**FTS-CDC-PHPPO**

**December 15, 2004**
**12:00 p.m. CST**

Coordinator — Good afternoon, and thank you for standing by. At this time, all participants are in a listen-only mode. After the presentation, we will conduct a question and answer session. Today's call is being recorded. If you have any objections, you may disconnect at this time. I will now turn the call over to Dr. Dan Hubbard. Doctor, you may begin.

Dr. Hubbard — Hi, everyone. Welcome to the 2004 Public Health Teleconference Series: Infectious Disease. This is Dan Hubbard, State Training Coordinator at the Public Health Laboratories in Concord, New Hampshire. Today's teleconference is being hosted by the New Hampshire Division of Public Health Services, Public Health Laboratories and is sponsored by the National Laboratory Training Network in cooperation with state public health laboratories.

The title of our program is, "WHO Activities to Strengthen Global Public

Health Diagnosis and Bio-safety." A few program notes to go over; after the program, each participant needs to register and complete an evaluation form. Documenting your participation helps us to continue to bring high-quality training programs in a variety of formats. If you do not register, we don't know you attended. So this is extremely important. To do this, go to - I'm going to give you a Web site - http://www.phppo.cdc.gov//phtnonline/. The password is WHO - all capitals.

When you have completed the registration and evaluation form, you will be able to print your CEU certificate. You have until January 15th to complete this process. The instructions are in your original confirmation letter and the general handout. They were also e-mailed to each site representative this morning.

If time permits, the end of the program will be opened up for questions. You are on a listen-only line. We cannot hear you. You cannot hear us. Therefore, anyone that wishes to harass the moderator cannot do so. If you experience any problems with the line during the conference, please press star zero. This is signal the attendant that you are having a problem. Again, welcome and thank you for joining us. We have 55 sites from

across the United States listening to this teleconference.

Today's speaker is Dr. Bradford Kay. He is a coordinator for the World Health Organization Laboratory Capacity Strengthening Program. He began his career as a research scientist and expert in public health laboratory practice. He is a former associate professor of International Health at Johns Hopkins University School of Hygiene and Public Health and former research associate professor of medicine with the University of Maryland School of Medicine.

He worked for more than 13 years with the Centers for Disease Control and Prevention in Atlanta, Georgia and five years with the WHO as the regional laboratory advisor for the WHO African regional office and currently, as coordinator of WHO global activities for laboratory capacity development, bio-safety and preparedness for deliberate epidemics.

He has 16 years of international experience having lived in Spain, Peru, Bangladesh, Egypt, Zimbabwe and currently France and I am totally envious. It is my pleasure to introduce to you and to welcome our speaker, Dr. Kay. Take it away, Dr. Kay.

D. Kay Very good. Thank you, Dan. I appreciate that, and thank you for the participants that are joining this presentation. I hope you've had an opportunity to look at the presentation that I sent to NLTN and that you'll have it so that we can follow along together because I'll sort of do it as a slide presentation and you'll look at what I'm hopefully talking about. If you get confused, periodically, I'll give you a clue as to which one of the slides that I'm referring to.

So it's a pleasure to be part of NLTN's training program. I'm joining you from France where right now, it's about 7:15. It's cold here, and it's been a good day. Let's start.

WHO Activities to Strengthen Global Public Health Diagnostics and Bio-safety. The issues, and I'm on the second slide now. Global health security issues affect everyone. That's pretty much what this slide summarizes. We all play. We are all are participants in health security. Communicable diseases continue to affect the global community and those are naturally acquired. They can also accidentally acquired in a bio-safety breach. Unfortunately, they can also be deliberately released and that's a topic we'll deal with a little bit later on in my presentation.

The impacts, though, of however these diseases occur -naturally, accidentally or deliberately - are pretty much the same. There's, obviously, illness and sometimes death. These diseases can destabilize disease prevention control programs very much as we would see in a pandemic epidemic; disruption of travel and trade, tourism, economic consequences and I know you're looking at that young lady with the mask on thinking SARS - exactly.

The bottom slide there, the gentleman walking away from what looks like a fermenter, it is. That's a Iraq and during the war, there was great disruption, obviously, to their public health infrastructure.

We need early warning systems to address diseases and these disease threats come in many, many different packages now. I'm on the third slide, and it has a collage of pictures that represent the kinds of threats that we're seeing. Obviously, when you have mass gatherings of people, whether they be refugees or pilgrims or even people attending the Olympics, you have an opportunity for them to get communicable diseases and these diseases can be either naturally acquired - we've had that in the Haje - or there could be an act of bio terrorism.

Obviously, international trade and travel, the rapidity with which we can change continents and literally fly around the globe is an excellent opportunity for organisms to travel rapidly and they do and indeed, the SARS epidemic was, again, a good example of what can happen in a situation where you have people traveling and you have communicable diseases on the loose.

