Hello, and welcome to "Public Health Live!," the Third Thursday Breakfast Broadcast. I'm Rachel Breidster, and I'll be your moderator today. I'd like to ask that you please fill out your online evaluation at the end of the webcast. Continuing education credits are available after you take our short post-test and your feedback is helpful in planning future programs. I also want to let you know that the planners and presenters of "Public Health Live!" do not have any financial arrangements or affiliations with any commercial entities whose products, research or services may be discussed in this activity, and no commercial funding has been accepted for this activity. As for today's program, we will be taking our questions throughout the hour via phone at: 1518-888-0351, or via e-mail at phlive.ny@gmail.com. Today's program is entitled "Can We Prevent Infant Sleep-Related Deaths, What You Need To Know." Our guest is Dr. Michael Goodstein, an attending neonatologist at York Hospital and associate professor of pediatrics at Penn State University. Dr. Goodstein is also the Medical Director of Research at Cribs for Kids. Thank you very much for joining us. So, Dr. Goodstein, welcome and thank you so much for joining us. Now to get us started today, let's make sure that everyone whose watching understands what it is we hope to accomplish, and what you hope they'll learn by the end of today's program.

Dr. Michael Goodstein, MD, FAAP: Thank you for inviting me, as well as the New York State Department of Health and the New York infant mortality COINN group. What we hope viewers get out of the session is that they become experts on safe sleep and become ambassadors for safe sleep in their communities. We'd like them to understand the ABC's of safe sleep, what the elements of the safe sleep environment are, and we'd also like them to understand what the public health implications of these deaths mean to our communities and across the nation.

MRB: A very heavy topic, and we're going to be covering quite a bit of information today. So to get started, can you give us some background information on both the impact of SIDS and other infant sleep-related deaths in our society?

DMG: First, when we talk about infant mortality in this country, we're talking about the deaths of babies under a year of age. And when we compare ourselves to other industrialized countries, we're not doing as well as them. So we have a lot of work to do. If we look at this graphic, we're looking at the leading cause of infant mortality—in this country, and the top five causes are congenital malformation followed by prematurity, and SIDS is the third leading cause, and it is also important that we look at the fifth cause, the unintentional injuries or accidental suffocation/strangulation deaths. But the total number of babies dying in this country is 24,000
before their first birthday.

**MRB:** It certainly is a larger number than you would expect to hear. Now, those are national statistics. Can you talk about how New York State looks compared to the rest of the country?

**DMG:** New York State is doing a very good job, so when we look at the national data for infant mortality, it's about six deaths for every thousand live births, whereas in New York State, it's only about 4.6 deaths per thousand live births. However, that's still a significant number of babies dying. It's about 90 sleep-related deaths every year.

**MRB:** And can you talk to us about how maternal age or race and ethnicity factor into that information?

**DMG:** Absolutely. When we look at this data, New York data really reflects what's going on in the country. So if we look at the distribution in terms of racial and ethnic rates, we see that there are some differences. The lowest rates are in the Asian-American population, and the highest rates are in the African-American population. If we look at maternal age there is an inverse relationship between the age of the mother and the infants, babies dying of SIDS. So the mothers who are youngest seem to be at the highest risk of having a baby die of SIDS.

**MRB:** Dr. Goodstein, with all of this information in mind, how would you characterize the nature of this problem for our country?

**DMG:** Well, it's really a national tragedy. We have about 3,500 babies dying from sudden unexpected infant death – in this country every year. If you do the math on this, this is one baby dying every two to three hours of every day of the year. It's really a silent epidemic. When you look in their communities, if an adolescent dies in a car accident, some unexpected death, it's all over the newspaper—there's an outpouring of grief for the family, but when we're talking about infants, we really stay silent about this, and these families can often suffer in silence. It is a national tragedy.

**MRB:** Absolutely. Now to make these statistics hit home, let's take a look at a program section from the WCNY-produced show called "Cycle of Health."

<<CLIP STARTS>>

**Darya Rotblat (lost child to SIDS):** It's been nine years, almost 10 years at this point, so it's been a journey, is the best way I can describe it. Not a day goes by that you don't remember that something is missing. It gets easier, I guess to say, in different ways it gets easier. There's not the immediate grief. But every day something is missing, and something dramatic changed in my life. And I guess I can say in other ways, that event caused many other things in my life to change that I would have never expected.

**Anne Boycheck (lost child to SIDS):** I've blocked a lot of it out because when it happened ... things were different then. I mean, they didn't have support groups, and I really wasn't allowed to grieve. It was just...uh....

**Therapist:** What did people say?
Anne Boycheck: “Don’t talk about it”, “put it behind you”, “move on”, “it’s over”.

Janice Richardson (lost child to SIDS): There's a piece of me that's missing, so that's how it's different. I walk around with a giant piece of me that is no longer there. A piece that is grieving for the future, and one of the things that we have discussed in this group is that. You know, everyone mourns death and everyone feels death. When you lose a parent, a grandparent, you're mourning those memories that you had in the past with them. When you lose a child, you mourn your future. And it's a long future. You imagine them at events and places that they're supposed to be and what they might look like today. You search in your other kids' eyes for them, and it's just a different grief and it's a different loss. Parents aren't supposed to bury their children.

MRB: So certainly those videos help to illustrate the importance of why we're having this conversation today and really the impact that this has on people all across the nation and particularly here in New York State, where we're focusing. Can you explain to us some of the terminology regarding sleep-related deaths?

