

AMCHP 2007 ANNUAL CONFERENCE

HEALTHY COMMUNITIES

March 3rd to 7th, 2007

Emergency Preparedness for Special Populations:

Maternal and Child Health Coming to the Table Meet the Needs of CSHCN and Pregnant Women

KATHLEEN KELEHER: Thank you Henry and thank you Suzanne. As usual, um, Massachusetts is far ahead of Vermont, um, but I'm from Boston so I don't feel too bad about that. And we always learn from Massachusetts, so, this is, um, it's a pleasure to be here with Suzanne today. But as I was sitting there I was thinking, don't you hate to have to present on the last talk on Sunday afternoon on such a beautiful day?

But, we're here to say that, just like Chicken Little, that little story when we were kids, an acorn fell on the chicken's head, that the sky is falling, the sky is falling. That does happen today. We have to prepare for major disasters that we never thought might hit us so close to home as in the past. But we're here to have that optimistic attitude that we heard about in the plenary, that we can do things, we're the people to bring attention to the Maternal Child Health population at the table.

So, my objectives today are just to talk about preparedness in terms of all hazards. And Suzanne mentioned that, that we have biological hazards, traumatic hazards like the World Trade Centers, we have chemical hazards, we have weather disasters. So the whole broad approach to disaster planning should cover all of our hazards. It's a similar approach, it can vary with what the disaster is or even who the population is. But today we're covering, um, maternal child health, and I will be addressing, specifically, pregnant women and newborn babies.

We'll talk a little bit about the past experience that we can learn from for disaster experience and, fortunately or unfortunately we have a lot of examples to draw from, and then briefly talk about recommendations for the future of where we can go forward. The goals of any emergency preparedness effort have to do around, first and foremost, uh, providing for the healthcare needs of pregnant women and their fragile newborns. It's, uh, um, a heightened state of vulnerability, and as Suzanne mentioned, pregnant women and newborns are in that definition and that's where our opportunity is to go to the table and talk about this population within that special populations of emergency preparedness infrastructure.

We need to establish plans, not just family plans and individual plans, we need community plans and statewide and regional plans, of which there are already several there. Identifying our partners, preventing problems and also with monitoring what works and what doesn't work. Are we reaching the people that

we need to reach? The CDC has it organized in this nice little grid that I think gives us a template for thinking of how we approach this, and ideally we want to be in prevention.

We want to prevent disasters from happening, when they happen we want to prevent, as best we can, the, um, affect, detrimental effect that it has on our populations. We want to be able to detect what's causing the potential issues that we're gonna have to deal with. During an event, epidemiologists look at what is causing this, um, in terms of, uh, food poisonings or, uh, exposure to gas or toxic fluids, um, gases, whatnot, to find out, as soon as possible, what's causing the, um, event.

And then, once we know what it is, to be able to control it and minimize the effect. Post event, this is where we are in a lot of situations right now. This woman mentioned wartime, we have lots of wars that we're either in the midst of around the world, or trying to clean up from afterwards. And improving, improving, and that's what we can do today is to learn from our past so that we can improve for the future.

Ideally we want to be upstream working with prevention, but, in reality, we have to deal with all three of these, um, situations at the same time. Nationally, in the United States, we do have the National Response Plan, and the job of that plan is to mobilize the federal response to help communities recover from a

catastrophic event that they do not have the resources to get out of themselves. That includes the Department Of Homeland Security, it includes the Federal Emergency Management Administration, which we know as FEMA, and also the National Disaster Medical System which activates the development of the disaster medical assistance team of which many of you may be familiar and a lot of healthcare providers sign up to be called in the event that those teams need to be activated.

In those teams, professionals who need a license to practice need to be licensed in the state where they are, so it's important that states have reciprocity or expedited, um, processes for people to get licensures. They found that out in Katrina, very quickly, that there were hundreds if not thousands of people wanting to come down to help, but having to check to make sure that they had a valid license to do what they were being brought in to do was extremely important.

These, um, professionals are brought in and deployed as paid federal employees. Um, and they respond to, these teams respond to communities that are basically overwhelmed, and they need help from the outside in terms of the medical care. The teams are activated to the United States and, and our possessions, and the goal is that they get deployed within six to eight hours. And you can, there are, um, copies of my handout in the back, if there weren't enough

you can let us know. But the list of the team members are right there, um, all the team members that we would need in a, um, a disaster.

