INTRODUCTION

This report is a summary of Franklin County sleep-related infant deaths occurring in 2017 and 2018. These deaths happen when infants, less than 1 year of age, die during sleep. Data for this report come from the Franklin County Child Fatality Review (CFR), an ongoing community planning process in which a team of community experts from various systems and agencies convenes to review the circumstances around the deaths of infants and children residing in Franklin County, Ohio. These data are collected from death scene investigations, medical records and vital statistics records. The information in this report provides an overview of the circumstances surrounding these deaths over the two-year period of 2017 to 2018.

From 2017 to 2018, there were 41 sleep-related infant deaths, many of which could have been prevented. These 41 deaths accounted for 14% of all infant deaths occurring during this period.

There are two main categories of sleep-related infant deaths:

- **Sudden Infant Death Syndrome (SIDS):** SIDS is defined as the sudden death of an infant that cannot be explained even after a full investigation that includes a complete autopsy, examination of the death scene, and review of the clinical history.

- **Other sleep-related infant deaths, also referred to as Sudden Unexplained Infant Deaths (SUIDs):** SUID is the death of an infant younger than 1 year of age that occurs suddenly and unexpectedly. Subgroups of SUID include accidental suffocation in bed, entrapment, overlay and undetermined.1

In Franklin County over the past decade, SIDS has become rare as a cause of infant death. This reflects a shift in the classification of sudden infant deaths by coroners/pathologists, as well as advancements in death scene investigations.

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RISK FACTORS

By identifying patterns and risk factors in sleep-related infant deaths, we are not placing blame on the caregivers of the infants. Instead, the goal is to recognize that there are many opportunities for communities to support and improve the lives of pregnant women, infants and their families in order to decrease preventable, sleep-related infant deaths in the future.

UNSAFE SLEEP ENVIRONMENTS

The American Academy of Pediatrics’ (AAP) guidelines for creating a safe sleep environment for infants state that babies should sleep Alone, on their Backs and in an empty, safety-approved Crib (ABCs of Safe Sleep). Babies can share a room with parents, but never the same sleep surface. Infants should never be placed to sleep on adult beds, couches, chairs or air mattresses.

Other best practices include:

- Avoiding smoke exposure as well as alcohol and illicit drug use during pregnancy and after birth.
- Keeping potential suffocation hazards, such as blankets, pillows, soft toys or bumper pads, out of the sleep area. Infants’ cribs should be completely empty except for a tight-fitted sheet.
- Breastfeeding or feeding expressed milk.

It is important for caregivers to follow all of the ABCs of Safe Sleep—not just one or two, to ensure infants are as safe as possible while sleeping. Columbus Public Health promotes these standards to parents, caregivers and health care professionals.

RECOMMENDATIONS TYPICALLY FOLLOWED

Sleep Position: “Back to Sleep” is being followed by most caregivers. The majority of caregivers (74%) placed their infant on his or her back.

RECOMMENDATIONS TYPICALLY NOT FOLLOWED

Sleeping Alone: Over half (59%) of the infants were sharing a sleep surface with at least one other person when they died.

Sleeping in an Empty Crib: The majority (80%) were sleeping somewhere other than a crib or bassinet when they died. Of the 20% that were sleeping in a crib or bassinet, 75% had blankets or pillows in the sleep environment.

Crib Availability: Of the 72% of infants who had a crib in the home, more than two-thirds were not sleeping in it at the time of death.

Don’t Smoke: Over half (59%) of infants were exposed to tobacco smoke, either prenatally or in the home environment (during pregnancy or after birth).

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RISK FACTORS, CONTINUED

UNSAFE SLEEP ENVIRONMENTS, CONTINUED

HOW MANY INFANTS WERE FOLLOWING THE ABCS OF SAFE SLEEP? (Alone, Back, Crib [Empty])

Only 5% of infants (n=2) who died in their sleep in 2017-2018 were following all of the ABCs of Safe Sleep. That means 95% of these babies were not alone, on their backs and in a crib that was empty when they died.

SMOKING AND SUBSTANCE USE

Smoking Status: Nine percent of births in Franklin County in 2017 to 2018 were to mothers who smoked cigarettes during pregnancy, yet among all sleep-related infant deaths, 45% of infants’ mothers smoked cigarettes during pregnancy.

