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**Assessing the Human Health Effects
of the Gulf of Mexico Oil Spill:
An Institute of Medicine Workshop**

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P R O C E E D I N G S (9:10 a.m.)

**Agenda Item: Recap Day One Discussions and
Overview of Day Two**

DR. ADLER: Can you take your seats, please. We will start in just a couple of minutes. Good morning. Could we get seated, please, and get started. We have another quite full day. Thank you.

I would like to welcome everybody to the second day of our workshop. For those of you who were here yesterday, I think you will agree that it was quite a remarkable day. It's a rare meeting where each and every presenter presents their work that is right on target clearly presented, and within the timeframe allotted.

This was true of the prepared talks and also the spontaneous comments at the end of the day. And it suggests to me that perhaps the best way to run a terrific workshop is to plan it in only two weeks.

[Laughter]

DR. ADLER: However, to confirm that hypothesis we need to replicate that today, and I actually have every confidence that we are going to do so.

To recap where we are, we were asked by Health and Human Services to achieve five things in this workshop. Yesterday we did two of them: we identified the range of

potential adverse effects on human health that may result from the oil spill and the related cleanup efforts, and we explored how to engage in effective communication with the public about the types and degree of risk.

We learned a lot of things yesterday, and I am not going to try and summarize all of it. But overall we have learned that based on current scientific knowledge and studies of past spills and disasters, we can anticipate some health effects of the spill and cleanup, but there is also much that we still don't know.

We do know that psychological and social effects are both common and serious. Concerns about mental health and social effects were discussed in a number of presentations, and one thing that struck me was in how many different presentations they came up, not just those that were focused on the mental health effects.

We also know the communities possess a great deal of wisdom and the willingness to engage with scientists in true collaborative research, but not in research where they are treated as one person described as "lab rats." We also know that the tendency for work to be done within silos is limiting the value of research.

I think yesterday it became clear what some of those silos are. Some of those are silos that separate scientific disciplines, that separate, for example, the

scientific understanding of animal health and human health, scientific understanding of earth sciences and human health sciences; the understanding of the relationship of mind and body, and the understanding linking biological processes with social and behavioral processes.

Other silos, however, separate scientists from community residents and from their leaders. And one of the things we also heard yesterday was not only that the communities welcome collaboration, but that the scientists are ready to engage in this kind of collaborative work. We also I think are aware at the same time that other silos separate the community, government, and industry, and breaking down those silos will also be important.

Today we are going to be addressing our other three objectives, which focus on how we can start to fill the gaps in knowledge that we surfaced yesterday. Doing so is important so we can gain more definitive information for individuals and communities to reduce some of the uncertainty that now exists, and also to target services to specific populations who are most in need.

These gaps in knowledge encompass those gaps in our science, and also gaps in the information that communities want and need. And we want to consider both of these types of gaps in our discussions.

The specific objectives that we are going to

address today are to first explore the options for creating effective surveillance and monitoring systems, based on available data sources and methodologies. Second, examine the strategies for strengthening the existing surveillance systems and filling in existing gaps, what new kinds of data information will be needed. And three, is to consider the components of a framework for surveillance and monitoring.

To address those issues today we will first hear from state governments about how they are currently monitoring the health effects for residents of their states. Then we will have a panel of researchers discussing methodologies and data sources that can be used, and end with a discussion of components of a framework and next steps.

To get us started we are privileged to hear from Vice Admiral Regina Benjamin, who is the Eighteenth U.S. Surgeon General. As many of you know, Dr. Benjamin founded and directed the Bayou La Batre Rural Health Clinic in Alabama, and also served as Associate Dean for Rural Health at the University of South Alabama.

She is actually the perfect person to start us off today, because she in her own career has broken down the silos of community government and academia, and we are pleased to have her here today.

[Applause]

**Agenda Item: Remarks from the Surgeon General of
the United States Public Health Services**

VICE ADMIRAL BENJAMIN: Thank you, good morning. No slides, sorry. Thank you for having me here, and thank the IOM for putting on this conference.

I would first like to express my sympathy for the eleven workers who lost their lives in the explosion, and to their families, their friends, their coworkers. To those of us who never got to meet them, yet they touched our lives, may they never ever be forgotten.

On behalf of President Obama, I would like to express his desire to protect everyone's health now and in the future, both here on the Gulf Coast and throughout the nation.

We are taking a public health approach to dealing with the effects of this disaster. That is to identify the issues, to treat and contain them, to prevent them from getting worse, and to prevent them from ever happening again.

As the Surgeon General I have 6,500 United States Public Health Offices under my command. These offices are dedicated to protect and promote the health and safety of our nation. We have public health doctors, nurses, dentists and pharmacists. We also have public health

veterinarians, engineers, and other professionals who are currently working throughout government within the agencies you heard about yesterday, such as CDC, the FDA, NIH, HRSA, and SAMSA and all the others that we talked about yesterday.

And the Commission Corps offices were activated on May 27th. We also have 208,000 individuals in the Medical Reserve Corps. These are local volunteers that are trained to assist the Surgeon General in times of disasters and other public health needs. We can work with these local volunteers, such as the Medical Reserve Corps units here on the Gulf Coast, because they are already in the community. And we can achieve a comfort level with the community that would take outside groups months to achieve.

I have a personal connection to the Gulf Coast. I went to college here and then to graduate school at Tulane. But I grew up on Mobile Bay in backwood Alabama. My family's homestead was on the Bay, and we have been there since the early 1800s. As I said earlier, I started or founded and ran a solo family practice in Bayou La Batre, Alabama for twenty-three years. And our town and our clinic was just overcoming or trying to recover from Katrina. In fact, our new building is due to open in August. But now this oil disaster has delivered a new blow.

The water is really a part of our lives. For some we make our living in the seafood industry, in water sports, sport fishing. But for others, we fish, we crab, we throw the castnet for tonight's supper. When I used to cross the Bay on my way home, and I would kind of just expectantly wonder what the Bay is going to look like today because it has its own personality. Sometimes it would be aqua blue, sometimes blue-green, and sometimes it would take on the color of the gray sky. It is really hard to explain what the water really means to us, because it is really in our blood.

My job as Surgeon General is to clearly communicate the health risks this disaster has for the short term and for the years to come. People need to know what this disaster is and how it is going to affect them and how it is going to affect their children.

The current scientific literature is inconclusive with regard to the potential hazards resulting from the spill. Some scientists predict little or not toxic effect on humans or from exposure from oil or their dispersants. While other scientists express serious concerns about the potential short term and long term impacts the exposure that oil dispersants could have on the health of the responders in our communities.

Since the information available to informed

decision making related to the human health impact is inconclusive, Secretary Sebelius contracted with the IOM to convene an independent panel of scientific experts to commence this particular public workshop to provide scientific basis for future research and surveillance.

I am really looking forward to the results of this conference, because when I speak to the American people I want to give them reliable information based on the best science that is available. I want to give them information that is science and evidence based. I want to give them information that they can trust.

I am going to end with a quote that is in the inside flap of your registration materials from President Obama, and this is it: "Science is more essential for our prosperity, our security, our health, our environment, and our quality of life than it has ever been before."

I look forward to the rest of the day and look forward to this panel of some of my very close friends and colleagues that is following me with the state health offices. Thank you.

[Applause]

**Session IV: Overview of Health Monitoring
Activities**

**Agenda Item: Panel Discussion. How Are State
Governments Currently Monitoring the Effects of the Gulf of**

Mexico Spill on Human Health?

DR. WHITE: Good morning. I am LuAnn White, and I am from Tulane University. It is my very great pleasure to moderate this session with our state health officers. I would like to say too that I spend a lot of time working with the state health department here in Louisiana, and that is my other hat that I wear on many days.

Let me introduce our panel. Jimmy Guidry is the State Health Officer from Louisiana, and serves as the medical director for the Department of Health and Hospitals.

Next we have Mary Currier, who became the Mississippi State Health Officer in 2010, after serving as a state epidemiologist for many years. We have Dr. Anna Viamonte Ros who is Florida's first State Surgeon General and the first woman and Cuban-American to serve as the head of the department.

We have Dr. Donald Williamson, who was appointed the State Health Officer and Director of the Alabama Department of Public Health in 1992, after serving as the Director of the Bureau for Preventive Health Services.

And last by not least, we have Bruce Clements, who serves as a Preparedness Director at Texas Department of State Health Services, where he is responsible for health and medical preparedness, and response to programs

ranging from pandemic influenza to the impact of hurricanes. So I think he does a little bit of everything.

I want to ask you, how many of you all were able to go out last night and eat some good Gulf Coast seafood? Yes, I want to say to these people here, that what gets to those restaurants is safe, and what is in the grocery stores is safe. These are the frontline people, and we have had some very distinguished guests telling us about oil and research methods, but these are the people who are really doing it and they are doing it every day. Even before they start I think you need to give each one of them a big hand.

[Applause]

DR. WHITE: With that in mind, let's let Dr. Guidry get started here and tell you what is really going on here in the Gulf Coast.

DR. GUIDRY: Good morning. Those of you that are visiting, thank you for coming here to add to our economy. Those of you that have never seen a live Cajun, you are looking at one, and I don't have webbed feet, at least when I swim I don't have webbed feet.

Certainly we seem to deal with a lot of issues in Louisiana, and looking at the issues we deal with I think if I have to hear one more time 'we have never done this before' it seems like assuming things we have never done

before. There are plenty of people that want to give you advice on how to do things, and there are plenty of people who think about how to improve things. But the bottom line is when you have never done it before, everything is research, everything you do is research.

Literally as we go through this event there are a lot of unknowns. Trying to figure out how to keep people healthy when they have been through a number of disasters, and yet another disaster, and pick up the pieces and rebuilt their lives, certainly is a challenge. It really shows that humans are very resilient, their ability to do this.

When we started looking at dealing with this amount of oil coming to our shores, the things that seemed to take priority at the time were around the animals and making sure that we could protect what we call in Louisiana it is definitely for the rest of the country where most of the seafood comes from. No doubt in our minds it is the best seafood in the country. So certainly that has been a question, how do we make sure we protect that seafood.

Then that leads to questions about well what about the health of those people that eat that seafood, what about the health of those people that are exposed to the chemicals. There lies trying to figure out how to make sure that you mitigate. If you have an event and you want

to minimize its effect on your life, and you want to mitigate that, how do you monitor what is important so that you can make sure that people don't get sick unnecessarily.

Well, you monitor air. And you say to people there are no chemical levels in air monitoring that shows that would impact your health. And then you get the call, I am vomiting, I have headaches, and you are telling me that there is nothing in the air that is going to make me sick.

Literally our approach has been in monitoring complaints, people's claims to exposures, having them report in what they feel like what is going on with their lives. We encourage them to call in, but we also monitor the healthcare that is provided, wanting to make sure that it is the right healthcare, but also to capture what is actually happening in our communities to try to match up what is going on with the air monitoring, the water monitoring, the food monitoring, the essentials that you need that make you healthy, we are monitoring all this. But no one really knows what these chemicals mixed together what type of impact it is going to have on you.

We started surveillance, and we are now in our third week of surveillance, and in that surveillance we focus initially on short term huge human health effects. And we didn't include injuries. We had people report it,

but certainly many of the injuries are a result of people working in an environment that they are not accustomed to, that are working on beaches and in the water. Many of them have never worked there before in 100 plus degree heat. So you can see the difficulty deciding whether that weakness or that nausea, that headache, is related to the oil, or is it related to being in 100 degree heat in a suit.

Literally trying to figure that out as you do these reports, trying to figure out how these are occurring.

The complaints are followed up by our staff in the Department of Health and Hospitals, and our Environmental Epidemiology and Toxicology, and a database is created so we can track this. Reporting has not been mandatory, but the response has been robust. Sometimes people are very happy to share with you what is going on in their lives, especially when their lives seem to be so tumultuous where their economy gets to be impacted, their health gets to be impacted, so literally we have no problem telling you that our lives once again has been impacted.

We promote reporting through our existing system of networking with local providers. So we work with those providers providing care, and we download that to our website. And what do we ask for? All of the health effects related to the spill, potential complaints including exposure to odors, fumes, skin contact, heat

stress, in addition to injuries such as lacerations, fractures, and cleanup or containment activities. All patients that are treated are also related to injury or illness should be reported.

We get the information, and then when we get the information say from a hospital or a provider in a clinic or a provider from a first aide station, we then follow-up with the patients or the cases to find out how they are perceiving their healthcare and what they are thinking. And when you ask them what has happened, they say I got sick. And what from? And many of them say dispersants.

Then we say, how do you know? Well, that's what I hear in the news. How do you know it is dispersants, how do you know it is petroleum? For instance, many people were feeling somewhat nauseated, we did some air monitoring and it seemed to be that it was related to hydrogen sulfide, and hydrogen sulfide wasn't even coming from the oil, it was coming from the marsh.

So you really have to separate out what people perceive and what is real. That is part of our job in the surveillance, it is trying to figure out what is out there. For instance, if you have a number of people complaining of odors and fumes, you have the ability to move a mobile unit to do some air monitoring and find out what it is that they might have been exposed to.

We developed the database, we followed up and tried to clean up that database, and then we provide a weekly surveillance report to detail those exposures. So far from what we have been doing we have seen total exposure related to illness about 621, 143 that have been reported, 108 workers, and 35 general public. There are 20 reports of people who were hospitalized, and most of them were hospitalized for about a day. If they are removed from the environment they get well pretty quickly, and it is usually acute and they get well; 17 that were hospitalized were workers, and 3 were general population. Most exposures involve workers on the rigs or those who were engaged in cleanup activities. The most common symptoms, headache, nausea, throat irritations.

How do we get the reports? We got 34 from our Poison Control Center, people called into Poison Control, we got 73 from the emergency department, we got 33 from urgent care and physician clinics, and we got 3 from the hotline. The most common route of exposure by far is odor, inhalation, followed by skin contact.

There are limits on this data. Because of the nature of environmental exposures there is no attempt made in this report to confirm the exact cause. As I told you before, it would be difficult to do that.

Health complaints are the symptoms and signs

reported by the person. Some of them are objective, for example, emesis or vomiting, and some of them are subjective, I feel nauseated. There are large variations in the symptoms and how they proceed and how they are reported.

How is this report used? Well, we use it to spot trends, what is going on in our communities, is the oil impacting their health. We also use it to ensure the medical resource are available in those areas where people need the healthcare. The media uses those reports to monitor health complaints. OSHA uses it to enhance worker surveillance. As a matter of fact, David Michaels at OSHA recently said that the data was invaluable. Again, monitoring what is actually occurring, what is being reported, and trying to explain from the scientific viewpoint what is going on.

In addition to this surveillance of reporting from the public and reporting from providers, we have also done some syndromic surveillance. What that means is we look for patterns in the healthcare setting that might reveal some kind of syndrome. And what we really looked at were seven hospitals in impacted areas, to look at increases in respiratory illnesses or asthma. Because we had a chemical exposure that might involve making your asthmatic condition or respiratory conditions worse, you

would expect if there was an issue that there would be an up-tick in the number of people showing up in emergency rooms with those types of complaints.

We took this year's weekly data for asthma and upper respiratory infections among those ERs, and we compared them with the past three years. There is no increase to report. That is comforting from the standpoint that the air monitoring is not showing hits that would show health impact that would make you that sick. We are seeing irritant type reactions to the chemical, and we are not seeing an increase in respiratory problems in the emergency rooms or asthmatic conditions being made worse by this event. Again, taking the facts and looking at trends over the past three years, and comparing that to what is happening at this point in time.

How does this syndromic surveillance work? Well, we have a list of things that we ask the hospitals to report, and then we flag those chief complaints which are indicative of specific syndromes. Then those records are reviewed, and we try to figure out if there is something actually going on in the community that is occurring at those hospitals.

Most of the reporting that we are capturing is really going after those illnesses that are acute and certainly those that are really bad that end up at a

provider or in an emergency room or at a first aide station. We have worked with those providers for those people working out there in the cleanup, those that have provided medical care with the company, to make sure that we are tracking what is happening to the workers. Much of our knowledge about exposures come from industry, and people exposed in working in industry every day. That is what a lot of our levels are based on.

This is something very different, it is in the community, it is in the water, it is in the air, and hopefully it won't be here for the eleventh time that you have seen workers.

The question that continually arises is what does it mean for long term health? And how do you separate genetics, lifestyle choices, life stresses, and an environmental exposure today and what it is going to do to you twenty years from now. And this is what we have been monitoring in Louisiana, and this has been our experience and what we are sharing with people.

And as I have told people before, this is more than a spill. This is ongoing leakage of a chemical, and adding chemical to help disperse the chemical. So there a lot of unknowns, so we are feeling like we are in a research lab. It is things that no one has ever dealt with before, and we certainly are using experiences learned from

Exxon Valdez, but this is much larger than that.

So that is what we want to share with you today, and we will continue to work, and we are working with the seafood safety plan, and we proposed to BP and the federal government \$457,000,000 plan for the next 20 years to make sure that our \$4 billion industry recovers. This will impact not only our health lives, but our mental health, our economic health, so all the things that are important. And so happy that you could be here today, that we could share this with you, and we welcome you to Louisiana and hope you will contribute to our economic condition.

Thank you.

[Applause]

DR. CURRIER: I am Mary Currier with the Mississippi State Department of Health, and I am glad to be here and to have access to seafood, thank you very much. Although we do have some oyster beds and places where you can get shrimp in Mississippi as well, and I would say that they are just as good as those down in Louisiana.

[Laughter]

DR. CURRIER: So I am going to talk a little bit about what we are doing as far as surveillance. The oil hasn't hit us nearly as badly as it has Louisiana and Alabama and now Florida, for whatever reason. It has hit a little bit of our Barrier Islands, Petit Bois and Horn

Islands, but especially Petit Bois was just this sort of ribbon of glob that they are calling mousse, that came in one night and then washed away and went somewhere else, so it may have landed in Alabama or Florida, for which I ask forgiveness.

There is a lot of monitoring going on as far as air monitoring, water monitoring, and there will be fish monitoring prior to reopening beds, just to help everybody feel a little bit better about that. The health department in Mississippi is responsible for the human health monitoring, and what we have done is very like what has been done in Louisiana, although we haven't had the reportable oil effect issue that they have had in Louisiana, as we have not really had oil yet.

We have had the other effects, the economic effects especially. We have had people canceling, I've even heard people here at this hotel talk about how they canceled their vacation in Destin because of the oil on the beach and the dispersant in the water. And I have had people back home say the same thing, that they are canceling their vacations on the coast and going elsewhere. So I know it is an economic effect.

Let me just talk about acute effects and what we are doing to monitor those right now. This is like what is going on in Louisiana. We have hospital emergency

department surveillance. We have five coastal hospitals that report to us daily, and then we also have four hospitals inland so that we can compare the two. Looking at syndromes that might be related to some toxicities.

Now I think Dr. Williamson will say in a few minutes we need to move into surveillance for actual worker health, and issues with being on the beach and looking for tar balls and oil, heat related stress and injuries and things like that. But currently we have respiratory illness with and without fever, rash, and other illnesses that are on our monitoring system.

And how that is reported is we get it daily from those emergency departments, as a number and as a percent of all non-trauma patients that were seen in those emergency departments. So you can look at it over time and compare it to the inland hospitals. Then those things are graphed together. You can see, for example, this is the coast county hospitals, which are the bars at the bottom. It is labeled as district, and our District 9 is the coastal county hospitals. That's another reason I really did like the movie *District 9*, did any of you all see that? It was awful.

Then the control hospitals you can see are the pink graph there, the pink line on the graph. And you can see actually we had more of those, and this is for a

febrile respiratory illness in the control hospitals than we did on the coastal hospitals.