I was talking earlier today to a couple women from Missouri, I don't know if they're here in the audience, but they just had, um, a disaster due to a half to one and a half inches of ice. Um, to think of that little bit of ice, they didn't have electricity for up to 13 days, which obviously effected work, school, uh, everything. Um, and they brought out how important the mental health facilities were at a time like this. It creates chaos.

Um, in the World Trade Center they found that one of the most successful strategies in getting people out was leadership within that workplace to calmly gather people and get them down the stairs or whatever, but we have to know what the plan is and have the right people. We talked about the definition of special populations, basically people who can not, at the time of a disaster, have the resources to successfully get through that disaster.

So, what are the issues during a disaster for pregnant women? What do we go to the table and say, a pregnant woman, a newborn baby isn't just like a healthy un-pregnant person. There are special needs there. Those needs are basically predictable, they're based on what the needs are during a pregnancy, but they're much more exaggerated during, um, a tragic event. And the needs depend on

what the risks are, what type of a disaster? Are we talking about an ice storm, are we talking about World Trade Center, are we talking about the pandemic flu?

The vulnerability of that person, is the woman in her first trimester of pregnancy, her last trimester of pregnancy? Is this a newborn in the NICU or a healthy newborn that can go home with its mom. How much of the environment is destroyed? As we know, um, Katrina was the whole infrastructure was basically wiped out in a very short period of time. How much of that environment has been destroyed and how do we replace that infrastructure in a timely manner? And also the availability of the other resources, food, shelter, whatnot, that's needed.

We also know that there's this increased vulnerability due to this, um, environment itself. It's not just that the woman's pregnant and we have a newborn, but the fact that the whole infrastructure around the family and this woman are destroyed. Pregnancy itself carries major risks around stress level, we know preterm labor, unfortunately, in this country is on the rise, not on the decline, as well as low birth weight. In a disaster these things are elevated even more.

Obstructed labor or poor, um, delivery outcome, difficult labor, extremely high blood pressure, seizure disorders during pregnancy, and certainly miscarriage and infant death are both increased during times of, um, disasters, and we need to be prepared, again, to prevent those. Certainly wound care, whether it's

vaginal lacerations or uterine, um, incisions, abdominal incisions due to a c-section, we need water, um, antibiotics, etcetera, to care for that.

In addition we have all the environmental risks due to loss of job. The Missouri example, for instance, being out of work for 13 days for a lot of, um, pregnant women, takes away a lot of financial security. And also, if you don't have electricity, you often don't have clean water, the basic necessities, things we take for granted every day. Certainly nutrition, how are we gonna get food to people that are out in our rural areas? Poor hygiene, um, infants need water, pregnant women need water, um, soap and water to stay clean, facilities.

In time of crisis and chaos, we all know that abuse and violence increases, and women and children are the most vulnerable. That means we have to make sure that there's security involved and safe environments for both, um, women and pregnant women, 'cause they often can't be as mobile as someone who isn't pregnant or, um, doesn't depend on parents to get them moved.

Radiation and air pollution, this is, um, the radiation piece is significant in states like Vermont that have a nuclear power plant in them, for instance. And certainly in situations where housing is lost, we've seen this happen in the tsunami to an extreme level, that people have to live out in the elements during times of earthquake. Um, certainly we know that California is at risk of, uh, future earthquakes and loss of, um, housing is a major threat.

What are the issues around childbirth during a major disaster like this? Well, we do know that childbirth is one of the major reasons for admission to a hospital in the United States. There's about 4 million births in the United States a year, and 99% at least, occur within the hospital setting. As a clinician, as a nurse midwife for years at, uh, University Of Vermont Medical Center, I used to just theoretically think, well, what if the hospital was full, what if something happened and we couldn't, we didn't have space for pregnant women? Or if there was a flu outbreak and only the severest cases were in the hospital, we didn't want to bring healthy pregnant women in. Or if the NICU was destroyed, what would we do?

But as a clinician I was at that little tip of the iceberg, I, uh, the tip of the pyramid, I didn't have to go much further than that. Now, in public health, being responsible for building infrastructure for systems that Suzanne was talking about, we need to go to that next step of saying, how do we replace an infrastructure, how do we provide for the resources if our hospitals went down, if we could not admit women to the hospital, if we did not have NICUs to care for these babies, how would we set up some kind of, um, facility to care for that temporarily?

And how do we triage? How gets into the hospital, who doesn't get into the hospital if we were hit with a situation like that? Certainly in Katrina they had to deal with this a lot where most of the hospitals in New Orleans were, were wiped

out, and where do they get sent, um, became a major issue. During the postpartum time, after a woman's delivered, the risks are somewhat similar in that there's always a chance of, uh, infection. Whenever you have bleeding, you have an increased chance of, of infection and access to medications becomes very important, whether it's a bladder infection, a uterine infection, vaginal infection, a breast infection, um, those are very frequent and, um, can cause major problems and increase maternal morbidity, certainly.

