Safe Passage Study on Sudden Infant Death Syndrome (SIDS)
2006-2017
The Safe Passage Study was a large, prospective, multidisciplinary study developed through the Prenatal Alcohol, SIDS, and Stillbirth – (PASS) Network.
The purpose of PASS was to look at the things that affect the health and well-being of babies, including medical problems, prenatal care, and smoking or drinking during pregnancy. This is important to improve pregnancy outcomes, such as Sudden Infant Death Syndrome (SIDS), Fetal Alcohol Syndrome (FAS) and stillbirth.

Environmental Influences on Child Health Outcomes - ECHO
2018-Present
Avera is one of only 31 grantees in the nation to be chosen to participate in ECHO - a 7-year program through the National Institutes of Health (NIH).
The goal is to improve child and adolescent health by looking at how a broad range of environmental influences - including sleep, nutrition, allergens and social relationships - affect children both prenatally and after birth. ECHO will include 50,000 children across the 35 sites.
As part of ECHO, we are currently recruiting pregnant women from the Sioux Falls and Rapid City areas and also enrolling participants who were previously a part of the Safe Passage Study.

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Avera CPCPR and two other ECHO Sites identify that 1 in 5 children in the United States have a chronic health condition that affects their daily function.

Parents with children (ages 5-9) were asked a series of questions to score them on their children’s health, level of life satisfaction, and level of psychological stress. The major finding was that children with a chronic health condition were just as satisfied with their lives as children without a chronic health condition. Accordingly, children challenged with chronic illness often lead happy and fulfilling lives.

(Blackwell et al, 2019)

A Safe Passage dietary study found that Northern Plains American Indian pregnant women were not eating enough fresh fruits, vegetables and whole grains. Researchers found no differences between pregnant American Indian women’s diets and those of the general U.S. population. However, American Indians have higher rates of premature birth, diabetes, and cardiovascular disease which makes the availability of wholesome foods increasingly important, especially during pregnancy.

(Ferranti et al, 2019)

Safe Passage researchers set out to determine how heart rate changes as babies grow in the womb. Almost 2,000 fetuses in late pregnancy were studied. Heartbeat, on average, slowed down 7 beats/minutes as delivery day approached. Variation in heartbeat became greater as the fetus neared birth. While boy and girl heartbeats were the same through their second trimester (140 beats/minute), female heartbeats became faster than male heartbeats during the third trimester. By understanding normal development, researchers and health care workers can better identify when problems occur.

(Shuffrey et al, 2019)

Newer Data Shows
FASDs are more common than we thought

Fetal alcohol spectrum disorders (FASDs) are the leading preventable cause of developmental disabilities worldwide. Older studies suggest that 1% of U.S. children suffer from FASDs, but newer data indicates prevalence as high as 5% nationwide. First-graders from the Rocky Mountain, Midwest, Southeast, and Pacific Southwest U.S. regions were measured between 2010 and 2016 for height, weight, head circumference, facial features, and neurodevelopment. This data also included alcohol use questions answered by mothers. Surprisingly, a very low number of children with FASDs (<1%) were formally diagnosed or were diagnosed with another condition prior to the study. These results emphasize that 1) FASDs occurs more often than previously estimated, and 2) many children have FASDs that are not formally diagnosed in the general population.

(May et al, 2018)
Researchers with the Safe Passage and ECHO studies measured heart rate changes while infants were sleeping and compared this information to worrisome toddler breathing (such as wheezing or whistling in the chest) two years later. The major finding was that girls with high infant heartbeat rates were more likely than boys to have breathing difficulties later on. The study provides one more piece to help explain how asthma and breathing issues develop in young children. (Perzanowski et al, 2018)

Healthy hearing can be measured in infants

Healthy infants from the Northern Plains and Cape Town, South Africa hearing were tested using two procedures. The first measured low-level sounds coming from cochlear (ear bone) hair cells, indicating how well our ears collect noises and turn them into signals our brains recognize. The second procedure measured electrical impulses coming from the section of the brain in charge of hearing. The Safe Passage results were similar to previous general population studies, and provides a good baseline for future interests in hearing development, especially with babies exposed to alcohol and smoke during pregnancy. (Sinninger et al, 2018)

Electroencephalography (EEG) uses electrical sensors to detect activity in different regions of the brain. A PASS ECHO collaborative study measured infant brain activity and linked the results to the same children two years later. This study found toddlers between 2-3 years of age behaved better and had greater memory and sensory abilities when they also had high EEG activity as infants. Interestingly, this correlation between infant brain activity and early childhood behavior and development applied to boys, but not girls. This study helps understand how EEG testing can be used to detect brain patterns that lead to childhood changes in growth and development. (Brito et al, 2019)
Among children 0-19 years of age, Sudden Infant Death Syndrome (SIDS) causes more deaths than heart disease and cancer combined in the U.S. and is the leading cause of infant death. The Safe Passage Study enrolled thousands of women from Cape Town, South Africa and 3 sites in S.D. at a high risk of SIDS. The purpose of the study was to determine characteristics of mothers at a greater risk for prolonged grief disorder (PGD) following the death of their baby by SIDS. Four PGD risk factors were found: anxiety, depression, alcohol use, and younger age. Mothers with one or more of these risk factors experienced much more grief one to two years after their infant’s death. (Goldstein et al, 2018a)

How do mothers experience grief after the sudden death of their infant? This question was addressed through the PASS network by studying the relationship between SIDS and the development of prolonged grief disorder. Most mothers (68%) who lost an infant reported daily intrusive feelings of yearning and emotional pain, and half of them suffered grief for more than six months in the form of confusion, diminished sense of self, bitterness, anger, and avoidance. By studying the grief phenomenon in mothers who have lost children, healthcare professionals will better understand how to help these women and their families cope. (Goldstein et al, 2018b)

Grief and Loss with SIDS

To our participants:
We appreciate your willingness to devote your time and commitment in improving the health and well-being of mothers and children!

Thank you!

To our research collaborators from:
Columbia University, University of Maryland and Avera McKennan Hospital & University Health Center

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