So it is important to get that baseline to make sure that we know what goes on routinely, and how things are classified routinely in this hospital, so as we move forward into further oil and perhaps on our beaches we can know sort of what normal is and what routine is. That is what we have here. We have not had very many spikes in these things. We did have a spike in rash illness in one particular area that was unrelated to each other, and they were unrelated to oil. And we had a spike in respiratory illness in one particular area you can see. This is respiratory illness with fever, or influenza like illness, and it was unrelated to oil as well. We look at that over time, and if there are spikes we investigate them.

We also have biosense study, which is the CDC system of the Department of Defense and VA Hospitals, to look at those same syndromes and to monitor those over time to see if they are something that needs to be investigated. They do the same thing with that information, and they get that information to us. The information goes originally to CDC. It is similar to our surveillance data, our syndrome surveillance data and our hospitals.

Then we have the poison control centers. We have one poison control center for the whole state of

Mississippi. We have looked at number of calls related to oil questions, whether they are symptoms that people think might be related to oil or whether they are just informational. You would be interested to know that some of those calls are from all over the state, not just from the coast. And we thought we were looking at all the information that was possible to look at, and then we realized that the Colorado Poison Control Center had been contracting with to take our poison control center phone calls. So while we have 13 calls to our poison control center related to oil, and there have been over 40 calls that went to Colorado, and we are not getting all the information on those. One of our needs is to have those calls come to our poison control center instead of to Colorado. If there is anyone here who can help us with that, we would appreciate it.

So far none of the surveillance data have shown anything related to oil or an increase in any particular syndrome that would be related to oil. Our biggest concern right now is heat related stuff that is going on, and that is what has been seen in workers on the coast so far. Certainly Centers for Disease Control and Prevention are at the ready and have offered to help anytime anything becomes an issue. So we know that they are willing and able and have been in contact with everybody along the coast I

believe, as far as this is concerned.

Now one of the questions I was asked was what are our needs as far as surveillance. Well, we would like the Poison Control Center calls to come to our Poison Control Center, please. But mental health surveillance is something that we have not done a lot of. I have talked to the Department of Mental Health in Mississippi, they have certainly seen an uptake in calls to their emergency fund lines, and of referrals to their psychiatrists and psychologists along the coast. They say it has been about a 10 to 15 percent increase, and this is without oil on our beaches.

We know this is a community, our beach, our coast, is a community that has been so affected in the last five years following Katrina, that they are beaten down. Some of them were just coming back from Katrina. And really Katrina affected all the way up to the Jackson area, we were without power in the Jackson area as well. And this will too, because so much of the beach is related to the rest of the state. We've got folks who are now without jobs because of this, or they are going to work for BP and going out and looking for oil and they may never go back to fishing because they make more working with BP.

It is a real issue for us. It is an economic issue and it is a mental health issue. The mental health

concerns, those heat stress concerns as well, are things that are of concern to us, and we need to be doing surveillance for those things and improving care for those things.

Then of course there are the long term effects that Dr. Guidry has talked about as well. We don't know what the long term effects are and we need monitoring in that regard.

So, thank you very much.

[Applause]

DR. VIAMONTE ROS: Good morning to all of you, and thank you so much for having me here and having the opportunity to join my fellow state health officers on this very, very important series of workshops.

I want to first begin by affirming all Florida's officials' deep concern about the impacts, the immediate and certainly long term from the deepwater horizon oil spill, on all of our state economies, our coastal tourism, our environment, our wildlife, and of course the health and wellbeing of all of our residents, and especially those that are assisting in the cleanup effort.

Tourism makes up a very, very large sector of our state economy. Let me put some of these data in perspective. As you all know, the warm weather in Florida, hundreds of miles of beaches, and our friendly beach

communities really do attract over 81 million visitors to Florida just last year. Those visitors have a tremendous economic impact, if you can imagine. Tourism spending just in the year 2008 totaled more than \$65 billion, and it is credited for bringing in another almost \$4 billion in sales tax revenue.

In addition, more than one million people were directly employed by the tourism industry, again in the year 2008. Florida's diverse and dynamic commercial fishing industry remains a leader in consistently providing fresh quality fin fish and shell fish to satisfy growing consumer demand worldwide. The dockside value of Florida seafood currently ranks in the top ten states, with dockside value over \$200,000,000.

Cleaning up the environment is also critical for the long term viability of more than 1,000 species of marine fish in our waters, not to mention the countless other wildlife that call Florida's waters home, like the endangered West Indian Manatee that spends summers in Florida's coastal offshore habitats.

Early indications, as we have all heard in the past series of workshops, indicate that the acute health impacts should be minimal to the general public when compared to the environmental devastation and potential economic loss from this incident. The losses to the

tourism and seafood industries continue to grow, and we are interested in monitoring the behavioral health complications from such a severe economic downturn to all of these industries.

We are fortunate that Florida has a mature and experienced emergency management system. And under the leadership of our Governor Crist the state emergency response team and the Florida Department of Environmental Protection they are all actively coordinating and simultaneously responding to the impacts of this incident.

The Florida Department of Health is a member of the state emergency response team, and serves as the lead agency for the public health and medical response during all manmade and during all natural disasters. Our public health and medical efforts have focused on establishing situational awareness and preparing for our phased-in approach effort. So far we have worked through the first preparedness phase, and have initiated response efforts in the effected counties all along the Gulf Coast. As we execute our response plans in these effected areas, planning continues so that we can remain proactive in all the others, especially as the oil moves.

In the initial preparedness phase of this event Florida's focus was threefold. First, we began with a robust effort to manage public information that will be

tailored as necessary, but will certainly last throughout the event. Second, we collected information to establish environmental baselines. And third, we began contingency planning should a hurricane occur while oil spill response is still ongoing.

Florida's experience using the information management branch, or the IMB structure, has already proven beneficial in providing the public with most up-to-date health information. Coordinated and consistent public health messaging is being provided to Florida's residents and visitors through the county health department structure, our regional public information officers, our local officials, and our emergency management partners.

I know from a personal level I have taped a number of public health messaging both in English and in Spanish and Creole, because those are our main groups that we try to address in this area. From the state level we also have enacted a rumor control section to identify and respond to health related rumors should they occur, and they are. We have created and integrated deepwater horizon response resource website for the public, response partners and media outlets to have a single access point for all information. An important part of our web presence is a real-time map showing Florida beaches that you can click on that have a health advisory posted due to the deepwater

horizon oil.

The state launched also a toll-free Florida oil spill information line, with live operators. We have prescribed public messaging about inhalation, ingestion, and dermal exposure to all oil products. In addition, we engaged the Florida Poison Control Centers, and we have four in Florida, to answer public and healthcare provider questions related to the adverse effects of oil, and provide guidance for exposure management.

The Poison Control Centers personnel are briefed by our Department of Health personnel, our toxicology and our medical staff, and use this information plus their own extensive toxicological expertise to answer all questions. The Centers prepare a daily summary of all types of questions they have addressed for use by our Florida incident management team. We do know that factual clear and consistent messaging by healthcare providers and others in government are key truly to alleviating misperceptions, panic, and fear during the disaster.

And as was just previously mentioned by Mary, none of the surveillance data so far do indicate any increase in our human illness reports.

All of our 67 county health departments, just like during the H1N1 event, have forwarded to the community healthcare workforce also a fact sheet that is especially

focused on providers. And if any of you are interested in additional information about our website or our toll-free number, and the scripts also that we have provided for our poison control center, not just for the public, but for your healthcare provider community, please let me know and I will be happy to share that with you.

The second element of the preparedness phase was to establish water, sediment, and tissue baselines since testing obviously will be ongoing. Baseline testing was conducted from Escambia County, which is our most western county, to Palm Beach County on the Atlantic side of the state.

Specific to contingency planning, the third element of our preparedness phase we developed a health impacts contingency matrix, and you can see it here, and health triggers document, that recommend actions correlating to the severity of the oil spill impacts. The state also developed planning contingency for a simultaneous hurricane and oil spill scenario. And I just called before I came this morning, because I know we are following a storm that is going to bring a lot of rain now to Haiti, and just looking at it and seeing whether or not, and I was told this morning it has a 20-30 percent chance of becoming a main storm later on. So we are constantly monitoring this.

Florida did begin to experience the impacts of the oil spill on June the 4th, which was approximately 45 days after the explosion. This triggered our response phase, and today the heaviest impacts have been to our most western counties, that being Escambia and Okaloosa. We have seen some oil sheen, some tar balls, and some degree of mousse that has migrated into our state waters and onto our beaches.

As the state moves through the response phase, Florida is focused on continued monitoring, testing, and surveillance. In addition, we are maintaining a robust public health efforts and establishing new protocols as necessary.

In terms of monitoring, we already are receiving substantial assistance from the CDC, and at this time really do not have any unmet needs that we have identified. The CDC has been chairing weekly meetings of epidemiologists from the affected gulf states, along with representatives of the National Institute of Occupational Safety and Health, NIOSH, and the Agency for Toxic Substances and Disease Registry. We convened to discuss common approaches to health surveillance, which focuses mostly on the public, but certainly includes the responders.

Thankfully at this point as I mentioned no

clusters of illness have been identified in Florida. However, heat exposure, heat exhaustion, and dehydration have occurred. We are aware that NIOSH is working closely with BP and its contractors, as well as volunteer organizations to identify and roster all workers who are part of the response effort, so that there will be an accurate denominator for the health effects that may occur along and amongst these exposed workers.

NIOSH started in Louisiana and has worked their way east, and has just recently started rostering workers based in Florida as part of this effort. This list is a necessary first step in establishing registries for possible long term follow-up studies.

At this time Florida surveillance has three components. First, visits to emergency departments for illness that may be related to oil or oil smoke exposure are being tracked by those hospitals that participate in Florida's electronic surveillance system for the early notification of community based epidemics syndromic surveillance system. That is why we call it the ESSENCE.

Not every coastal hospital participates in ESSENCE. However, we do have representation right now for most of our affected counties, Escambia, Santa Rosa, Bay and Leon Counties.

Second, the Florida Department of Health has near

real-time access to electronic records from our Florida Poison Information Center Network. This does allow for the identification of possible oil related illnesses and intoxications.

Third, CDC shares with the Florida Department of Health information about outpatient and emergency department visits at our military treatment facilities, and there are a number in the panhandle region. Such facilities are widely scattered across Florida, and as I said many are located in the Gulf Coast area.

Our public information efforts do continue to evolve, however. Florida oil spill information line and poison control center scripts are updated frequently as new health and safety information emerges. Again, if you would like copies of that script I will be happy to provide those for you. Our message continues to reach the public through the media and our local county health departments. In addition, health advisories are being issued and rescinded through local channels as necessary.

While we are engaged in the very first stage of our response efforts in regards to all the gulf counties, we continue to develop protocols in anticipation of future needs. For example, we are developing an air quality monitoring protocol in the event of near shore oil burning, if that occurs. In addition, we are working to establish a

reopening protocol for Florida fisheries that have been closed for harvesting due to the presence of oil in the water. And we want to open our waters for tourism industry, of course, like everyone else as soon as possible and as soon as it is safe.

Our partners at the Florida Department of Agriculture and Consumer Services are also monitoring water samples to ensure Florida's seafood products remain safe and plentiful. And we will be meeting as we have been already with our FDA partners to make sure that the protocols necessary for reopening are instituted and we are able in a timely manner to take advantage of them.

Thankfully most of our coastline has not yet seen the effects of oil spill, as my colleagues here on the panel will attest. But certainly the inevitable is on everyone's mind. The Florida Department of Health we do remain committed to working with our inter and intrastate partners to be proactive in preventing adverse effects on human health, while we strive to maintain and minimize long term impacts to our health of our economy, our environmental systems, and certainly our industrial systems.

Thank you again for allowing me to be part of this wonderful workshop, and I look forward to speaking with you all, and sharing any information that we might

have. Thank you.

[Applause]

DR. WILLIAMSON: Thank you for the opportunity of being here.

Let me just set the stage briefly of our experience in Alabama. Unfortunately from our perspective, all of our coastline has been impacted with oil intrusion. It began in earnest around the 1st of June on Dolphin Island, and proceeded then across all of Barrier Islands, which are our coastline. Today all of our oyster reefs are closed. All of our state coastal waters are closed for fishing. We at one point have had swimming advisories issued for all of our waters. Fortunately we have been able to lift the swimming advisory around Dolphin Island, but the rest of Baldwin County the western part of our beach continues to have a swimming advisory. And at least as late as yesterday have large amounts of oil material still rolling onshore.

In looking at health effects, we have attempted to try to capture through a sentinel surveillance system, acute health effects. It is a voluntary system, we recruited all eight hospitals in the two impacted counties, as well as twenty high volume emergency urgent care centers and federally qualified health centers in those impacted counties. We are getting daily reports of the total number

of patients that they see, as well as those patients who presented then with oil exposure related complaints. We are capturing that information by age, and by symptom complex, we collate it, we share it with CDC. We also have data coming in from the poison control centers, and we like everyone else is getting biosense data.

Now on that hospital system we have some 19,500 complaints presented since the middle of May to last Friday, June the 18th. Only 29 patients have presented to those emergency departments FQHCs and urgent care centers with oil exposure related complaints. And that term I am going to come back to. Eighteen of them have been inhalation associated complaints, eight were skin contacts, and three were ingestion, twenty-four of the twenty-nine were less than fifty years of age.

From the Poison Control Center data we have had sixty-six exposure calls, and fifty-seven of the sixty-six were classified as minor, and nine of the sixty-six were moderate. But even those when you went behind that classification you found they were things like nausea, vomiting, diarrhea, skin rash, there was nothing unexpected or untoward. Again, inhalation constituted the overwhelming majority of those exposures as well.

From the biosense data we only have two VA or military hospitals in the impacted counties, and they are

reporting no anomalies. But if we look at what we think are the ongoing surveillance issues, we are refining some of our own surveillance process. While I've been here folks have been adding some additional data. We have not been teasing out in this sentinel system whether these are residents or whether they are visitors, we are going to begin doing that. We have been relying on other data sources to try to trap worker status. We are going to begin building that into the information as well.

One of the other challenges is this is a voluntary system, and it does not have staff going behind the reports to validate we get all the reports. So one of the opportunities here I think potentially is to look for making that more robust and enhancing that.

I think a real issue that you have already heard alluded to is the distinction between oil exposure related and oil spill or oil lead related. When you are talking about oil exposure related we tend to think of that as you got oil on you or you inhaled the vapors, you have a direct exposure to the oil. Well, the reality is that probably at least in the short term, from what we are seeing oil spill related is going to be more important.

We had I think about ten days ago seventeen people on the barge suddenly feeling ill. It turned out two of them had to be airlifted off. It turned out one of

the generators was pumping carbon monoxide into the air intake. That is the sort of thing we want to capture.

Heat exposure and heat related injuries certainly we want to capture. I think we have all heard yesterday the constructs and the challenges around the mental health. If we are going to do a good job of responding we got to have stronger mental health effects surveillance, so that we can plan the interventions we got to make. That to me is a huge challenge.

Worker health safety, NIOSH is as you have heard rostering all the workers. I think what states would like is more information from BP specifically on what they are seeing in terms of worker injuries, and having that data reported.

Yesterday's data drove home I think the reality that we know very little about long term effects, and figuring out a way to create effective and efficient monitoring systems to capture long term health effects that are both oil related. And also you are looking along the Gulf Coast at states that already have high burdens of chronic diseases, hypertension, diabetes, high burdens of cardiovascular disease. As we heard yesterday that the stress associated with this disaster will both precipitate new incident disease, as well as exacerbate ongoing disease. We need to figure out a way to do population

surveillance and monitoring, so that we can figure out how much of any increase in chronic disease we see we can attribute to this event.

Lastly, I think it is wonderful that we are collecting all this data. But at the end of the day it is how do we communicate this data. And this is I think a major challenge for public health agencies. There is a fine line between me transmitting the message that the side effects have been minimal, and that being heard by people it's perfectly okay to go into the water, and let my three year old swallow it. How we figure out, how we nuance the idea that while the effects acutely have fortunately been relatively mild, that does, A, not mean there are no effects, and it, B, does not mean that we know what the long term effects are, and therefore precautions early are critically important. So result communication I think is going to be going forward one of the real challenges for surveillance.

Again, thank you very much for the opportunity of sharing these thoughts, and we like everyone else look forward to gaining the wisdom of this conference and improving our surveillance systems.

Thank you.

[Applause]

DR. CLEMENTS: Good morning, everyone. On behalf

of the Dr. David Lakey, the Health Commissioner in the state of Texas, I want to thank the Institute of Medicine for the opportunity to share with you today, and to sit up here with this distinguished panel of state health officials.

You may be wondering why Texas is here. You have heard a lot about the other four states, they have direct impact that they are dealing with right now. And Texas so far has been spared. We are doing planning to ensure that the steps that we take down the road are going to be in sync with our fellow Gulf States.

By the way, I really appreciated Dr. Lichtveld's statements yesterday about the connections between man and nature. And it is kind of the same way among the Gulf Coast states. If you look at public health across the Gulf Coast states it is very much woven together, there are very few things that can happen in one state without impacting the others. I also thank Dr. Guidrey for the opportunity to come to Louisiana a few weeks ago, and spend some time with his staff as they worked on this because that became the basis for our planning initiative in the state of Texas. I knew what questions to go back and ask the staff.

So thank you again, I appreciate that.

In Texas we have a lot of challenges. We have about 350 miles of coastline, about ten times that if you

look at tidal shoreline. So if you take all the estuaries, the bays, the lagoons, over 3,000 miles of tidal shoreline. Thousands of miles of channels, and we have about 25 percent of the residents in Texas living in those 18 coastal counties.

And by the way, we are a big home rule state, so unlike some other states we have issues with dealing with the locals. We have county judges which carry a great deal of authority and have a lot of say-so in what happens in their jurisdictions. That sometimes can pose some interesting challenges to us as we try to come up with a standardized way of doing business across the coastline.

There is a domino effect that we are seeing. We are seeing an impact on particularly the Galveston area right now. A lot of this sounded so familiar, as I heard this comparison as we talked about Hurricane Katrina, and how we are getting now this next disaster following so closely behind before people have fully recovered. We are seeing a similar thing happen right now in Galveston.

There are about 16,000 acres of oyster beds off the coast of Galveston Island, and about half of those were destroyed by Hurricane Ike. So about 8,000 acres were lost by the storm surge. Now unfortunately we have about half the oyster beds reduced by 50 percent off the coast of Galveston Island, and they are being overfished now because

a lot of the folks who do oyster harvesting here are starting to go over there. Actually I think on Ebay they were selling the rights to do some of the licenses, and I think one of them was going for about \$10,000.

It is an interesting interplay that happens when we have workers in Texas that are coming to this area to do work in recovery. We also have fisherman over here who are going over to Texas to fish the waters. There is a lot of interplay between those two things.

That raises a lot of the issues for the state of Texas that require good surveillance. Our laboratory is one of the biggest in the world. It is the second largest in the nation, our public health laboratory. We have over two million specimens we run a year, a staff of over 400, about 150,000 square feet, but we have no capacity for seafood testing. To stand that capacity up we would need about a half million dollars, and a couple of staff members, and even once we get that going we are very limited in the number of samples given the current protocols that we could actually run on any given week. We are very interested in looking into alternative testing methods for seafood.

We have taken samples of both oysters and fin fish, and archived those in the state of Texas. So we have good baseline data should the need arise for us to tap into

that. As you have heard my colleagues up here describe, a lot of the biosense tracking that is going on, we are watching that also in the state of Texas. We have 28 hospitals contributing data to that, 14 non-federal hospitals, 5 DOD, and 9 VA hospitals.

Another concern that we have is the occupational health issue. As I mention, we do have a lot of workers from Texas who are coming here to do work. I'm not quite sure how this data is going to flow. When we have people coming here who are possibly exposed, and who come back to Texas, how are we going to identify that. So that is an interesting challenge for us in the state of Texas, because there are an awful lot of people particularly who work in the oil industry in the Houston area who are over here working right now. That is going to pose some ongoing issues.