Blood loss, normal with pregnancy, but if someone has to get up and move and walk or be transported, the amount of blood loss could certainly increase and risk that mother. Breastfeeding, that's certainly the, the, the preferred choice for, for babies at a, at, always, but especially in a, in a situation like a major traumatic event. It's always readily available, it's clean, um, you don't have to worry about the water source, etcetera.

Having a baby is always stressful, even in the best of circumstances. If you don't have a house or if you're out in the rain or if you're, um, exposed to toxic chemicals or everyone around you has the flu, um, the stress levels are obviously major. Separation of an infant, they found in Katrina that the best way to transport a baby is to transport that baby with the mother. So whenever possible, keep the mother, ideally keep the family together, but at least keep the mother and the infant together after birth.

Personal safety we talked about. Um, unfortunately in a chaotic situations and times of stress, um, personal safety is even more of an issue than, than normally. And certainly contraception after pregnancy, um, uh, after delivery, at these times, is very important to think about how women, will women have access to safe contraception?

And what are the needs of a newborn that we have to build into our plan so that these newborns are safe? Again, we can predict these things. The environment for childbirth has to be clean and, um, have the resources that it needs. We know what those are, we need to always maintain the, the body temperature of an infant, warm and dry, that's the, that's the hallmark of when you deliver a baby, keep it warm and keep it dry and with the mom.

Nutrition, again, we talked about breastfeeding. For babies who are not breastfed, formula, and another thing in disaster they find that, oh, we didn't have enough formula, or, gee, you have to mix the powder with the water, we don't have water. So having ready made formula becomes very important. To be able to prevent but also detect what an infection might be so we know how to treat it in terms of the, the right antibiotics, so that means, usually, having access to a lab that can do those, um, studies.

Exposure to elements, um, we usually see large facilities such as the, what was it? A football stadium in, um, in New Orleans became the place where people

were, were housed for a while. Immunizations, we need to continue with those. Uh, if this, um, disasters go on for long periods of time, how will children get immunized, and, as we know when the, the water's dirty, when, um, environment is destroyed, infectious diseases become even more of a threat, they become more contagious because people are more crowded, so keeping immunization rates up is very important at these times, as well as access to pediatric and NICU care.

Um, so, um, we've gone over those, um, key concepts of keeping the mother together, breastfeeding, clean water for formula or premixed formula, and also having the supplies that are needed, again, predictable supplies that are needed for babies and postpartum women.

In our emergency preparedness plans, we need to think about and be at the table with emergency planners, because they do not think of these populations. They think, oh, having a baby, you can do that in a taxi cab, what's the big deal? In the planning it needs to talk about specific locations, if your infrastructures went down, of where and who would staff, um, uh, labor and delivery area. Safe, clean, warm, private, and that would enable, um, the staff to take care of newborns.

Who on the list of volunteers of when we have to activate a disaster medical assistance team, who do we need to care for maternal child health populations?

We need to know that ahead of time. Raising the questions with the emergency preparedness teams, like Suzanne talked about, going to those tables is so important to raise those questions.

Safety from domestic abuse and rape needs to be, um, alerted and talked about in the plans, and also transport, helicopter, ambulance, whatever, but to be able to transport newborns and women at risk during a pregnancy, as well as mental health services, which we touched on a little earlier.

So, both Suzanne and I have tried to hit home of this all hazard approach that we have biological issues, like the pandemic flu, natural events like Katrina, chemical spills, trauma such as, um, World Trade Center, nuclear reactors that, um, are disasters. We don't have to think too hard before we can identify some of these issues.

Who and how are these being addressed now? So what are we doing to help prepare for this? Well, most organizations around maternal child health now are starting to pay very close attention to it, like AMCHIP, which I think is really taking leadership in this. Um, the National Association For City And County Health Officers are emphasizing the education of the public around, this is around the, the flu, the pandemic flu, to make sure that people have every capability to take care of patients in the home, almost a quarantine situation, in that only the sickest patients would be admitted to the hospital, which means healthy women

who are pregnant and maybe delivering, that might be the worst place for them to go and deliver.

