Leo and Jane Morris

This is an interview with Leo Morris about his activities in the West Africa Smallpox Eradication Program. His wife, Jane Morris, is also present. The interview is being conducted at the Centers for Disease Control and Prevention, on July 14, 2006. This is during the 40th anniversary celebration of the launching of the Smallpox Eradication Program. The interviewer is Kata Chillag.

Chillag: How did you come to choose public health as a career?

L. Morris: It was a bit serendipitous. My background is statistics, and I was studying statistics at the University of Florida. Usually every summer, I went home to Miami to work, usually in the hotels, to get money to go back to school the next fall. But during my junior and senior year, I thought I'd better get some experience. The Public Health Service had a traineeship program for statisticians, and 1 other person and I were selected from the University of Florida. Our assignments were just random. He got assigned to the Department of Agriculture, which turned out to be pretty boring, he tells me; and I got assigned to the Tuberculosis Program, Public Health Service, before it was transferred to CDC.

After that summer, they asked if I'd consider coming back after graduation. And I might add, in those days-'59, late '50s-a statistician, even one with just a bachelor's degree, was in great demand. There just weren't many around. And I said, "Well, you know, I'd like to stay closer to Florida," and they told me about CDC. The Serfling-Sherman Polio Immunization Surveys were being conducted then, so CDC was looking for statisticians. So they recommended me to CDC, and there I was.

Chillag: And so, how did you get tracked into smallpox eradication?

L. Morris: I started out in the Polio Surveillance Unit, when we had cases of polio in the United States. I worked in that unit for 3 years in the EIS [Epidemic Intelligence Service]. Then Dr. Langmuir [Alexander Langmuir] supported me for employee development, and I left and got my Ph.D. at Michigan, where our first child was born. (The first was born in Michigan where I got an MPH in biostatistics in biostatistics, the 2nd in Atlanta, and the 3rd in Brazil,.) Then I worked with D. A. Henderson [Donald A. Henderson], mostly on viral diseases in the Surveillance

Section. The Investigations Unit was devoted to bacterial diseases back in those days, with Phil Brachman. I also worked a lot in reviewing material for the MMWR [Morbidity and Mortality Weekly Report]. That was '63. I worked on a big St. Louis encephalitis outbreak that year in Houston, Texas.

In '65, I worked with Larry Altman. He became the first person to go to West Africa in the measles program in West Africa on a TDY [tour of duty].

We were getting involved in some smallpox work, and I was chosen to be part of it. We had a 5-person team in '65, including Don Millar [J. Donald Millar], who later became head of the Smallpox Unit at CDC, to evaluate the vaccine produced in Brazil. Basically, we were comparing the Wyeth freeze-dried vaccine with the freeze-dried vaccine produced in Brazil. We worked in the Amazon territory of Amapa, which is now a state. We were gone about 5 weeks. When we left here, it was winter. In fact, we had a snow storm, and that day we didn't know whether we were going to get to the airport or not. And there, of course, it was summertime and 100° in Rio de Janeiro before we went up to the Amazon. That was my first trip to Brazil.

I did some polio work in Chile and Puerto Rico in 1960 and 1961. I really sort of fell in love with the culture in Brazil, and the people and so forth. That was '65.

Then '66 was the start of the smallpox program, so I stood up with D. A. Henderson and others in the original group that started the Smallpox Eradication Program. I was in charge of the statistical end and evaluation. In '66, we trained the first group that went to West and Central Africa. I had interviewed many of the nonphysicians who had applied.

Then the Pan American Health Organization (PAHO) came to CDC. At that time, Brazil was the only country with endemic smallpox in the Americas. There were some overflow cases into neighboring countries. It was variola minor, not variola major, so it didn't get the publicity of some areas. But PAHO, which is part of WHO [World Health Organization], said they were going to put advisors into Brazil. They had a newly created Smallpox Eradication Program, and they needed a statistician, an evaluation person. They had 3 physicians, 1 from Paraguay, 1 from Peru, who was the team leader, and 1 from Colombia. So I was asked if I might want to go to Brazil. I said, "Where do I sign up?" I was very eager for that. In February of '67, we left for Brazil. And that's how I got to Brazil. I was there 3 years as advisor to the Smallpox Eradication Program after I had

participated in sending the first trained group over to West Africa.