Prenatal smoking is linked to preterm birth and low birthweight and is a major risk factor for sudden unexpected infant death. In addition to prenatal exposure, secondhand smoke exposure can lead to many health problems, including sudden unexpected infant death. Studies show that a substantial amount of sleep-related infant deaths could be prevented by eliminating all prenatal smoke exposure.

Substance Use: In recent years, marijuana use during pregnancy has increased as the perception of risk has decreased. Approximately 1 in 20 (5%) pregnant women report marijuana use during pregnancy. Locally, among sleep-related infant deaths, 40% of mothers used marijuana prenatally. More than 60% used one or more substance while pregnant, including tobacco, marijuana, alcohol, cocaine or opiates.

PRENATAL SUBSTANCE USE AMONG SLEEP-RELATED INFANT DEATHS, FRANKLIN COUNTY, 2017-2018 (N=40)

- Any Substance: 61.0%
- Smoking Tobacco: 45.0%
- Marijuana: 40.0%
- Alcohol: 15.0%
- Other Substance*: 12.5%

*Includes cocaine, opiates, medications to treat drug addiction, and benzodiazepine; no use of heroin, methamphetamine or other painkillers reported.

RISK FACTORS, CONTINUED

HOUSING

Inequitable access to quality, affordable housing and other housing challenges have been linked to infant mortality, including sleep-related infant deaths. Housing challenges and inequities can adversely affect infant health by contributing to toxic and persistent stress in pregnant women and disrupting prenatal care. Additionally, crowded living spaces, variations in room temperature and insect/rodent infestations are all contributing factors as to why infants may be placed to sleep in an unsafe place, whether or not a portable crib or other safe sleep environment may be available. Housing conditions can play a role in a parent’s decision to follow or not follow safe sleep guidelines. Parents may be using a crib for storage due to crowded living conditions, or want to keep the infant in the adult bed to stay warm due to a lack of heat, or to keep them safe from insects.

In Franklin County in 2017 to 2018, housing instability was noted in 43% of sleep-related infant deaths. This includes women who experienced unstable housing conditions during their pregnancy and/or after the infant was born.

PROTECTIVE FACTORS

BREASTFEEDING

Breastfeeding is proven to be beneficial for moms as well as babies. It can boost an infant’s immune system and reduce the risk of SIDS. The longer breastfeeding is exclusive (without the introduction of formula), the greater the protection. However, any breastfeeding is more protective against SIDS than no breastfeeding.

AAP and Columbus Public Health encourage parents to share a room with their infants, close to the parents’ bed, but on a separate sleep surface. Room sharing promotes breastfeeding and enhances convenience for comforting a fussy baby, but does not carry the suffocation risk of bed sharing. Infants who are brought into the parents’ bed for feeding or comforting should be returned to their own crib or bassinet before the parent is ready to rest.

The majority (75%) of infants that died due to a sleep-related cause had been breastfed for at least a short period of time; however, the data do not indicate breastfeeding exclusivity or duration.

8. Housing instability was determined by CFR through documentation from various sources including medical, court, law enforcement and social service records in which the women reported living in a shelter, couch surfing or were found to have a history of evictions during the pregnancy or after the infant was born, or otherwise stated that they experienced housing difficulties.
HOME VISITING

Increased infant home visiting participation has been one infant mortality reduction initiative gaining ground in the past few years. Franklin County has several home visiting services available for pregnant women and infants. Home visitors can help reduce infant mortality, including sleep-related deaths, by providing education and support to women and families, including:

- Conducting in-home health assessments for the infant and mother and helping them find a primary medical home.
- Providing lactation counseling and supporting breastfeeding.
- Assessing families for basic needs like access to food and safe and affordable housing.
- Referring families to social service programs as needed.
- Educating caregivers on the importance of infant safe sleep and providing them with a Pack ‘n Play® or Cribette® if needed.

Twenty-two percent of these infants’ mothers are known to have received home visiting services at some point during their pregnancy and/or after the baby’s birth.

ABOUT THE CAREGIVERS

EDUCATION AND AGE

Of the mothers who had a sleep-related infant death in 2017 to 2018, 88% of mothers were 20-39 years old and 68% had a high school degree or higher level of education.

PRENATAL CARE

Nearly all mothers (93%) received at least some prenatal care. However, 35% received inadequate prenatal care, which is characterized by the Kotelchuck Index as prenatal care that started after the fourth month of pregnancy, or receiving less than half of recommended visits.

