

Understanding Sleep-Related Infant Deaths

Sleep-related infant deaths include deaths caused by sudden infant death syndrome (SIDS), unintentional suffocation in bed and “undetermined” causes (please see green box, page 3). Since 2001, the number of sleep-related infant deaths in Illinois has remained constant, between 170 and 185 per year (Figure 1).

There is significant racial and geographic disparity in the rate of sleep-related infant deaths in Illinois. Figure 2 indicates the rate of death per 1000 live births by race and ethnicity in Illinois, Illinois outside of Cook County and Cook County. The rates in the figure combine three years of data (2003-05) to stabilize the estimates.

African American infants are far more likely to die from sleep-related causes than are White, Asian or Hispanic infants. In Cook County, **African American infants are 12 times more likely than White infants to die from sleep-related causes**; outside of Cook County, African American infants are twice as likely to die from sleep-related causes than are White infants.

White infants who reside outside of Cook County are four times more likely than White infants in Cook County to die from sleep-related

causes. Hispanic infants are about equally as likely to experience a sleep-related death regardless of where they live in Illinois.

Please see the Technical Notes on page 4 for an explanation of cases that are included in IVDRS. IVDRS does not review data for cases of unintentional suffocation in bed or Sudden Infant Death Syndrome (SIDS) — other sleep-related causes of infant death. We provide available data for these deaths for context and because most of these deaths involve unsafe sleep practices. All three causes of death (SIDS, unintentional suffocation in bed and undetermined causes) could be further prevented by public health efforts to promote safe infant sleep practices.

FIGURE 1: Number of sleep-related infant deaths in Illinois 2000-05

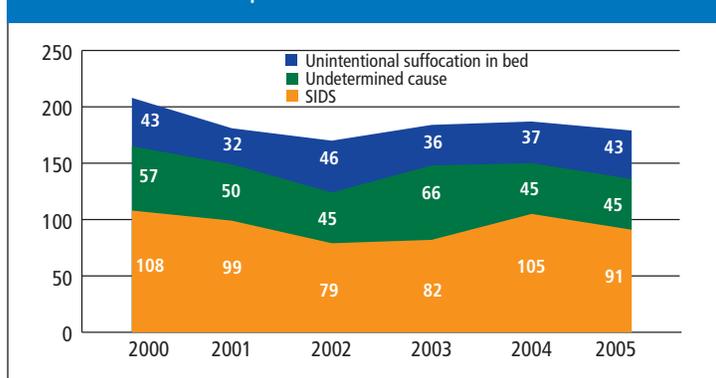
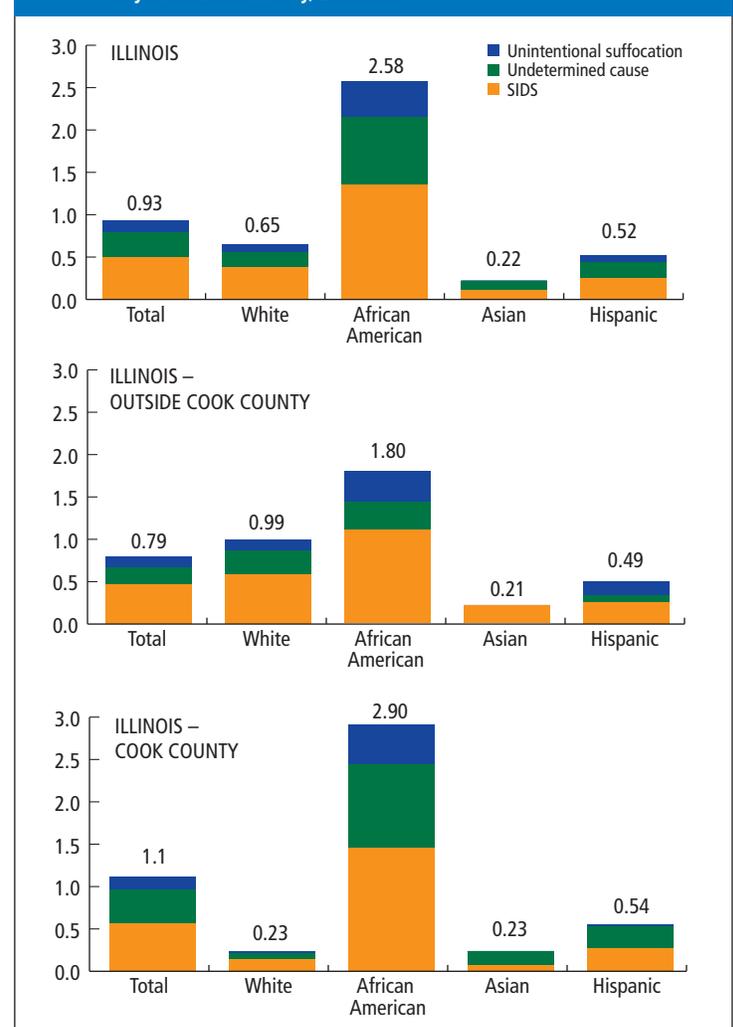