Chillag: And, Mrs., Morris, how did you feel about that?

J. Morris: I loved it. When Leo asked me, "What do you think about going to Brazil?" I said, "When?"

L. Morris: We both learned how to samba.

Chillag: Yeah, there you go.

So, you mentioned that before the actual smallpox eradication, you did the trial between the 2 vaccines, correct?

L. Morris: In '65.

Chillag: In '65. And then, after that, was there a typical day for you as a statistician working on this in Brazil?

L. Morris: Well, we had several primary objectives. I spoke Spanish reasonably well, but I took some Portuguese courses so I could forget my Spanish because it's hard to combine the 2 languages.

The director of the program in Brazil was a man named Silva. He had recently retired from being the head of malaria control in all of the Americas at PAHO in Washington and returned back to Brazil. Because of his vast experience, they talked him into taking over this new Smallpox Eradication Program. He was the only one in the office who spoke English. Now if you went up to the Ministry of Health in Brazil, a good percentage of the people spoke English. But he was the only one who spoke it in this office back then in 1967. So on my first day there, we conversed in English, about the surveillance we needed, reporting, and so forth, and then he said to me, "This is the last day I'm going to speak to you in English," and he never spoke to me in English again. So in that environment, it was easy to really improve my Portuguese.

We had 3 primary objectives. First was to develop a reporting system, which they didn't have. There were 22 states at that time, and I think only 6 or 7 were reporting cases of smallpox . Sao Paulo, the biggest state, with the most cases, never reported. Starting a surveillance report based on the reporting was the 2nd goal. And the 3rd was to start thinking about evaluation. I had worked on the system that they were

going to use in West Africa for evaluating the vaccination program. We wanted to extend it to Brazil, although in Brazil we could be a little more sophisticated because they had better census data to use as a sampling frame.

Chillag: When you talk about evaluation of vaccination, what all does that entail?

L. Morris: Two primary things. One would be a sample of villages or towns, sometimes big cities in Brazil, to look at 2 things: 1) asking everybody in the sample households if they had been vaccinated in the campaign; and 2) checking everybody <5 years of age for a vaccination take on their arm. Since this was a mass vaccination campaign, the take would be visible at 7-10 days. So little kids should have had a nice smallpox vaccination take on their arm by that time.

Chillag: And you mentioned that the reporting was all new. What were some of the challenges of starting up a reporting system in this context?

L. Morris: Well, slowly but surely, we got most states to start reporting. What we had to do was go to some of the biggest states and talk to them.

Brazil is different from the rest of Latin America in that it has independent state health departments like in the United States. In all the rest of Latin America, it's all federal system down to the county employee. Mexico has states that are not as independent as in Brazil.

So it was important to go visit states. One of the first challenges occurred as we were improving reporting. In '67 and '68, a total of 4,500 cases were reported; by that time, a vaccination program had been started in northeast Brazil, a poor area. In '69, when we had reporting really going strong, 7,500 cases were reported. So explaining to newspapers how cases almost doubled while we were vaccinating was challenging, but I think they finally got that the increase in cases was due to better reporting.

Chillag: Was there misinformation in the newspapers?

L. Morris: Several times.

Chillag: Like what?

L. Morris: Some areas, there were rumors, "The vaccine must be causing the disease." I remember also, in 1 state, there were some tetanus cases, and they were blaming that on the vaccine. But I left those kinds of public relations problems up to my Brazilian counterparts to handle. I didn't want to be the middle. So they handled that.

But also, we came up with data showing that from '68 to '69, in places where the campaign had been completed, there was an 80% decline in cases. There was 100% increase in the states without vaccination, but it was mostly better reporting.

Chillag: So, how much were you at headquarters versus out in the field?