Our next slide refers to the International Health Regulations. I could give you a whole talk just about the IHR, as we call them in WHO, but it's basically a renegotiating of the agreements on how we coordinate the response to disease threats of international concern.

In the past, there have been international health regulations that have required member states to tell us, tell WHO, to report cholera, plague, etc. Unfortunately, that really hasn't happened and there are no teeth to the regulations and many countries just don't report. I spent four years in the cholera hospital in Bangladesh and Bangladesh has yet to report its first cholera case, and I assure you, there are many cholera cases in Bangladesh every year.

So the International Health Regulations are a re-evaluation of that global

agreement. It's not a bilateral agreement, such as a treaty. It's more as just what I've said - an agreement between member states and WHO. Interestingly, we're finding at WHO that much of our information is coming through non-traditional sources anyway - the Internet and a variety of informational sources that are very rapid, sometimes not terribly reliable, but indeed, it's very hard for member states not to acknowledge that they have an important or an infectious disease going on.

The International Health Regulations certainly take that into consideration. It's more an agreement on how we'll communicate with one another. Instead of a list of diseases, we think that a better way is to have health events of international concern and ask member states to please help us to stay in the loop on those.

We might come back to some of the issues of IHR later, but you should know that this is ongoing and in the next few years, we expect that there will be a completely, new, revised International Health Regulations. The World Health Organization's 192 member states will subscribe to that, we're sure, and it will help us to sort of reevaluate how we communicate. Let's go to the next slide.

Diagnostic capacities are essential elements of health security. I'm a laboratorian. I came up as a microbiologist. I work in San Diego and then in Massachusetts. I had some very good bench training and bench experience, and one of the things that we feel are tremendously important is to have laboratory validation, laboratory verification of these disease events.

On the slide that you're looking at, there are two parts of it, two halves. One is the disease early warning systems. These are notifications by healthcare facilities. This is the more formal system that we deal with. It's health departments; it's ministries of health, and their reporting. Indeed, they may report something very, very unique and very unusual, but you can see that there's a laboratory validation that would usually precede the alert and the response activities. It may not. Sometimes, there's syndromic information that's important enough and things can be activate before laboratory validation. But it's certainly a key component of the response.

On the other side, epidemic intelligence. We have health information from the media, from the Internet, from a variety of sources - it might even be rumors. That, too, is important information and it must be verified.

Again, the laboratory needs to be involved. This information may be the first information that we have for a very unusual health event. So whether it's a national control program on the left side of the diagram, or if it's an emergency response program for exceptional risk - both take the laboratory.

Let's go to the next slide, "The Situation." Most countries, unfortunately, lack both epidemiologic and public health diagnostics. Now, when I say "most countries," I need to clarify that - most developing countries. You'll see the bullets on my slide - epidemiologic capacities. What are we talking about? We're talking about structured epidemic intelligent systems where they are structured and they communicate internally and externally. They should have an action oriented outbreak indicator and threshold.

If you see particular types of patterns of diseases, it should be an indicator and perhaps if you have, say, a diarrheal disease in a certain period of time during the year in a certain age group, there may be a threshold that's crossed and you say, "Well, it looks like we're beginning an epidemic of whatever this is."

Structured response mechanisms for epidemiologic information and confirmation capacities. These are all of the things that we find very, very much lacking in developing countries. As far as diagnostics, well, in most countries, it's even further down the ladder. Laboratory involvement is often lacking. The laboratories do not have appropriate roles. They have very little advocacy or resources. The infrastructures, whether they're national or global, are very, very limited and in many cases, they're missing.

Bio-safety awareness and bio-safety practices are really not even on the radar screen, unfortunately, for many, many of the member states that we work with and pathogen security. Keeping your pathogens safe in a laboratory environment is certainly a concern. It's a concern for the developed world. Unfortunately, it is not a concern to many of our colleagues in the developing world. This represents a very significant challenge to WHO, when we are faced with perhaps 100 or more of our member states who are facing such great problems.

The next slide, slide number seven, is the World Health Assembly resolution number, 5516. It was made in 2002. Basically recognizing the global needs, they asked WHO to do the four things in those bullets:

Strengthen global health surveillance, assist emergency preparedness and response, provide guidance and technical information, and develop new tools. Indeed, our WHO program that I'll be describing to you is trying to respond to those needs and trying to provide needed tools and needed programs to the global need that was identified in the World Health Assembly.

Let's go to the next slide. What is WHO? Well, WHO, obviously, we're a UN agency. The World Health Organization has existed for a little over 50 years. We have a global network with privileged access to countries. We do have, as the slide states, 192 member states, six regional offices that are shown in your slide and we have our headquarters in Geneva, Switzerland.

In addition to this, we have 141 country offices where we have representatives in the country that are able to try and assess and implement WHO programs in those countries. So it's a very broad and a very large network.

Let's look at the next slide, our WHO CSR strategy. What is CSR? You'll see at the bottom of the slide, it's the Communicable Disease

Surveillance and Response Program. There are many programs in WHO. We are just one of them, but one of them which focuses on communicable diseases and on the surveillance on the response.