TABLE 1: Sleep-related infant deaths in Illinois and Cook County, 2005

	Illinois	Illinois, Outside of Cook County	Cook County
All (N)	156	69	87
Rate per 1,000 live births	0.87	0.69	1.11
SIDS (N)	86	35	51
Rate per 1,000 live births	0.48	0.35	0.65
Unintentional suffocation in bed (N)	25	20	11
Rate per 1,000 births	0.14	0.20	0.14
Undetermined cause (N)	45	14	25
Rate per 1,000 live births	0.25	0.14	0.32

FIGURE 2: Sleep-related infant deaths per 1,000 live births, by race and ethnicity, 2003-05



Cook County infant deaths of undetermined cause, 2005-07

Like unintentional suffocations in bed and SIDS deaths, the vast majority of undetermined infant deaths in Cook County are circumstanced by unsafe sleep practices. The analysis focuses on the 67 undetermined infant deaths where the infant died during sleep (two additional undetermined infant deaths did not involve sleep).

Table 2 details the sleep circumstances of the infants who died from undetermined causes. These data are gathered during the scene investigation by the Cook County Medical Examiner and from police reports when the scene investigation cannot be completed.

Of the 67 infants who died, 25 (37.4%) were put to sleep on their backs — the sleep position strongly recommended by the American Academy of Pediatrics. Fifty-two (77.6%) were not sleeping in a crib or bassinet at the time of death; 38 (56.7%) were sleeping with another family member (usually a parent).

The vast majority (92.8%) of the infants who die from undetermined causes were under six months of age, with most deaths occurring between 3 weeks and 4 months of age (Figure 4). The age range of infants who die from undetermined causes is very similar to the age range of infants who die from SIDS.

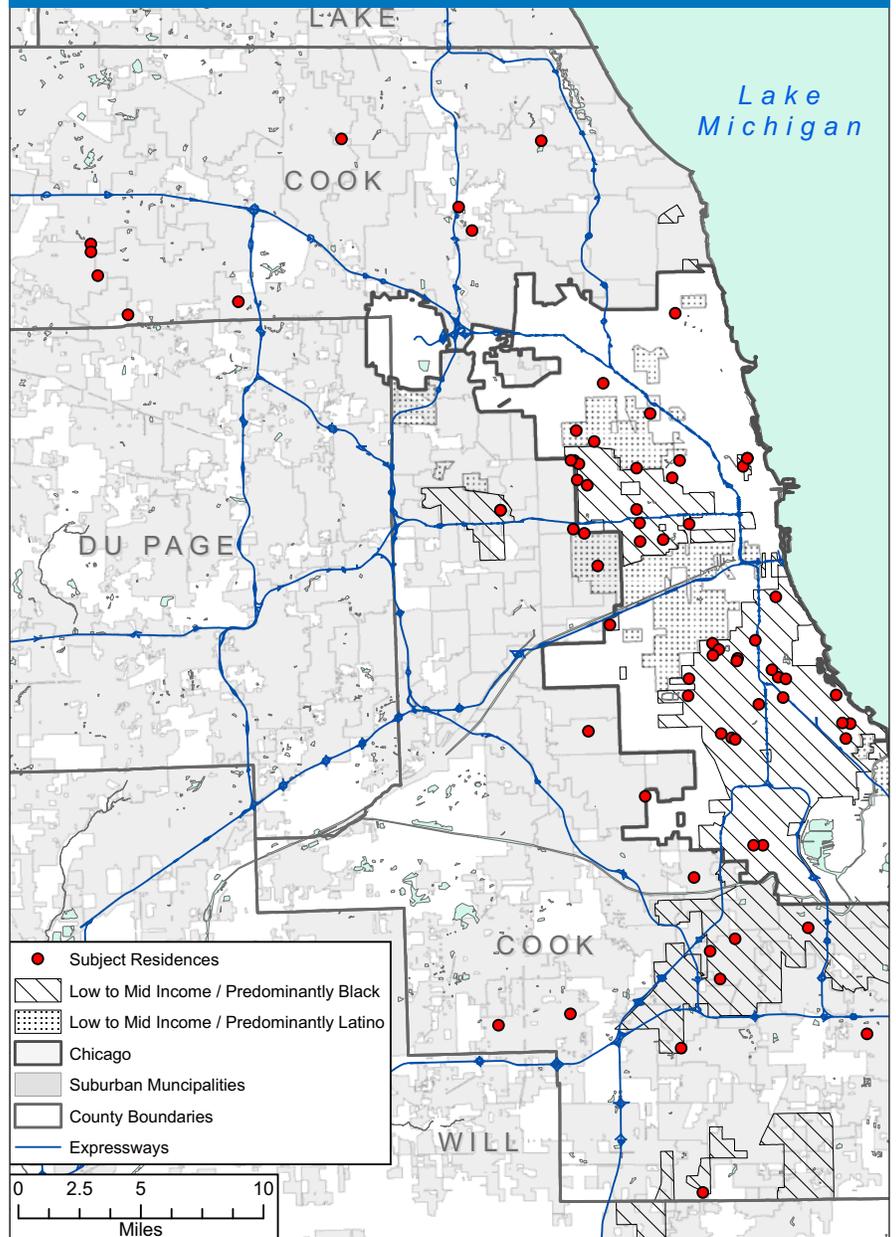
In addition to unsafe sleep practices, the infants who died from undetermined causes were exposed to risk factors that are associated with SIDS, or other high-risk situations. Table 3 lists these risk factors. Several infants (37.4%) had a chronic or acute medical condition that would not normally result in death (acute conditions included a low fever or a cold); 13 (18.8%) families had experienced another infant death; 19 (27.5%) had a caretaker (parent or caretaking grandparent) with DCFS involvement in the previous three years; and 42 (85.3%) had a smoker in the household.