L. Morris: Well, Jane thinks I was in the field 100% of the time, but it was probably half of my time, about 40%-50%.

I was training teams to do evaluation (that's another story), visiting states to get better reporting, and so forth. And once the reporting was starting to be established, we talked about evaluation using surveys. That didn't get off very well. It was not traditional in Brazil. They were worried about improving the reporting, getting out the surveillance report, the politics of a new program, and so forth.

In March of '67, one of the first states to be vaccinated was a little state called Alagoas. It's right below where Recife is in Pernambuco State, which was vaccinated in late June of '67. And a report of an outbreak came in from a county called Branquinhas. So the first thing we did was to check the vaccination records, and according to the number of vaccinations given in that county versus the estimated population, 104% of the estimated population was vaccinated.

Well, first the diagnosis had to be confirmed in a laboratory. It was confirmed that it was smallpox, not chickenpox or anything else. So we mounted a team, and we looked at several factors. We did a survey to look at the take rates on vaccination scars of little kids, and the survey showed that there were satisfactory take rates in those who had been vaccinated. But the survey showed only 49% of residents had been vaccinated, not 100%. We checked if there was any significant migration of people into the area since. That had not happened. And all of the smallpox patients were long-term residents. They were living there during the campaign. So it turned out it was

just plain old falsification of the records. They vaccinated half, they said, "All right, let's put down 100% and go on."

Chillag: And so how was that handled?

L. Morris: The main result for me was that we implemented routine evaluations by center surveys in all the states.

Chillag: What happened to the officials who falsified records?

L. Morris: All of the ones involved in that state were dismissed-the chiefs were dismissed, and the supervisors. The campaign had been finished, but we revaccinated in that area. And state by state, we trained the teams that would do the evaluations 7-10 days after vaccination. They would follow the vaccinators by 1 week to 10 days to do a survey of random villages and towns.

Chillag: You mentioned that training was another story. So what is the other story?

L. Morris: Oh, just that there was strong resistance to putting resources into evaluation. But after that incident, they had egg on their face and they said, "Okay, let's do it."

Chillag: One of the things that we are supposed to ask you about is collaborating with locals and some of the challenges and successes with that. Maybe you can comment a bit more on that.

L. Morris: You know, maybe I'm biased after being there. And also, in addition to the 3 years I was in residence, later I went back and got a PhD in population studies to join the new Family Planning and Evaluation Division., with Dr. Langmuir's support- and I'd like to thank him for it. So between '78 and '95, I was in Brazil, involved with a lot of family planning and maternal-child health surveys. Although these trips were just TDYs; I spent a lot of time there.

Brazilians are very nice people. They're very different from people in the Spanish-speaking countries. Although a lot of people think Latin Americans are all alike, their history is different. The Portuguese colonization was different than the Spanish colonization. I learned about soccer. They didn't have any baseball.

Although just to digress for a minute, when we were

training, the state health department in Sao Paulo-the richest state in Brazil, at that time composed of about 20 million people-took jet injectors and vaccine from the federal government but would not let the federal government pay their state employees. They had their own money, and they wanted to control their own employees.

I went down there to train their statistician in evaluation and in field and training techniques. And we were out in the field, in a county, a municipio, in northeast Sao Paulo State called Araçatuba. It was a big agricultural area with a lot of Japanese Brazilians. Brazil has the largest population of Japanese immigrants in the world, even more than the United States.

On Saturday morning, we were coming into Araçatuba to meet with the evaluation crew and check their work. And we saw a sign: "Saturday morning, 10 AM, baseball game between a visiting team from Japan and the local team of Japanese Brazilians." So I said to my counterpart, "Have you ever seen a baseball game?" "No. I don't know what it is." So I said, "How about if we work tomorrow afternoon?. We'll go to the game at 10 AM." It was a little stadium, about 5,000 people. And it was me, him, and 4,998 Japanese Brazilians. They were selling rice cakes.

But that was a very unusual situation. As you know, soccer is the sport there. So I got into soccer with many of my colleagues and that was part of an entry with them, to be able to talk day to day like we may be talking about the Braves here this weekend. That was an important way to connect.