We're basically trying to build programs in three different focuses, foci - national, regional and global. We must build at national level because that's where the epidemics happen. If we don't have epidemiology and laboratory diagnostics at the national level and if those resources are not integrated into some way of reporting, then we don't know until somebody from the outside begins hearing rumors and something is reported in a different way.

Obviously, from the national level, we go up the next to the regional level, and I mentioned earlier that we have six regional offices. So the way we look at the world is to divide it up into six pieces. Those regional offices have regional reference centers, information sharing capabilities and many times, there's an opportunity to integrate surveillance and diagnostic activities. We're working on that. It's a challenge and it's a challenge in the United States. It's certainly a challenge to bring member states together.

Finally, globally. Our disease alert and response systems are globally oriented in that we are trying to gather, in real-time, information as to what is going on in any part of the world. Let's look to the next slide, the capacity strengthening activities, and I mentioned how epidemiology, epidemiology is simply studying the diseases that are within populations and public health laboratories working together.

They are part of our programs, two very important parts. You can see the activities that we have listed underneath each one of these specialties. In epidemiology, there's the prioritization of diseases at national level. Are the countries looking for the appropriate diseases in their borders? Obviously, if you are in a tropical country, you're going to have to deal with tropical diseases and they need to know what are the greatest threats that they have. Establishing epidemic intelligence systems, early warning systems, monitoring, evaluation, etc. - all the way down.

On the right-hand side, the Public Health Laboratory, we need standard diagnostic tools, and those are standard diagnostic methods. Many of them are classical methods. They're not rapid. They're not even things like APIs, which are very common now, but in many developing countries, these would be a tremendous luxury and so they have to rely

upon really classical microbiological tests and good microscopy.

Building live infrastructure - trying to get resources that are sustainable. That's another big problem with the developing countries. Their resources are not sustainable. They get a microscope this year; they may never get a bulb for it next year. If it breaks or what have you, they're sort of out of luck because they don't have a sustainable resource for the funds and the equipment and the materials.

There's also a missing management component and we feel very, very importantly there needs to be quality assurance, quality control. A lab really isn't worth investing in if the information that they're giving is not accurate and not timely and not correct. So quality assurance, quality control are important. Bio-safety is obviously important too. The SARS epidemic; after the epidemic, there were three releases of the SARS virus in Singapore, Taiwan and China and in all three of those instances, it was due to a bio-safety fault, not due to poor infrastructure because they were coming from very well structured laboratories with very good equipment. The problem was work practices. Down at the bottom, you see data management and analysis information dissemination - things like that this - that build strong programs. Let's look at the next slide, our Laboratory

Capacity Strengthening Unit.

When I was introduced by Dan, he mentioned briefly our Capacity Development Program. When I came to France three years ago, there was a challenge for us to set up a program that would uniquely focus on the public health laboratory and try and integrate those laboratory skills into national epidemiology programs. We recognize that there were great, great needs. I had come from Africa where I was the regional advisor for 46 African countries. Coming from there was a very, very good introduction to the kind of needs that exist not only in Africa but southeast Asia, southwest Asia, in many parts of the world.

What have we set up? Well, in Leon where our office is based, and you may wonder, "Why are you based in Leon? I thought you said you were Geneva." Well, we are, but WHO is also supported by member states and the French government just happened to give us $20 million with the suggestion that it would be very good to have high profile in France. So Leon has been home to this program for the last three years. France is certainly not the only one that's contributing, though. In fact, between the French and the United States, those are our two biggest donors.

We have across the top of this slide; you'll see the five boxes - training, EQA (External Quality Assessment), development of infrastructure in countries, distance learning and follow up and partnership development. Those are activities that we identified as really important to be able to help strengthen laboratory capacities. I think all of you that are listening today are very much aware of each of these aspects and you probably are doing it in your own laboratories.

In Geneva-based programs, we have our bio-safety and preparedness for deliberate epidemics. I'll mention a little bit about those later, but those are a whole group of people, about 13 of them, that are in Geneva. Let's look at the next slide, "Program targets." Development of globally relevant programs, and tools that strengthen those three things - public health and national referral labs, biological safety and security of pathogens and all of these building national health security. These are our program targets and what we're trying to build, but that first one really says a lot - public health and national referral labs.

In the United States, we have a good public health system. There are other countries that don't have public health laboratories. They have laboratories in hospitals, in medical centers and they do the referral work,

national referral work, but they're not public health labs. So we sort of us the terms interchangeably - public health or national referral labs.

Take a look at the next slide, and it has a whole list of publications, which probably are not showing up really well on whatever you're looking at. It was just a collage of things that we have put together. They are food safety issues, manuals on how to isolate and identify plague. Some of it is bio-safety. Some of it is the transport of infectious materials. WHO spends a lot of its effort producing standards and guidelines that we give to member states and ask them to consider implementation. They can take them and borrow from them. They can copy them directly if they want, and indeed, many do.

