

Aaron Matthew SIDS Research Guild - Year in Review – January 2020

While publishing takes many years, among the many things we accomplished this year was something truly unique: leading medical researchers at Seattle Children's Hospital Integrative Brain Research Institute, and world class data scientists at Microsoft, collaborated with top medical experts around the world on four peer-reviewed papers submitted to medical journals.

- "[Maternal smoking before and during pregnancy and the risk of sudden unexpected infant death](#)" and
- "[Distinct populations of sudden unexpected infant death based on age](#)", were published by the journal, *Pediatrics*.
- "[Geographic variation in sudden unexpected infant death in the United States](#)" was recently published in the *Journal of Pediatrics* and
- "[Factors associated with age of death in sudden unexpected infant death](#)" was just accepted at *Acta Paediatrica*.

In the paper published in April of 2019, the team estimated that at least 22% of SIDS-related deaths (SUID) in the US are directly associated with smoking during pregnancy. Smoking only a single cigarette during pregnancy doubles the risk of SUID. The researchers were also the first to report that smoking during the three months prior to pregnancy, and quitting in the first trimester, still increases the risk of SUID by 50%. This paper generated significant media (for example, see this [WebMD article](#)) and had a huge impact among the scientific community. Although, this article was just published in 2019, has already been cited 21 times in other peer-reviewed articles, which is very remarkable.

In the second paper, the authors discovered two statistically different groups of SUID cases: those that occur during the first week, and those that occur between one week and one year. The data strongly suggest that there are different underlying causes of death between these two groups. Experts have always thought that SIDS-related deaths were caused by more than one thing and this study backs up this assertion. This is important because finding clues behind the causes of these deaths is the first step toward reducing them, and we are breaking this mystery down step by step, child by child. That's why we are more optimistic than ever - and why we are so grateful for your support.

The third paper explored the effect of altitude on SUID risk in the United States. There were several previous studies published on this topic with conflicting results, but all had a much smaller sample size. The authors found an increased risk at very high elevations (>8,000 feet), however, there were only 10 SUID deaths (out of over 23,000) that occurred at these high elevations over a 6-year period in the United States. They concluded that future research and educational resources should focus on SUID risk factors with higher prevalence.

The most recent paper to be accepted for publication analyzed which factors were associated with a younger or older age of SUID death. They found that a younger age of death was associated with maternal smoking and factors related to lower socioeconomic status, and an older age of the SUID death was associated with low birthweight, prematurity, and admission to the neonatal intensive care unit (NICU). However, if you correct age for gestation, these factors are also associated with a younger age of death. These data provide potential clues for future discoveries of physiological mechanisms underlying SUID death.

Perhaps even more importantly, last year we embarked on our most promising research effort to date: **building the first cloud-based genetic database dedicated to sudden infant death**. The ultimate vision is to establish prenatal testing for SIDS and all known diseases to act where possible prior to the birth of a child. This effort, built on our research and prior studies, shows there are likely genetic markers that can help us identify children at risk. It is another collaboration between Microsoft and Seattle Children's - and also funded by your donations - which promises to bring genetic data from around the world to researchers so they can analyze for anomalies and clues in genome sequences of babies lost to SIDS and SUID.

In September, we held our **third annual SIDS Research Summit**, bringing together over 75 of the top researchers in the field to present their work and discuss new areas of exploration. Attendees included medical researchers with expertise in genetics, pathology, biostatistics, and bioinformatics, as well as medical examiners, data scientists, neonatologists, and other health professionals and activists, from as far away as Norway and New Zealand. The event was so notable that an [editorial](#) about it was published in the journal, *Pediatric Annals*.

In October, we held the first **SIDS Dreamathon** to accelerate research into safe sleep. The goal was to both educate a broad range of parents and to accelerate Artificial Intelligence work by our data scientists. Over 500 people engaged online and in person. You can see more about this in my interview with [King5 news](#).

Finally, on the research front, on January 29th, Microsoft announced a new program called [AI for Health](#) and increased significantly its contribution of world class data scientists and technology to this unique partnership to solve SIDS and ultimately improve infant mortality world-wide. You can see more here about this announcement.

Over the last year we also took our case to lawmakers in the United States, lobbying for millions of dollars to support research into infant deaths, for better data collection, and to support parents impacted. Our Foundation, medical researchers from around the world, technology professionals and other nonprofits - including [Cribs for Kids](#) - made significant contributions to the lobbying effort. "[Scarlett's Sunshine Act](#)" named in honor of a child lost in 2016, just before her first birthday, has the bi-partisan support of 79 members of Congress, and just passed in the Senate as we speak. We are hopeful the U.S. House of Representatives passes this and it sent on to the President for his

signature by year end 2020. Please write your [lawmakers](#) and ask them to support the bill.