But I got along very well with my colleagues, and in some ways they appreciated working or advice from a North American more than from people from Spanish-speaking countries.. I still have very good friends from those days. And I just want to mention how the epidemiologists that we trained in Brazil might have had the biggest impact of any country in terms of going to other countries after that and working in smallpox; they worked in Ethiopia, Bangladesh, and India.

We lived in a 10-story apartment house, 2 apartments per floor for 20 apartments. And except for a woman from North Carolina married to a Brazilian, and 2 other Americans (he was with some shipping company.), everybody was Brazilian. So we were intimately involved with Brazilians. So we had very, very few problems with relationship with our counterparts there.

Chillag: You know, it's a little different than the West African

situation. One thing that we were supposed to talk to you about was how you reacted to challenges in the living situation. Were there any?

J. Morris: To me, living there was wonderful. We hadn't been in our apartment 3 days, and my first visitors were 3 Brazilian neighbors who didn't speak English. We had coffee. And we communicated, even though I didn't speak Portuguese.

Chillag: Were there any really striking cultural differences for you that caused you pause?

J. Morris: Well, their driving was a challenge, and walking my children across the street. I had to hold their hands because when the drivers turned the corner, they didn't look. But, no. I didn't speak the language, but I learned what they would call kitchen Portuguese, and I did very well with that. So my communication with the locals was very good.

L. Morris: Since she could pass for a Brazilian, they thought she was Brazilian.

J. Morris: We went to the first dinner party when . . .

L. Morris: Oh, that's a colorful story. So, 8:00 PM, we invited some people from the PAHO office and a few other Brazilians. So we thought people would arrive at 8 o'clock. At 8:45, nobody was there, so, "My God, what happened? Did we give them the wrong address?" But people started to arrive. So we quickly learned.

J. Morris: Always late.

Chillag: Was that true in the work, too?

L. Morris: Not really, somewhat, you know. A 9:00 meeting might start at 9:20. But for social events, it was more-

J. Morris: But usually someone would say, "What time?" "Eight o'clock." "Is that Brazilian time or American time?"

Chillag: This was your first trip to Brazil. How was it different from your expectations, both the work and the living?

L. Morris: In '65 or later?

Chillag: Either.

L. Morris: In '65, I was just surprised at the openness of the people. Now I've worked in every Latin American country except, I think, Suriname and Haiti. But at that time, I think it was just Chile and Puerto Rico. But the openness of the people was a surprise.

PAHO had scheduled the vaccine trials in the Amazon just before Carnivale, and after the vaccine trials, we had to come back to Rio to report to PAHO and the Ministry of Health. Of course, we stayed over for Carnivale, and that was quite impressive.

I think there were probably 2 things we couldn't get in local markets. One was cranberry sauce. And they didn't have peanut butter.

J. Morris: But they had Hellmann's mayonnaise.

L. Morris: She likes Hellmann's mayonnaise. The first time she went to the supermarket, she said, "Oh, there's Hellmann's mayonnaise!"

J. Morris: Yeah. They did have Hellmann's. And I thought, "Okay, I'll be fine here."

L. Morris: So compared to the situation for people who went to West Africa, culturally different but not extreme different living conditions?

J. Morris: The people were very, very warm, and they had a very nice warmth for children, and that was nice.

Chillag: Well, this may not be true for you, but in my experience, sometimes it's not your actual discipline or training, those skills or experiences that are most relevant for doing good work. What about your skills and your past experience were most relevant to doing good work in Brazil and in smallpox in general?

L. Morris: Well, I think my training in EIS and my work with reporting polio. It was almost an easy transition into another disease.

I think to this day that it was very important being able to talk to colleagues about nonwork things, like who won the

soccer game this weekend, what singer was going to be at a club that weekend. I think that helped a great deal. In fact, on that kind of a personal basis, I think I was much closer to the counterparts than the 3 epidemiologists in the Latin American countries were. In fact, our leader of the group from Peru never learned Portuguese. He just kept talking in Spanish for 3 years. The Colombian spoke Portuguese or learned Portuguese. And Brazilians would always appreciate that. (DELETE - Three years he kept talking Spanish). So I think those things were very important and translated from a personal basis to the work environment.