Many times, such as what you do with the Centers for Disease Control, you'll see a good reference laboratory manual and you'll modify it to your own use. That's what we have tried to do - give them models that they can follow. Let's look at the next, strengthening epidemiology.

These bullets down on the left-hand side are the things, which are epidemiologists - there's about 30 of us that work in this program, the Leon Capacity Strengthening Program and we have eight or nine

physicians and veterinarian epidemiologists. They have worked with our colleagues in Geneva on everything that you see listed there - training modules, assessments, try and identify what their needs are, field training programs and on it goes. Next, there's the WHO recommendation for surveillance and surveillance standards.

You probably heard about the global outbreak alert and response network. This was very active during SARS. It is a network of networks and indeed, there are more - your slide says 110. We have more than 130 different institutions and networks that pool their resources. This was what I was talking about earlier with the International Health Regulations. There are so many networks, so many sources of information that it is virtually impossible for a member state to have a significant outbreak of an infectious disease and not have it found out.

We are, I don't want to say exploiting in a negative sense, but I guess in a very real sense, we're exploiting that openness of information. Indeed, the Health Canada has developed the Global Public Health Information Network, GPHIN as we call it.

GPHIN is basically a Web crawler, and it looks for key words. In the

newspaper, in articles, in magazines and a variety of print sources and electronic sources, it searches globally and in - I'm not sure how many languages, but multiple languages - for key words. Those key words are then followed up. Indeed, it's been amazing what things have been first identified to WHO just through this Web browser. Twice a day, GPHIN downloads a report to WHO and twice a day, that report is analyzed.

The other things you see - rapid assistance. If there is, indeed, an outbreak and a country requests assistance, we have teams not only at headquarters, but we can mobilize teams from around the world with experts from, say, the Centers for Disease Control or from other countries that can go as rapidly as we can get them to the source of the problem. The Global Outbreak Preparedness and Response Strategies are growing every week.

Let's look at the next slide. It's a picture of a fellow in a laboratory, and indeed, one of our trainees that I'll talk to you about in a few minutes. We have a goal for the public health labs that we are working with, and that is sustainable support for health security through good laboratory practices. What do we mean by that?

Well "sustainable" was a very carefully chosen word because we want

public health labs in our developing countries and indeed, around the world, to have sustainable support. They need to recognize and their governments need to recognize that they are key players in health security. You must have good diagnostic practices.

Let's look at the next slide, the summary of core diagnostic functions. What are we focusing on? Well, all of these things that you see listed. Certainly the identification and characterization of priority agents and indeed, in some of our member states, we have to help them to see what priorities they're going to put because they really don't have the ability to isolate and identify everything.

So the identification, the characterization, food and water are essential parts of health security; quality assurance, quality control, as I mentioned to you earlier. We must build in each of our laboratories a sense of responsibility for good laboratory practices and QAQC is really, really important.

Information management and communications are very difficult. A lot of things are in logbooks and it's very difficult to go back and get it out. Sometimes, laboratories have very useful information, but there's just no

way to share that information. So we're trying to respond to that. Training and continuing education we feel are important, and just as you're doing now by this means, we're trying to find a mechanism to offer public health laboratories around the world training and continuing laboratory education.

Policy and advocacy, yes, we need to help member states build that and bio-safety and insecurity. I can talk probably on each one of those things for quite a while. You wouldn't want to hear it. Let's keep moving.

Distance learning. We have begun a program in the Leon project, as we call it, to develop training resources. One of the things we found early on was giving somebody a computer and giving somebody an e-mail access was the single most empowering thing that we could do. It was really quite revolutionary. We had our first cohort, as we call them. We brought in seven countries and basically, we're learning from them. What are your needs? What do you need? What's the reality in your country? Having come from Africa, I was pretty well aware of that, but we had seven countries that joined us and we gave each one of them a computer and we gave each one an Internet connection that we maintained through the WR, WHO regional office, in their country. It's amazing. It's absolutely

amazing.

We started getting information from them. We trained them in how to use the computer and how to do some searches and some basic things, and they were with us for about 12 weeks, this first class. As I said, it was absolutely amazing to see what they did, and these were people who had not, for the main part, had any experience at all with computers.

That convinced us that we needed to do some serious consideration about distance learning and information resources in electronic format and you see all of the things that we have listed there - eLearning materials, networks, CD ROMs, etc. That's come a long, long way.

I was talking with Shula Ecsk out of the CDC Laboratory Advisory Group and she's part of the NLTN. Shula was saying that she'd seen on the Web that WHO had a resource center for national public health laboratories and it was just recently launched. That's exactly what we did. We created what's called an Internet portal for our laboratories, and you can find this; in fact, if you want to write this down, I'll tell you where you can find it. It's at www.who.int/labresources. I think that will get you into it and you can navigate from there. If you have difficulties, at the end, I'll give you

my e-mail and I can put you in contact with how you can get more information about our lab resources.