FIRST GENERATION IMMIGRANTS

As there is a shift in the population in Franklin County that includes immigrants from many nations, we also see first-generation immigrants losing their infants to sleep-related deaths. From 2017 to 2018, 12% of infants who suffered sleep-related deaths had parents who are first-generation immigrants. Twenty-five percent of all births in Franklin County are to immigrant parents.

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12. Home visiting here is defined as mother receiving at least one home visit from a home visiting program for pregnant or parenting women.
ABOUT THE BABIES

HEALTH INSURANCE
Ninety percent of the infants who suffered a sleep-related death were Medicaid recipients.

SEX
Fifty-six percent (23 of 41) of sleep-related infant deaths were among infants who were male. Male babies make up 51% of all births in Franklin County.

AGE AT DEATH
Seventy-one percent (29 of 41) of sleep-related infant deaths were among infants who were 3 months old or younger. Nationally, SUID rates are highest in an infant’s first 6 months.15

ABOUT THE BABIES, CONTINUED

GESTATIONAL AGE
Most cases (88%) of sleep-related infant deaths were among infants who were born full-term (at least 37 weeks gestation). Twelve percent were preterm (<37 weeks gestation), including 2% very preterm (<32 weeks gestation). While national data indicate that preterm babies have a higher SUID rate, the majority of sleep-related infant deaths in our county were full-term infants.16

RACE & ETHNICITY
Sixty-eight percent of sleep-related infant deaths that occurred during 2017 to 2018 were among infants identified as non-Hispanic Black, though only 31% of all births in Franklin County were to non-Hispanic Black mothers.

From 2015 to 2018, non-Hispanic Black infants died from sleep-related infant deaths at a rate four times higher than non-Hispanic White infants.17

Infant mortality is a reliable indicator of the health of a community.18 The racial disparity in the infant mortality rate between Black babies and White babies illustrates the need to address the social determinants of health and improve equity across racial and ethnic groups.

DISPROPORTIONALITY OF SLEEP-RELATED INFANT DEATHS BY RACE/ETHNICITY, FRANKLIN COUNTY, 2015-2018

17. The time frame 2015-2018 was used in order to ensure that the non-Hispanic White rate was stable for comparison (to be stable, a rate should be based on a numerator of at least 20).
WHERE THEY LIVED

Some areas in Franklin County have more sleep-related infant deaths than others. As shown in the map below, the density of sleep-related infant deaths, which is the number of sleep-related infant deaths per square mile, ranges from 0 to 1.5. Areas along Interstates 70 and 71, considered the urban core, have a higher density of sleep-related infant deaths when compared to the rest of Franklin County.

In the 10-year period of 2009 through 2018, there were 232 sleep-related infant deaths in Franklin County. Two-thirds (155) of these deaths occurred among residents of a CelebrateOne priority area ZIP code. The table to the right lists ZIP codes with 10 or more sleep-related infant deaths during the last 10 years, as well as their designation as a CelebrateOne priority area. CelebrateOne priority areas are neighborhoods in Columbus where higher unemployment, lower graduation rates, homelessness, lack of access to nutritious food, higher instances of crime, and lower access to health coverage and timely access to prenatal care contribute to poor outcomes for infants.

2016-2018 SLEEP-RELATED INFANT DEATHS, FRANKLIN COUNTY (N=67)

<table>
<thead>
<tr>
<th>ZIP Code</th>
<th>Sleep-Related Infant Deaths</th>
<th>CelebrateOne Neighborhood</th>
</tr>
</thead>
<tbody>
<tr>
<td>43211</td>
<td>21</td>
<td>Linden</td>
</tr>
<tr>
<td>43204</td>
<td>18</td>
<td>Hilltop</td>
</tr>
<tr>
<td>43232</td>
<td>16</td>
<td>Southeast</td>
</tr>
<tr>
<td>43223</td>
<td>15</td>
<td>Franklinton</td>
</tr>
<tr>
<td>43224</td>
<td>15</td>
<td>Northland</td>
</tr>
<tr>
<td>43207</td>
<td>14</td>
<td>South Side</td>
</tr>
<tr>
<td>43219</td>
<td>11</td>
<td>Northeast</td>
</tr>
<tr>
<td>43228</td>
<td>11</td>
<td>Prairie Township (OEI)</td>
</tr>
<tr>
<td>43227</td>
<td>10</td>
<td>Southeast</td>
</tr>
</tbody>
</table>

*Please note that these ZIP codes are where the infants resided, not necessarily where the death occurred.