Chillag: What do you wish you had known before doing this work that you didn't know?

L. Morris: Well, I wish I had arrived there speaking better Portuguese. But then I had the help of the director, we never spoke English again. And when we were up in the northeast with the vaccination campaign, very few people spoke English. So if I wanted to eat, I had to learn how to speak Portuguese.

Other than that, it was a pretty seamless transition, actually, and I was very impressed. They picked up on the reporting, and after the 3 years, expanded it to other communicable diseases for the first time: measles and polio and other diseases.

Chillag: And did they in any way translate what you taught them technically into local terms, or did they implement it, as you said, directly? It sounds like you were already very aware of local constraints.

L. Morris: I had a counterpart for the surveillance report and the reporting system. He was a physician without a lot of statistical background, but he was eager to learn. He was sort of at the end of his career, eager to learn. He was from Bahia State, which is the most interesting Afro-Brazilian Brazilian state.

I remember 1 time I was invited to his house for dinner. They had a great mokaka [phonetic], which is a Brazilian dish using palm oil, and it's very similar to West African food, actually. It was very good.

I would work with him on what to put in the surveillance report. We worked on the tables together. We would put a graph

or something in very rough Portuguese, which he would change. And sometimes I would wonder why some of my words didn't work. One time, I was trying to describe the peak of the outbreak for a histogram. And I looked up peak in the dictionary, and he looked at the Portuguese word I was going to use, and evidently it was their word for orgasm. He looked at it, and he said, "We can't use that word," and so we had to use another word. But there were little subtleties like that I had to learn.

Chillag: You've gone back to Brazil for reproductive health. Have you seen any of the communicable disease contributions that you made?

L. Morris: Like I mentioned, the last case of smallpox was in '71. We left there in '70. They then expanded our surveillance report to 6 major communicable diseases, calling it the BBoletim oletim epidemiológicoBoletim Epidemiologico instead of just a report covering smallpox.

You can see our influence in the current surveillance at the Ministry of Health even today and in the fact that they have an epidemiology training program now in Brazil. The rationale for doing surveys, to evaluate, is now incorporated into their AIDS program and also in the maternal-child health area. So I always thought of that as a big success that that stuff continued after I left.

Chillag: That's amazing. I mean, it's not just the smallpox, which is just so amazing in and of itself, but this kind of effect. I mean, what an impact for a career.
So, what do you think was the biggest challenge of the smallpox work in Brazil?

L. Morris: The first was getting them to accept the evaluation of the vaccination program to avoid more outbreaks in areas where supposedly everybody was vaccinated.

The second area was the switch-over from mass vaccination to surveillance-containment, which was started in, I guess, Nigeria, West Africa, with Bill Foege [William H. Foege] and the support of Don Millar [J. Donald Millar] and D. A. Henderson [Donald A. Henderson]. Part of that strategy was that the other consultants and I, along with internal help from people we knew better in the program, finally convinced the Brazilian health officials that this new strategy was coming down. In '69, all

the big states in the south were just starting mass vaccination. So we discussed-and they accepted-their having EIS type Officers work in the 4 of the biggest states: Bahia, Minas Gerais, Paraná, and Rio Grande do Sul. Sao Paulo, the biggest state, went its own way.

And to introduce the new strategy, we had a big training course for these people. There were some state coordinators, plus they brought in about 6 or 7 young physicians working in the special public health service. They were not more than a couple of years out of medical school, enthusiastic, ready to be assigned to these big states and to improve reporting and introduce surveillance-containment. And we had a 2-week training program at the Hospital Emilio Ribas in Sao Paulo, which at that time was the smallpox hospital. In the '80s, it became the AIDS hospital.

Chillag: Interesting.

L. Morris: The course covered general epidemiology and survey techniques, but it also introduced the surveillance-containment methodology. And I remember that we had a paper published by 3 of the trainees from 3 states Bahia, Minas Gerais and Parana). In 1969, they investigated 33 outbreaks in the surveillance-containment situations. There were originally 27 cases reported, and they found an additional 1,500 cases. So it suggested that reporting was only about 2% in these big states. These were all part of surveillance-containment investigations.