We're in the very early stages of this, but basically, what we're trying to do is one-stop shopping for the public health lab - standard operating procedures, all of the manuals that we have whether bio-safety manuals or you name it, the plague manual or the Anthrax manual or the tularemia manual or whatever people want. We are rapidly putting them into an electronic format and putting them into this resource center.

We also have a chat room. It is a moderated section that we can take direct questions and we can come back and respond to microbiologists' questions. We get all sorts of questions. We get questions like, "Where can I buy diagnostic materials? Where can I get an antisera for this or for that?" We try and answer their questions.

Indeed, it may not be something that you in the United States would use on a regular basis, although you might, but we find that our resource poor countries have really embraced this. So that's exciting. Let's keep moving.

The next slide has a picture of the African continent and it talks just a little bit about our EQA program. As I mentioned, we felt that establishing external quality assessment was really an important thing and that member states and public health labs needed to be a part of external quality assessment. We now have 46 laboratories in Africa that are signed up for three programs - plague, Anthrax, meningitis. These go out in three languages - English, French and Portuguese. We have three shipments a year.

This has been ongoing now for three years and we have a contracting laboratory in South Africa that is doing a tremendous job of putting this together. We are in the next phase of establishing an external quality assessment program in the Eastern Mediterranean region and we will very shortly after that be establishing one in newly independent states in Eastern Europe.

Let's go to the next slide. The next slide talks a little bit about this regionally based, two-year program for national laboratory specialists. Planning groups one through four have already been entered into the program, and as I mentioned, there's an opportunity for us to field test in real terms what are their needs and how can we help them? You see a

group of our cohorts, as again I refer to them. They're looking at computers because we spend a long time and a lot of time, a significant amount of time when they come to Leon learning how to use a computer.

As I speak, right now, training group number four is meeting in Wagadudu, Burkina Faso and they're having a three-week training session. We decided that we would not do all of our training sessions in Leon, that that was not value-added, but rather to take them to the geographic area where they're working so that we could really model what they need in the environment that they're working.

You see the little textbox. It talks about what we train these folks in and the methods obviously. Management principals. I don't know about you, but when I went through my bachelor's degree in microbiology, I didn't get any management. In fact, when I went through a master's degree, I didn't get any management. It wasn't until I was in a doctorate program that I finally got a management course.

Unfortunately, many of our public health microbiologists and the senior microbiologists in developing countries have no management skills and they need it. They need it from everything from how to write a grant

application, how to do a budget, how to make a good request to their national government for the supplies and materials that they need and on and on.

You can see the other things that we try to stress and we have modules that we have been working on with experts on each of these issues and there is more as well. But these are the groups that we have been learning from, and you can see we have quite a range of developing countries. We have African groups. We have those from the Eastern Mediterranean. We have the Eastern European. Very, very different in their needs and really helping us to understand how to put this program together.

Let's look at the next slide, …national laboratories and specialized institutions. This is one thing that, perhaps, your laboratories could play a role. In fact, APHL will be-- We meet with Scott Becker and with a variety of people from APHL and they with us. One of the things that we're looking at now is how can we twin national laboratories? How can we bring into a unique relationship people from developing countries and developed countries? That certainly could be in a residential program where somebody actually travels, but it could also be where people are helping each other virtually through the electronic media where we can

link people up, exchanging information, mentoring, research - you name it.

We're meeting, actually, with WHO next month on trying to put together some thoughts on how to actually make this happen and what kind of costs would it entail. We're trying to do it at the low-end of the spectrum so that it doesn't become overwhelming in that we need millions of dollars. How can we do this and just get people linked up usefully and communicating? So that's an exciting thing that we hope that many will be part of in the future.

Let's look at the next just very briefly - "Successes with our capacity program." We certainly have had some successes in the short three years that we've existed. We do have a "Core Capacities for National Referral Laboratories" document. We have an assessment tool that is key to these core diagnostic capacities and interestingly, it's done in electronic format. You can do it on a desktop or a laptop, and it's an assessment tool that is meant to be comprehensive but something that will give a snapshot in time of what the labs real capabilities are. It's been a challenge to develop it. I'm sure you can appreciate it.

The training modules; there are many of those. We have workshops in a box, and I understand Scott Becker says, "Yes, that's what we called them first." So maybe we've stole that term, but we've done them on SARS, cholera, meningitis, how to do … diagrams, EQA - you name it. We have some very good regional EQA programs. They're model because as you saw, they're not comprehensive. We asked the people in the regions, "What do you need to know, and what would be most helpful to you with an external program?" That's how we came up, in Africa, for instance, with plague, meningitis and cholera.

The electronic communications capabilities; that's really quite exciting and our Web-based resources will, we think, really pay dividends in the future. Finally, expanding our partner base for sustainability of this WHO program. Some of you may say, "Well, Brad, doesn't WHO have a big budget?" No, we have a very small budget. We have a very small budget. I like to think that we're sort of a rounding error on some of the national budgets that our member states have.