As well as the mental issues. We have our disaster behavioral health staff checking regularly with the coastal mental health and substance abuse providers. Again, we haven't really seen any significant anomalies or any increases in the poison control biosense, or in the mental health tracking that has been going on. So far so good in the state of Texas.

But we are gearing up and we do have a plan in place. Of course it is a dynamic process, plans are

nothing but planning is everything, as Eisenhower said.

The planning process is going forward.

We do have triggers, as Florida described. We do have similar triggers in place for our plans, and are doing things pretty much the same way as our sister Gulf states.

One of the other challenges though, one thing that I wanted to take a minute to talk about, is actually Dr. Williamson just mentioned this a minute ago, the systems that are needed for us to do good epidemiology. One of the problems that we have had, and this is an ongoing problem since public health preparedness dollars started right after 9/11 and mailed anthrax, one of the biggest problems we have is we have seen year by year a decrease in those funding streams. The HRSA, now the ASPR dollars for hospital preparedness, and the public health emergency preparedness dollars coming from CDC, typically each year we see a little bit of a decrease. Sometimes like in 2006 we saw a 13 percent decrease.

By the way, that same year we got an additional infusion of funding for Avian Influenza. I asked a senior official at HHS, I won't mention a name, but I asked him one time how can we fix this. Because what just happened is this, this is in 2006, we have all these people who can do things like surveillance, and they are funded through these public health preparedness dollars. They just got

cut 13 percent, and we let people go, including epidemiologists. Now you gave us another infusion of money that we have one year to spend for Avian Influenza preparedness, including surveillance. So we are losing infrastructure and getting additional money for a topic, okay, for a specific threat.

Here is the answer. We live in America. The people decide what they are concerned about, and they share that with the White House, with Congress, and that sets the agenda. This year they are concerned about Avian Influenza and you are getting additional funds for that. Next year it may be something else, it may be nothing else, so God Bless America.

That is truly our problem, we are being reactionary, and as a result of being reactionary we are truly not building the infrastructure that we need to carry out the surveillance that is being described here. Some of the gaps that we need to address can be addressed. In fact, they could be addressed with some of the PHER dollars, the Public Health Emergency Response dollars we got for H1N1. But we have to give all that money back by the end of next month. So the madness continues.

People in the right places now are saying all the right things. Secretary Sebelius at the Public Health Preparedness Summit in Atlanta a few months ago got up and

talked very specifically about infrastructure, and the need for ongoing sustainment of public health infrastructure.

Before I came back into public health preparedness I worked in a small defense contracting firm for a little while, and learned a lot about DOD funding. It is interesting, if you want to develop a product for DOD if they have a need you have about an eight year timeline for research and development. From the time you have a concept like I need a new grenade, we need a new kind of grenade, go develop a grenade, R&D all the way up until you are in production is about an eight year process. It is very thoughtful, it is very strategic, it is very well done, because we have to do a good job on developing those weapon systems and other things, right.

We don't put that kind of thought into our surveillance systems in public health. We fund it year by year, and we get a little bit of money and then you have to spend it down, and you get a little more money. We can't be strategic in our approach.

What I see as one of the greatest needs right now in relation to surveillance is we really need to look at public health infrastructure and how to do thoughtful strategic planning, and put the kinds of systems in place that not only address H1N1, but can address the threats that we are seeing now. Thank you.

[Applause]

DR. WHITE: Thank you. I think we have had some very provocative thoughts put through here, and I think we have seen a common theme among the various states in their surveillance processes and in what they have seen.

I would like to ask our panel if they have any comments they would like to make or any additions after listening to their fellow health officers.

DR. GUIDRY: What I would like to say is that since 9/11 we have talked about communications and working with people. This event here is really proof of where states working with the federal government, working with private entity, and working with the public, how important that is.

I have been talking to these folks on the phone now for weeks, and that is something that wasn't happening several years ago. It really lends credibility to the fact that the ability to handle our issues together, much as you do in psychological counseling and group therapy, it lends itself to where we have so many events that occur, Chinese drywall, I'm talking to Florida and how they are dealing with Chinese drywall. And it just makes that much more sense that when we get together and try to figure out how to do it much more effectively and efficiently it takes all of us to figure that out.

The piece that I have been looking for help on is what IOM is trying to bring together, and that is we need to improve our surveillance, we need to monitor things, but we need to figure out what this means to our health and what does it mean to our long term health, and that is a much more complicated question, and much more difficult to answer, and it is really going to take some thought put into it.

What I have heard about Exxon Valdez was that a lot of money was put into research about health, but we still don't have the answers. And if you look at healthcare and exposures and cluster investigations, you can spend a lot of money getting more questions. We need to get some more and spend a lot of money getting more answers, that is how I think we need to approach this. And people don't want to feel like guinea pigs, they don't want to be your research guinea pigs, they really want to try help answer the question, but they don't want you to be doing every test you can think of. It needs to be well thought out.

These communities have been through a lot, and they certainly don't want to be having a whole bunch of folks come at them and asking to do their blood tests and asking to monitor them. They want some answers, but they don't want to have to go through the research that we are

talking about. So we really need to put our heads together collectively and say what makes sense, what is going to answer some of these questions.

When I was invited to come here today it is difficult to tell people this is how you stay healthy, this is what you need to do. You can tell them worker protection, you can do all these things to mitigate, but then you have the media constantly showing this can impact your health twenty years from now, but no science that can definitely answer that question. That, for your mental health, is not good.

I can go inside, I can shelter inside, I can avoid the fumes, I can try to stay healthy, but I might get cancer twenty years from now I heard on the news. That is not a message that people need to hear, because here is an event that they didn't create, they are having to deal with, and to hear that there is some thought out there that you might get cancer from this, or you might get some hyperimmune reaction to this, we got to have the facts. We can't just be conjecturing things and thinking things, and sharing it with the public because, to me, that is getting their mental health in worse shape. Because now in addition to worrying about rebuilding and my economy and my next paycheck, I got to worry twenty years from now about my children or grandchildren who might have been exposed

for twenty minutes or an hour might come up with some cancer.

The messaging in the public communication is critical, but the science has definitely got to get better at giving answers.

DR. VIAMONTE ROS: I just wanted to echo what Bruce's comments were. It is so important that we really do need from a state perspective the federal backing and the federal validation of the importance of building infrastructure with all of our states budgets being really decimated. If they don't see at the federal level an importance and a funding of infrastructure, of prevention, of community health, their ability to dedicate funding for that will be very, very limited. And our being able to make that case to our state legislature is very limited, if they don't see again that corresponding federal commitment to that.

I was coming down the elevator with Dr. Adler this morning, and I was saying in the four years I have been there between storms, between Chinese drywall, between H1N1, between our Haiti response, now our oil response. It has just been sort of crisis after another. And again, our responses have been very reactionary. We don't have any long term planning, because we again don't have a lot of validation and a lot of importance given to that at the

federal level, and certainly not at the state level.

Please engage the folks at the state level who really are on the front lines of being able to create that infrastructure that is so needed for good public health, good community health, and make sure that you fund it. It is not an all or nothing, it should not be either prevention or primary care, one at the expense of the other. It really needs to be a concerted effort, and we really do need that commitment at the federal level so that we can again make that a plea at the state level.

DR. WILLIAMSON: I would be remiss if I did not take the opportunity to reiterate what everybody else has said. Consistency of funding is critical, in terms of surveillance and the ability of states to respond. As long as state public health funding is largely dependent upon the vagaries of state budgets, then we will have an uncertain capacity to respond.

If we are serious about being able to ensure the same level of protection for all our citizens, we got to have a fundamental floor of public health support for stuff that is not very exciting. I mean doing shoe leather epidemiology is not very exciting. Following up flu-borne outbreaks is generally not very exciting. But those are the same people then who turn around and can work in this sort of outbreak. That is one point.

The second point is I certainly agree with Dr. Guidry, we don't want to let half science create unnecessary fear, but I do think we didn't learn from the Exxon Valdez, in that we didn't do the long term longitudinal follow-up that now we wish we all had data on. And I would like to believe this will be the last oil spill, but unless we somehow figure out a way to go without oil this won't be the last oil spill.

And I would hate for whoever is sitting in this chair, I hope forty years from now or twenty years from now, to be faced with the same questions: how do I tell my coastal communities it is going to be okay. Let's answer that question with the best science we possibly can. It either is going to be okay, or there are things we need to be looking at. The people who know how to design the studies, design the studies, fund the studies, and let's get some answers.

[Applause]

DR. CURRIER: I just want to say that I agree with all of that, and although I do find shoe leather epidemiology to be exciting, I know that makes me a nerd, it makes me weird, but it is a basic science of public health and without that surveillance, and surveillance for oil spill illness is surveillance for everything, it is the same surveillance for everything. And without that basic

surveillance and that capacity for surveillance in every state, whether it is a rich state or a poor state, and Mississippi being a poor state we don't have the capacity to continue doing these kinds of things long term without federal assistance.

And when federal assistance is topic related like H1N1 or bird flu or whatever, then we can't have consistent surveillance across time. And that is really key to being able to respond to whatever happens, the latest thing, the Chinese drywall, the whatever. So being able to respond to those things is very dependent on having stable funding and capacity.

DR. WILLIAMSON: This is not directly related to surveillance, but it speaks at how fragile our entire health infrastructure is. The states are now working through with their conservation people, their fish people, reopening protocols. We are going to meet on those today.

One of the challenges that we are testing for are PAHs, a compound that I presume I heard something about in undergraduate school, but fortunately long since forgot. However, it turns out that the methodology that the FDA has validated uses a protocol development I know, shortly after the spill there was one laboratory in the entire country utilizing that protocol. Today there may be two. They are working hard, and I give them credit for expanding that

capacity, but we are talking about if a state had been able to open their fishing waters by now it would have been very difficult to have gotten those samples processed.

And while today it is PAHs and oil, who knows what it will be tomorrow. Will we need a lab that can run I-131 levels because a power plant had a leak? We just have a very, very narrow and uncertain surge capacity for unusual lab tests in this country, and we need to figure out a way to deepen that surge capacity.

[Applause]

DR. CLEMENTS: Just one other thing I would like to add, and that is just the importance of translation dissemination in research. There are a lot of gaps in our knowledge and we have a lot of new problems. In fact, it seems like as you have heard almost every problem that we are dealing with these days seems to be kind of a new problem or a new spin on an old problem, and we just don't have the research to inform good policy.

I think there is really an opportunity here to better coordinate, translate and disseminate research information and public health practice, to bring those two things closer together.

Part of the problem that we have seen in preparedness is the funding streams tend to drive a wedge in between people. We have seen that with hospital

preparedness programs, funding versus public health emergency preparedness funding. Those stovepipes or silos or cylinders of excellence, they need to be brought together more closely. And when the funding comes down that way, including research funding, that tends to kind of set the folks in the academic community off on their own path, and they don't always even have the opportunity to come back and help translate and disseminate the research findings to inform better policy in public health practice.

I would encourage us to consider that as we move forward as well.

DR. WHITE: Thank you. I think our time is just about up. And I thank all of our health officers here, and I think we need to give them all a great big hand once again.

[Applause]

DR. ADLER: We have two slight changes to the schedule, because we have two additional speakers who will be briefed, but I think give us some very important perspectives on two federal agencies and the work they are doing. I will introduce both of them, and if they could come up that would be terrific.

The first is Dr. Alexander Garza, who is the Assistant Secretary for Health Affairs, and the Chief Medical Officer of the Department of Homeland Security. He

manages the Department's medical and health security matters, and oversees the health aspects of contingency planning for all chemical, biological, radiological, and nuclear hazards.

He will be followed by Dr. Mathew Stanislaus, who is the Assistant Administrator for the EPA Office of Solid Waste and Emergency Response. He is responsible for EPA's programs on hazardous and solid waste management, hazardous waste cleanup, oil spill prevention and response, chemical accident prevention and preparedness and emergency response.

And here you are, and thank you.

MR. STANISLAUS: Thank you. I am actually Mathy Stanislaus of the U.S. EPA. Administrator Johnson asked me to come down to this conference, and we are going to talk about all the work that EPA is doing as well as our federal government partners working with the states in our great partnerships with the states to address public health and environmental issues.

As you all know, the Coast Guard is the on-scene coordinator for the incident of national significance. EPA is working with incident command to deal with the environmental and public health issues. From day one they recognized the need to monitor environmental and public health impacts. We stood up literally within the first

couple of days to put in place and then add to those systems, so that we can deal with within our existing knowledge and existing technology how do we address and monitor the potential public health kinds of impacts.

Let me just give a bit of background of our activities, particularly with states and local governments, NGOs. We have regular calls with states and local governments, NGOs, in terms of our data, our response activities, to make sure that we are presenting the information as we know it, presenting gaps as we know it, and presenting how we are addressing those gaps as we know it.

Related to that we feel really it is critically important to identify the perception of a public health concern. Let me talk about the monitoring we are doing. We have an extensive air monitoring program, we have a continuous monitoring, we have mobile monitors that circulate around the Gulf, we have airplane monitors. This monitors various parameters from hydrocarbons, from particulates, and also monitors dispersant constituents. We felt it was really critically important to answer the question both in terms of the oil products as they disperse, all their onshore impacts, and can we address the concerns that people have raised of are they experiencing the inhalation of dispersant products. To date we have not

seen any of the shore monitoring any kind of shore kind of impacts.

We do shoreline monitoring, we do deep sea monitoring. So the shoreline monitoring, both we did a baseline monitoring within the first few days, so that we have a baseline to compare our ongoing monitoring, so we will be doing our ongoing monitoring post-impact to the shore.

The short monitoring consists of both petroleum products as a dispersant products, and again to this date we have not detected any shoreline dispersant impacts. Deep sea monitoring we have done in conjunction with our approval of deep sea dispersant application, we have acquired a series of environmental and toxicity analysis, and we reserve the right to couple our deep sea application of dispersants should that exceed certain toxicological parameters. That is ongoing, and again to this point based on the data we have collected there has not been an exceedance of that cutoff threshold.

Waste. We are also concerned with the waste, and how the waste should be characterization. We have in place a characterization of waste to determine, one, whether it is hazardous or solid waste, and two, depending on which facility should the waste be sent to. To date the sampling has not detected waste to be hazardous, or at this point

the waste is not going to landfill kind of facilities. Separately the oil products have been sent to facilities to recover the waste.

In terms of dispersant, we have done analysis of the dispersant, and beyond our independent toxicity analysis is ongoing in terms of chloral and various other comparators to the ongoing analysis of that to determine whether other dispersants are equally effective and possibly less toxic, that is ongoing analysis.

Separately we have taken on the degradation. What we know right now is that the dispersant degrades within a few weeks. The application dispersant to oil results in oil degrading far quicker than without dispersant. Clearly this is a tradeoff. The application of dispersant is a tradeoff between the terrible circumstance of the disaster and the oil impact to surface ensure where the application of the dispersant, which again is less toxic than oil to prevent in our view the greater impacts to the shore.

All of these air monitoring is compared against baseline thresholds, which looked at both acute and long term impacts. These are health based thresholds for each of these monitors, each of the parameters that we monitor. Clearly there are gaps because of the long term nature of this, and this is a unique event. Most of our emergency

response activities are a single incident, usually a day, as opposed to this ongoing event.

Clearly there are these long term issues that we need to constantly analyze. But I want to underscore that EPA has an aggressive air monitoring program, and we post that daily on our website, EPA.gov/BPspill, and we also put up regular calls with a variety of discussions to explain that and to understand the various issues.

I want to quickly touch on odors. Clearly there was a concern of how people experience odors. Does odors equal a public health impact, or other kinds of experiences with odors? We work with HHS putting out a fact sheet that relates to under what circumstance does the experience of odor mean a public health concern, versus those that could mean kind of various non-acute kinds of impacts onshore.

We worked out kind of a fact sheet, again available on our website. Let me close with this. Despite all of this, our message is not getting through. And I think that there is work that we need to do to provide data confidence and science confidence. And we are ongoing to do that, we are working with local organizations to get our message out, but frankly we have more work to do.

Let me just last say the Assistant Administrator of the Office of Research and Development, Paul Anastas is also here, if you have any questions for him.

Thank you very much.

[Applause]

DR. GARZA: Good morning, everyone, my name is Alex Garza, I am the Assistant Secretary for the Office of Health Affairs, and Chief Medical Officer for the Department of Homeland Security. I met a few of you at dinner last night.

On behalf of Secretary Janet Napolitano, I want to thank the IOM and HHS in particular for getting this process started, and for convening this meeting. The Secretary is very much engaged on this issue, as I think is evident in what has been going on. So much so that she convened a meeting a couple of weeks ago with the various health stakeholders, including the CDC, OSHA, ASPER, EPA and the White House, to make sure that she was situationally aware of what was going on down in the Gulf, as she frequently does when she passed my office to do all the other work.

Really what our office does, the Office of Health Affairs, has a couple of main missions. One is to make sure the Secretary is situationally aware of all the health issues that will affect national security. So this falls well within and into that lane. Secondly, we also do a large part of our office's workforce health protection, which is also a primary concern of the ongoing efforts down

here in the Gulf.

We work closely with Admiral Tedesco of the Coast Guard to make sure the Coast Guard personnel are well taken care of. But secondly, we work across the interagency to make sure that Secretary Napolitano is well aware of the issues that are going on in the Gulf. To that effect, we have people staffed at the National Incidence Center up in Washington, DC, whose tasking is to work with each of the agencies that are involved with the health issues in the Gulf to form a common operating picture for everything that is going on, so the Secretary is well aware.

In that aspect we are working with all these different agencies, and putting this together into a situational report for the Secretary and into a weekly report. The White House is also firmly engaged in that as well.

That is how we really view our role, as being a facilitator and a collaborator across the interagencies, since we do not own the medical response and we don't own environmental monitoring, but since this is a complex situation we view ourselves as sort of an umbrella agency to bring all that information together.

Those were the main talking points that I had. Again, the Secretary is very well engaged in what has been going on with the Gulf, Admiral Allen is as well, I have

had talks with him in the past couple of weeks about the issues going on with the health related situation down here. She is extremely engaged, and she is well-aware of the aspects of health going on in the Gulf, and she is determined to make sure the issues are being addressed appropriately and very adamant about making sure we work with our interagency partners, which I think is actually going very well.

Those are the few comments that I had. I appreciate the opportunity to talk with you, and again appreciate all the hard work that everybody is doing down here, and appreciate the IOM for putting this together.

Dr. Kathy Brinsfield is with my office, and her and I will be around for the rest of the day. If you have any questions for myself or my office you can either contact me, Dr. Brinsfield or our email box is healthaffairs@dhs.gov.

So, thank you.

[Applause]

Session V: Research Methodologies and Data

Sources

Agenda Item: Panel Discussion. Critical

Thinking: What Research Methodologies and Data Sources

Could Be Used in Surveillance and Monitoring Activities

DR. BAILAR: It is a pleasure to be here. I

thank the Institute of Medicine for asking me and our panelists to come and talk about some matters that are very close to our hearts and our professional interests.

I am John Bailar, retired from the University of Chicago. We have some very distinguished panelists. Dr. Lynn Goldman is a pediatrician and an epidemiologist, a Professor of Environmental Health Sciences, Johns Hopkins University Bloomberg School of Public Health, and is now moving to George Washington University.

Dr. Tom Matte is a Professor of Urban Public Health in the Environmental and Occupational Health Science at Hunter College and the City University of New York School of Public Health.

Dr. Bill Farland is the Vice President for Research at the Colorado State University in Fort Collins, Colorado, and Professor in the Department of Environmental and Radiological Health Sciences at the School of Veterinary Medicine and Biomedical Sciences at that institution, where he went after some 27 years as a federal employee rising to very high levels in the Environmental Protection Agency.

Dr. Howard Osofsky is the Kathleen and John Bricker Chair at the Department of Psychiatry in Louisiana State University Health Sciences Center.

And Dr. Masys is Professor and Chair of the

Department of Biomedical Informatics at Vanderbilt University and Medical Center.