DMG: Sure. Well, most people are probably familiar with the term SIDS, sudden infant death syndrome. They may not be as familiar with the term SUID, sudden unexpected infant death. So these deaths occur in a previously healthy baby, so they're completely unexpected, they kind of come out of the blue. Typically these are unobserved deaths so when we talk about these deaths, we're kind of taking out of the picture those deaths with obvious causes, such as a child that dies in a house fire or car accident. So there are many spokes to the wheel of SUID. Some of these deaths are really rare conditions, maybe a poisoning or a rare enzyme defect in a newborn we call inborn errors of metabolism. The majority of these deaths occur in the upper quadrant of this graphic, it's SIDS, accidental suffocation and unknown or undetermined. Now sometimes these unknowns, what happens is the coroner can't make a determination, there's no test to determine between SIDS and accidental suffocation, as they can't differentiate, they'll just leave it listed as an unknown sometimes. What has us really kind of excited a bit as researchers and healthcare professionals is that some of the deaths that we thought were SIDS are turning out to be these suffocation and strangulation deaths, and why this is important is that we talk about risk reduction with SIDS, but when we're talking about suffocation, now we're talking about true prevention, or injury prevention, so that if we can eliminate all these deaths, which is about a thousand per year, it would help in dropping our infant mortality rate in this country.

MRB: Absolutely. Now is there a specific definition of SIDS, or what things should we know about how a case of SIDS-related death is actually determined?

DMG: Right. There's a very specific definition for SIDS - an ICD 10 definition, the death of a child under 1 year of age that remains unexplained after a complete postmortem investigation. There are three components to that: (1) there needs to be a complete autopsy, which would include toxicology studies, (2) there needs to be a review of the death scene, so a death scene investigation, and (3) there also needs to be a review the medical history of the child, the clinical information. If after all this is done, there's still no obvious cause of death, then that death will be labeled SIDS.
MRB: It's kind of a determination by exclusion almost.

DMG: Absolutely, yes.

MRB: Now, what are some of the other things that we should know about the impact of SIDS?

DMG: There's a lot of information to go over. As we mentioned, it's the leading cause of post neonatal mortality, deaths from 1 month to 1 year of age. It's a diagnosis of exclusion, and then as we can see in the graph that's going to come up, if we look at the age distribution over the first year of life, there's a peak incidence between 1 and 4 months of age. However, it's important to note that some of these deaths occur out to 11 and 12 months. So all the recommendations that we make for safe sleep go until the baby's first birthday. Some other interesting things to know about SIDS is that there's not an equal distribution between boy and girl babies. There's actually a 2:1 ratio of male to female infants, and we're not sure why that is. We also tend to see higher rates in our preterm and low birth weight babies. We used to see a much higher incidence in the winter months, there's a seasonal variation, that's flattened down, now there's like a 10% increase during the winter time. That's actually good, maybe it's that parents are starting to understand that even though it's cold outside, they don't need to over-bundle their baby, and if it's warm inside, and we know that overheating a baby increases their risk of dying of SIDS. We also know that as we mentioned, it is associated with moms who are younger in age, and it also occurs in mothers who have not had much, or little or no prenatal care, and we also tend to see it with mothers who are smoking. That's really important because if mothers didn't smoke, we would estimate that one-third of SIDS cases might disappear.

MRB: Wow, that's a pretty startling statistic in and of itself. Are there any disparities in SIDS for different populations as far as race or ethnicity or anything in that regard?

DMG: Unfortunately we do see that, Rachel. We see there are higher rates, about twice as common in the African-American population compared to the Caucasian population, and also higher rates in the Alaskan Native it and American Indian population. There's no SIDS gene, we don't think there's a very big inherited component to this, but we do know from looking at the environment there are some factors it plays in the disparities. So for example, in African-American populations, mothers are more likely to put their babies face down, which doubles the chance of a baby dying of SIDS. They're more likely to share the bed, which we know is a risk factor for SIDS deaths, and they're less likely to breastfeed their baby, and breastfeeding is very protective against SIDS.

MRB: What is our current understanding of the pathogenesis of SIDS?

DMG: So you know, we can't completely explain it but we do have a model, a hypothesis, which is called the Triple Risk Model. As that would suggest, there are three components of the triple risk model and at the intersecting points is where the baby is most vulnerable for SIDS—so it's like the perfect storm for this event to occur. If we break this down, there are three components. If we look at the lower left part of this slide, there's the vulnerable infant—there's something different about this baby, but you can't pick this baby out in the nursery from anybody else, they all look the same. We think for some of these babies, 5 to 10% of the cases, it's due to cardiac arrhythmia. We think in the majority of cases there's some sort of brainstem
abnormality. Now if we move to the middle part of the slide, there's a critical period development. Ninety percent (90%) of these deaths will occur during the first six months of life. This is a very critical period of time for these babies, there's a lot of changes in their brain, their sleep state organization is changing and there's also changes in their motor control as well that can make them vulnerable. The part that we focus most on is that last circle, those exogenous stressors or things that are extrinsic outside of the baby. We focus on these things because these are things we have control over. If we pull that circle away, we make that target of SIDS smaller. So these extrinsic things we will be talking about is the baby's sleep position, whether they're on their back or their tummy and whether or not they're sharing the bed and whether or not they're being overheated, or if there are loose things in the sleep environment.

**MRB:** What can you tell us, or can you tell us, anything about what exactly happened in an infant's brain that might make them more susceptible to SIDS?

**DMG:** Sure. That's a really good question. So in order to understand this, first we have to understand what is normal. In the brainstem, we have these serotonin neurons that connect up with different nuclei in the brainstem and the spinal cord that are important in controlling our autonomic or our vital functions—so, our heart rate, our blood pressure, our breathing, and most importantly, in this case, the control of upper airway reflexes, and our arousal from sleep. And Dr. Kinney at Boston Children's Hospital has come up with a hypothesis behind this. She believes in many of these cases, up to 75% of true SIDS cases, that there's a dysfunction, a serotonin dysfunction, in the medulla that prevents babies from having an appropriate response to a threat in their environment, so either low oxygen levels, hypoxia, or high carbon dioxide levels—hypercarbia. And for a subset of babies who die of SIDS, this is the mechanism that leads to their death.

