio because I think that's what we're trying to focus on most today, although perhaps maybe I'll allow myself one last question - give myself the privilege as host - which is that...we see now the outbreak of avian flu, and there's actually been a long line, Ebola, which you were the first to identify, I think we've concluded it came from monkeys. We seem to be seeing more and more of these diseases. Why is that? Is it there because as the world population grows, more and more human beings are in closer and closer contact with animals? Or is it because as we eliminate diseases like smallpox and polio, we leave ourselves vulnerable to other diseases that weren't identified before? Why is this?

DR. HEYMANN: There are all kinds of reasons, and you've listed some of those reasons. We're in a world now where people are in closer contact with nature, there is intense animal culture especially in South Asia just next store to dense populations of humans. So there's a chance for these organisms to breach the barrier between animals in which they're living and humans in which they're not living. And once they do that, they can then spread internationally as did SARS as does polio today in people. They can also spread in insects, they can spread in foods like mad cow disease. They can spread in many different ways.

JENKINS: This is World Chronicle. We're talking with Dr. David Heymann of the WHO, about how the crippling disease of polio can be ended forever. Here's a UN TV report from Pakistan:

VIDEO ROLL IN (UNIA #797 TRT: 1'38")

NARRATOR: The government of Pakistan assisted by UNICEF and the World Health Organization, WHO, is regularly organizing National Immunization campaigns, which are concentrated in drives of three days each. UNICEF's Resident Representative in Pakistan is Carroll Long...

LONG: "We are down to only 68 cases of Polio in Pakistan this year, down from almost 2000 about a decade ago. So we are trying to make sure that in another year's time perhaps we don't have a single case that cripples children for life or that kills them."

NARRATOR: The campaign is proving to be an international model, as the vaccination drive works to include every sector of Pakistani society, and in a variety of ways.

Health officers visit homes door-to-door, a direct approach that immunizes children under the age of five on the spot.

Parents can also take their children to local hospitals that have been well-supplied with the Polio vaccine.

In this hospital in Rawalpindi, scores of children are being vaccinated during the campaign.

Schools nationwide are also brought into the process, ensuring that as many children as possible have the chance to be immunized.

And during the campaign medical students are mobilized. The benefits of this works in both directions as the students gain invaluable experience of how an immunization process works. At the same time, the program receives the human resources that are necessary for its success.

VIDEO OUT

JENKINS: Well I think we could see from that clip why it's such an expensive proposition, I mean, this is very intensive, labor- intensive. You have to get to every part of the country, of these countries, where you have these hot spots. Have you seen any of this donor fatigue that we hear of sometimes, that rich nations get fed up of spending money on issues that they think won't get results? Is that where some of the urgency this year comes from?

DR. HEYMANN: To date there's been over three billion dollars invested in polio eradication. Rotary International, one of the major partners, has put in over a half a billion dollars. These partners want to see polio eradicated. They're still with us. But there is fatigue; there is fatigue in countries from the vaccinators, especially in those countries where they had done the job and now have to do it again because of imported poliovirus. And there's also fatigue among some of the donors, but fortunately that fatigue is being overcome. The G8 for example in it's Canada meeting, and then in the meeting in France, confirmed that they would increase their resources for polio eradication. And actually two new partners to the eradication partnership, France and Russia, have now joined.

HAMANN: What about the implications, Doctor, out of this eradication campaign? Are there lessons learned that may be applicable to some other disease that may show up? I mean what has WHO learned in this eradication campaign of polio if it is indeed successful by the end of the year?

DR. HEYMANN: Well, the major thing we've learned is how to work well with all the resources in the world against one issue. This has brought together some very strong partners, CDC from Atlanta in the U.S., UNICEF, WHO, Rotary and many international donors including the Gates Foundation and the usual donor countries – the UK, the U.S., Japan, Scandinavian

Countries -- all working together to provide equity in health, through one public health good, which is polio vaccine. So it's a very important initiative, and countries that haven't yet done the job of interrupting transmission of polio are not being fair to their own population. You have the chance for health equity.

PISIK: Doctor, one of the things I'm wondering about is what's going on right now? TB is back. SARS is popped up. Ebola never goes away. Polio, we thought, was eradicated. What is it in our resistance? Is it our resistance has changed? Is it antibiotics? Is it something that is allowing people to grow sick or...?

DR. HEYMANN: First of all, there's a new understanding that infectious diseases remain a threat. There was a period of time in the 70's and 80's, when there were new vaccines and new antibiotics and nobody feared infectious diseases anymore. What we see is that we let down our guard, we let down our surveillance, or our disease detection systems and we let down our programmes to fight these diseases. And what happened? It came back. In addition to coming back, we're seeing that new diseases are emerging at a rate of about one a year, and these are emerging because we're penetrating deeply into the forest where these animals live, where these organisms live in animals, and then the close proximity of humans and animals permits a breach of that normal barrier between us – then the animals infect the humans.

JENKINS: We'll talk about this idea that somehow we maybe debilitating our resistance, our ability to fight...I remember my great grandmother used to say to me that a little bit of dirt is good for you, as if it's sort of promotes natural anti-bodies, a stronger ability to resist things. Is there anything to that?

DR. HEYMANN: Well, there's certainly is and polio is a good example. In developing countries where there is a sanitation problem and where everybody is exposed to polio very early in life – it's a crippling disease, it cripples, it paralyzes the lower extremities. In industrialized countries in the 50's before polio vaccine, good sanitation systems permitted people to escape polio when they were young, and then if there was an epidemic it occurred and the people who were infected were the young adults who ended up with paralysis of their respiratory or their breathing muscles and ended up in an iron lung – a very more serious disease, yes.