I am not going to give more extensive introductions, because time is short and there is a great deal more information about each of these speakers in the registration folders that you all have.

I would like to now go to the panel and ask each one of them to identify any possible conflict of interest or appearance of conflict of interest that you would like declared before we embark on the meat of our session.

DR. GOLDMAN: I have none to declare.

DR. MATTE: No conflicts to declare.

DR. FARLAND: No conflicts.

DR. OSOFSKY: No conflicts.

DR. MASYS: No conflicts.

DR. BAILAR: Very good. We can proceed directly to the presentations. Each of the speakers will have about ten minutes. At the end of that I will take perhaps ten minutes to summarize and then add a few points. Then I will ask the panelists to talk with each other about some things that may have come up here.

Following that we will be using the card system that you are all familiar with now. If you have questions or comments please put them on cards, give them to one of the staff members. I cannot promise that we will be able

to get through all of them, but we will be able to deal with as many as we can.

Agenda Item: Overview of Research Methodologies and Data Collection

DR. GOLDMAN: And my thanks for the invitation to be with you here today to talk about the Gulf Coast oil spill, and the problem consensus of course that we are concerned about health. A reminder that our definition of health that I think our panel will use is that according to the World Health Organization, a complete state of physical, mental and social wellbeing, and merely the absence of disease or infirmity.

Health is a very broad concept. And to address health concerns we need to address them at an individual level, in terms of the risks to people individually, and what we can do to protect them and prevent adverse effects at a population level, the people in a region. And also for the future, things that we can learn in order to protect people from adverse events in the future.

There are many challenges when we are talking about health surveillance and monitoring. We have heard so much about these both yesterday and this morning, from that wonderful panel of state public health people. That of course there are unknown numbers of people exposed to unknown hazards related to the oil spill. In addition, to

the organized responders and the workers there are many, many others who have been involved. There are volunteers, there are non-governmental organizations, there are residents in communities who may have opportunities for exposure, may be at risk for health outcomes related to stress and adversity. Then of course there are people who have already suffered and are continuing to suffer due to loss of life, diminished livelihood, potential exposure to chemicals from crude oil, burning, and use of dispersants.

We heard this morning that this disaster is larger than what might have been predicted, and that there really has not been preparedness in the public health community for addressing this kind of event. That the experiences that we have had from past oil spills does not prepare us for dealing with something of this magnitude. We are never prepared on a day-to-day basis for being able to ramp-up the kind of surveillance and monitoring that we need for a disaster like this.

In terms of surveillance and monitoring, we need to understand what the baseline status of health is. We need to be able to monitor the changes that are occurring in health over time, and we need to be able to do biomonitoring for changes that might be indicative of exposure. I think our past experiences have taught us that anything we can do to archive samples, such as samples of

blood, it was mentioned yesterday that the core blood samples that are collected can be good, urine samples that can be used later can be extremely useful.

In terms of environmental monitoring, we need to have immediate information about what is going on in the environment, real time information. We heard about that this morning from the state officials. But also as with biological samples, that collection and archiving of information can be very useful. So that if there are air samplers collecting air samples, to archive the filters, archive any material that later might be examined for things that we might not think about looking at today.

And I would say we must use all possible sources of data. We heard from the EPA person about the fact that there are reports of odors. Carefully accumulating information like that, as we don't know if these odors might be indicative of a health effect. It may not be, but later on those reports of odors might be clues to places where there had been exposures. To even save information like that, where, when, any facts that can be gathered can be useful.

From past experience we know that we must involve citizens and communities in the design and analysis of studies, but in doing so, also that we must clearly communicate the limits of our knowledge. And the limits

and the challenges in our ability to prove cause and effect associations, these things must be communicated very clearly.

We have a need for rapid data analysis and clear communication of information related to health risks. I think that for the communities, the immediate concern is are we safe right now. And so the ability to actually be able to use it, as the health departments are doing, this syndromic surveillance information, other information, is very helpful. The more specific that can be to the populations who might be exposed, the more useful. And of course to clearly communicate uncertainties.

We need to rapidly identify and collect data on baseline health status. And we need to address barriers to data collection, like legal agreements and confidentiality issues, that can be barriers. Obviously we need to honor the privacy of individuals. We need to protect individual health data from misuse, but at the same time we need to have the access to data. And there is so much concern about litigation and the kind of society that we are in today, but legal agreements that create a barrier to being able to access data will be a real problem in terms of management of public health.

From past experience we have learned that the earlier collection of exposure information is very

important. So often we have gaps in our knowledge about exposure during the most important time period, and that is the immediate period when an event is underway.

We also need to understand that our definition of exposure can change over time. This is one of the toughest issues in communing information with communities, and that is that our concept of what people are exposed to and who is exposed can change as we gather more data and as we analyze that data. So communications need to be extremely clear, and to the extent possible we need to use objective exposure measures.

We know that our local, state, and federal agencies are not well funded to do this. A rapid infusion of resources is needed. We don't have good mechanisms for doing that. Those of you who have resources available to you in the federal government and other places need to be very creative about getting those resources to the people who need them. They need them quickly.

And of course engaging the academic community and others is a part of that, and I think this meeting is largely designed to do that, to bring people together to be able to engage people, to be able to tap into the resources that are here in the region.

And with that, I am going to segue to our other speakers. Thank you.

[Applause]

Agenda Item: Surveillance and Monitoring

DR. MATTE: Good morning everyone. I want to thank the Institute of Medicine for inviting me to participate in this important workshop, and also for a chance to come from one great city to another great city and enjoy some good food for a brief stay.

I am here as someone who recently was in the shoes of a public health practitioner, a big city health department. I recently joined academia. As near as I can tell one of the big changes is you are more often introduced as being a "distinguished panelist." I'm not sure if that is a good thing or a bad thing.

But I am going to be speaking from that perspective, and at the outset I want to say that a lot of what I am going to be talking about I know from conversations from colleagues here and elsewhere is already on the minds of the agenda of people at the state and federal level, and in academia. I am going to be talking about the goals of surveillance and research in this context of an emergency response, some methods and examples drawing upon the 9/11 experience; also events like the blackout, H1N1, since that time.

What are the implications of these experiences for the Gulf oil spill? I want to acknowledge that a lot

of the work I will be talking about was done by many people, many agencies. This little "wordly" it is called, is from the web page that describes the partners in the World Trade Center Health Registry. There was a lot of work that went on after 9/11 by many groups.

What are the information needs to assess the overall health impact and reduce it from this incident? We need information about exposures, both physical, chemical, as well as psychological. What are the populations and what are their vulnerabilities? We need data on control measures, training, use of PPE, public messages, who are they reaching, how effective are they?

Services need to be tracked. What are the needs, what are the reach, what are the utilization of services?

Data on acute injury and illness, exposure, and dose response relationships is a big part of the research agenda. You have been hearing the terminology surveillance and research, and these are conceptually different but overlapping activities. I would say that the activities circled in red generally fall under the category of surveillance, actionable information to make things better now. Research is mainly about the exposure response relationships from both the psychological and physical exposures. But there is a lot of overlap, and each needs to inform the other.

There are many data sources and methods used in public health surveillance. I am going to focus on four: syndromic surveillance, surveys, related activities, called registries, cohorts and panels, and then worker medical surveillance, which is really a special type of public health surveillance.

So you have heard about syndromic surveillance, it is really tracking nondiagnostic health indicators, ED visits are a common one. Also things like health line calls, it is usually near real time, and that is the value of it.

In New York City we implemented ED surveillance as a manual system, with the help of a lot of epidemiologists from CDC, a couple of days after 9/11. It quickly transitioned to an automated system, and it has been improved over time and proven itself to be adaptable, to things like the blackout, illness after the blackout, heat illness, we use it for that, and we have shown that it can be used to track air pollution effects of asthma in New York City.

It had a major role in tracking H1N1. The limitations of it, which were mentioned earlier, it doesn't get you good exposure data or clinical detail, and the geographic coverage depends on really who your providers are in your reporting network.

Surveys were quite useful after 9/11. So the mental health impact was first really systematically quantified by researchers at the New York Academy of Medicine. They did a phone survey five to eight weeks post 9/11, and subsequent waves of surveys.

During the H1N1 outbreak there was an online survey done really just three days after the outbreak started at a big parochial school in New York City, and it was extremely useful.

We can get estimates from surveys both of the general population to try to generalize or project some of the other data we are collecting into population impacts, or we can direct surveys at certain target populations. It is becoming increasingly possible to rapidly implement surveys if you are judicious and realistic in what you are trying to measure, and really focus and simplify the instruments.

Limitations are you are relying on self-report of both exposure and health outcome information. It is cross-sectional data, so unless you are recruiting people for follow-up it has limited value for etiologic research.

Worker medical surveillance, the biggest example of that in New York City is the World Trade Center medical monitoring and treatment program. It is a NIOSH funded program. There is a lot of information available at the

website, as shown here.

Responders receive standardized examinations, of which there have been more than 20,000 conducted between 2002 and 2007. This effort has been helpful in documenting high rates of persistent respiratory, mental health, and other conditions, and what are the specific clinical characteristics of them. They do offer treatment for specified covered conditions.

There is an important limitation of this sort of effort though for research, in that there is limited data on exposures, in part because of the nature of the 9/11 event. And the ability to project data from those who come for care to the universe of those who are out there and potentially eligible is really limited, as David Savitz pointed out in a paper a couple years ago.

The Fire Department World Trade Center Responder follow-up in some ways represents sort of a gold standard type of worker follow-up activity, in that they had pre-9/11 baseline health data, and post-9/11 standardized follow-up and it's a well-defined cohort.

The World Trade Center Health Registry involves voluntary enrollment of a variety of groups with potential exposure to the 9/11 event. About more than 70,000 people were enrolled in the registry, between 2003 and 2004, and those dates will be relevant to later discussions. It has

been estimated there are about 400,000 or more people were eligible.

Again, it is documented outcomes among people who were heavily exposed. There is periodic follow-up by a survey. It is set up to allow record linkage, which is ongoing to mortality and hospital discharge data. And there is a provision for multiple nested studies that outside researchers can approach registrants through a centralized process of the respondent burden is managed. Also there has been an effort to link people to services since 9/11.

There are three advisory boards which have been involved, which has been very important. Again, limitations are we wish there was more objective data on exposures and baseline health, and whether or not all the participants are representative of those who would have been eligible is uncertain.

At the risk of, I appreciated the comment about things that we say can have public health impacts, and if we are not careful in making scientifically valid statements. Now I am being aware of the public health impacts on my colleagues in public health, and showing a big long list of suggestions that include things that they are already doing.

I think it is clear that there is no one approach

to this problem that is going to work. A flexible, multilayered and coordinated approach like that, which seems to be coming together now, is what is needed. There needs to be rapid feedback to inform both the workforce and public health protection measures.

Worker health surveillance if it can be initiated prior to deployment that is the best baseline, lung function tests, for example. And to ensure that the ongoing surveillance, the reporting of illness and injury, is done in a way that workers can feel safe that they are not going to lose their job if they complain about symptoms.

Surveys may be very helpful to identify, at least quantify exposed populations, to track some of the population impacts, especially mental health, and to inform recruitment for registries if those are appropriate.

What about registries? Lynn mentioned this. We really need a couple of things, we need denominators, so that means identifying the universe of those who would be eligible for a registry, the rostering of workers that I am hearing about sounds like NIOSH, which was very involved in the Fund the World Trade Center Worker, and the health registry. That they are using lessons learned from that to get started on this denominator assembly baseline health data.

And without exposure data and good data on covariance, other things that people do or are exposed to that could affect exactly the same endpoints, the scientific value of registries will be greatly limited.

My colleagues at the state health departments it sounds like they are doing what I know happens at the city health departments during these kinds of incidents, is exploring ways to enhance and refine the syndromic surveillance systems. They tend to sort of take a step forward in sophistication with each major incident like this.

Finally, there is a need to coordinate any follow-up efforts, as you heard from members of the audience yesterday, and where possible to link people who are in those follow-ups who are developing health problems to services.

Finally, I want to say especially today, it has become more and more, it has become easier to develop a lot of data, to analyze the data. None of it is free, even if it is just analyzing data by an analyst at the health department, it doesn't come for free. There is an opportunity cost. We always need to be asking the question, is the juice worth the squeeze for each of these efforts.

So thank you for the attention, and I look

forward to further discussion.

[Applause]

Agenda Item: Environmental Assessment, Risk and Health

DR. FARLAND: Good morning. Thanks again to the Institute of Medicine for inviting me to participate in this meeting, and to be a part of the dialogue that hopefully will provide some solutions to the problems that we face here in the Gulf.

Many of the themes that I am going to be talking about are ones that are under active discussion, and hopefully will have an opportunity to continue this dialogue as we leave the meeting today.

In terms of the discussion that I would like to provide, I think the first observation is that while the science of risk assessments evolving to try and deal with situations like we are facing here in the Gulf, we really need to take on this real world approach to address complex chemical exposures in the environment. It gets away from looking at chemicals one at a time, and it gets away from the idea of our ability to assess chemicals without taking into account the background and the biology in which the chemicals impinge. This is really the first issue that we would like to talk about.

Secondly, to meet this challenge we have talked

about the importance of having both better and different data, and innovative tools and approaches that could be developed and used, and that we all need to be pulling in the same direction. This partnership of environmental health professionals that is going to be needed was addressed by Dr. Guidry, and I think Dr. Clements suggested the importance of infrastructure to really support this kind of activity as something that is a great need.

Now as I look at the issue of how we focus on the problem particularly from an exposure standpoint, exposure stressors have the ability to alter biology, we understand that and it can lead to adverse effects. But it is also clear that there will be no adverse effects if there is no exposure. So preventing exposure is something we all ought to have on the front of our minds as goal one.

As we look at how exposures impinge on normal biology, we can look at a continuum from exposure to disease, and then we put that in the perspective of variability in that exposure and variability and susceptibility in our population, and try to understand how organisms handle toxic chemicals and how they respond. As Lynn mentioned, we need to do this in the background of uncertainty, and the fact that we are dealing with a very complex problem.

As exposure overcomes homeostasis, or the coping

mechanisms that we have in our bodies, we begin to see adverse effects occurring. Even though we may see some exposures, we may be able to deal with those, we need to put in perspective those exposures in terms of outcomes.

And we can't forget that other stressors also alter biological response beyond the chemicals that we might be focusing on here, oil and the dispersants. These stressors can lead to psychological impacts, to PTSD, depression. And I know my colleagues will be talking about this in the talks that are coming up.

What are some of the opportunities for improved understanding of hazard and risk? I would like to really focus on this idea of Source to Receptor, but that involves the need to really understand multiple pathways and the environmental fate of these potential toxicants as we begin to focus on both the impact on humans and on animals in the environment.

This leads me to raise the point that was made yesterday afternoon about the importance of a one medicine concept, and the fact that we can learn much from an understanding of the response of the fish, the wildlife, and human receptors to the kinds of exposures that might occur.

I won't focus on the issues around individual responses in any of these levels of biology, including

biomarkers of exposure, biomarkers of a response. But understand that we want to develop those kinds of data in order to have a systems approach, the understanding of potential for a population response in this particular case.

The environmental theme and pathways to human exposure are complex, and in this case there are multiple ways that the exposures can eventually arise. We have heard about the details of the sources, and the opportunities for transport of the environment. The issue of the transport and disposition and ultimate disposition within the food supply is a particularly important issue here in the Gulf. We are likely to need to develop some additional monitoring that we can talk about, that will help us to understand these pathways to human exposure.

Some of the sample data sources that might assist us in this and have been talked about previously, the air sampling at this point is underway. We are looking at things that we know about for both the air sampling, water sampling, food sampling. As Lynn said, I think we would be well-benefited by archiving the samples that we take so we can go back and look at those in the future.

Certainly in terms of our air sampling issues, we need to understand the differences between crude and weathered oil, products of incomplete combustion. And

between EPA and the local monitoring that is going on, I think we will have a rich resource of samples to work with.

In terms of water sampling, Matt Stanislaus talked about the issue of water and the unlikely event that we will see contamination moving far enough inland to really affect underground water systems. But the important issue here I think is to assure that our disposal plans are significant, and address the issue of the potential for the contamination of local wells and underground water systems.

Food sampling, we have talked a lot about seafood sampling. I think it is also important that we begin to look at the issue of creel surveys and wildlife monitoring. Again, the area has a rich resource in these sorts of opportunities, and we know there are populations of subsistence fishers and hunters in the local area. Those individuals need to be protected, and we need to understand potential for exposure.

Activity patterns including the proper use of personal protective equipment, Gulf based recreation and migration of birds and fish and wildlife are going to be important issues as we began to take these things into account.

I might also include here self-reported illnesses as a particular sample data source, that perhaps could lead us to looking at some different ways to estimate exposure.

In terms of estimating exposure, I think the importance of the timing, comprehensiveness, and interoperability of datasets that come out of exposure are really going to be particularly important as we begin to put these data together and reach some of the conclusions that we will need to make both in the near term and in the longer term.

In terms of the merging challenges and assessing the current situation, a number of these have been mentioned. I think this question of aggregate and cumulative exposures and building on backgrounds, Dr. Williamson discussed this earlier this morning. We certainly live in a complex chemical environment, and whether it is where we lived previously, or previous occupations or events that we were experiencing, those all add to the complexity of the potential for outcome in these kinds of events.

I have mentioned the importance of understanding uncertainty and variability that only comes with a robust dataset to be able to work with. And the focus on particular life stages and sensitive populations is one that is important. In that regard, there are both ethnic and native populations down here that are important to focus on. We have mentioned the fact that there are subsistence fishers and hunters, and many of these people may be important targets for follow-up as we begin to

assess and collect information.

In summary, I do think there are some real opportunities that exist to understand the route to and profiles of exposure to the Gulf oil constituents. We would like to be in a position whereby giving some thoughtful analysis of these opportunities we can help the local communities understand and mitigate or prevent those exposures. The data will certainly assist in the exposure prevention disease surveillance activity. Because of the complexity of the situation the kind of data that we are collecting now will need to be maintained both in a comprehensive manner, and over a long term.

Thank you very much.

[Applause]

Agenda Item: Mental Health

DR. OSOFSKY: I am Howard Osofsky, and I am going to take the liberty to do what I did yesterday. We have given you a handout of what would be in the PowerPoint so that you can look at them at your leisure, and they will be transmitted via the Webinar. That allows me to talk in some ways more informally, and not constantly refer to what we have put together.

One of the issues that as I stand here today that I am reminded of, I spoke on the experience of several years when I chaired an international consortium on the

psychosocial affects of terrorism, disaster, and acts of mass destruction. And when Dr. Guidry was up earlier, five years ago he and Dr. Anthony Spire and I put on a conference, again on short notice, to train people to be able to respond to mental health needs if we were to have a disaster or a difficulty here. We did not know that three months later we would have Hurricane Katrina. It was an extremely successful conference at the time, and people commented on its value for them. After the conference Dr. Guidry said shouldn't we be doing this for the entire Gulf. Again, in retrospect, obviously so.

Let me point out some of the issues that we have been dealing with that of course everybody does. This is one that disasters are unpredictable. The unpredictability of the event leads to the difficulties and then doing what would be the types of quantitative and qualitative longitudinal research that we would all like to see done.

The second is that during the early days one is focusing on control, the control here of the oil spill, which hasn't been able to be done, but also the basic needs of individuals and families. Then there are the difficulties in following the course of individuals and families, the migration, people will move normally at various times in their lives. But also when we take a look following Katrina we had tremendous displacement, which has

effected the fishing industry as we have seen, but also the fact that if people can't have jobs or the return of jobs what this may mean to the course of where they live.

The convenient samples that can be difficult but have their own limitations, and most of the work hasn't been done cross-sectionally with disasters and the need for longitudinal work. The samples the difficulties with the database, the differences in ages, cultural differences, the importance of translational collaboratives, the naturalistic differences that we see, and the importance of the bio-psycho-social links in research and components of research, and that is something that has been coming up so much.