We are very poor, and here's an interesting thing. Our core budget, that means the money that WHO gets being a UN member organization, only covers 20% of what we do. A full 80% of what we do is donor supported,

and that means we have to seek funding for it. That funding, believe me, it comes and it goes just as in your programs. It's a real challenge for us.

Our bio-safety program; let's take a look at that very quickly. You'll see some manuals and indeed, the third edition of the "Laboratory Bio-safety Manual" is now in print. It's coming out in six languages. It's like your BMBL - a very useful, sort of laboratory-oriented guide on how to work safely with pathogens. Lots of good things in there, and indeed, our WHO collaborating centers in bio-safety, two of them are in the United States. The Centers for Disease Control and NIH are both collaborating centers with us and they helped us tremendously to put this together.

So our bio-safety program does all of the things that you see listed in those five bullets. We publish. We have training materials and actually, we're revising the training materials that we're working with right now. We have a grant from CDC to do that and we're very grateful to that.

We also are very heavily invested in the regulatory issues - how to ship and how to handle infectious materials in international transport situations. That is a real challenge. It's a great challenge because obviously, these transportation regulations change over time.

Let's look at the next slide, "Preparedness for Deliberate Epidemics." That's one of the groups in Geneva that I coordinate. This linked because we feel that laboratories are a unique resource for, unfortunately, for very dangerous pathogens to be used by those who would use them for harm. We have a program now in WHO that is trying to help member states understand what their vulnerabilities are.

As I mentioned earlier, there are many member states that don't really appreciate how important it is for them to understand health security and keeping their pathogens secure and safe and how important that is globally. So we have a tool - it's a very large tool. It's a checklist and a manual that helps member states to evaluate their own risks and their own vulnerabilities. It asks them a lot of questions and it meant to sort of guide them through, are they prepared? Do they have the diagnostic capability, and is that diagnostic capability linked to an epidemiology capability? Does the military and the security forces of the country ever share information with the health resources, etc., etc.? You can imagine the kind of questions we ask - probably things that you've been working on the last few years developing in your own states.

Lots of that the thinking of member states like the United States are in this preparedness for deliberate epidemics program that we have.

Very quickly, and I realize that I need to cut this off. We're getting close to the end here. Let's just talk about public health and security. In the past, public heath and security have really been two different things. There has been public health issues and there has been security issues. In the slide that you see, it's a …diagram with an Ebola, Ebola-Zaire in the middle. The challenge to health and security is if there is a deliberate and an intentional use of a biologic agent, we in public health are, all of a sudden, directly linked and related to the security by …world.

This is something that we in WHO have not had tremendous experience with. Indeed, we're working with partners now like Interpol and trying to understand what is Interpol's perspective on security. Certainly, it's very, very different from ours. Indeed, when we talk about health security, it's always an eye opener to them.

The challenges to health, public health today are to understand where our roles intersect with those with the security community. I think a lot of you are probably a long way down that road already, and you've probably had

table top exercises and a lot of other discussions and opportunities at ASM and other meetings where you've talked about this, but many of our member states, this is a brand new concept. It's something that is very, very far from their thinking.

Let's look at the slide that says, "Bio-security Issues for Public Health," and in the security issue, the bio-security issues for public health - there are at least five here that I've listed. The first is that diseases continue. We still see naturally occurring diseases. So what we don't want to say is you need to get away from what you're doing in public health and be all focused on bio-security or bio-terrorism and the deliberate issues. That's not true.

We feel, as the second bullet states, a strong public health infrastructure for naturally occurring disease will certainly be the foundation for bio-security so that if there is an intentional use, obviously, it will first be seen, in all probability, as sick people coming to healthcare institutions.

Bio-safety, working safely with pathogens is an essential component of bio-security and bio-security here, using that team meaning keeping pathogens from misuse. There is a problem. In the United States, some of

you who speak Spanish - bioseguridad and bioseguridad are the same word, but one is bio-security to us, and bio-safety.

So bio-safety translates in Latin-based language as bioseguridad. It translates in French as bio-security and we can't really talk about bio-safety and bio-security without defining the terms, and so that is a problem, and we're struggling with that to try and find better terms so that our constituents understand what we're talking about.

Developing countries, as I mentioned, have few resources for bio-safety let alone bio-security. We talked to them about keeping pathogens safe in their laboratories. Often, they're not even working safely with them and so we really need to start where their greatest need is. We don't want to get them confused as to what they should be spending the bulk of their efforts on.

Then finally, sustainable global bio-security measures. They have to be developed, and we all have to agree on them because if we don't agree on them, we probably won't maintain them. There has to be clear advantages to the participants. So at WHO, we certainly just can't say, "Well, you ought to do this; you ought to do this; you ought to do this," and expect

people to do it. It has to make sense and they have to see why it makes sense.

