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University of Alaska scientist works to defeat silent killer of infants

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FAIRBANKS — As devastating as it is mysterious, Sudden Infant Death Syndrome claims the lives of more than 4,500 American children every year, and the problem is even more intense in Alaska.

Photo by [Eric Engman](#)

According to the Centers for Disease Control and Prevention, there are 60 SIDS cases per 100,000 births in the United States. Michael Harris, an associate professor with the University of Alaska Fairbanks' Specialized Neuroscience Research Program, said the SIDS rate for Caucasian babies in Alaska is 2.3 times the national average, and the rate for Alaska Native infants is five times the national average.

"It's a particularly bad situation in Alaska, and we don't know why," he said.

That is why he is looking for answers not only related to the syndrome but what specifically is putting Alaska infants at higher risk.

According to “Findings of the Alaska Maternal-Infant Mortality Review” published by the State of Alaska Epidemiology Department, SIDS and asphyxia were the leading cause of Alaska infants’ death from 1992 to 2001. Harris said epidemiology studies always lag behind the current situation because they use causes of death to generate data. But in the case of SIDS in Alaska, he doesn’t predict a drastic change in trends from the past data.

Harris said three factors need to be considered when dealing with SIDS: age, vulnerability and environment.

Children are at risk of succumbing to the syndrome only during the first 12 months of their lives. Harris said during this time, infants’ brains are changing drastically — growing from a fetus’s brain to a child’s brain. After the first 12 months, instances of SIDS decline dramatically.

One theory about the most vulnerable infants is that they lack serotonin, a neurotransmitter that moderates anger, aggression, body temperature, mood, sleep, sexuality, appetite and metabolism. Harris performed several studies on mammals and found animals that lacked serotonin didn’t notice a difference when they inhaled increased amounts of carbon dioxide. The hypothesis based on this finding is that infants with a lack of serotonin will have the same reaction.

If an infant sleeps on his or her stomach and breathes into a pillow, the pillow blocks oxygen from entering the infant’s body and increases the amount of carbon dioxide in the infant’s bloodstream. The typical responses for an infant would be to wake up, regain muscle control and move its neck away from the pillow, then breathe faster to

increase oxygen consumption.

“A problem in any of these responses becomes an acute life threat,” Harris said.

The third factor is the infant’s environment. Tobacco and alcohol intake during pregnancy are factors associated with increased chances of SIDS.

The development of the Back to Sleep campaign was a large milestone in the fight against SIDS. Developed 10 years ago, it is a national effort that promotes putting infants to sleep on their backs instead of their stomachs. Harris said it reduced the SIDS rate by half — but it also revealed that other factors cause SIDS because infants still die from it.

To increase SIDS awareness, organizations such as the National Institutes of Health have produced brochures and informational materials about things parents should do to decrease the number of environmental risks an infant faces. Harris said the majority of the tips, such as having the infant sleep on its back, are extremely useful, but parents in Alaska face some unique problems.

One of the tips the campaign promotes is having infants sleep in light clothes and a light sheet. Harris said families in some Alaska communities such as Barrow or Nome and those who lack central heating might find this tip more harmful than helpful. Another tip advising parents to create a separate sleeping area for infants clashes with many parents who sleep with their infants in the same bed, a common practice in Alaska.

Harris said a frightening theory is that some Alaska parents will read all of the

recommendations, think they must follow every one of them, then discard the entire list when they find two or three recommendations that don't apply to them.

"I don't know why this is happening, but I'm terrified it is," he said.

Harris, who specializes in hibernation biology, has been using his knowledge to create physiological models that be applied to infants. He has been working to address the SIDS problem in Alaska for the past five years and has studied the disease for the past 12 years.

Because the problem is so mystifying, the progress of solving and finding a cure or a screening tool is still in the early stages. Harris said his research could be conducted anywhere, but finding answers for Alaska's SIDS problem can only be done by people in the state because they see the effects first-hand.

"No one is going to solve our problems but us," he said.