Then there is the issue of the cultural education and differences in population. We see this, and it varies in various studies, but we see this in the populations that are most impacted here. We have a number of different cultures, different approaches, for example, to religion, to psychological issues, to medical wellbeing and health, and how one incorporates that into the research and the findings that we are going to need to obtain, and the issue of what works best for whom.

We would also stress, and I stress this throughout the PowerPoint, the importance of collaboration. People will want to help, and we find that they work with

us very effectively in gathering data, but when they know they are helping others, as well as the fact that the data will be helpful to them. So in our own work there is important and consistent communication of results, and applications of results.

I would like as you look at the material here to remember that we are dealing with an already vulnerable population. I presented data yesterday on the mental health symptoms and the symptoms over five years that we have been seeing and during recovery, though the recovery is very considerable, people are still not back to what would be considered baseline levels.

The issue of cumulative trauma, Dr. Revliner(?) referred to Dr. Sheinkopf's work on toxic trauma, and it is very similar: the cumulative trauma that people have had in the period of time prior to and what will be continuing during this spill.

We have also learned very much and we are very pleased about the collegial relationships that have developed, and I think can be very helpful. The University of South Alabama has approached us, and the University of Mississippi we worked closely with Galveston and with Houston, and the issues of can we be doing collaborative mental health research that will be of real help in understanding some of the differences, some of the

differences in exposure, some of the qualitative and quantitative differences.

We have used qualitative methodologies in beginning our research, because we established community advisory boards with which we work with stakeholders, that both help us with the needs assessments, but also help to make sure that our evidence based instruments are always culturally sensitive and the work we do reaches out to the communities in ways that make sense to them, and where they then collaborate with us further in doing this.

With the quantitative methodologies, we are currently do these with both adults and with children, and again we have this wealth of prior data before this oil spill disaster, and the continuation of the collaborative links and relationships. I point out that again I emphasize the issue of cumulative trauma. We are going to see this very importantly in the adults, and certainly the research around the world substantiates with we have seen, that in some ways people can feel stronger and feel they have mastered some disasters, but at the same time have increased risk and sensitivity at this time.

In children we would see this especially. And I plead with you again not to ignore the needs of children of different ages, they do differ, and we will come back to this with our work on resilience, and our evidence based

work, and our close collaboration with the schools. And as I say, we are already getting schools reaching out to us so that we can help them as we have in the past, because we always provide reports and we always work with them on what will then improve school climate and school services, and the collaboration right out in the field at the sites with them. They are already raising their own concerns of what they will be dealing with in the fall.

The adult assessments are evidence based, they are the ones that were developed with 9/11 and have continued. They are the ones that NIOSH uses. We modified them somewhat so that we include alcohol and substance abuse, family conflict. Here we are going to be doing some modifications not of the measures of post-traumatic stress and depression, but of other background measures so that we understand the impact of the prior and current difficulties. And currently that should be completed this week, and we are working with this with colleagues nationally, as well as within the state.

With the child and adolescent measures, again these were based on measures developed by the National Child Traumatic Stress Network. We have a meeting tomorrow where we are revising them one more time. So again we will have comparable data, the data that is relevant for the current situation.

The younger children the measures are filled out by the parents, and by 8 and on they are filled out by the students themselves. There are always done in collaboration with the schools. One of the fascinating things for us over time has been the percentage of children, the high percentage, who ask for counseling after they have completed this. And knowing the figures as I showed them to you yesterday have gone down some, they are certainly not back to baseline.

What we have also found and one of the ways of approaching families is how often parents will ask for help for their younger children, a greater percentage event for the children who actually score in the cutoff range.

I would also like to mention when I talk about the cumulative trauma we talk about the exposure to toxic chemicals, issues of employment, issues of the ecology in a different way for so many people here. And this would be true in other parts of the country, nature, the shore, the wetlands, so much of this is part of their lives. And it is not just their work, but the entirety of their being, and their multigenerational being, and their relationship to the environment.

Again, I would stress the developmental considerations. I do want to get back to this when we talk about this, and as I say, you have some of the figures in

the handouts and the PowerPoint from yesterday. One of the issues that I would bring up is the issue of resilience. We have been doing significant studies of resilience, longitudinal studies, working very closely with Ann Madison from the University of Minnesota. And what we have been finding is that longitudinalism in a considerable majority of children, and especially over time, will show normal patterns of resilience. We will have some who show new breakdowns, some who have breakdown but very often linked to already existent mental health difficulties, home difficulties, lack of strengths of the home, other issues related to age, related to peer relations, related to losses. But they are in the minority. Then there is a very small percentage where they look good and deteriorate over a period of time. We will be continuing that.

The other thing I wanted to mention is the importance of using this type of data and psychoeducational data to work with strength-based interventions, to help people utilize their strengths, to feel in control, to recognize areas where they are in control, and to assess these interventions. This is something that we will be doing carefully and that will help.

If I could mention maybe one thing that hit me yesterday, is I heard two of our speakers say will they ever eat fish from the Gulf South at this point, or will

their children eat fish. I found myself thinking if we look from a public health perspective and how closely this is being monitored, at the present time let's just say that it is much safer to eat fish from areas that are found to be safe by the public health monitoring, than it would be from farm raised salmon, tuna with its contamination of mercury, to eat farm raised catfish from China, to eat some of the seafood imported from Vietnam. And can we in a not falsely reassuring way, but in the reasonably reassuring way based on the knowledge that everyone is gathering the data, take a look at what we can know who will be of help to people, and help to people and what they wish to do is manage their lives.

Again, I would emphasize the importance of working collaboratively within the community, having the resources, having the trust. I work with Dr. Trepeta in our school of public health and the Tulane School of Public Health, but people working together in a collaborative way, but starting off with a trust, a deserved trust, and continuing to maintain that trust and move forward and helping people.

Thank you very much.

[Applause]

Agenda Item: Biomedical Informatics & Registries

DR. MASYS: Hi, I am Dan Masys, and I am from one

of the sister institutions slightly to the north.

Vanderbilt is located in Nashville, Tennessee, and often referred to as the most northern southern city with a number of connotations to that.

I bring a perspective of biomedical informatics, which is not a household term. Its formal academic definition is the application of the principles of computer and information science problems in medical research healthcare and health professions education.

But fundamentally we are tool builders. We are principle tool builders, in the sense that we evaluate what we do, see if we built better mousetraps. But the context of my remarks today will be both lessons learned and possible tools that could be applied to the set of information management requirements that you have heard the other members of the panel describe.

A constant theme throughout this has been health events related to Katrina, and I think from an informatics perspective there is also very useful to look at some of the outcomes of that event. In fact, I would premise that to say that it seems to me that Katrina could be viewed as an acute hurricane, where the oil spill is just going to be a sort of chronic hurricane that we are going to have to deal with for months, years, or decades.

Our speaker related communications said you

should use images, so this reminds me and it did occupy an awful lot of the Gulf. And we had seared into our collective consciousness images taken just walking distance from where we are meeting today, and if those don't touch your heart you probably just don't have one.

In the outcomes of Katrina, there was from an informatics and systems perspective an important bright spot, and that is the reported experience of the Veteran's Administration computerized patient record system. There was a lot of loss of paper records, fragmentation of healthcare services in the Gulf region. But there was both an acute story of the records, the 60,000 New Orleans area veterans being transported to Houston, their entire electronic record system being reconstituted within three days. They created a web interface to that, they had 10,000 hits within a week.

But most importantly I think for this event is they tracked over the ensuing months what happened, and they saw dispersion of VA beneficiaries to 200 healthcare sites in 48 states. And their electronic health record made it possible to provide continuity of care, as if those people had just arrived for a routine appointment back at their home location.

Lesson learned number one was that electronic health records are really the sine qua non for effective

care delivery and health effects monitoring for regional and national scale events, where you have mobility. And you actually don't know where people who are in the region for some period of time will be in the future.

If one compares that then to where we stand as a nation, this is an article published last year by a number of authors including David Blumenthal, who is the current national coordinator, so he is sort of living the dream of this problem, that we have only 1.5 percent adoption of a full comprehensive electronic health record. Only about 1 out of 5 hospitals have decision support at the point of all their entries to guide practitioners to do the right thing consistently every single time, whether or not they happen to read a particular paper. That cartoon which was not part of that paper is not a comment on the Gulf region, but on the entire healthcare industry relative to other information intensive industries.

So lesson two is that electronic health records are still the exception rather than the norm in the U.S., and it is becoming a national embarrassment. There are many industrialized nations far ahead of us in this regard.

Another thing that happened spontaneously after Katrina was the creation of a number of health related websites. KatrinaHealth.org took the approach of pooling pharmacy data from pharmacy chains, benefits, management

companies, and creating a resource for the simple act of renewing prescriptions for people that were dispersed all over the region. It was used by almost 30,000 retail pharmacies, only about 5,000 provider database queries. It was clear that this resource wasn't even known by practitioners in the region. It to some extent suffered from telecommunication disruption and knowing who was who, because there was not a unique identifier for every person in the system.

That problem of merging data has been addressed by a number of national level prototypes that are referred to generally as health information exchanges. What they are, are nonprofit regionally based organizations that pool data from many contributing healthcare organizations, and make it available to each one both in an identified fashion that enables continuity of care, so you get a healthcare system that is greater than the sum of its parts, rather than less. With the application of de-identification for tracking of patterns can be used to support research as well.

They are federally sponsored, most of them by the Agency for Healthcare Research and Quality. There are health information exchanges that are highly successful in Massachusetts, Indiana, and Tennessee. And they are to some extent the public version of the functionality

described by one of the people in yesterday's open session, where Cerner Corporation does this kind of pooling on behalf of its own customers. But this is a neutral community resource managed by the community as a nonprofit entity to make this data available.

Lesson three is as you have heard from multiple speakers on both of these days, that clearly we are going to have to merge and analyze data from a variety of sources that include clinical care events made individually on behalf of individual patients by individual practitioners and healthcare organizations. The things that people do on behalf of their own health, like buying over the counter medicines, and combining that with weather, ocean currents, and environmental sensors, observations by people at the scene. And this new class of data that clearly is going to become increasingly important, and that is biomarkers of individual variation.

There are tools that are available for agile data capture and analysis for health research topics. The National Institutes of Health had a very large program involving 46 different academic institutions in the U.S., called the Clinical and Translational Science Program, CTSA's. And the CTSA program has supported the development of a secure web-based set of tools for distributed data management, called REDCap. REDCap is a sort of remarkable

infrastructure that allows an investigator just to define a set of variables in an Excel spreadsheet, and the system builds itself literally within minutes one can be acquiring data.

And you see a little map down here of the more than 2,000 studies that is supported. We recently completed a health capability survey that involved 43 countries, 117 sites around the world, who were entering data in English, Portuguese, Spanish, and French, to a common data model, the merging of the data occurred in less than a minute.

These kinds of tools could easily be adaptable to the sets of very focused research agendas, because REDCap, for example, is available at no cost. It is not a product, you don't buy it, it doesn't cost something to support it. When people give you free software it is sort of like giving you a free dog, you do have to put some resources into the support of it.

This will intersect over time with what we are calling often the era of personalized medicine informed by molecular variation. The genome enabled health science of our day is correlating the differences between you and me, the roughly 1 percent of our DNA and other biomolecules that makes the difference between us. And as we measure this molecular variation and correlate it with real world

events, such as response to oil spills, we are going to face a problem of the combinatorial explosion of facts that may bear on decisions that is just way above the current professional model of autonomous individual practitioners doing the right thing based on what they read, what they remember, and what they try to do every single time.

Here is a graph that in essence sort of shows this Twentieth Century healthcare that decisions based on a traditional clinical exam history, where most of us are in pretty good shape with respect to being able to manage the information that bore on a decision. But as we add in the individual genetic variation, these observed biological and psychological variations in response to environmental exposures, and then the responses to the therapies, we are in an area where we clearly are exceeding the capability of any human being to remember to know enough to do the right thing every time.

The next lesson learned about this escalating complexity is that individuals and healthcare practitioners will need evidence based person specific decision support.

Let me move from those four observations to five recommendations. The first is since the needed electronic health record infrastructure doesn't exist, then it is clear that we need to immediately add resources to strengthen the existing health monitoring and reporting

mechanisms described by the other members of the panel and other speakers at this at all levels, local, regional, and state.

Second, accelerate the adoption of interoperable electronic health records. And it turns out the federal government, the Obama Administration for the first time in history had a plan and \$20 billion focused on implementation of interoperable electronic health records, so-called meaningful use of them. And that meaningful use means you had to be able to see our data. It would be an opportunity I would think to increase the federal incentives, because that was supposed to roll out over six to ten years, to in fact make the Gulf region a model for accelerated implementation of that same national plan, to move it into the leader of the regions of the nation in terms of adoption of these technologies.

And from an informatics perspective we will clearly need to have sort of tags, that is codes or labels for oil spill related events that could be applied, and they in fact define another virtual cohort at the level of observations made by clinicians throughout the region.

Third, as I mentioned, this mechanism of a health information exchange, to my knowledge there is not one in the gulf now. It would be a very natural additional layer of the ability to pool and permit meta-analysis, as well as

permit coordinated care across the region to create a Gulf region health information exchange.

Then to use tools such as REDCap to have a very agile research data infrastructure that will actually serve the purposes of being able to pool data through common data dictionaries, and to allow with proper permission the easy and ready access to that for analysis.

Then lastly, on the effector side, on the movement of information back out to people on the ground who have to make decisions, to make available evidence based decision support not through published papers, although those are necessary but not sufficient, but through this person-specific decision support infrastructure that uses those same electronic health records. As well as taking advantage of some of the other media we have heard described at this conference, including broadcast media, websites, text messaging on cell phones, social networking media such as Twitter and Facebook. There are lots of opportunities to use multiple channels to try and provide a consistent authoritative message.

With that I thank you for your attention.

[Applause]

DR. BAILLAR: I am going to talk from right here because the light is better, and I will not be using PowerPoint.

My first point is to remind all of you that the recommendations you hear yesterday and today are personal recommendations. They are not recommendations of the workshop, they are not recommendations of the panel, they are not recommendations of the Institute of Medicine, they are recommendations of the person who is speaking, and that will include the recommendations I am going to make.

I would like to begin by talking a little bit about surveillance and what it means. That word has been defined in a lot of different ways, and many of those are utterly incompatible. So I am not going to try to redefine it, I am just going to tell you what I mean when I say in this room that word "surveillance." It means to me service to the individual, the one person who is standing or sitting in front of you at the time of a contact. It will include examining that person, taking a medical history, possibly laboratory tests, for the early detection of medical conditions including mental and psychological conditions that may be subject to effective treatment.

It will include talking with that subject about what problems are you having, how are you dealing with them. It will include some discussion about emerging developing knowledge regarding the health effects of oil exposures, oil spills, that may be relevant to this person in front of you. But the core of the surveillance is that

individual contact.

Now there is going to be a need to assemble the information from contacts to get a picture of surveillance across a community, beginning with small communities and then consolidated into somewhat larger. But for me surveillance means service to that individual person.

The handmaiden of surveillance is research. It is quite a different matter. The research I am thinking about has to be in direct support of surveillance. The study of whatever information is available to detect new effects that we don't suspect, don't know about at this point, research to refine our notions about how frequent an effect may be and how serious it is when it occurs. Research to investigate and identify susceptible subpopulations, whether they be children, pregnant women, the elderly, people already sick with other things, or groups defined in other ways. But the research should be in direct support of the surveillance as I have defined it.

The research is going to have to be highly centralized. If you have fifty different groups trying to collect information each in its own way there is not going to be any way to put all that together to come up with researchable data that can tell a convincing story. Even two organizations will be too much.

What I have in mind is a single organization with

a single person in charge who is responsible and has the authority to direct the research operation. I cannot tell you what organization that should be, it might be CDC, it might be a new organization created by the effected state health departments, it might be a consortium of the universities in the area. But I am convinced that there has to be one organization with one person in charge to do an effective job of research.

Now I am talking about a highly decentralized surveillance operation, and a completely centralized research operation. They have to work together, and that pairing will not be easy. But I am convinced that it is necessary.

A second issue to talk about is what kind of surveillance is going to be undertaken. There is passive surveillance, in which you have an organization or people who are receptive, but wait to hear from the effected persons or their doctors that something is going on, that there is a problem.

In active surveillance there is a periodic effort to go out and contact people on the list of persons to be included in the surveillance activities. And you ask them to come in to talk, you talk to them on the telephone if necessary, and possibly go to visit them if they are not able to get out, but do that on a fixed schedule. I don't

know at this point what that schedule could be, it might be for example every six months at the beginning, tapering off to every two years. It is hard for me to imagine that over any long period of time the intervals would be more than two years. I would make a very, very strong personal recommendation that you go for active surveillance, wherever that is possible.

There are questions about who is to be covered, and how many of them. And there is going to be a need for clear specific operational rules about who is to be in this surveillance program and who is not eligible. Cleanup workers, other responders and occupationally exposed persons, what about the National Guard troops, and local fisherman. What about communities along the coast, what about the families, the wives and children of people who are heavily exposed occupationally? For example, the wives who wash the dirty clothes that are soaked with oil.

There is going to be a need to include people with limited exposure, perhaps even no exposure, to serve as controls.

What about the cost of this operation? It is something I have not really heard discussed here. My expectation from watching some other long term follow up studies that have some similar characteristics, is that we are talking about something in the range of from \$3,000 to

\$10,000 per person for a lifetime surveillance follow-up. If we take the intermediate figure of \$5,000, you have 10,000 people subject to surveillance, you are talking about a lot of money, that is \$50,000. If you have 30,000 people subject to surveillance, that goes up threefold. If you have 50,000 it goes up even more.

And somebody very soon, like right now beginning today, has to think about how to cover the cost of surveillance if you are going to undertake this kind of long term active surveillance of what is going on.

There is a need for speed, a real urgency here. It is already too late to collect some kinds of information that will become quite important. We need to identify persons for surveillance while we have them, before we lose contact with some of them. There is a need to collect personal data, initial physical and laboratory exams before the exposure reaches its peak. There is a need to collect quite extensive environmental samples and to save them. We do not know today what we might need to be looking for in years to come. We need not just environmental samples, we need body fluids, blood, breast milk, saliva, other things. We are going to have to have tissue samples for some things I suspect, though that is not an easy matter.

What information of items should be collected? I have never heard of any long term follow-up epi study of

the kind I have in mind, where anybody said at the end gee we really need to collect some of those things. There will be a push for more and more kinds of information, as more and more questions arise over the coming years and decades. And you want to keep that in mind as you or other people are designing the studies. Go for more rather than less, right up to the tolerance of the people who are going to be in this surveillance program.

There is a need to keep in mind that not every bad health outcome in an effected community or in an exposed person is the result of that exposure. We need to know what might have happened in the exposed group without the response. If you have twenty cases of some uncommon outcome, and in the absence of exposure would expect five, you, may not know which of those five would have occurred anyway. But you know that there is something going on, or you wouldn't have twenty altogether.

I think there is likely to be a need that because of the high level of suspicion and distrust in some of these communities there is going to be a need to keep the door open for people to join the surveillance group at a later time, as they become reassured that there will be some benefit in it for them.

There is going to be a need for a substantial dedicated staff to manage the surveillance activities, and

a need to learn what can be learned from a number of other large scale long term follow-up health programs. The National Cancer Institute has its SER program, Survival End Results, and epidemiology. There is the Radiation Effects Research Foundation in Japan that is doing a lifetime follow-up of persons exposed to the atomic bombs. The Framingham Study of Cardiovascular Diseases, the Nurse's Health Study; Three Mile Island, as an example that has not worked out very well. Certainly the World Trade Center cohort needs to be considered in deciding how to manage this one.