The next slide, "Bio-security Issues for Public Health." It's the second of two. Bioscience facilities are potential sources for pathogens. That's where they occur and if somebody wanted to get a hold of things that could be used or misused, they could easy get them in healthcare facilities, public health laboratories, research universities, etc.

Unfortunately, the bioscience community, if it's a university, they're not uniformly accustomed to the security issues. I know, in the United States, you are know. You've had a heavy dose in the last couple of years of security. In many ways, we wonder about the U.S. model because the U.S. model is certainly not one that we could apply around the world. The amounts of resources and the amounts of efforts and energies that are going into the security would really overwhelm most of our member states. We're trying to get them to practice good laboratory practice and good bio-safety and we're telling them, "That takes you a far piece down the road in security."

We certainly want them to be aware of the security issues, though, because

they need to be. Global norms and standards; we are working to develop these because they don't exist. There are no global norms and standards for public health and public health laboratories.

Regulatory mechanisms for biological materials globally do not exist. Yes, you have your select agent rule in the United States, but Burkina Fasco has no qualms with sending something to … If they are sending it safely or not safely, it's a public health issue, but there are no regulatory measures and mechanisms that prohibit the transfer of materials or even accountability of materials.

Control of certain biological materials, I think we'd all say, "Yes, that's really important." Security measures must be in balance with other priority public health goods. Indeed, when we talk about the developing world, their populations wrestle with a lot of other things other than bio-security.

Let's look at the next slide, "Access to Pathogens is Necessary." I've just said that bio-security is important and I meant it. It is, but from WHO's standpoint, we also need to have access to these dangerous pathogens that we also feel need to be controlled. Why? Well, because we have many

member states that still have outbreaks of plagues. They'll have anthrax naturally occurring. Yes, it happens in the United States and Canada and North America, but very rarely and very sporadically. But we have member states where these are significant issues.

We cannot, certainly, just make dangerous pathogens against the law. Indeed, there has been a great deal of difficulty that we in WHO have had in getting pathogens. Some of your laboratories in the U.S. are collaborating centers for us. For instance, the Fort Collins Lab of CDC. When we've asked them to send multi-resistant strains, say, of plague for part of our EQA activities, it's almost impossible now for us to get them. Even strains that are not on the select agent list are almost impossible for us to get because of the perceived fear that people have of sending something that will somehow get them in trouble.

So it's a challenge for us to maintain an active culture collection, if you will, with our collaborating centers. But we need to let our legislators and the security people know that these organisms must be available for public health and for training, for research, for pharmaceutical companies for basically, just our evaluation; as I've mentioned, our external quality assessment. We do send, as you know, we send plague to 12 countries in

Africa and we have to do it because we have to artificially keep their proficiency because they don't see enough, but they see sporadically cases.

Finally, coming down near the end, "Control of Biological Agents." This is a difficult one and I'm ending this talk because we've sort of done a spectrum. If you've gotten, I hope, a picture of some of the things we do, it's that we're trying to help public health laboratories globally with their needs and controlling biological agents is very, very much talked about in many of our member states in the developed world. There are issues that need to be considered.

First that these agents are ubiquitous and they occur naturally. Traditional security measures can be very ineffective with these agents. They can be easily removed and undetected. Minute amounts, as you all are aware, are very significant. The origins can be almost impossible to trace and it is a concern. It is a very great concern of how we control biological agents in laboratories and how we control them in the sense of keeping of them from those who would use them for harm.

We're spending a lot of time and energy thinking about these issues, and

so are a lot of other people. We're trying to do it balancing the needs for global public health and all of the things that I just mentioned - the training, the EQA, etc., etc. The ability to ship strains around the world so that we can maintain our proficiency as well as our understanding of these strains is really important.

So we're very cautious about the various approaches to do this. A very legalistic regulatory approach might certainly put constraints on public health. Let's look at the next slide, "Norms and Standards."

I guess this is where we're trying to work right now in this laboratory program. We're trying to understand what are the issues and how can we build consensus? How can we help professional microbiologists? Probably most of you are in that category. How can we help you and our colleagues around the world understand the need for codes of conduct? How can we protect these agents that are very valuable, in many respects, from theft and loss? What about export and transport mechanisms? How do we handle that without inhibiting our abilities to do research in public health?

Who should recognize facilities? If you have a containment laboratory, a

BSL4 or a BSL3 or a BSL2; in the United States, it's not too hard to figure out what they look like and what the capabilities should be, but there really are no global standards for those and we're working on trying to establish norms and standards so that we can look across the board and have a common view of what laboratory containment should mean.

Procedures for screening laboratory personnel. There have been lots of discussions on is that an issue, and should laboratory personnel be screened and have security screenings? Perhaps, some of you have been. There are member states that think it's absolutely ridiculous and they wouldn't do it. Uniform procedures for threat and risk assessment, and most of our member states are not thinking about these issues.