So I think introducing surveillance-containment in those big states helped shorten the campaign, although mass vaccination in the school populations, things like that, continued. But switching to surveillance-containment-getting it going and functioning-was the challenge.

Chillag: Yes, I know. I understand the magnitude of what you just described to me. But could you speak a little more about this for the lay person? You know, it sounds so matter-of-fact if you don't fully know about this.

L. Morris: Well, Brazil had better communication systems than West Africa, but you have to remember Brazil at that time was a country of 120 million people; the whole Amazon area was without roads. The poverty in the northeast was quite real. It was really 3 different countries. The southern part, the industrial part, was

much more developed. Then you had the northeast, really agricultural, lot of poverty. Then the Amazon was different. People get around by rivers and stuff like that.

So in a country with very few good Federal-State relationships, training the federal Ministry of Health and the state health departments was in the mix of trying to get this whole thing going and accomplished.

Chillag: Yes. That's amazing.

So what do you think were the biggest rewards for you of participating in smallpox eradication?

L. Morris: We had our third girl down there, and Jane was mentioning how they love kids there. In many of the Spanish-speaking countries of Latin America, you could be a 4th-generation person, but you're still not really a Venezuelan or a Mexican or something. But in Brazil, they said about our daughter, "She was born in Brazil, she's a Brazilian." And she even got a Brazilian passport later on. So we loved the people.

There were some rough areas. I remember in northeast Brazil, the first couple of trips reminded me of how the West in the United States might have been, you know, guys with guns and horses, riding around and things like that, and not having bathrooms.

But I must admit, living in Rio was not a hardship. We happened to live 3 blocks this way from Copacabana Beach and 4 blocks the other way from Ipanema Beach, so we can't say that Rio was a hardship.

Chillag: Did the West African guys tease you any for all your hardships?

L. Morris: The other thing that helped push surveillance-containment was that D. A. Henderson held a big meeting of smallpox laboratories in Brazil the 2nd year,'68, to talk about surveillance-containment in West Africa. One of the attendees was a person from the smallpox lab in Moscow. And the Brazilians had prepared a field trip to get participants out of the meeting room and into the next state, where they were vaccinating. But she was very concerned. She came up to me and said, in English, "How can I go on this trip?" I said, "Well, they're going to have a bus to take everybody there," and so forth. And she said, "But isn't my visa only good for Rio de Janeiro?" At that time, if you got a visa for Russia, you could just be in Moscow unless

you had a special permit. She was very surprised that it was different in Rio. Plus, I guess she had the impression, from whatever education she had growing up, that in Latin America, everybody was poor, the capitalists are killing them, yet she saw people going to the beach, every restaurant full. She was surprised at all this.

But D. A. having that meeting there was also helpful to us, continued stimulation of the Brazilian program.

Chillag: Do your kids remember Brazil?

J. Morris: A little bit. The 2 older ones do remember. The young one, she was only 2 when we came back to the States. My oldest daughter was in a Spanish class in the United States, and the teacher asked her to count to 10 in Spanish, and she immediately rattled off in Portuguese. The 2 older girls spoke fluent Portuguese but then totally forgot everything they knew. Our oldest daughter lived in Miami, and she understands and speaks pretty good Spanish.

L. Morris: She was at Miami Children's Hospital for about 10 years, and a lot of the patients were from Latin America.

J. Morris: But our 2nd child, she doesn't remember really much at all.

L. Morris: They were 7, 5, and 2 years old then. Now when we left,, the 2-year-old didn't speak much, but she understand Portuguese because she was with the maid a lot. But although she doesn't remember much, she feels a great affinity for Brazil. After she graduated college and was working on a federal grant doing social work in Athens, Georgia, we fixed up a trip to Brazil for her to stay with colleagues of mine in 3 different states, and that really turned her on. And, as I mentioned, because she was born in Brazil, they issued her a Brazilian passport. So she can work there, and she got some job offers in teaching. She had 1 more year on this grant she was working on, and she was thinking about going down there. She met a guy that year, so she never went down. But she feels a strong affinity, just that she was born there and that we gave her a Brazilian first name, Eliana.