There are questions about availability of data. Who should have access to what aspects of the data at what time, keeping in mind the need to protect the privacy and confidentiality of the people who are providing the data. It isn't enough just to cover up names and addresses. If you know that your neighbor was in the hospital last week and was discharged on a particular day, you might be able to put together other bits of information if you had access to the whole record and find out just what that was all about, and so forth. So there have to be some built-in protections against that kind of breaking confidentiality.

Maybe I should just stop right there. That is a lot of things to consider, it is just a beginning, it is going to be an urgent process, it has to be undertaken

immediately, and I hope many of you will be directly involved in that.

I would like now to turn to the other panel members and ask what comments they would like to make about what their colleagues have said here. Lynn?

DR. GOLDMAN: Just a brief comment about again resources, because I think oftentimes it does come down to that, and that certainly when we spoke as a panel prior to this session then we recognized there is an awful lot we don't know about what is going on here. And I think the comment that Dr. Matte made about the fact that we are giving advice, and we know that a lot of our ideas are ideas that people here already have had and are hearing now.

But one thing we did know for sure is that the resources are not in place to do all the things that we might recommend as individuals that you would want to do.

I did have a little bit of a response to Dr. Bailar's comment about what the cost over a lifetime might be for a surveillance, I think it is very difficult to project that. I wouldn't be clear myself about what that might be. I am thinking some of the things I have been involved with in the past, for example, the Agent Orange situation, where just getting the Dioxin level on an individual can be hundreds of thousands of dollars, just

doing the laboratory work on the one hand, and on the other hand, other kinds of events that I have been involved with personally where it is not so costly to do the surveillance and the tracking. Because this episode really hasn't fully unfolded, I think it is very difficult at this point in time to project what the costs might be.

There will be one, and there needs to be planning for that, there needs to be resources for that. And I can't agree more about the need for coordination, whether it is needed for the research that is going to eventually be done, but also for the surveillance activities and coordination along the different agencies. And it is going need to be help from the outside I think to come in with some of the resources that are needed to do that, if you are going to have common data platforms and standards and so forth. From my own experience I know there is no way that the people who are in the front line can be thinking about that right now.

DR. BAILAR: Other brief comments from the panelists before we go to the questions from the audience?

The first card I have says, "This workshop is an excellent beginning, but it will be necessary to do a reporting back to the impacted communities on a regular basis. The Committee should consider scheduling regular meetings for this purpose."

Any comment on that? I think it would be hard to disagree with that. It certainly should be built into the plans.

[No response]

DR. BAILAR: Another question, "In previous oil spills, e.g. Valdez, why wasn't the science done to answer long term impact to public health? Was it funding, incompetence, politics, maybe 'we don't want to know, what if it shows adverse effects?'" "Mass exodus from the area?" The fundamental question was, why wasn't the science done after previous spills?

DR. MATTE: I can't speak about previous spills, but I will risk reflecting on experiences in New York City after 9/11. I think the biggest challenges are getting resources in place, identifying a structure, a leadership structure. There is a lot of very good research going on in New York related to the World Trade Center, but I think everyone involved wishes that things had started sooner, because that is the data on exposures the denominator starts to get stale very quickly.

I think the lesson from that is that the sooner it can be determined what resources are needed to start and how to get started, that will be a plus.

I do want to say on the community side, based on what I have been hearing, I am less sure about where one

would even start with a sampling cohort to look at chemical exposure. Certainly I can imagine how one can identify people who are impacted economically in the community. But I haven't heard so far information that would allow me to say well this is a population that we could have baseline exposure data, we would know then what kinds of health effects we might want to look for and who.

DR. BAILAR: Is Larry Palankis here? Do you want to comment on this?

DR. PALANKIS: Certainly. A simple answer to that question could be all of the above. But actually my experience was that, and it wasn't just my experience, but the experience of a number of researchers who had begun to not only look at the social and psychological effects of the Exxon Valdez spill as I did, but the biological effects, the long term health effects, the effects on economic activities or in the Native Alaskan populations on subsistence activities.

I can tell you that once the litigation process got to full steam much of that effort came to a halt entirely. And just based on my own experience of having been deposed and undergone a grilling by experts for Exxon asking me about the details of my methodology, about who did I contact, what kinds of questions I asked them, how I analyzed the data. Oral surgery without Novocain would

have been a desirable alternative.

Many research initiatives actually ground to a halt as the result of the litigation. It wasn't just a matter of protecting confidentiality of research participants as I mentioned yesterday after my talk, but it was also a matter of compromising the research process itself, the ability of investigators from different teams working on different questions to come together to talk about the results, to communicate the results back to communities.

As I mentioned, a lot of research efforts like my own was really intended to provide feedback to communities so they could help with planning, identification of resources that they needed to put into place and so forth. But even that ability became compromised by the litigation efforts, and many of the communities themselves ultimately became involved as plaintiffs in litigation against Exxon.

So unfortunately it is both one of the necessary outcomes of events where blame can be assigned, but it is also one of the major drawbacks and things that we need to consider at the very outset.

DR. BAILAR: Thank you. The next question, "What do we need to do to implement an active surveillance system to respond to health complaints and symptoms of workers so we can institute protective measures quickly in order to

protect workers from potential adverse effects?"

Tom?

DR. MATTE: First of all, from what I heard from Dr. Howard yesterday some of those ingredients are in place, but I think the essential components are to summarize them too. One is there needs to be a way for injury and illness reporting to be made to someone to an entity that where the worker doesn't feel threatened or inhibited, and where that information is rapidly being collated and analyzed.

Second, I think there ought to be access to acute illness and injury treatment in places where the exams that are done can be standardized, and again the information can be rapidly collated and disseminated.

I guess the third point is all of this won't matter if it is not connected back to the incident managers and those who are involved in deploying the workforce and training, provisioning of PTE and so forth. My impression is that there is a substantial amount of that going on as part of this operation, but there is a lot that I don't think that we know here at this meeting.

DR. FARLAND: Just a comment about taking this in the other direction as well, and trying to glean some information from those self-reported illnesses and their self-reported exposures, to assure that we are doing

appropriate environmental monitoring to try to get at the root of those particular exposures.

DR. OSOFSKY: One very brief comment, because I think the issue of what will happen over a period of time, especially related to litigation, is a very real one. Certainly from the perspective of our field, the issues of post traumatic stress disorder and other types of complaints, we have seen this before, result in suits and in class action suits.

At the same time, I would think there could be objective data, especially at this point, across disciplines with the public health for the mental health. I also think one of the things that has been present to us in our work is given the collaboration of the communities, at least at this point.

And what we see with these schools where these schools are so appreciative, and the response to work together collaboratively with us. One can get very important data from the children, the adolescents, the families, we can certainly get some types of data that can be very useful. And what we do with it, as you may know, is the data not only do we get reports from schools for claimants, but people who meet the cutoffs. We will talk with the student and if it seems appropriate then we will in an appropriate way speak with parents and obtain HIPPA

releases for them to get the appropriate treatment.

I do think there are aspects that can be done. At the same time I am aware, as I said yesterday, I remember when the Red Cross was really being helpful in giving cash for people to get more medical care. You would find first responders not wanting to take that because of their concern that they would then be part of a national database. And could there be anything there that might effect their employment in the future, even though they felt the needed help.

We see this with some of the military following deployment and their concerns if they go through the VA system, or have their treatment on base as opposed to getting it off base, will there be anything reported that can be of concern.

I think there are many issues, and I think they are issues that we can work through and try and solve, because the data is so important as we move forward.

DR. GOLDMAN: Just to add to that, I think that is very true, I have seen that as well, and I think that is also part of why I think Tom Matte said that it is very important that surveillance for workers provide a safe context. It is not just a matter of the first responders being concerned about their future employment, but also in the context of people who work for companies, that their

employment can be effected, and that they need to feel that they can honestly talk about to somebody about what is going on with them without having the threat of losing their jobs.

DR. MASYS: So there is a common in informatics that the deployment of new information infrastructure is about 10 percent technology and 90 percent sociology. And I think this is exactly the situation we are in, that if you model the information flow what are the observations to be captured, who is in charge of them, and who gets access to them. You basically have solved about 80 percent of this problem, you don't have to invent any new infrastructure, just use the ones that already exist and there won't be a single answer. It could be paper forms for one group, a telephone survey for somebody else, a website for someone else. But all of those tools already exist.

What we need is the conceptualization of the body of information that needs to be acquired, who gives the observations, who gets them. Then I think we could get it running very quickly.

DR. GOLDMAN: I would like to make one other point. What Dr. Palankis had to say I thought was really quite chilling. We have gone through an era where medical professionals for a long time were concerned about being

good Samaritans in incidents, because they were afraid of malpractice liability. Then action has been taken by states and also by the U.S. Congress to provide protections for good Samaritans, so people don't have to be worried about stepping in and helping.

Now I'm hearing that the good Samaritan epidemiologists and psychologists and other scientists have similar issues with being very much put into issues in terms of the legal system that are pretty uncomfortable if you step in and help. And I think that this is a public policy issue, and I wish we had an attorney on the panel, but it is something that I think needs to be explored with people who are legal experts. There must be some way to provide researchers with protection from being put through what you were put through with that.

DR. BAILAR: The next question I have here is, "It is well-recognized that social economic status, specifically income, has a profound impact on health. Will this data be selected at an individual level?"

I would like to respond to that. I have thought a good bit about social and economic, especially economic impacts on health over years. I do not think that the amount of money in your pocket has any direct effect on your health, but it is a marker of things that do, of occupation, of diet, of level of stress, of where you live

and the exposures that might go with that.

And I do not know at this point what items of information will be collected in these various activities, but I hope that they will include these components of socioeconomic status that may be more closely related to what actually happens to people's health.

Anyone else?

DR. MATTE: Just one related point, which at the risk of saying something obvious I don't think there should be any effort to study physical health outcomes of chemical exposures and mental health consequences of this event separately. We know too much about how those two domains of health influence each other, influence susceptibility to chemical - mental health influence on chemical susceptibility. In addition to the social determinants of health, measuring them and tracking them, we need to integrate the collection of mental health, psychological stress outcomes with the physical health information.

DR. OSOFSKY: I would say the same thing. This is such a crucial area, with our expanded knowledge of the interface and the influences in both directions, and in multiple directions including the ones that you are bringing up, that it is very crucial that we study this in a whole manner.

DR. BAILAR: "Is there any personal sampling for

inhalation exposure to VOC or other airborne hazards for the cleanup workers?"

Does somebody know about this? Tom?

DR. MATTE: I am not directly involved. I think there are people here who are, but there is information online that I have seen.

EPA has a website, and OSHA also has data online I believe on personal monitoring for VOCs and some related exposures.

DR. BAILAR: "Is it possible to correlate biomarkers or health defects to exposure data available on airborne hazards for the cleanup workers?"

DR. MATTE: That hopefully will be possible. Right now from what I have seen online, I don't see evidence of a lot of variability in the personal monitoring data. But I haven't looked at it carefully. I think in addition to looking at the objective measures of exposure, there is sort of time activity information where workers tasks and the number of days that they worked on them would be another sort of surrogate for exposures that maybe are not fully captured with monitoring data, such as dermal absorption, for example.

DR. GOLDMAN: I guess another point on that is that in most cases with the kinds of chemicals that we know that are involved in oil spills, that the biological

monitoring would have to be done concurrently with the environmental monitoring. If there haven't been biological samples taken until then, it might be very difficult to correlate what is going on with the external and the internal exposures.

DR. BAILLAR: The next question, "Were biologic samples collected in the 9/11 studies?" Tom?

DR. MATTE: There is a published study, I don't have the citation for you, but there was a biomonitoring study on I would say a relatively small sample of responders. It was some weeks, I don't remember the exact interval, but it was in the order of at least a few weeks after the 9/11 event, and subsequently, and there has been a lot of research, if you go to the websites that I have mentioned, where there have been attempts to look at biomarkers of exposure after the event.

One challenge with 9/11, and I think it is relevant here, is that we live in an environment those of us especially who are in urban centers where there is a lot of exposure to some of the same contaminants that are in crude oil, and when we fill up our vehicles we walk down a street with a lot of diesel exhausts and so forth.

Teasing out biomarker connections to our everyday exposures from what people are encountering and developing, identifying the right kinds of specific biomarkers, I think

is a research challenge right now.

DR. OSOFSKY: Could I ask a question? That is if I take a look, and certainly it is the entire Gulf, and then we take a look at three parishes, where there are fishing communities right now. But one of the parishes, St. Bernard Parish, which has been so wonderfully supportive and helpful, with Katrina there was a question of whether people would be around to resettle in the parish, because there was also the toxic oil spill from the Murphy Oil Company that as a result of Katrina.

And I don't know what biological measures may have been obtained at the time. Eventually it was decided that the residents could return fairly rapidly. But that was a real question for some period of time right after Katrina. I don't know what samples may have been taken at the time.

DR. GOLDMAN: I believe there were not samples taken at the time from the people there. I certainly had a chance with some people from Tulane University and others to tour that area right after the storm, and could see the crude oil that was in homes and around the community. But it was also I think able to be cleaned up.

DR. BAILLAR: "What does the panel suggest as authoritative web-based resources for the public and others to get oil spill related information?"

DR. MATTE: To start, I have seen good, and I think steadily improving information available. There is a link at the CDC home page, OSHA, EPA.

There is an overall link for the response, but I don't have it off the top of my head, that provides a lot of information. So I think you won't have too much trouble finding pretty good information online. I think as with any such incident it is going to gradually get better as it is sort of faced to the public, and in the richness of information that is available there.

DR. MASYS: To that list of federal agencies, I actually just Googled oil spill health effects, and one of the highest ranked hits is on the National Library of Medicine, where they have sort of an index page.

But importantly in the spirit of their Medline Plus, which is kind of the biomedical literature interpreted for the lay public, their specialized information services division which has a long history of toxicology and managing chemical information, is creating a set of things for the public as well as for researchers. That is another important federal information agency link.

DR. FARLAND: Just a comment on the PA site. There is an overview statement about the monitoring data that is ongoing, and that is updated frequently. But there is also an ability to drill down to the actual data that

has been collected, and the numbers of samples, and the kinds of hits.

For individuals who want to get that level of information EPA is a very good site for that.

DR. GOLDMAN: I was also going to mention that I think the state health departments, I looked at their sites, and they look pretty good as well, and has a lot of information that is very relevant in particular areas that people are wondering about, whether there is oil on the beach and more local issues.

I have been seeing that the availability of the monitoring data more or less in real time is thoroughly unprecedented. I saw that after Katrina, but I see even more of that now, and it is very helpful.

DR. BAILAR: We have a few cards left, but our time is up. I apologize to the people who have written out questions we can't cover. I am really very sorry about it, but we do have to close at this point.

Thank you all very much.

(Whereupon, luncheon recess taken 12:25 p.m.)

A F T E R N O O N S E S S I O N (1:40 p.m.)

Session VI: Future Directions and Resource Needs**Agenda Item: Panel Discussion. Looking Ahead:****How Do We Develop Effective Surveillance and Monitoring Systems?**

DR. SAVITZ: I think we will go ahead and get started. We appreciate those of you who have stuck it out until the very end here. Hopefully it is not a bitter end, it will be an enlightening and informative end, in fact.

My name is David Savitz, I am an epidemiologist, and am currently Professor of Preventive Medicine at Mount Sinai School of Medicine, soon to be going to Brown University in the fall. My own work and interests are in perinatal epidemiology and environmental epidemiology.

I am the only one on the podium who has not been up here before, and who therefore needs to give my own conflict of interest statement. I had a lot of time to do soul searching, and I did come up with one relationship with an oil company. In the early 1980s I reviewed a questionnaire for Shell Oil. That is the only one I could come up with, despite thinking about it for the past day and a half. So I did want to mention that, though.

This is a session which is intended to be integrative and bringing a perspective, trying to draw in

as appropriate the many themes that emerge. And we certainly had a diverse and enlightening array of presentations to talk about what the major gaps are, what the opportunities are.

And I have sort have been rehearsing with the panel a little bit, suggesting that this is kind of an opportunity for them to take a free hand. They have been involved with this planning for a couple of weeks. Some of the folks have been thinking about it much longer than that, of course. But to try to offer what they think are some of the important observations or take-home messages. In all the sessions this is not a consensus, this is simply the opinions and thoughts and priorities of those members of the planning committee.

I am going to use my two or three minutes here and then pass it along to Nancy Adler. In terms of thinking about the priorities for monitoring and data gathering and so on, I think that at least for me one of the take-home messages is that data has multiple purposes. And I am used to as a researcher of course thinking about data as the raw material for scientific discovery and observation. But I think it is important in this context to think about what data needs to be gathered, what the purpose is, what the timeframe is for it, but especially this issue of what we are going to do with it.

Data is, again, not just for the raw material for scientific discoveries and publications, data provides information for communities that are concerned and want to know what is going on, for people who are public health providers, who are medical care practitioners and need data to know what the service needs are. That it is not just some abstract theoretical interesting intricate issue, it is a very practical concern, and it seems particularly practical here.

Of course we are also concerned about the data that will allow us to track the health of the community and the workers and others who are effected, and to hopefully both do a better job in understanding what the health implications are for this population and this episode, and be prepared to do a better job the next time anything roughly analogous occurs.

In terms of my own thoughts now on the sort of priority that I did not walk in with a day and a half ago, one of the areas that keeps coming back that I think is important, and I will just give my two cents and then pass it along, is this issue of the dealing now with the predictable socioeconomic impacts and the ramifications. There is a lot of unknowns about toxic chemical impacts and those need to be attended to, but there are some of these immediate and obvious concerns. I would put very high on

that list the socioeconomic disruption and the mental health consequences of that, that data gathering can of course advance science, but it seems it has immediate need in the area of planning service provision, making sure that adequate resources are available to address a real problem that is inevitably happening and going to continue, and that there be the appropriate response, again driven by gathering the data that are needed by those who are the service providers.

Then the second and final issue that I will raise, is this challenge of reconciling the need for prudence and caution with the avoidance of undue disruption to the community. And what I mean by that is clearly we have heard a lot about the effects of the economic disruption I just mentioned, that has its own health implications. And to the extent that there are unnecessary avoidance of the seafood from the area, of the recreational opportunities of the area, there is a health implication of that as well as the area of being exposed to toxic chemicals. It is trying to balance this precaution in not exposing the local residents or visitors to hazards, that is of course a priority, but there really is a need to carefully and intelligently reconcile it with avoiding undue disruption to the economy, which is so driven by those kinds of factors.

Then it also of course translates into the kinds of communications. So if I am thinking of taking a vacation on the Gulf Coast, I want a resource that is going to let me know if that is a good idea or not, if it is safe. And I want to be comfortable with that as an outsider, and certainly those of you who are the residents of the area need that kind of information as well. And of course what is needed to be able to provide that is data, good data, clear data, well-communicated data, credible data, that is something that it overlaps with but is distinctive I think from the kind of data that researchers need to make new discoveries about the implications for the health of the population.

Again that is my individual two cents worth on an area that seems to be emerging through repeated angles, and different angles I guess, as a priority, an immediate priority right now that is needed, and something that is important to pursue I think.

With that, I am going to invite, I am not going to reintroduce the panel since they have all been up here once before at least, and simply sit down and invite starting with Dr. Adler, and going down the group and having them give five minutes or less if possible. And we will also be collecting cards from those of you who may have questions. I should also mention we are going to try

to end this a little early, around 3:05. So don't hold back if you have questions you would like to ask, please you can be working on your cards and then we will try to entertain those at the end.

Thank you.

DR. ADLER: I wanted to start out with one observation and then a potential framework. The observation is as I was thinking about the needs for what communities want, and what science produces, almost all the discussion today where people were pointing to the fact that there were not effects, said we have no evidence of an impact of this and no evidence of an impact of that. Science is set up to show differences or to test differences, and we can't say there is evidence of no effect. We can say there is no evidence of an effect. And those subtle differences have a very big difference in the impact. I think as we think about the communication, I think that is one of the issues we will need to think about.