OEI=Ohio Equity Institute; in Franklin County, OEI areas consist of Reynoldsburg (43068), Whitehall (43213), and Prairie Township (43228), in addition to the traditional CelebrateOne neighborhoods.
RECOMMENDATIONS

DEATH SCENE INVESTIGATIONS

• Decrease number of unknown data points/improve data collection on the SUIDI form.
• Submit recommendations for investigation form (SUIDI form) to the Centers for Disease Control and Prevention (CDC).

ABCS OF SAFE SLEEP

• Promote and educate on AAP safe sleep recommendations and include diverse messaging such as:
  - Safe Sleep, Sober Caregiver.
  - Air mattresses are included in list of unsafe surfaces.
  - Share the room, not the bed.
  - Cribs are not for storage.
  - Attentive and appropriate infant supervision, including safe surfaces to place babies when they cannot be supervised.
• Mandate Safe Sleep Ambassador trainings for any professionals who work with families with infants such as nurses, home visitors, care coordinators, day care workers, etc.
  - Including Safe Sleep Ambassador training for care coordination through Ohio Medicaid Managed Care Plans.
• Get cribs into the hands of people who need them.
• Ensure infant has a car seat and a crib before discharge from birth hospital or NICU.

What we have done:

• Columbus Public Health and Franklin County Public Health (FCPH) incorporated education on the dangers of air mattresses into safe sleep education and educated home visiting nurses on this specific hazard.
• A total of 1,404 Safe Sleep Ambassadors were trained in 2017-2018.
• A total of 3,109 cribs were distributed by Columbus Public Health and partners in 2017-2018. FCPH partners with CPH to distribute Pack ‘n Plays® and Cribettes® through the Cribs for Kids program to families in need of a safe sleep space for their infant under the age of 1.
• Nationwide Children’s Hospital Safe Sleep Collaborative promotes AAP recommendations and ensures infants discharged from NICUs have cribs and car seats.

FATHERHOOD

• Develop and increase participation in programs that support fathers and work to increase fatherhood involvement in all aspects of family planning, pregnancy and child-rearing.
• Target safe sleep education materials to men/fathers.
• Invite fathers to attend all community events and programs aimed at pregnant women/infants.

What we have done:

• With leadership by the Ohio Commission on Fatherhood, partners such as the Columbus Urban League, OhioHealth’s Boot Camp for New Dads, Action for Children, and the My Baby & Me Program’s new Fatherhood Fundamentals initiative seek to engage fathers and enhance their skills related to parenting and self-sufficiency so they can be a positive and active presence in their child’s life.
• With Ohio Equity Institute funding from the Ohio Department of Health, CPH and CelebrateOne collaborated with the Ohio Commission on Fatherhood, the Columbus Urban League, Action for Children, and Turnkey Development Institute (Dads2B) to develop the Infant Vitality Toolkit for Men and Fathers. This toolkit includes information about infant safe sleep, tailored specifically for male audiences.
HOME VISITING

- Encourage participation by providing incentives for home visiting for pregnant women and new mothers.
- Increase referrals for home visiting for at-risk women including:
  - Women who test positive or endorse tobacco, alcohol or drug use at any time during their pregnancy.
  - Women who report housing instability during or after pregnancy.

**What we have done:**

- Columbus Public Health is working collaboratively with CelebrateOne and other community partners to increase the numbers of eligible women in Franklin County who receive home visiting services early and throughout their pregnancy and postpartum period. Columbus Public Health’s home visiting programs provide family-centered parent education, care coordination, outreach and support to pregnant women, parenting women and their young children up to age 3, who reside in Franklin County. Home visitors provide each home visiting participant with a safe sleep assessment, education on how to make sure an infant’s sleep environment is safe, and other resources as needed. Home visitors help clients link with services and supports such as perinatal care, well woman and pediatric primary care, smoking cessation programs like Baby and Me Tobacco Free, WIC, mental health services, and support with housing and transportation resources.

PRENATAL CARE & WOMEN’S HEALTH

- Offer more smoking cessation programs with incentives (includes cessation for tobacco and marijuana).
- Improve access to LARC (long-acting reversible contraceptives) for all women.
  - Including expanding access and knowledge of the program to women who abuse substances or are in treatment for substance abuse.
- Education/counseling on birth control options with OB/GYN at prenatal care visits and in hospital post-partum.
- Improve access to early prenatal care, and provide more incentives to women for accessing prenatal care.
- Create bridges between prenatal care and drug treatment programs.
- Expand/improve domestic violence screenings during well visits and prenatal care visits.
- Improve access to on-site interpreters during prenatal care visits and during delivery.
- Close healthcare systems gaps for pregnant women who are young, socially isolated or non-English speaking.
- Create diverse social support programs for pregnant women.
- Educate on safe-spacing between pregnancies.