**MRB:** Now, it sounds like there are some very complex processes at work here. Are they more sensitive in infants?

**DMG:** Well, there's been some good research that's been done on this. Out of Dr. Kinney's lab and this was research from David Patterson and reported in JAMA (The Journal of the American Medical Association) that they've done very elegant studies where you can actually look at the brainstems and take very fine sections, and as you start taking measurements of some of these things. In the next slide, we’re looking at receptor binding density of serotonin in particular areas in the brainstem. The more color there is, the brighter this looks, it's kind of like a weather map, right? So, the brighter things are, the heavier the rain, on the right side in the control, it's very bright with greens and yellows and reds. If we compare this to the SIDS case on the left, we see there's very little staining. So there's definitely some differences between the brains of these babies compared to healthy normal-term babies. Now they've gone on to do more research, so in 2010, another study came out in JAMA where they're actually able to measure the levels of serotonin and the enzyme that's responsible for making serotonin—tryptophan hydroxylase—and they found that the levels of these chemicals are 20% to 25% lower than the babies who have died of SIDS.

**MRB:** Certainly, looking at that picture on the slide makes it very evident to see something is different between the one brain and the other. Can you tell us more about what exactly happens to an infant that's impacted this way?
DMG: Sure. Again, there are multiple theories in terms of the actual pathogenesis of the case of SIDS. One potential mechanism is explained in the next couple of pictures that we're going to look at, from a review article on SIDS in the New England Journal of Medicine from doctors Thatch and Kinney. What should normally happen where those blue arrows go, they're x'd off for babies with SIDS. When they're kind of face down, they might get into the situation where they get a pocket of air that they keep re-breathing and their oxygen levels start to decrease, with which puts them at risk. What a healthy normal baby will do is lift and turn their head to the side so they get some fresh air. Now what happens in the babies that die of SIDS, if we move on to the next image here, we'll see there's a cascade of events. These babies fail to turn their head and so they start re-breathing the same air, they start to become asphyxiated and they get a lack of oxygen, hypo-perfusion to the brain. If they fail to arouse, this will cascade down to the point where they go into a coma, the heart rate will slow down, they will become bradycardic, and if they fail to resuscitate and get fresh air, it will lead to their succumbing to a death that will be diagnosed as SIDS. That's one theory. For some people, they think it's not so much that it's this re-breathing, but that by laying face down, the babies get overheated and it triggers a response in the brainstem and autonomic functions.

MRB: Given the information that you just shared with us, can you talk about the importance of back or supine sleeping to our audience?

DMG: Absolutely. This is a really critical point, not just for parents, but for healthcare providers because there's still this fear of putting babies on their back, they're afraid they're going to choke to death. This is one of my favorite images to show when I'm doing education, covering basic anatomy and physics and gravity. If we look at the normal orientation on the left of this image, where the baby is laying on the back, we see that the trachea or the airway is higher up than the esophagus or the baby's feeding tube. So if a baby should spit up, I always tell parents, if they're worried, lean the head to the side a little bit so if the baby spits up, it will roll out of their mouth. By gravity, it's forced to the lowest anatomical point, which is your esophagus, so the baby ends up swallowing their spit up, which I know sounds really gross, but the baby is not going to be harmed by doing that. Now let's compare to the baby that's laying in some other position, in the prone or face-down position. Most of what they spit up is going to come out their mouth and they're not going to re-swallow it, but anything that does get into the back of the throat, now by anatomy and gravity, the lowest point is the trachea or the airway. So it's actually the baby who is prone who may be in a deeper sleep, is less likely to arouse, that are really the baby that's more at risk for getting into trouble. Now another thing, people worry about with the babies choking, if you're neurologically intact, if I took a sip of my water right now and it went down the wrong pipe, went down into my airway, as soon as it hit the back of my throat, I would start coughing, and it wouldn't be the queen's little cough, it would be really loud and very embarrassing, like if you're in a movie theater and get red in the face. Parents are worried their babies are choking to death, but they're the not, they're just protecting their airway so nothing gets down into their lungs.

MRB: Now is this specifically a concern with people who have babies who have reflux problems? Does this become a more important conversation?

DMG: Actually it really does. All babies reflux, right? That's why there are burpie cloths, that's why you have lots of laundry, because every baby spits up some. We don't havev time going to get into reflux and reflux disease today, but the bottom line is not only does the task force but
the National Association of Pediatric Gastroenterologists all agree, unless the risk of death from reflux is greater than death from SIDS, babies should be laying flat on their backs. The only time they're at greater risk is if they have a very severe anatomic abnormality that's going to need surgical intervention. So for the otherwise healthy baby, elevating the head of the bed really does not help, it's been shown through a number of studies and all it does is put the baby at risk for rolling unto a position that could compromise them or put them face down.

**MRB:** So certainly, and I'll be the first to say I'm not a doctor, but based on the description and the pictures that you showed, it makes a lot of sense to me what you're explaining about the importance of back sleeping, just based on gravity. So when did that recommendation for Back to Sleep and promoting sleeping on the back first begin, and what was the impact of changing the recommendation?

**DMG:** That's a great question, and really, the implications were just huge. So we had always recommended – it seemed to make sense, babies should sleep face down so they don't choke to death. It turns out that that was just not the correct case. There were a number of studies that came out, probably one of the most important of which was the New Zealand Cot Study. They had much higher rates in terms of these deaths. Looking at how babies were sleeping, they saw it was much more common in babies that died of SIDS to be found face down and also with soft bedding around them. There is other data besides this going back to the 1940s, and there was a committee on infant mortality right here in New York City, that showed about two thirds of the babies dying of SIDS were found face down and half of them had stuff around their nose and mouth. So in 1992, we came up with the recommendation to switch babies and not put them in a prone position. It's gone through a couple iterations, and the side was found to be just as dangerous as new data came out. So back sleeping came out in '92. As you look at this graphic, the yellow bars are before the back to sleep recommendation, our SIDS rate was just solid, you could go back as long as you want, we used all kinds of home monitors, nothing touched it. The blue bar shows where we started with the recommendation, and in '94, where the red bar starts is the Back to Sleep campaign. One of the greatest public health interventions, the most successful ones in the late 20th century. What we're looking at in this graph in the red bars, over time, is that the rate of SIDS is dropping, which correlates directly with that green line, which is the rate of exclusive back sleeping for babies. And in less than a 10-year period, what we saw was a 52% reduction in the number of babies dying of SIDS. This campaign is responsible for about 35,000 people being alive today.