J. Morris: And her middle name is Iraci, who was "An Indian princess from the northeast state of Ceara.

Chillag: So now I'll ask you to sort of step back from Brazil and think about the program as a whole. At what point did you think smallpox could actually be eradicated?

L. Morris: This was doubtful to some people because they claimed there could be hidden cases in the Amazon region...

In '69, we expanded to the south, the populous states, where we introduced surveillance-containment. I went down for 2 years, then extended for a third year because I didn't think it was over. I think I thought that I had to see it through another year anyway. This is from '69 to '70; but the full year of '69; I came back in February of '70. And towards the end of '69, a lot of progress was made in the southern part of Brazil, and the surveillance systems were stronger. And at that time, Dr. Langmuir offered me more career development in demography and population studies. So I think we left in February of '70. The last case was in early '71. So I think it was towards the second half of the 3rd year.

Chillag: So, how did that feel when you heard it was the last case?

L. Morris: In Brazil, it wasn't as famous as the last case in Somalia, but, man, it was great!

Chillag: Yes. Has anything in your career compared that that? I'm just curious.

L. Morris: Reproductive health has been a different kind of challenge. It's not as easy to eradicate unintended pregnancies and women dying of illegal abortion. Reproductive health is a different kind of challenge, more long-term, but it has been a good challenge and a very important one for women's health.

Chillag: Which sort of brings me to another question. How has your participation in smallpox eradication influenced the choices you made in your career afterwards?

L. Morris: I think the biggest thing that transferred over was the importance of good survey techniques and evaluation using sample surveys. This is especially true in reproductive health, where things aren't reported like a disease and you have to use sample surveys. That fit in with my statistical background and so forth. So I think that was the biggest transfer of skills, from smallpox to reproductive health.

Chillag: And how would you, Mrs. Morris say that your being there affected your life afterwards?

J. Morris: Well, it made me appreciate help because I had 3 children. I learned to see how other people live, and that was good, and to appreciate how much we do have right here.

Chillag: So, do either of you have anything else to add that you think it's important for people to know about this experience as a whole?

L. Morris: First, it was wonderful to be part of the esprit de corps in the Smallpox Eradication Program, to be part of eradicating the disease. Later on, of course, I was well out of infectious disease into reproductive health, but then came polio control and eradication. We continued some of our reproductive health work in Brazil as well as other parts of Latin America, and also Portuguese-speaking Africa, Guinea-Bissau, and Mozambique.

I was able to really maintain friendships with people. One of the persons we trained for surveillance-containment became the head of all vaccine preventable diseases in the Ministry of Health in Brasil. Now he's an advisor at PAHO in Brasilia, and I had lunch with him. So maintaining friendships was important. Some of the people I worked with went to PAHO, one went to Ethiopia for WHO and then became head of immunization for PAHO for Latin America. So I've been able to maintain friendships and continue following Brazilian soccer.

Also, over the years, I've met most of the Brazilians who've come to CDC for training, and I followed the World Cup. I was over at the home of some Brazilians' who were working at CDC in 2006, and, of course, it was disappointing to lose that year.

But the other thing that carried over was from FETP [Foreign Epidemiology Training Program], the idea of trying to expand somewhat into noninfectious diseases. Three years ago, we (myself and a colleague from Brazil) conducted a 2-week course on basic epidemiology for reproductive health; that helped me translate the manual into Portuguese for the FETP program in Brazil. And a heavy content of that 2-week training was the importance of surveys.

And I guess that CDC has FETP in around 12 or 13 countries now, some of it paid for by the countries themselves. World Bank loans also come into play, sometimes even paying the salary of

the CDC person.

Chillag: Do you have anything else you want to add?

L. Morris: No, no, thank you.

Chillag: Well, it was really an honor, and I thank you very much.