I wanted to remind ourselves as well as a group that one of our charges was to come up with a framework for surveillance. I have been sitting and listening for the last two days of what are the characteristics of a framework for putting all this together. I made some notes, and I thought I would just propose some dimension

that might be the basis of some discussion.

As I thought what a framework would entail, what are the characteristics, and based in large part on today's discussion but also informed by yesterday's, that it should be long term, that it should be flexible, that it should be multilayered but integrated. Those would be the key characteristics.

The second dimension has to do with it should be both universal. There are some things we should be monitoring across all populations so we can make comparisons, but also we need some tailored and focused depending on the populations. Particularly around life stage, looking at the focus on children would be different than focus on adults, particularly ethnic groups, and particular vulnerable populations, those with preexisting conditions or genetic vulnerability, for example.

Third construct would be what is the content. So we have the characteristics, we have the populations, and then what is it we would actually monitor for. One is the baseline rate of outcomes of concern. We talked about biospecimens that could be banked. We talked about exposures over time that should include both objective and subjective. We have talked about syndromic response. We talked a lot about mental health as a particular category we should be focusing on. Also looking at immediate

responses, as well as long term.

A fourth dimension that I thought we should be considering, or what the processes are by which this all evolved. Under processes I was including the importance of involving the communities of the need to coordinate across the various agencies that are already gathering data, and will be gathering data. The need to set priorities, making it safe for workers and others to participate and get information. Under this based again on this morning, is protecting us from the complications of litigation.

Another dimension of a framework would be the use of existing sources. We heard about electronic health records. We didn't talk as much about existing surveys. There are a lot of surveys that are going on now of populations that could be modified for a specific population, that could be used and would be much quicker turnaround because they are already in the field and there is already baseline data. That is another dimension I thought.

Then there are basically unanswered questions, of passive versus active involvement, which health outcomes should be monitored. Which covariants should we be measuring, so things like socioeconomic status, which may be a control variable, it may be a moderating variable, it may be a determinant. Where it falls I think will depend

on people's models, but we should have some ideas about what other variables we should be measuring, and finally who does it.

I hope that might be helpful in a way of framing our discussions.

DR. BAILLAR: I have just three points. One point is to emphasize something Dr. Adler has just said that I think is critically important. The second is to repeat and emphasize something I said earlier. Third is something that we have scarcely talked about.

Dr. Adler has said that no evidence of effect is not the same as evidence of no effect. That is a critically important point. If you have no evidence of effect it is often possible to at least put an upper bound on the likely sides of some effect. But you cannot say that we have not been able to demonstrate it, so it is not there. You don't know it, you don't know whether it is there until you have done the proper kinds of analysis that will show that within whatever limits you think are tolerable there is not likely to be anything important. It is an absolutely fundamental point.

The second thing as I said earlier but want to emphasize, is the need to organize the research effort now. Every day matters, and I mean that literally. People will be moving away and out of reach, memories will fade or

change, and environmental samples will alter with the passage of time. Every day matters, and it is critically important to get to this at the earliest possible moment.

I already detect some signs of some pretty fierce turf battles. I have no patience with turf battles. I am asking everybody who is here and everybody who may become involved in this in the future, to recognize the common good and come together. I am not going to say who I think it should be, but I am asking you all to cooperate and in a good spirit to make this thing work.

The third point which I had not given a lot of thought before I came here, is the need to consider legal implications of collecting all this data. I don't know enough about law to say just what needs to be done, but I suspect that there is going to be a need to review and maybe modify state regulations and laws as well as national law regarding access to the data here to protect the integrity and the confidentiality, the privacy of what is provided, so that it does not become either a club to beat some of these people with, they have been beaten on enough, or a barrier for collecting information that may become critically important. Again, I think that needs to be done right now. Somebody should be looking into how to protect the data from the legal challenges that could be very destructive.

DR. GOLDMAN: Thank you. I have a few closing thoughts as well.

I think one thing to reflect on at a time like this when we are really in the midst of such a large disaster. I mean it is a disaster that I think is continuing to unfold, and unfortunately we are not yet in a position to be able to say what the full magnitude of this will be. We just don't know that yet.

I was reminded of this at lunch today when somebody mentioned to me that apparently this morning a robot underwater hit one of the pipes, and now apparently the flow is maybe increasing again. These things will continue to go back and forth on not only making I think the situation more and more uncertain, but I would guess contributing to stress when there are these factors that are completely beyond really all of our control that are occurring.

But yet it is what we would think of also as a teachable moment, in terms of some lessons I think we can learn. I think one lesson that certainly has been taught again and again but we haven't quite learned and we need to learn, is the need for better health impact analyses of these kinds of decisions. This is a decision that is done as a permitting decision by the Department of the Interior, it is not a decision that is made with the full health

impacts analysis.

I would argue that given this we have six billion people on the earth who have a tremendous need for energy and fewer and fewer supplies of energy, that it isn't accidental that at this time we are drilling a mile down to get oil, because that is where the oil is now, not because that is where we want to go to get the oil. And that as we use those reserves that are at that level, we will be going into even riskier environments in order to get energy. We will take more and more and more risks. So that decisions that maybe before could be in the hands of non-public health authorities, I think the health community needs to get more involved with those decisions. We need to be involved with decisions about energy, and we need to be involved in policy issues related to energy. And we really shouldn't be seeing in this day and age an energy bill in Congress that has so little involvement by health from the medical community by the public health community. Because these issues effect our health every day, every day we are breathing the pollutants that come from burning fossil fuels. And I think that we just need to come to a realization that this is an issue that involves health.

We also need to learn I think in the longer term in the need to have much more continuous investment in what was called earlier today the public health infrastructure.

I hate to call it that, because I think people tend to kind of close their eyes and fall asleep when you use a term like infrastructure. But the reality is that today's public health agencies are very underfunded. The state of the U.S. economy is such that there have been huge reductions in state and local investments in public health, and those agencies are functioning at a very basic level, at a very minimal level.

And then when an event like this occurs the expectation is they will rise to the occasion, and that they will be able to take care of our health needs, make sure the food is safe, make sure the air is safe, track the consequences, and we need to be much more serious about making the continuous investments so that that promise can be fulfilled fully. And we haven't done that.

A couple of other comments that are more on a short term basis, is that certainly, and I would agree with earlier comments that this is a situation that calls for stronger levels of organization of the response, I would say on the federal level in particular. We have seen that military has been brought in to kind of command the overall oil spill, but I don't have a sense that we have a strong focus for coordination for health issues.

I would agree with the comments that were made that this shouldn't be an invitation for turf wars among

the agencies. I think that the agencies have pretty clear differences in their missions, but there needs to be better coordination both of the short term and the longer term responses and also application of resources to improve the ability to manage the data and to collect the data. I love the ideas in the last panel for being able to do that, in terms of the medical care system as well as the data that are being gathered. And I don't think it is too late for the agencies to start doing that.

Last but not least, somebody at lunch made a comment to me that they were a little bit disappointed that we haven't been able to drill down very deeply into all the issues that are there for our charge. Drilling down is not a great expression. But I looked back at the charge for this workshop, and we have had a huge charge and very challenging workshop to put together and many questions to review. And I think that this is an issue that deserves being visited again by the Institute of Medicine. I think that we do need to continue to have committees and workshops or groups that work on this, as well as probably other efforts at the federal government and state and local government can do.

It is true that there is a lot more that needs to be done.

DR. LICHTVELD: The U.S. Guide to Preventive

Services Taskforce has put in front of us four basic questions before we get into action. The four, and we all know them, are should something be done, what should be done, how should it be done, and is it working.

The should something be done is clear, yes, we should do something. And while we don't have all the data to get that answer, we know that something should be done.

What should be done is more difficult. We began that conversation in these first two days. My comment and my reflection will focus on the latter two of the questions, because those are harder. It is the 'how should it be done' and the 'is it working.'

From my viewpoint, both as a scientist, but particularly as a New Orleanian and a Gulf Coast resident, how should this be done. What are some guiding principles for this work?

First, be informed before you inform. I think the state health officers left us with that message. There is a responsibility for each of us to go back and say yes I ate fish, I ate crawfish, I ate seafood, and I had oysters. And the state health officers on the Gulf Coast make sure that seafood is safe, and make sure that what we have in the restaurants and on our table is safe.

Secondly, build on what we have. Build on existing partnerships, many of us are in such partnerships.

I am part of a secure consortium, there are many other consortiums here that address these very things of environmental threats, disasters, and health disparities. So build on what we have in terms of partnerships.

Build on what we have in terms of mechanisms to get into action. That is not really in front of you. But as several of us have said here on the panel, we can't build on nothing. If there isn't anything, whether we call it infrastructure or the floor of the public health house, we can't build on a foundation that is rickety or doesn't exist.

Thirdly, make science work for communities. I am for research, absolutely, but that research will not work if we don't address the social determinants of health. That research will not work, like we do for our families and our kids we put money in the bank investing in the future. In this case we need to put biospecimens in the bank so that we can get in fact future answers. That needs to happen now.

Frankly, we need more than coordination. We need a level and a design of interdependence that hasn't existed in the United States. And I hate - for Katrina there were many firsts, perhaps for this oil spill there are some firsts too, that the rest of the world would never have to do this again.

That interdependence must exist not only among researchers in a transdisciplinary fashion, but of health agencies and other institutions and other stakeholders, including BP, to work with us in a way that engages the community, and to work with us in ways that engages the workers. That there is an interdependent framework of action that includes research, but is translatable and directly actionable for our communities along the Gulf Coast.

And lastly, the fourth question, is it working. And Judy didn't know that I would say this, but I will. Let this not be IOM's last visit. Let it be the first of a sequence of visits along the Gulf Coast to make sure that the science that we all will do will be credible, will be independent, but particularly to make sure the data and the results that we come up with is readily available so that all communities can take action. We don't have to wait ten years to do that.

DR. MCCAULEY: Thank you. I have spent some time reflecting on the rich discussions we have had over the last day and a half. This is such a complex situation, and something so worthy of the Institute of Medicine's deep analysis of what is going on. And I am underneath an optimist, and I believe in the very worst of times you can learn and create new ways and models of working together.

And I think of all the stories I have heard today and yesterday, the impact on the mental health of the community concerns me so much, and particularly the stories about children.

This is just a small thing that can perhaps come out of future dialogues and planning together. But we talked about this being a teachable moment for us as scientists and health providers, but also it could be a teaching moment for the community and particularly our children. We talked about resiliency, and how to help our citizens get through this and be stronger and investing in the future.

And I would say we need a group of us to work across our silos to focus on the children, to try to turn something positive about this. My esteemed colleague Ken Olden worked for years at NIHS to engage children in environmental health. And you have a great opportunity to use this disaster as a way to increase the awareness of our young in environmental health. And perhaps to even do quickly, because there is a time urgency to this, but to really develop a vast network of youth ambassadors who are engaged in this process, who are helping collect data that we might normally never see. And it will change their lives, it will change their perceptions of environmental health, it will change their perceptions of industry in

this area, it will change their perceptions of what they can do as individuals.

How you want to do it, how it would work, I just know that there is time urgency. You have time this summer with kids that are going to see a lot of bad things, a lot of scary things, but you could work to make it a very positive experience for a lot of the kids and change their lives. So I encourage you to do that.

Also think about technology, think about engaging the youth to do some monitoring for you, to report positive things in addition to the negative things. Because they see things that we no longer see, and they have cell phones, they Twitter, we could do something very quickly to turn something that is devastating to a positive experience for a portion of our young citizens.

Thank you.

DR. OLDEN: Thank you. I guess what impressed or effected me the most, I'm not sure I was impressed, but what effected me most was that first of all we keep talking about the same issues every time there is a disaster of this sort. And we have been talking about these issues for years. And one of the ones that is clear today and yesterday is the issue of leadership, who is in charge. And again, it just seems that no one is really in charge to make the important decisions that need to be made here in a

timely fashion. It seems to me that is one thing that we need to point out to the government, is that at least we should learn that somebody needs to be in charge.

The other one is I hope that whatever we put forward that we emphasize the need to incorporate building on a foundation of what the community really would like to see done. We won't be able to do everything it seems to me I'm sure that will be the case, because of limited resources. We won't be able to do everything that ought to be done. But as we set the priorities, the priorities ought to be based in large part, at least we ought to listen to what the community believes should be done first, and not second or third or fourth, but what they believe should be done first.

Because the impacted communities either we leave them with a sense of what is urgent, and most urgent. So I think we need to listen to what the community people said to us yesterday. To be honest I am not so sure that we shouldn't broaden our reach into the community, because I am not sure we have heard the community really in its entirety. I would say we need to recommend that we need to have some more discussions with the communities that are likely to be impacted.

We keep talking about the public health infrastructure, and again we have been talking about this

for I know twenty years or more, and we still don't do very little to really shore up the public health infrastructure. The things I heard this morning were certainly deficiencies, in 1991 when I went back to work for the government.

And science, science is the other issue that needs to be addressed. For example, we are talking in here about mixtures. Well, I remember having conversations with Lynn Goldman and Phil and all of my colleagues here in the room fifteen years ago again, about the shortcomings of science to address mixtures. And we didn't go into that much yesterday, but we are living in a state of toxic ignorance in fact when it comes to toxicology of mixtures. So it is time that we begin to use some of the new technologies that are available to us to really understand and try to tease apart some of these complex issues, like mixtures, because that is the real world exposure, and not one tenable at a time.

The other issue is holistic. We need to take a holistic approach, and I appreciate here we heard a lot about mental health. And as a basic scientist I certainly think it impressed me that that is probably one of the most urgent public health concerns that the community expressed, and that the policymakers in this region expressed. I think that certainly has to be a very high priority.

I think those are the issues that I wanted to raise. Thank you.

DR. ROSENSTOCK: Thank you. I am at the end of the alphabetical line here. So I am going to try to highlight a few thoughts I have had that largely will build upon comments that others made.

One thing I didn't hear in this session that I feel is probably shared by a number of us. In my reflection of a few days is we have done a lot of things right here, and I don't think that should be lost as we start talking about the gaps. Because there are a lot of deficiencies, there are a lot of age old problems that we haven't addressed. The things that I have been impressed about as different from my time in government, which is about the same time as mentioned, is I think we have seen agencies learn from mistakes.

We saw the example of the National Institute for Occupational Safety and Health that had been called in post-9/11 and the World Trade Center, they have really learned the things that they didn't do well. And one of the things we are doing now to correct it, as we have heard, and I certainly applaud it, is early on trying to roster and get the full denominator of all the workers exposed to this. I think that is one example.

We also heard the state health officers this

morning talk about ongoing contact among themselves, and with CDC. And I think in not very distant times past we might not have seen that as effectively. And there are a number of people in this room and some who have left who actually have been involved working with communities or working in more traditional distant scientific ways, collecting information that has informed I think where we are now and what we are doing.

I am looking at Dr. Larry Palankis, I think his work post-Exxon Valdez and the follow-up has really been fabulous. It is part of the cornerstone based also on other work post-disaster, and here post-Katrina, that lets us I think not just speculate that mental health may be a problem, but actually have very good information about why mental health even if far removed from direct exposures to toxins is of grave concern. That is the first thing I wanted to mention.

The second thing I wanted to talk about was this issue of resources. A few folks have commented on it. And whether you used the words public health infrastructure or not, the reality is as others have said there has been erosion since the 1980s in direct governmental support for local, state and even federal public health. New resources have largely gone in targeted ways to biosecurity. Those resources and other disease du jour sort of reactions don't

necessarily build upon the core assurance of health function that public health is poised to preserve.

And things that we keep repeating over and over, I mean how many times do we want to sit up here and say we lost those ten epidemiologists yesterday, and today we have this disaster and we have a little more money over here, but they don't have the core resources to do what needs to be done. And that is important because it is rare that any single disaster is that different that you don't need the core function.

I think we had an eloquent description this morning from the state health officer from Alabama about the laboratory search capacity. We have built up better laboratory response networks, in fact, mostly by the influenza and biosecurity. But we have abandoned some other very core public health laboratory functions that simply need to be addressed.

Lessons learned, I hope that gets filled back in from this current ongoing rather spectacular disaster, and continued conversations about those.

In terms of resources, an issue that has come up, I think one consensus that has come up, but it is clear that we have heard from virtually every sector, whether it is academic, government, community, the need to be smart and collect specimens now, whether they are biological or

environmental specimens, it is important, and I personally endorse that enormously.

But I also want to give caution in that collection to say because we still have limited resources I think it is really important that we are very smart and strategic about which of those samples we test for what. Oddly enough, that is something that we may have a little time to get smarter about. For those roles and other, I am personally yet again I think I'm the fourth voice or something on this panel to say I think the role of the Institute of Medicine is critical. I think they are an independent respected scientific voice, they have the experience to work across many sectors, and I believe helping guide the kinds of science that is needed and the value and the evaluation of the science in addition to being present in communities are all important ones.

The last comment I will make is the comment because we have heard this about who is in charge and the voice. I think here perhaps I sense differences about what we think. My own view is we have seen a single voice from the government emerge over these last two months of who is in charge in terms of more or less, in terms of trying to deal with the actual environmental let's get the spill slowed down or stopped. I think we haven't heard, and I do think it would be helpful for all of us to have at least a

single point of contact to inform us and keep us posted in a health communication message. I think having lots of different voices, that is okay, but you still want at least at the federal level a voice. And I don't think there has been a person who has emerged to do that.

When it comes to the activities though, I would hope we would just go for strong coordination at the federal agencies, there should be leads in departments in subagencies as appropriate that are coordinated so that the worker health efforts are not duplicated in a negative way, and they are coordinated and facilitated across agencies and responsibilities. But I think we will expect that something this large, this complicated, and this ongoing it is hard to imagine that this will not be decades. Not just in litigation, but in terms of understanding what has happened, that we maintain a good communication among the agencies and to the public.

So I will stop.

DR. SAVITZ: Thank you all very much. We have got a number of questions, and I am trying to sort of group them into coherent topics. And one of them actually picks up on something that was mentioned indirectly by at least three of you, I may have lost count, there may have been more of you. That is the question of centralization and leadership. If you will bear with me, I am just going to

paraphrase for all three of them and invite comments on pushing this maybe a little bit further.

I think we all agree there needs to be surveillance through diverse data sources, and the question is whose responsibility is it to herd the calves, which is a reasonable way to think of the challenge of people with data with good intentions, who pulls that together and identifies the gaps and so on, how organizations that have data get involved.

The second one concerns leveraging existing regional NIH funded research resources. This is more focused on the coordination of research, as opposed to the coordination of surveillance activities. But the question of whether some of the networks of existing resources, whether the clinical translational science awards or other mechanisms, be used to centralize the research in some manner as Don and others have suggested.

Then finally, would it be possible to have a national disaster research coordinator appointed. What other specific ideas for leadership might be approached. Again, we are not going to probably solve this problem, but I would be interested actually hearing any more sort of concrete ideas of how do we get from here to there. How do we get from a general recognition of a minimum coordination, who does that, who steps up, how is that

going to happen, what can we do even as part of this process to help that go forward.

DR. GOLDMAN: A couple of responses. First to the second question, and that is this issue of research thing I'm aware of is that for non-health related research related to disasters, the National Science Foundation has a rapid granting mechanism that very quickly puts money out there for researchers. And that requires an abbreviated grant application or a full application, has a quick turnaround period, extension peer review, but it is a very quick turnaround. And the goal is to be able to engage the universities right away.

There is not such a thing that is funded either by the CDC or by the NIH. And NSF stays away from health because of the turf issues in that part of the government.

I think one thing that would be if we had the ability to make a recommendation, I think we would probably all agree that there needs to be that availability of funding. And it could wind up being supplements that go to existing grants and CTSA's, but it could also be for completely new research ideas that wouldn't have to go to existing funded research activities.

I know that the NIH has and probably will continue to do creative things. I saw that in the wake of the World Trade Center, one of our centers is Hopkins and

several other of the environmental health centers received supplements. But this is a completely different thing, to not have to have an existing center in place and be able to launch new research, we just don't have that capacity that is there for health.