**MRB:** That's excellent. It's really – it's good news in light of a very heavy topic. So in addition to sleeping on the back, as opposed to sleeping on the front, what are some other important risk factors for SIDS, things that maybe we could mitigate?

**DMG:** Sure. When we start getting into the actual recommendations, they're all based on evidence-based medicine and studies. So some of the of the data here we're going to look at is from the Chicago Infant Mortality Study, and in that study, they show if babies slept on soft bedding, they were five times more likely to die of SIDS. If they slept on their stomach, they were 2.4 times more likely to die. Babies who died of SIDS were over five times more likely to have shared the bed with other siblings. And for any of our viewers out there who have ever had a toddler in bed with you, it's like having your own tornado in there, you wake up and you're happy you don't have bruises. They have no concept of personal space. So it's very easy for them to kind of roll over, get up against their little sibling and they might cover the nose or
mouth and result in a tragic death. In some of these things, they don't just start to add up, they start to multiply. So sleeping on the stomach with soft bedding gives you a 21-time increase risk of dying of SIDS.

**MRB:** That number alone is so startling to me, and just such a striking figure. So knowing all of this information then about circumstances that contribute to risk for SIDS, did that help to drive a national policy or an effort for national policy on preventing or reducing SIDS-related deaths?

**DMG:** Absolutely. I mean, this is kind of a crisis number of babies dying, so we've been looking at this for years and there's been a Task Force through the American Academy of Pediatrics that has come up with a number of iterations. As we get better data, we update the recommendations, so we've been doing this for quite some time. The latest recommendations came out in November of 2011 and we hope to have an update on this in the next year or so. We do this all on evidence-based medicine, so we're looking at guidelines from the U.S. Preventive Services Task Force so we have can different levels of strength of the recommendations A, B and C, and an A level recommendation is based on multiple well done studies that all kind of reach similar conclusion. And we think that additional studies wouldn't have an impact on that recommendation. Strength B recommendation means that there's at least one solid study that shows there's a recommendation to be made based on it, but it's still open enough that if new studies came out, they may show contradictory information and the recommendation may be modified. Then the Level C strength of recommendation is one that we don't have good studies on it so it's really based on expert opinion and consensus.

**MRB:** So let's review some of those guidelines and if we could start with the Level A or the strongest recommendations.

**DMG:** Sure. So with the AAP recommendations we're talking about, obviously babies should be on their back for every sleep time. Some parents get a little confused about this, they think it's only at nighttime, but it also includes their nap time. And we should always be using firm sleep surfaces. You shouldn't be able to put your hand down and leave a mark or imprint, so memory foam and things like that are a no-no. Babies should be room sharing with the parents, not bed sharing. It's okay to bring the baby in to facilitate breast feeding, bonding and cuddling, but when you're sleepy, your baby should go back to their safe sleep environment. All soft objects away, things that can result in a suffocation death. Moms should get good prenatal care, the less low term weight babies we have, the less the risk for SIDS. We don't want to see secondhand smoke which increases the risk, also we don't want to see smoking during pregnancy, because that really alters the development of the brain and puts the baby at higher risk for SIDS.

**MRB:** And are there other Level A recommendations or things that people may be surprised about?

**DMG:** Sure, there's additional Level A recommendations. Some are a little more obvious, like mothers shouldn't be drinking or using illegal drugs while they're pregnant. We encourage breastfeeding. There's very strong data on this. It's almost a dose-response relationship, the more breast milk a baby gets, the lower their risk is for SIDS. We have good data from a couple of meta analyses showing about a 45% breast reduction from breast feeding your baby. So tons and tons of good reasons to give your baby breast milk, this is another one. One thing people
don't seem to have picked up on – studies show a lot of people are not aware of this – is that babies should get a pacifier at sleep time. We don't know how it works but there's a clear association between pacifier use at sleep time and a reduced risk of SIDS. We don't want them to force anything on the baby so if they're not ready to take it, that's okay, and it's also very important to note that for those babies who are being breast fed, it is important to wait until breastfeeding is well established, three to four weeks out, before you introduce that pacifier. We've kind of mentioned to avoid overheating, overwarming your baby, and then there are medical grade monitors out there but they're not recommended for trying to reduce the risk of SIDS. They really don't work (to prevent SIDS). There are good reasons for using them, but that's mostly for premature babies who have immature breathing patterns, that we call apnea of prematurity, and that can get babies home from the hospital quicker, but it's not a mechanism to be used for reducing the risk of SIDS.

MRB: You've mentioned a couple times the importance of not overheating the baby, and yet I know from my nephews and niece the importance of swaddling, so can you talk about swaddling the baby and the overheating concern?

DMG: Sure, that's a great question, a really hot topic and a lot of people ask me questions about swaddling. Swaddling has been a around for a long time because it does have some benefits. It's really helpful for calming fussy babies, for getting them to sleep better, and also important for babies when they're really young in terms of helping to keep them warm. There are some risks involved with swaddling if it's not done properly, you can overheat a baby, the baby breaks out of the swaddle, it becomes loose bedding that becomes a risk factor for blankets over the nose and mouth. A couple years ago they looked at some consumer product safety commission data looking at deaths related to swaddling, but if you read the study carefully, what it points out is those kind of deaths have been very, very, very rare and in almost all the cases, there were other confounding factors such as the baby being face down or soft bedding. So the conclusion that we really obtain from this article is that if swaddling is done properly, it's not a high risk thing to do. We need to make sure that all other safe sleep recommendations are being followed, and then that as soon as the baby is trying to roll over, then it's time to get rid of the swaddling because it's dangerous, then they can't get out of it, and if they're face down, they can get themselves stuck in the bedding. So if we look at our recommendations, the AAP recommendation is that swaddling is not recommended as a way to reduce the risk of SIDS, that there's not data for that, but that there are other benefits, so it's okay to do it as long as you're doing it safely.