To come to the end of this, we would like to, the desired outcomes, we really want public health laboratories to have a bottom up approach to security and oversight and regulatory mechanisms as much as possible. We would like to have common national benchmarks that can be used for the security of these agents and then the rest of the things you see. Consensus standards; they need to be developed. There needs to be a harmonization of national approaches to bio-security; the whole issue of facilities and are those facilitates adequate and can they contain the

agents? These are all issues that we're working on.

Interestingly, one of the things that we're working on right now is polio. We're hoping that polio will be eradicated globally as smallpox was. Polio exists in many, many laboratories around the world; certainly much more than have, or had, at one time, smallpox. Well how do we prevent polio from getting back into the environment? How do we prevent its reintroduction both accidental or as a weapon? What about vaccine manufacturers in the developing world that will continue to develop polio vaccines and grow up 1,000-liter fermenters of wild type polio strains? What kind of scrutiny are they under for bio-security and bio-safety and containment?

These are all issues that we have to work with our member states. They represent challenges. I guess the bottom line is that the strength in laboratories, and this is the last slide, strengths in labs really takes a lot of things. On my PowerPoint, I have these little disks that have these words that you see on yours. They come up one at a time. But all of the things that you see there - training and partnerships, management, advocacy, internal and external QC, follow up and distance learning. These are all part of building sustainable national capacities for diagnostics of

communicable disease.

What are we trying to do in WHO? Well, basically, we're trying to build a program that addresses the unique needs of the public health laboratory. As far as we know, we're the only program in WHO that does that. We're a small program. We don't have a lot of money, but we are pretty enthusiastic about where we've been for the last three years. So with that, I'll conclude and there is time, perhaps some of you would like to ask some questions. Dan?

Coordinator Excuse me, this is the coordinator. Were you ready for questions?

M Yes.

Coordinator Thank you. We are now ready to begin the question and answer session of the call. One moment for the first question.

Dr. Kay I hear you, Dan.

Dr. Hubbard Is anybody still on? Are we taking questions now?

W Yes.

Dr. Hubbard Okay. I have a question. If there's one major accomplishment that you'd like to achieve in the coming year, what would it be, besides moving from Leon to Geneva?

Dr. Kay That's a good question, Dan. Certainly, the program that we've had for the last three years is, in many ways, an experimental program. It's a model program. We're hoping that we will see some real sustainable capabilities in the countries that we're working with. We're working basically with 22 countries right now in a very, very proactive way. We're hoping that their capabilities will not just be developed for one year, but those capabilities will, the capability to essentially feed themselves to continue to develop their own infrastructure, their own advocacy messages, their own capabilities; we hope that that will be the measure.

If you ask me what do I hope for this year, I hope that we'll also have funding so that we can continue the program. We've had some very good indications that our long-term funding, and when I say long-term, we've had a five year grant, as I mentioned, from the French. We are very

enthusiastic that that will continue, which will underpin this. We'll need to know by May of this year.

If this makes sense, then WHO, essentially, will have this as a continuing long-term program. We're in the process right now of being evaluated and having lots of discussions on that.

Dr. Hubbard Thank you. Are there any questions waiting? No. I appreciate your stress on the collaboration between Epi and lab and certainly if you have some time, you come vacation in New Hampshire and advocate for our public health laboratories.

Dr. Kay Sounds good. Well we found that that's a real need because in many cases, the epidemiologists and the laboratorians in a lot of our member states don't talk to each other and don't have a lot of communication. They don't even know who each other are. That, we feel, is a real missed opportunity. Actually what we're doing as part of our training is, in the Wagadudu session that I mentioned that's ongoing right now, we're bringing the national epidemiologists in with the heads of the public health laboratories and the chief technicians so that they can actually work together on some tabletop exercises and some other things jointly.

Dr. Hubbard Okay. Thank you, again, Dr. Kay.

Dr. Kay It's been my pleasure.

Dr. Hubbard If there aren't any more questions…

Coordinator One moment. At this time, there are no questions.

Dr. Hubbard Thank you.

Dr. Kay I hope that some of the member states, that some of the laboratories that are listening will be able to be a part of our mentoring program.

Dr. Hubbard If anyone has any questions that they think of later, Dr. Kay will answer questions by e-mail. If you send the e-mail to the northeast office of NLTN at neoffice@nltn.org, he will answer. As a reminder, again, all participants listening to the program should register and complete an evaluation form by January 15th. The directions for this are on your confirmation letter and general handout. They were also e-mailed to each site representative this morning. Documenting your participation helps us

to continue to bring high-quality training programs in a variety of formats. When you have completed the registration evaluation form, you will be able to print your CEU certificate.

This concludes our program. Our next teleconference series will begin in February. The co-sponsors of today's program, I'd like to thank our speaker, Dr. Bradford Kay from New Hampshire Pubic Health Laboratories in Concord, New Hampshire. This is your friendly state training coordinator, Dan Hubbard, and soon to be retiring Dan Hubbard. Have a good public health life.