PISIK: What about AIDS? That's the one thing I forgot to mention, how much does that impact our immune systems, or our ability...?

DR. HEYMANN: Certainly in a world where there are up to 30% of adults in some countries infected with the HIV virus, it plays a major role in the herd immunity or the immunity of that entire population. And when the herd immunity is not good, then diseases can spread very rapidly through those populations. So there are all kinds of different reasons but certainly AIDS is a very important disease today, it's one that will decrease immunity to TB, to many, many infectious diseases and therefore makes these diseases more serious.

JENKINS: And polio too?

DR. HEYMANN: Polio is fortunately not more serious in HIV infected children and the vaccine fortunately is effective in those children in preventing infection.

JENKINS: What about adults?

DR. HEYMANN: In adults, most adults where polio is occurring today have already been immunized by natural disease in childhood and it's not a problem anymore.

JENKINS: How about resistance to antibiotics? This is something we hear quite a lot about these days - that doctors prescribe antibiotics promiscuously, and that some developed countries with big agri-businesses use antibiotics in livestock feed, and that we as humans then get the antibiotics through the food we eat. Is that a problem?

DR. HEYMANN: Antimicrobial resistance is a serious problem. Every infectious agent, for which there's an antibiotic, has begun to develop resistance against that antibiotic. And the cause is paradoxical. In industrialized countries, it's from overuse of antibiotics. In developing countries it's from underuse.

JENKINS: We've heard that before, of course - the problem of obesity in the developed countries and hunger in poor countries. But I've noticed that in Europe, for example, they no longer use antibiotics with animals; in this country they do still though. As I understand it, the way they were able to stop using them in Europe was simply to keep a cleaner environment for the animals - that they cleaned up the chicken coop everyday instead of once a week and therefore the chickens don't get infected and therefore they don't need the antibiotics. What is this about this country, is it the farmers are just too lazy to clean up the chicken coops?

DR. HEYMANN: Well, that's a question I can't answer. What I can answer is that it's been proven in Europe, starting in the Scandinavian countries, that clean agriculture, that raising animals in a clean environment, will permit them to grow at the same rate that animals in dirty environments grow if antibiotics are added to their food. So, what the Europeans have shown is that clean agriculture can prevent the use... the need to use antibiotics, and therefore

it decreases the antibiotic load that is in the world and decreases resistance to those antibiotics.

HAMANN: Dr. Heymann, I hate to ask you this question, but I feel like I have to as it's probably the last go round the table here. As the leading expert on communicable diseases, is there something that keeps you up at night? Is there sort of a nightmare scenario that you worry about or...?

DR. HEYMANN: Each infectious disease has its own points for worry. And there are emerging diseases. Like SARS is worrisome because we don't know about the disease. We know nothing about it – we have to just base our decisions on evidence as it accumulated. Then there are the old diseases, the diseases that have been with us for decades – malaria, TB. Those diseases are worrisome because the drugs that we have to fight them are becoming less effective because of resistance and there are no vaccines. So each disease has its own worry points, if you would, and you could lay awake each night worrying about each disease because of its particular characteristics.

JENKINS: How about bio-terrorism? Do you have room in your nightmares for bio-terrorism?

DR. HEYMANN: Well, deliberate use of agents, in a time of microbial agents to cause harm is a very real fear. We've seen that this can occur in the United States. What's the good news if there is good news is that the public health response to a deliberately caused infection is identical to that for a naturally-occurring, infectious disease. So our detection systems that we built for naturally occurring infectious diseases will be those systems, which can also detect and respond to deliberately caused infections should they occur.

JENKINS: You are as I...I get the impression you're fairly confident that you will be able to eradicate polio by the end of this year. You have that look in your eye. And when that's done, I take it you're going to go back to looking at communicable diseases as a whole. What's going to be your next focus? Are these some of the things that you going to be working on - bio-terror or some of the things that Louis mentioned?

DR. HEYMANN: Well certainly there are many people in the world working on these issues - I'm not alone. So you know, it's a joint effort, whatever is done on these diseases is a joint effort. I'm right now working with the polio programme. We have to be optimistic that polio transmission will be interrupted this year and we're going to give it everything we can to do it. That means visiting countries - working with those countries to make sure they have what it

takes to do the job. You have to do that with each disease. Each disease can be fought depending on the partners that you have available to work with you to do the disease

JENKINS: Following the January 15th meeting of the six countries that have polio still, are you confident that there are now no obvious obstacles to reaching your goal on polio?

DR. HEYMANN: Well there are certainly obstacles, they're not technical obstacles, and they're not epidemiological obstacles. Polio is at the lowest level ever. But there are local obstacles, local problems that demand local solutions, and that's where Rotary, UNICEF, all groups that had been working on polio can now have the added benefit to work with governments to strengthen their ability to overcome these local problems and get rid of the disease.

JENKINS: So you're talking about the logistics, getting the resources to the right places, that sort of thing?

DR. HEYMANN: That's right and sensitizing the population of the importance of vaccine and making sure that they seek vaccines, not only wait for them to come to them.

JENKINS: It's also an educational issue - teaching people that this isn't going to make them infertile – and that sort of thing?

DR. HEYMANN: That's exactly right.

JENKINS: Well Dr. Heymann, thank you for being with us on this edition of World Chronicle. Our guest has been Dr. David Heymann, who is the leading World Health Organization's effort to eradicate polio worldwide. He was interviewed by Betsy Pisik of the Washington Times, and Louis Hamann of the Canadian Broadcasting Corporation, CBC.

I'm Tony Jenkins, thank you for joining us. We invite you to be with us for the next edition of World Chronicle.

ANNOUNCER: Electronic transcripts of this programme may be obtained free of charge by contacting World Chronicle at the address on your screen:

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