MRB: Obviously, the Level A recommendations are the strongest recommendations. I'd like to go over the level B and C as well. Obviously a little bit quicker, since they're not as enforced or not as well researched, so if you could briefly go through the other representations for audience.

DMG: Ok. One is kind of a straightforward one - a baby should get immunized as recommended by the AAP and CDC. Commercial devices that are out there to monitor babies, really shouldn't be used to reduce risk of SIDS, it's okay if you're in another room to listen for your baby but not as a way it to reduce the risk of SIDS, and it's very important that babies get tummy time, when the baby is awake and being monitored because if you go somewhere else and you put the baby down and they fall asleep, then you've got prone sleeping. And the reason that we recommend the tummy time is that if babies are on their back all the time, they start to get a flattening of the head or what we call positional plagiocephaly, which is a problem. The
Level C recommendations, we want all healthcare providers to endorse and model safe sleep so we're being consistent with our messaging, that's kind of an obvious thing to do. We want media and manufacturers to model and promote safe sleep in their images and advertising so that would be inconsistent with the images people are seeing in terms of what behaviors they want to model, then we want to continue research in providing funding to look into this so eventually one day we can eliminate all these deaths hopefully.

**MRB:** I understand that these recommendations have been distilled into a fairly succinct and easy to follow message. Can you talk about that?

**DMG:** Absolutely. It's as simple at your ABCs. The baby should sleep Alone on their Back in the Crib, no exceptions.

**MRB:** So, following the ABCs. Excellent. Now we've recently visited a children's hospital in Rochester, New York where we were able to observe Nurse Krystal Carson talking with a mom about infant safe sleep practices.

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**Nurse Krystal:** Hi, I’m Krystal. I’m part of the safe sleep committee in the hospital. I just wanted to go over some stuff with you about safe sleep. Do you know very much about safe sleep?

**New Mom:** I heard something about them sleeping on their backs, but I don’t know much more than that.

**Nurse Krystal:** Yep, that’s correct. We definitely recommend that they go to sleep on their back. We also recommend putting them in a sleep sack, we recommend you can either put their hands in and bundle to their shoulder or you can have their arms out.

**New Mom:** What happens when they are ready to roll over?

**Nurse Krystal:** When they’re ready to roll over, you definitely put their arms out, that way it’s safer for them and they can move around and turn if they need to. We also recommend that you don’t overheat them by layering them with tons of clothing.

**New Mom:** What should the temperature usually be in the room?

**Nurse Krystal:** Usually 68 to 72 degrees is what we recommend. You don’t want to put anything else in the bed with her like stuffed animals, extra blankets, you don’t want to put a bottle here. She can have a pacifier as long as it’s dry.

**New Mom:** Okay. Sounds good.

**Nurse Krystal:** Do you have any questions?

**New Mom:** I don’t think so. That was very helpful. Thank you.
Nurse Krystal: Okay. We have a packet that we give out with all sorts of information if you want to look back when you go home, and if you have questions, you’re more than welcome to contact us with any.

New Mom: Great. Thank you so much. You’re welcome.

MRB: So certainly listening to those recommendations and listening to the way you explain the recommendations, it seems fairly easy to follow, so I wonder why is it that all parents don't follow these recommendations? What are some of the barriers you encounter?

DMG: We focus on safe sleep because we thought it was low hanging fruit but there are definitely some challenges and barriers with he have to overcome. In some cases, it's a tradition and custom for some families. Sometimes people just feel that It's a rare event and it can't happen to me. For some people it's not a priority, they're worried about food and shelter and their safety. Other times there are competing messages from grandparents or breast feeding specialists and sometimes there's distrust of medical professionals. As we look on the slide here, there are things that parents have specific concerns about. Again it's that prone positioning because they're afraid the baby is going to choke if they're on their back, that babies can sleep better or deeper on their stomach, that babies are fragile so they need soft things around them. Some people say since you don't know what causes SIDS, it's God's will so I don't need to pay attention, this is going to happen if it's going to happen, and some people feel Recommendations keep changing so why should I listen, but the Back to sleep recommendation has been there for over 20 years Now. Every parent is trying to be a good parent, sometimes they're sleeping with their baby because they're afraid of gunshot fire or animal or bug bites.

MRB: Are there any key behavior approaches that ground your approach to infant safe sleep, and it if so, how do they impact how messages are delivered to caregivers and parents?

DMG: There are lots of theories looking at ways people learn and how we can achieve behavior changes, learning theory, motivational interviewing. So parents are more likely to recall information and they're able to comply with recommendations if this is done in a non-confrontational setting. So you want to have an atmosphere of acceptance and compassion and you really want parents to work through this for themselves to achieve ownership that you want them to drive the conversation and that you allow them to receive adequate information, let them process it and let them kind of ask the questions and then kind of figure it out, to hopefully plant the seeds that they can work through so that they'll want to make the change and not be told what to do.

MRB: That whole idea kind of meet the person where they are rather than trying to force the information.

DMG: Absolutely. As soon as you start can dictating to people, they're going to shut down and not listen to you.

MRB: So we have some solid recommendations and practice guidelines that you've gone over. Are there ever any circumstances where these approaches aren't warranted or where we might
be advising something different?

DMG: We always want to promote safe sleep for our parents, Rachel, but when babies are stick in the hospital, sometimes there are some exceptions because of medical reasons, so usually in our neonatal intensive care units where babies are sick, they're on monitors continuously and people are up 24 hours a day observing their children. So for example, a baby having breathing difficulties perhaps because of prematurity, we know it's easier when they're on their tummy, so we'll put them on their tummies when they're sick due to premature breathing issues. Also babies trying to make their way out of incubators, they might need to be layered with extra bundles or hats. As soon as these issues resolve, we tell parents we're doing this because of this reason, as soon as your baby is better and healthy, we're going to put your baby in what we call a safe sleep environment, a home safe sleep environment, so we're going to get that baby on the back and we're going to do this education with you. So these are teachable moments. Every time we have to deviate from the norm, it's like, hey, this is the reason we're doing it, but we want you to know, these are the things that are safe for your baby.