**What we have done:**

- Columbus Public Health’s Baby & Me Tobacco Free Program provides individualized smoking cessation services to pregnant mothers. Education, support and free diapers are available during and after pregnancy. A total of 402 clients were served in 2017–2018.
- Columbus Public Health’s Women’s Clinic works with recovery centers to provide LARC to women who want them.
- The StepOne program is designed to get women into prenatal care early, provides resources for home visiting, and can help with Medicaid enrollment and transportation.
NEONATAL/PEDIATRICS

- Offer free infant CPR classes for parents and caregivers at prenatal appointments and prior to discharge from birth hospitals and NICUs.
- Ensure providers are up-to-date on knowledge of mandated reporter laws.
- Promote AAP Safe Sleep recommendations and discuss ways to calm a fussy baby.
- Create a “Crying Baby Hotline” to support parents who are overwhelmed.
- Infants should be seen by pediatricians regularly and should have their first well-visit scheduled before they are discharged from the birthing hospital.
- Mothers and fathers should both be encouraged to attend infant well-visits.

What we have done:
- CPH developed magnets to promote the national Crying Baby Helpline and are distributing them with Pack ‘n Plays® and Cribettes® in Columbus Public Health’s crib distribution program.

HOUSING

- Increase affordable and safe housing opportunities for pregnant women and families.
- Develop more support programs for pregnant women and families with infants who are at risk of eviction.

What we have done:
- CelebrateOne’s Healthy Beginnings at Home pilot study offered subsidized housing to 50 low-income pregnant women in unstable housing conditions.
APPENDIX

SUMMARY OF AMERICAN ACADEMY OF PEDIATRICS RECOMMENDATIONS

A-Level Recommendations
- Back to sleep for every sleep.
- Use a firm sleep surface.
- Breastfeeding is recommended.
- Room-sharing with the infant on a separate sleep surface is recommended.
- Keep soft objects and loose bedding away from the infant’s sleep area.
- Consider offering a pacifier at naptime and bedtime.
- Avoid smoke exposure during pregnancy and after birth.
- Avoid alcohol and illicit drug use during pregnancy and after birth.
- Avoid overheating.
- Pregnant women should seek and obtain regular prenatal care.
- Infants should be immunized in accordance with AAP and CDC recommendations.
- Do not use home cardiorespiratory monitors as a strategy to reduce the risk of SIDS.
- Health care providers, staff in newborn nurseries and NICUs, and child care providers should endorse and model the SIDS risk-reduction recommendations from birth.
- Media and manufacturers should follow safe sleep guidelines in their messaging and advertising.
- Continue the “Safe to Sleep” campaign, focusing on ways to reduce the risk of all sleep-related infant deaths, including SIDS, suffocation and other unintentional deaths.
- Pediatricians and other primary care providers should actively participate in this campaign.

B-Level Recommendations
- Avoid the use of commercial devices that are inconsistent with safe sleep recommendations.
- Supervised, awake tummy time is recommended to facilitate development and to minimize development of positional plagiocephaly.

C-Level Recommendations
- Continue research and surveillance on the risk factors, causes and pathophysiologic mechanisms of SIDS and other sleep-related infant deaths, with the ultimate goal of eliminating these deaths entirely.
- There is no evidence to recommend swaddling as a strategy to reduce the risk of SIDS.

The levels are based on the Strength-of-Recommendation Taxonomy (SORT) for the assignment of letter grades to each of its recommendations (A, B or C).

Level A: There is good-quality, patient-oriented evidence.

Level B: There is inconsistent or limited-quality, patient-oriented evidence.

Level C: The recommendation is based on consensus, disease-oriented evidence, usual practice, expert opinion or case series for studies of diagnosis, treatment, prevention or screening.

Note: “Patient-oriented evidence” measures outcomes that matter to patients: morbidity, mortality, symptom improvement, cost reduction, and quality of life. “Disease-oriented evidence” measures immediate, physiologic or surrogate end points that may or may not reflect improvements in patient outcomes (e.g., blood pressure, blood chemistry, physiologic function, pathologic findings). (CDC, Centers for Disease Control and Prevention.)