So what do we, what can we do in place of that? So we need to advocate, we need to get the guidelines written that include these populations, there's a lot of groups that are starting to do that now. Um, we talked a little bit about March Of Dimes and the American College Of Obstetricians Gynecologists are also getting active in this area. We need to be at the table to implement and communicate this information. Sometimes we take it for granted, but people in emergency preparedness, um, this is new information for them. They like to jump in their trucks and go, and, and rescue.

Um, that's, um, so this, they, I think, my experience they're certainly willing to hear about it, they're willing to listen, um, there's limited money and there's a lot of people coming to the table right now for emergency preparedness inclusion.

If we look at a few situations that we have experienced, that we can learn from, certainly Katrina is on everybody's mind. With all the stress in the situation, there was still a large number of deliveries to be cared for that were happening in the, um, airport that was converted into a holding area, in the, um, football stadium, labor doesn't stop, it can not be delayed. Um, so shelters were created, uh, specifically for that, and, um, providers were brought in that had OB experience and newborn experience. Plans to, to, to transition needed to be made for these

women to safer areas. And also that they realized very quickly that the ready, um, mixed formula was the best to use since there was often no refrigeration, there was no good source of water.

This is, um, a picture of a pregnant woman being evacuated. And you can see that this would be a very challenging situation for anyone, but for a pregnant woman, think about the risks, the dirty water, the cold water, the temperature of the water, the height, um, how long she had been in the water. Um, so you can see, again, the increased risk of miscarriage or, um, spontaneous abortions. This is an area that was setup for pregnant women and both of these women look like they could deliver any minute, um, especially the woman in the front looks like she could have that baby any time.

They found that about 100 ill or premature infants needed to be evacuated. That's a lot of NICU babies. Our NICU at the University of Vermont, um, holds 20 babies which is, they are often, we are often full. We know that we would triage to Dartmouth or Albany or other places if our place is full, but often when one NICU is full, other NICUs are full. So backup plans is what we need.

Keeping mothers and infants together, if possible. If ambulances can go out and only bring babies, got to get those babies out to safe locations, so, accommodating to bring parents with infants is, is sometimes very challenging. And getting the supplies to the families that need them is, obviously, critical. Um,

diapers, if we don't have diapers an increase infections certainly around, um, feces.

Okay. Switching from, um, physical disaster like a hurricane and flood, we'll talk about another happy topic, and that's the flu. And we, in this country, had a major outbreak of the flu in 1918, one that we can all learn a lot from. This trend line is simply the age, whoops, expectation of, um, people, of men and women in the United States from 1900 to 2000. You can see the decrease in the age expectancy, um, in 1918, when the Spanish Flu broke out, dramatic decrease. This is an example of why the flu, that flu spread so rapidly, was on the heels of World War II, young men were, uh, exposed to the flu, got on ships, crowded, lots of other people, spread very rapidly. Were cared for in these makeshift facilities where if you didn't have the flu when you walked in, you'd certainly have it soon after that.

It was a worldwide event because of the travel due to the war, it's estimated somewhere between 200 and 700 million people were effected. Broad range but you can get the idea that was a lot of people. And that, about 10% of those people died, that's a major mortality rate, obviously. And in the United States alone, we had a half a million people die.

Um, the effect of flu on pregnancy is primarily due to the inflammatory response, um, that causes preterm labor and increase in miscarriage rates. There has been

flu virus found in amniotic fluid, fetal blood, um, and in the placenta, so the mother can pass it on to the, the infant.

Um, the one study that's very fascinating that was in JAMA in 1919, small article, three pages, it's, it's a wonderful little article, it was a report done through a survey of, of 1,350 pregnant women reported by their OB providers, 50% of those women developed pneumonia. And generally this wasn't your secondary pneumonia caused by bacteria that isn't quite as serious as viral pneumonia, this was primary pneumonia, viral pneumonia due to the flu itself. It hit people very fast because the lungs fill up very fast. People practically died in front of people. Fifty-four percent of those women who developed pneumonia died.

So if you didn't get pneumonia you're, you're, um, you, no, none of the people in the cadre that did not get pneumonia, had the flu but not pneumonia, none of them died. If they got pneumonia, there was a very high, 50%, 54% chance that they would die. And of those who developed pneumonia, over 50% of those miscarried or aborted. Um, so the overall mortality rate, out of that 1,350 was 27%, but double that if the woman developed pneumonia.

Another example we have is the Asian Flu from 1957. It was after that they recommendation came out that all pregnant women should be vaccinated with, um, inactivated vaccine anytime during pregnancy. In 2003, 13% of pregnant women in the United States were vaccinated. In 2004, only 52% of OBs,

obstetricians, obstetrical providers, recommended the flu vaccine for healthy pregnant women.