MRB: Absolutely. What are some of the other barriers to infant sleep issues that you've been addressing?

DMG: Well, some of that is working with the media and with manufacturers, they're producing the images we want to see to promote safe sleep. All too often, I see advertisements for infant products or even for birthing hospitals where they show a picture of a baby sleeping face down in an unsafe sleep environment, so we want to be consistent. We've actually worked with the 4As, the American Association of Advertising Agencies to provide education to their member agencies, about 7,800 advertising agencies. One way we've worked with that. want to start thinking outside the box and work sometimes with non-traditional elements, we want to broaden our approach to this so subtle changes, just talking about SIDS, talking about safe sleep as a whole, so for people who say you don't know what causes SIDS so I don't need to do anything about it, well, you can't wrap your head around SIDS, you should be able to wrap your head around the idea of a pillow in your face resulting in suffocation. So let's talk about how we can prevent a suffocation death from happening. So that's another way around that obstacle.

MRB: Now are there examples of what an unsafe sleep environment looks like and can you show us an example of how an infant death might actually occur?

DMG: Absolutely. I think visual images are very important for education and understanding, and that local story, so you can understand, hey, this really happened in our community, that's really important. So a child death review helps us see what these death scenes are like. No dolls were harmed in the filming of these pictures, but what parents often do is they decide to sleep with their baby and so people will say I know what's going on with my baby. When you reach a certain level of sleep, you're really unconscious, you don't know what's going on. I think people acknowledge that because they put the baby in between instead of to the side because they're afraid the baby is going to roll off and either get bumped on a coffee table or the floor. A slight movement from this dad goes from where the baby is free to breathe to one where now the baby can be suffocated or asphyxiated. It doesn't matter if it's a blanket or compression of the baby's chest so they can't take a breath, it still going to be a suffocation-type death.

MRB: So what can we offer parents to help them follow these guidelines?
DMG: I don't think we do a good enough job helping families with a fussy baby, so a lot of times if parents are sleep deprived, they have children that are not sleeping well, when we're tired, sometimes we don't make the best judgment. So there are some tools out there that we can do. I like the five "s's", so swaddling that baby for the fussy baby, also side carrying and swinging them is really good for the gassy baby. Shushing, really loud white noise, babies respond really nicely to that, and sucking, so even when a baby isn't hungry. Learning infant massage is a great technique. I don't know anybody who doesn't like a massage, calms you down, and if you'd had a busy day and hectic environment, changing your environment to a more calming environment is great and developing routines, a good sleep routine, will help babies towards having better sleep habits.

MRB: Now what other important changes do you encourage health care providers to consider regarding infant sleep?

DMG: Sure, I think we need to expand our messages to beyond just talking about SIDS to in general talking about sleep safety. I think another big focus is with new parents who are worried about their babies choking or aspirating, really, to focus on those images that we already looked at, about aspiration and choking, we need to talk about keeping soft things out of the baby's environment, particularly those bumper pads around recommended any more. We want to ensure room sharing where baby is included for bonding but not bed sharing.

MRB: Can you talk about the infant based hospital sleep program?

DMG: We want to have consistent and repetitive messages in our community. As healthcare providers, we're giving mixed messages so the doctor says one thing, a nurse says something else perhaps another provider says something else. We get tuned out when there are mixed messages. So here's what the conversation can be. At home, because grandmas are very important in helping take care of new babies, so the dad says, you know, mom, I've heard all these different things about how the baby should sleep, what should I do? I don't know. And grandma may say, well, when you were a baby -- we always put babies on their tummies and if it's good enough for you, it's good enough for my granddaughter. In that brief conversation, you've just doubled the chance of the baby dying of SIDS. So when we look at the it hospital based program, this is a great place to get pretty much except if you're having a home birth, you're going to get 100% of your birthing population for education, it's a great intersection point, and not just the mom and dad but all the other people that may be involved with that baby's care to provide education for them so that the baby is always put into a safe sleep environment, nurses are great at role modeling, and it's efficient and cost-effective, it's a pretty easy program to do.

MRB: So talk to us about how you approach this at your hospital.

DMG: Sure. So what we did is we wanted to take a model that we knew already worked; we replicated the abusive head trauma program. This was actually developed not far from here in Buffalo, New York, and data that came out of there showed a 50% reduction in their shaken baby injuries with this program. So we just kind of changed it over to safe sleep information. so
every parent watches a brief DVD on infant sleep safety. They get face to face education with their nurse, and then they also sign a voluntary acknowledgment statement to focus them on how important we think this information is.

MRB: So from your experience implementing this at your hospital, can you talk to us about what would you say it takes for a program like to work and be successful?

DMG: Sure. We've done a lot of research on this, so we know that to be successful with this program, and I'll talk about this chart in just a second, that we need to have leadership, people need to be educated and it needs to be persistence of keeping this program running, it needs to be personalized and it should be institutionalized so there's policy and consistency. If we look at this graphic, there's really three components of this. You need to get program acceptance and there's multiple layers through hospital administration through all the healthcare providers. In the middle, there's your curriculum development, which includes initial training and maintenance of that training so people maintain their expertise, and then your education program for your family. And then at the far end of the slide, we're looking at community support. So you want to team up with other people who can promote this outside the hospital, a local health bureau, a safe kids coalition, child death review teams or first providers. All these people have the same goal, nobody wants to see these babies dying unnecessarily. So all this information where this program is available on the cribs for kids website, we want it to be easy and replicable as has been done at hospitals in many places across the country already.

MRB: Excellent. Now what do you think we really need to do to change the status quo?