In terms of the other question, I am kind of in the same camp I think that Linda Rosenstock is in, which is that we need to have more of a single voice for health, and a stronger voice that communicates clearly to the public about health issues, whether it is the safety of the seafood or safety of the people who are working out on the boats.

But I don't think it is realistic to propose some new kind of directorate or body that somehow would hold direction over all of the health agencies across the government. They are not all in HHS, the EPA has a role in health, NOAA and the National Marine Fisheries have some role in terms of seafood safety, their role for health over at USPA and other places. I don't think that there would be a way to say that there is a czar that rules over all of it. But I do think there needs to be stronger coordination, by which I mean that the roles that people do have are clearly there and that there is some thought given to how to prioritize among them. And as Dr. Olden said, a way for the communities and the people can have input into

what is a priority, that it isn't just a matter of who is the most powerful agency director and they can come in and seize resources to do what they want to do. There needs to be a way for communities to get in there and have a strong influence on the direction of the funding.

DR. OLDEN: I think the number one thing to do before we get into trying to decide what are the research needs, is to decide what can we do with what we already have today. I think that is the most urgent thing, and I have heard that several times. I think Maureen said it several times and others did as well.

We have some knowledge, evidence based kinds of things that we could do today without generating any new data whatsoever in terms of new knowledge or technologies. We should think about what are those that could be applied today. Because that's one thing that community and would be most helpful, it seems to me.

DR. LICHTVELD: In order to do what you said, Ken, we need to be willing to get out of our comfort zone. The data are collected and all the fields are defined, and for those of us in the federal jobs we know how long it takes to define a data field.

The idea is to be creative and use data in a different way. So that is the first challenge we have, be willing to be flexible and look at data in a different way

that was not collected for this particular purpose but could be useful.

DR. BAILLAR: I agree completely with Ken about using what we have now to do what we can now. But that should not delay the start of efforts to learn something new, those have to go forward in parallel, and they both need very vigorous pushing.

DR. ROSENSTOCK: On the data we have now, following up on that. I think out of the discussions here both in the room and in conversations on the side, which is why workshops like this is so important because we have all engaged in conversations and learned from each other, it is clear that there are quite a bit of data, particularly about workers that I fear are not getting the light of day. There is largely data that BP has, and there is also I think a fair bit of discussion you have heard some it presented, and I think this is knowable and I think some of it certainly is right, that workers are feeling coerced or are being coerced into not being able to reveal injuries and illnesses for fear of adverse consequences like loss of employment.

That is tricky, that is the sort of what are barriers to getting data. But I think again, since this is just a workshop to bring out ideas, I would identify that based on what I have learned we really need to be bringing

that to light. There are some immediate legal mechanisms available to the government to try to address that, and I would urge them to pursue that.

DR. ADLER: I would actually like to join the two issues of what is available now, and the need for a czar. I think a lot of what is available now will take a high level person to be able to coordinate and get it working across agencies. For example, there are a number of ongoing surveys that could be very helpful, but their content is set for this year. So there needs to be somebody who can come in and say I know this year you were going to look at X, but this really trumps it, and we very quickly want a new module into this survey. That has to be a very high level person. So I see this in some ways equivalent to the information technologies czar, who is coordinating that across different agencies, and who has to have the power to trump some of the other agencies.

DR. SAVITZ: Thank you. Going to another one that at least a couple of people have raised in some slightly different ways, and something again that came up really just starting today I think this afternoon even, the issue of the legal environment in which these activities are occurring. And one question about whether research involving these communities should be covered by a certificate of confidentiality to avoid misuse of the

information by either attorneys for defense or plaintiffs, government, or other individuals who have a different agenda other than directly benefiting the health of the population.

Then just another very closely related question, doing research and gathering data in the context of a situation that does and will involve litigation, and essentially, how to avoid having that interfere with the public health and scientific goals. Any suggestions for how to sort of deal with that reality and not have the legal environment impede or do harm to doing the right thing and helping the people that need help.

Any thoughts on that rather broad question?

DR. GOLDMAN: It almost gets back to the need again for somebody at a very high level that is helping to coordinate this, because I think the legal issues are very complicated. And I have personally been in situations where data that I have helped generate when I worked for the state of California the attorneys were reluctant to protect those data when we wound up getting requests from affected business interests to review them. This can be quite difficult, because you can wind up with situations where people actually want a contact, they want to recontact responders and try to get them to change their answers on questionnaires. You have no idea what goes on

in that context, that can change the statistics.

I think that is an extremely important question, and it probably needs to be addressed pretty quickly.

DR. SAVITZ: Other comments on that?

DR. BAILAR: Maybe we could be a little more specific, instead of saying somebody really ought to go and do that. I would like to suggest that our state health officers take up this issue immediately with their state attorneys general or other appropriate official at a very high level. And that our federal representatives do the same when they get back to Washington.

Now don't just assume somebody else is going to do it.

[Applause]

DR. SAVITZ: Again, in that spirit, as we talk about different groups if you will sort of take charge or to at least coordinate, I have heard informally discussed in some of the back of the room conversations that Linda mentioned, that the potential for a consortium of the involved health officers to be such a group. And I just throw that out as a group that is right on the interface between the communities and the broader governmental agencies, and the scientific community.

Again, I can throw that out, and any thoughts on that as a potentially appropriate level or forum for

oversight. Not that they have all the answers either, but that that might be an appropriate level.

I will leave that hanging there if you want, nobody has to agree or disagree unless they have any feelings about it.

(No response)

DR. SAVITZ: Let me go onto a couple of questions that are very specific about the nature of the occupational health hazards to the cleanup workers. Again, some of these have come up before, but it is maybe good if we get a more integrative comments on that.

The limited health and safety training, a very short amount of time that is devoted to that, and bearing that that fact has on the nature of the surveillance and monitoring system. Then another issue related to the occupational exposure limits that are really not necessarily that the structure is not well suited to the kind of work that is going on in terms of the nature of the environment it is occurring in, and the conditions of that, and how to interpret the air sampling that is done in regard to the safety of the workers, that it is not the class of factory environment with a well-defined forty hour workweek and so on.

I guess I would sort of broaden that maybe for those of you. Certainly there are people here with a great

deal of expertise in whether there is a particular need for addressing the health and safety issues, and the monitoring of the health of the workers involved, that sort of requires maybe some more directed or targeted efforts to deal with this particular workforce, that maybe isn't there in the general worker protection framework.

Linda is maybe somebody who might have some thoughts on that, but others may want to comment as well.

DR. ROSENSTOCK: I think there are a couple of things that have arisen that are worth highlighting.

One is we have actually, and this is not unusual, it is just coming to light now. There is sometimes jurisdictional overlap between who ultimately has responsibility for workers. We all think of OSHA having responsibility in all workplaces across the United States, and in fact they don't in many small workplaces that are out of some sectors. And the example here is that they don't have full responsibility on the rigs, and it is a shared responsibility that may have gaps.

I think whatever we learn from that needs to be quickly addressed, because I believe overall the degree to which we have an agency with regulatory and enforcement muscle to protect workers will be better off, and that has been a function that has been eroded over some time.

I think the issue about workers is like many

others as we address the populations. We have various populations with different kinds of risks, and there is the workers who are being paid who do this at other times who are being shifted to new work, and then there are the volunteer people who are experiencing some of the same kinds of exposures. And I believe that the lack of clarity about what kind of protective equipment they should be using, that is another communication issue, it is not fully decided scientifically.

And things like that again also beg to me back to the issue of more coordinated, informed, at least single point of contact so that people can understand what the pros and cons are.

DR. GOLDMAN: So then, Linda, people employed in fishing who are then hired as contractors to help with the cleanup effort, they are not workers actually, correct? I mean they are not covered by OSHA, unless they are large businesses. But if they are small?

DR. ROSENSTOCK: I don't know that. I think it may be small.

DR. GOLDMAN: They are small businesses that are contractors they would not even be considered.

DR. ROSENSTOCK: But some are going to be, the larger ones, so that is the ambiguity. And I am sorry we don't have the head of OSHA here who is very informed about

this, and I think he would be the first to be able to describe some of the ambiguities and gaps in their own enforcement.

DR. MCCAULEY: I think it is striking that we at the end of this day and a half still have these questions, which really speaks to that there is some improvement in transparency in terms of the different groups of workers who are providing oversight. Even some of the health data, the aggregate data, so that we can begin to see the scope and volume of injuries. I would like to argue that it would go a long way by having more transparency right now.

DR. SAVITZ: Thanks. This is something again, these are themes that have come up before, but I will embellish a little bit on. This is directed to John and Maureen in particular, but others can comment as well.

A major recommendation often discussed is the need for effective communication with the affected individuals, the residents, the workers, and so on. And the question of who should serve in that role of there being sort of a hue of a conduit for what we know, what we don't know, whether it is safe, what is the information there. And I would just add that obviously that requires both a command of the data and evidence that exists at a given point in time, but probably just as important a very high degree of trustworthiness and credibility as such a

resource. And both are challenges, they are different kinds of challenges, but it seems without the two of those it is not going to work. Either they don't have the data or they don't have the credibility.

And I would be interested, John and Maureen, how you might approach that.

DR. BAILAR: This fits very comfortably in my notion of what surveillance is, that is the delivery of services one by one to the people who may be affected.

The person who is in contact with that individual, who is doing the surveillance activities, needs to be informed. I think there has to be some kind of structure to keep them informed, to keep them up to date, to keep them doing some of the same things in the same way. But I see that as a vital function, and would push that pretty hard.

DR. LICHTVELD: For those of us who are engaged in crisis communication, we know there are three rules: be first, be right, be credible.

The 'be first' is the first test, literally. If we are not first, and we are not even last, and at this point we are just not there, then the next step is be right. So if your be first is eroded, your be right is being eroded. And if you are not credible then you lose all three.

What does that leave us, not pessimism, but just with going back to basics and saying the essential issue is communicate as early as you can. Make sure that what you communicate is right, is correct, is factual, even if that fact is I don't know. It is okay to say I don't know, but I will find out the information for you.

The third is the 'be credible' piece is tricky. It is tricky in my own state of Louisiana, it is tricky on the Gulf Coast, and it is tricky nationally. I am all for having perhaps a central point of communication, but here is an equally important need of translation by community leaders for individual communities, so that what is being communicated is translated and what does it mean for me by that church leader, by the local community leader, by someone who is trusted. And there are many of those if we look beyond the end of our nose, actually.

DR. SAVITZ: I would echo that. I just had the opportunity at lunchtime, I happened to be grabbed in the hall for a radio interview for someone from Tampa, and the question comes up right now is it safe to go to the beach, is it safe to have seafood. And of course I am smart enough not to answer that, or even attempt to.

But it would be very helpful to have such a resource that would say this is a website, this is an authority, this is somebody that can be vouched for and

that is up to date information and avoids the inevitable misinformation and rumors and so on that of course part of day to day life. But I think your point is well taken, I think the immediacy of that need, that it comes up daily, I mean it is there right now and it is not going away. And it seems rather urgent that that be developed or established maybe a little more firmly than it is so far.

DR. LICHTVELD: The longer the time lag the less credible your information.

DR. MCCAULEY: I think the communities need to tell us who they trust. If they want to know if it is safe to swim, do they trust a website for state tourism business? Do they trust only the website with the health department?

And if we had these data then we began to use that. Don't assume that the health department has the highest level of trust, we don't know that. We really have to find out from the community who they trust, and put the messages there around this communication.

DR. SAVITZ: Here is an interesting challenging one. What would you do tomorrow or this week to address the concerns you have raised? Pick something that can begin at least to address those needs, so that in terms of if the sort of immediacy issue beyond such forums should occur again, we agree with that, and there are some of

these longer term issues.

Any thoughts on sort of the most immediate actions that could be taken to benefit here? My thing again with this credible research, if such a thing, and I recognize it takes time to be developed to establish whether there was some sort of at least clearinghouse for information of direct relevance. But it would literally be as I said in my opening if I were planning a potential vacation next week, or somebody told me the seafood may not be so good, I want to go to a place and a resource right now that is trustworthy, that is databased, that is credible, that can serve as the sort of pipeline of information.

Obviously there are some things we don't know, and that has to be acknowledged as well. But it seems to pull together for whatever the right agency is, and I'm not an expert on how that should be organized, but a resource or clearinghouse for the story as it stands.

DR. OLDEN: Let me say the National Cancer Institute used to have, and I assume they still do, a cancer information service that was automated. And you call a 1-800 number and the common questions that people had about cancer were answered in an automated fashion.

So we could, it seems the government could have gotten up an information service within six or seven days,

based on what we know and what we don't know. And many of the questions that people have that I hear could have been answered within two or three days of this deal, and could have been continued to be built upon as we obtain more and more information. But the cancer information service run by the NCI gets thousands of hits every day, at least when I was a director of the cancer center. And it is very informative and up to date.

That is the kind of thing that we could do if there was leadership, and somebody would accept that responsibility. So I think you can't have five different states having responsibility for something like this. It has - this is what I think the federal government should do. There are things that could be done by state governments, but this is something I think we expect our government to do, provide us with information that is critical to protect our health.

DR. MCCAULEY: I don't think there is a single one of us that if you were worried about the ozone levels being too high to jog or have your kids out playing, that you don't trust what you find in your newspaper that is produced by EPA.

I think that is what Ken is saying, that the consumers should not have to go to multiple sites and try to decipher what is trusted and what may be a biased look.

I think that is the simple solution.

DR. ADLER: Actually I think we are all coming to the same place from different perspectives.

I was very impressed this morning by what the states are doing. We also saw how much replication there was, and how in some ways reassuring it was that the different states are finding similar things.

I do think it has to be a federal source that can bring that altogether, because if each state does it you won't have that information.

I think we are focusing on what we can do tomorrow to communicate what we know already. I think it is also important for us to think about what we can do tomorrow that will help get better data out to reduce some of the uncertainty. If we did have this I figure again at the federal level, I would start tomorrow with looking at what is all the routine data we are now collecting, and how can we bring that together to get more definitive understanding.

DR. GOLDMAN: What could be done this week? A lot of us talked about the idea of either a leadership coordinator communicator chief kind of role, somebody at the federal level that could be appointed tomorrow. If it was decided to do that, there are already very highly qualified people in the federal government one of whom

could be appointed to do that or perhaps somebody from the outside could be asked to do that.

It shouldn't be a politician, it should be somebody who is a health expert, a public health expert, and somebody who would have the management skills as well as the communication skills to do that. But there are people like that, and that could be accomplished quickly.

Getting data out there, I am going to repeat myself, but I think that money is needed for doing that. That there are rapid granting mechanisms for getting money out, and whether that is to universities or state health departments or to whom, that information isn't getting out there by itself. And it isn't going to be communicated by itself. That requires an investment of resources that could be done quickly.

I think those two things could be done this week.

DR. BAILAR: I don't entirely agree with Nancy and Lynn. I am little concerned of some of the implications of having somebody from the federal government take on this responsibility. Certainly there is a great deal of competence, just incredibly high levels of skill at doing some of these things, but I am worried about the level of trust in the federal government, of confidence in what comes from that sort.

I think that the state governments are probably

in closer touch with the communities and the persons who may be affected, and I would like to look at the possibility of asking these five state governments to get together like this afternoon to choose or to develop some kind of a consortium that could perhaps coop somebody from the federal government, or from elsewhere, to take this on.

It is a matter that I don't know enough to make a firm recommendation about this, but I would like to see somebody thinking pretty hard about whether the federal government can effectively exercise this responsibility in a direct way.

DR. ROSENSTOCK: I am going to deviate a little bit and pick up on another piece of what might be done in a real short term.

I think all of us who are deep in this have been impressed by the risk and the potential risk that is far reaching for mental health problems, for anxiety, depression, posttraumatic stress disorder. And it may happen, indeed as we know from people who don't have any direct exposures. And we have already gotten a sense of in one state surveillance system of picking up some mental health service access.

To me one of the earliest things I think should be addressed is a spiffing up target of mental health visits, or calls. And at the same time mental health

services are very deficient in these states as well as in the country, so I think having available as one state did, but maybe more targeted mental health, a person and hotline availability just other people knowing that it is not uncommon to feel anxiety and distress in a situation like this, even if you are three hundred miles in, can in and of itself be part of the mental healthcare that we need to provide.

And I think that would need to be a coordinated response at the local, state, and federal level.

DR. LICHTVELD: I think we have a real responsibility to not do what is nice to know, but to do what we need to know. And in order to do what we need to know, it is important to document what it is communities tell us. I always cringe when people say "the community," because there are many segments of the community as there are many segments of scientists and many segments of other pieces.

But letting this agenda or whatever we come up with be informed upstream by those who will have to use the data and will benefit from the information, it is I think a concerted effort towards that, whether it is a single point person that would make that happen, it is really pivotal.

DR. SAVITZ: Take the last cluster of questions, here getting back to the issue of worker health.

And I am going to try to sort of integrate. And again, it is in that spirit of what should be done right now, and specifically one of them concerning improving the management of current known risks. I would distinguish that I guess from the speculative possible in the future sorts of risks, but the immediate issues, for example, with heat stress you could also add injury and other factors. What preventive measures should be taken right now and then relate it to some issues related to the use of protective equipment in terms of the guidance as to what is essential, what should be done, and this may be a matter of in part just referring it to the right sort of agency or authority.

But I guess the theme there is the question of sort of immediate guidance to workers.

DR. ROSENSTOCK: I am going to take one piece of that. I don't know enough, and others know more, and I don't know if enough is known. But I think there needs to be very serious consideration about who the employer is for these workers. In the same way that we saw the President extract an independent \$20 billion fund that BP was not managing but was being managed independently to make sure there was rapid quick response. It may need to be that we explore employment as a federalized workforce, or some version thereof, so that we can be assured of the information we are getting, the absence of risk for adverse

consequences if you complain, and a more uniform worker training.

Because we know worker training in education actually has been shown over and over and over again, it works. That was a rather radical idea, but I think a good one.

DR. SAVITZ: The last one is actually not a question, but a suggestion, which I will just read for the record. You are welcome to react if you wish.

The suggestion is that the Office of the Surgeon General has a great deal of credibility, Dr. Benjamin is well-trusted in the Gulf Coast, and recommending that she be the federal coordinator to lead the health response.

[Applause]

DR. SAVITZ: Blending local and federal, among other attributes.

Anyway, if there are no further comments, any last comments on the panel?

DR. LICHTVELD: On behalf of us, this has been unprecedented. I would like you to join us in thanking the IOM for being here.

[Applause]

Agenda Item: Closing Remarks

DR. ADLER: I think I get the last couple of words. And I just want to thank everybody who is here, not

only for coming, but for staying until the end. I just was reflecting on what has happened the last couple of days. We do know some of what we need to know. We know there are good options for generating new knowledge, as well as some current knowledge. We know that the communities are ready for engagement.

And in light of the uncertainty surrounding how our potential exposure may affect human health now and in the future, we clearly need to coordinate across silos. I think this challenge that we have just been discussing now about how to coordinate is one that we are all facing in our individual institutions. And the question of how we really coordinate across fields and across interest groups is so important in every area.

We need to do this with the federal, state and local governments, with academia, with private industry and community networks and programs. By including the public in the development of monitoring and research activities, and by protecting the integrity of the data collection and analysis, we can develop surveillance systems that accurately inform decision makers in the public about the real risks of the physical and mental health issues related to the Gulf of Mexico oil spill.

It is important that as we begin to understand our knowledge gaps, we can I think better create a

framework of action that will benefit the effected communities. I think the focus obviously has to be on the effected communities, but I think this will also benefit the nation as a whole for us to have this understanding and systems in place.

So thank you very much for participating with us. And again, I just want to point out this was a stand alone workshop, but we really I think every single person here hopes that it will be the first of a lot more activities in the future.

Thank you.

[Applause]

(Whereupon, the meeting adjourned at 3:00 p.m.)