DMG: That's a great question. So we need to look at this at the local level and also at the national level. So there are a couple of really good programs that have been funded federally and we have state programs that are ongoing, one of which is the national action partnership to promote safe sleep or the naps program, where they're really working with non-traditional partners such as religious leaders, breast feeding advocates and advertisers to make our messaging more consistent and ubiquitous. At the personal level, we know that parents are getting some of that message, but if they're not changing their behavior, we need to make sure they understand the reasons why we want them to change behavior, and that we want this to be a two-way communication. I think those are things that are critical to moving the needle on this problem.

MRB: Now do we have any evidence that these different educational approaches actually work?

DMG: Absolutely. Just even the back to sleep program, we saw a 52% reduction in the rate of SIDS in this country, and we're starting to gather more data as the state programs are coming forward with their education efforts, and we won't go through everything on this slide here, but just looking at Tennessee, they have all their birthing hospitals are providing safe sleep education for their providers and the families, and as a result of that, the department of health there gave a board book from the -- every family -- sleep baby safe and snug, and that reinforces the message. One year after they started their program, there was a 17% reduction in their infant deaths. One of my favorite programs is in Baltimore, the be more for healthy babies campaign, which is a soup to nuts program, but if you look at their data, the infant mortality rate has dropped significantly, and it's at the lowest point now, about nine deaths per thousand
live births, the lowest in recorded history this Baltimore over 100 years and they've seen a 40% reduction in the racial disparity, a fantastic program.

**MRB:** Certainly those numbers are very encouraging. Now can you tell us about the cribs for kids program that you mentioned just a few minutes ago?

**DMG:** Sure. So cribs for kids is a program that originated in 1998 in Pittsburgh. It was an outgrowth of the sudden infant death bereavement program in Pennsylvania, a support group, and what they were finding there with their deaths is that so many of them, the babies were not in a safe sleep environment, they were sleeping together with their parents, and there was some data coming out that suggested that not all these families were doing this for tradition, but some of them would use a crib or pack and play if they could afford one. So they started the program, and their goals were to eliminate any preventable unsafe sleep death and there were two ways they promote this, one is by providing education for everybody, and then for families in need, providing them with a safe sleep environment. It started with full sized cribs.

**MRB:** How does the program actually work and how do you distribute the cribs to these families in need?

**DMG:** For crib distribution, we work with the local medical people so social workers, obstetricians, family doctor, they help us to identify families in need, then they get linked up into the program or they can even self-refer themselves. We need to confirm that will is a pregnancy, so we're not just giving out materials to people who don't need them, and we want people to take personal responsibility, they have to write a letter explaining why they need this. I get some very poignant letter from people and their dire situations. It's very touching information that we see sometimes and then once they're hooked into the program and they get closer to it their time of delivery, then we bring them n he get education on safe sleep, they learn how to use the pack and play, and we give it to them so they can set it up and be ready to take care of their baby when they go home. The good thing about the pack and play is that it's portable, so some of these families don't have stable housing situations or healthcare -- or daycare situations, so wherever of that baby goes, this thing packs up, it doesn't take a lot of space, it goes wherever the baby goes, there's always a safe sleep environment for that baby, and with the pack and plays we use, they have their own skew number so people can't just take them and try to return them to a Wal-Mart or another store to get money for it. Some programs will give out sleep sacks, pacifiers and other materials on safe sleep. So it's a really complete program.

**MRB:** Excellent. Can you explain the purpose of the national certification program?

**DMG:** Absolutely. This is an outgrowth of the safe sleep initiative. Basically what we wanted to do was be able to have all hospitals across the country have a way to model safe sleep. It creates a culture of safe sleep, and most hospitals have the idea of safety culture down because they want to prevent falls and infections, and we have ways for monitoring their progress and we also want to reward these hospitals for achieving their goals and another important thing is we didn't want to make any barriers to the program so there are no fees involved with this.

**MRB:** Excellent. Now we spoke with Dr. Elizabeth Murray in Rochester, New York about the
organization's commitment to safe sleep certification.

<<CLIP STARTS>>

Dr. Elizabeth Murray: So why is safe sleep important? I will say this, in Monroe County, we're unfortunately known as a community that has one of the highest rates of preventable infant deaths from unsafe sleep, so give me any other disease process that takes away infants from a community the size of Rochester and I’ll say that there is none. But this is something we live here in Monroe county and so when we realize that this was such a widespread problem that was taking so many of our little infants from us, the baby safe sleep coalition got together which brought together representative it’s from all of the hospitals, all of the community partner agencies to say we need to address this problem. We do have a lot of outreach with the community and what's great is that the fact that we have this unfortunate distinction of having the highest rate of preventable infants deaths from unsafe sleep really it was a call to action by all of our community media partners, and we take it very, very seriously because whether you're doctor working in the emergency department and living -- so how do we keep everyone current with the safe sleep guidelines and with our mission to encourage safe sleep? We do a number of it different things. There's the simple continuing medical education for whether be nursing or physician or mid-level provider staff, and then we actually have a safe sleep champion on each unit which will go around and he or she can check to make sure we're doing things well, give tips, give advice for how we could perhaps do things better so each unit actually has a safe sleep champion, kind after unique program that works with other providers to make sure we're staying current and keeping advice out to parents with every single admission, with every single delivery in that newborn nursery.

<<CLIP ENDS>>

MRB: Now with the national certifications, are there different levels of commitment for the certification?

DMG: Yes, we've made this a step-wise program so there are three levels of certificate figures. Bronze, silver and gold levels. So there's a safe sleep hospital safe sleep leader and a safe sleep champion. They build upon each other, so starting at the most basic level, it's fairly simple. You should have a safe sleep policy for your hospital that is based on the AAP recommendations. You should also have your staff trained so that they're doing safe sleep modeling and messaging and you have a program to provide education to your parents and that's the basic level. to move up to that second level as a leader then you have to add-on that you're replacing a lot of your blankets with wearable blankets to model safe sleep, and we also want people to auditor do what we call the plan do study act or PDSA cycles so you can monitor what's working, what's not working and improve from finding out what's not working. Then to reach the highest level, we talk about this not just being in the hospital, we want to extend this out in the community because really safe sleep is a continuum of education from children on through to grandparents. So we want them to it reach out into the community, whether it's providing a PSA, doing a health fair, providing an editorial for your newspaper. So lots of ways to do this, work with a Girl Scout troop, the other thing to reach that goal level is that need to affiliate or start a cribs for kids chapter. So there's no reason to reinvent the wheel, but what we want to do is make sure every baby who's identified as needing a safe place to sleep, that they can be referred to get that pack 'n play before they go home so no baby goes home into an unsafe sleep environment.
So those are the things that entail reaching those levels. On the website we have all the information on applying for this as well as a very rich collection materials that you can make use of. We want to make this easy. You don't have to reinvent the wheel. We have it all there to help you achieve success for your hospital.

**MRB:** Excellent. Now, Dr. Goodstein, you've provided us with an incredible amount of information today. Can you provide us with some concluding thoughts regarding safe sleep and its impact on our society?

**DMG:** Yeah, when I look at this, it's really not about the numbers. This is about the families, about their baby, and one preventable death is too many. To put it back into numbers and what it means from a public health perspective is, you have 90 children dying each year in New York right now. If we think about that, that's about four to five kindergarten classrooms that have been silenced forever. Parents should be visiting their child at the yard and not have to go to the graveyard to see their child. Gandhi said a nation achieves its greatness by how it treats its weakest members. So we're responsible for this as healthcare providers. If we don't do this and babies are dying, we fail those infants, we fail their families, we fail our communities, and we fail at our job as healthcare providers. so we really need to work together, reduce our infant mortality rate, if we fail at this job, I think history is going to judge us harshly.

**MRB:** Thank you so much for providing that information. I think you really drive the point home. We have time for just a couple of questions. The first one I have here, "I understand that as more of the SUIDS are classified as sleep related, the SIDS number is going down while the sleep related death number is not. How does this impact the vital message of safe sleep?"

**DMG:** Well, just to clarify, the SUID deaths include SIDS suffocation, so they're all part of this big umbrella. SUID is the big umbrella term for all these it can deaths. But that viewer is correct, we are seeing this drop in the SIDS and increase of the suffocation and strangulation deaths. Since the recommendations to prevent the suffocation deaths are very similar to the recommendations for reducing the risk of SIDS, it really doesn't change the messaging all that much. If you're doing all your safe sleep guidelines, then it's going to reduce both of these deaths, type of can deaths eventually.

**MRB:** Second question, "I understand that -- why is it important that the infant's crib is flat as part of safe sleep practice? Is there evidence to suggest that this is beneficial?"

**DMG:** Well, there's no evidence to suggest that you made to elevate the head of the bed. Some people want to do that because they think it reduces the amount of reflux, but the studies have shown that there is not a benefit to that, and I have actually seen each little premature babies with slight elevation, they can slip and roll over, and that creates a very unsafe sleep environment. so baby can end up rolled on their side or kind of crunched up or they can end up just flat face down, so they're really with no benefit and a risk involved, there's no reason to do that.

**MRB:** Absolutely. That makes sense. Another question, "what constitutes clothing that is safe for infants to sleep in? Is it safe to it use hats on newborn babies or infants when you're putting them to sleep?"
DMG: That's a really good question. So yeah, when babies are first born in the newborn nursery, they do have hats on them because they do have trouble regulating their temperatures and making the transition from fetal life to life outside of the womb. But within a couple of days, they're able to maintain their temperature, and once that's the case, there is no indication for keeping hats on babies. If you're going out in the cold, sure, you want to keep the head warm. When you're putting babies down to sleep that becomes a risk for it slipping down over the nose and mouth so it's a suffocation risk, so there's really no reason to do that. So basically onesies, infant pajamas, all those things are safe to use. What we don't want is anything that can get lose that can get over the baby's nose or mouth, and we don't want things that are too heavy. So what we recommend is that whatever number of layers the parent needs on in terms of clothing to be comfortable, the infant really only needs one more layer than that.

MRB: I think we have time for one more question. "What is the recommendation regarding swaddling and what is meant by a blanket with babies' arms out? What does the blanket need to be tucked in firmly?"

DMG: Can you just it go back to the beginning of that question again?

MRB: "What is the recommendation regarding swaddling." I think we kind of covered that, but what is meant by a blanket with babies' arms out?

DMG: Okay. So a lot of controversy in terms of how you do your swaddling. I've seen swaddling with the blanket over the baby's head, that's clearly not recommended. But people discuss whether the arms should be in or tight or the arms can be out. It really depends on the physical needs of the baby. So if you have a baby who's really fussy and thrashing, then you really need to get those arms in so they're tight so they have less awakening and that helps them to stay in a deeper sleep. If it's really just swaddling a baby to help them stay warm, then it's okay to just have that swaddle and it should always just be no higher than the armpit basically, but they can have their arms out, because basically babies learn to self soothe, so in order to be able to soothe themselves, that's really important. The only problem with having the hands up is as the baby gets a little stronger, they might try to break out of the swaddle. That's why we like wearable blankets better because there won't be anything loose if they happen to push out from that.

MRB: Excellent. Thank you so much for all of the information you shared with us today. I think it really is important for protecting the vulnerable members of our society. I think we need to get that information out there, so thank you for starting the conversation.

DMG: Thank you. It's been a pleasure.

MRB: And thank you very much for joining us today. Please remember to fill out your evaluations online. Your feedback is always helpful to the development of our programs and continuing education credits are available. To obtain nurse it continuing education hours, CME and CHES credits, learners must visit phlive.org and complete an evaluation and the post-test for today's offering. Additional information on upcoming webcasts and relevant public health topics can also be found on our Facebook page. Don't forget to like us on Facebook to stay up to date. This webcast will be available on demand on our website within two weeks of today.
Please join us December 17th, focused on a guide for EMTs, recognizing and treating mild traumatic brain injury. I’m Rachel Briedster. thanks for joining us on "public health live."