The geographic dispersion of undetermined infant deaths in Chicago strongly suggests an association with race and low income (Figure 3). Forty-four (65.7%) occurred in the City of Chicago. Infant deaths are clustered in the middle portion of the south side and on the west side. In the suburbs, the deaths are roughly clustered in the Harvey/Dolton area, the Oak Park/Cicero area and the Streamwood and Des Plaines areas.

TABLE 2: Sleep circumstances of infants who died from "undetermined" causes in Cook County, 2005-07

		Number	Percent
Sleep-related		67	97.1
Placed on back (confirmed)	In crib or bassinet	5	7.5
	Not in crib	20	29.9
Not sleeping in crib/bassinet	Bed sharing	38	56.7
	Sleeping alone outside of a crib/bassinet	14	20.9

FIGURE 3: Map of residences in Cook County where undetermined infant deaths occurred, 2005-07



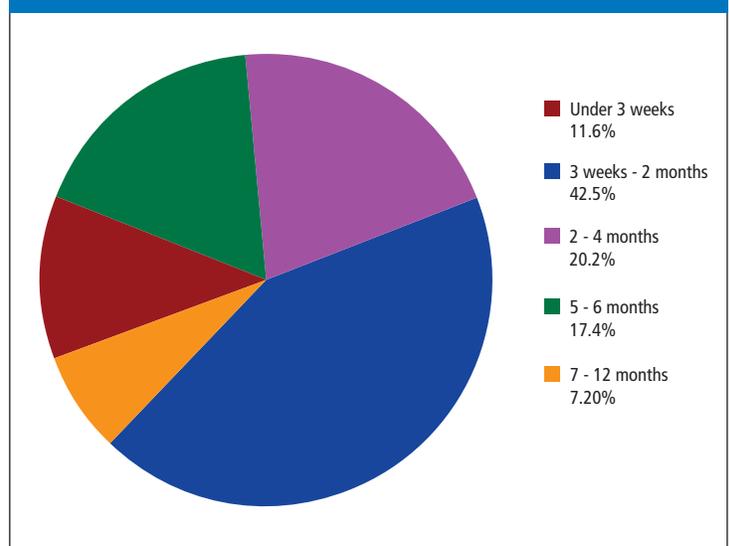
Map completed by Chicago State University Neighborhood Assistance Center, December 2009

African Americans in Cook County have an overall infant mortality rate (15.6 deaths per 1000 live births in 2003-05) approximately three times that of Whites (5.3 deaths per 1000 live births). Sleep-related infant causes account for almost 20% of the overall infant mortality rate for African Americans; for Whites, sleep-related causes account for fewer than 5% of deaths.

TABLE 3: Risk factors present in households of infants who died from undetermined causes in Cook County, 2005-07

Characteristic	Number	Percent
Premature (< 37 weeks)	14	20.3
Medical condition:		
Chronic	9	13.0
Acute	16	23.2
Adult in household with DCFS priors	19	27.5
Infant death of a sibling or near relative:		
SIDS	7	10.1
Other cause of death	6	8.7
Cigarette use:		
Mother during pregnancy	18	35.3
In household	24	50.0
Substance use during pregnancy	6	11.8
Domestic violence	5	8.5
Parent with criminal record	8	16.7
Parental substance use (not smoking)	4	8.7
Parent with psychiatric problem	5	10.9
Chaotic home/temporary living arrangements	6	12.5

FIGURE 4: Age of infants who died from undetermined causes in Cook County, 2005-07



The analysis presented in this Data Brief focuses on undetermined infant deaths occurring in Cook County, excluding two other counties that participate in IVDRS. Kane and Peoria counties have very small numbers of undetermined infant death, making comparison with Cook County impossible. Also, assigning the cause of death for these cases is extremely complex (see below) and appears to differ among jurisdictions in Illinois. The Cook County Medical Examiner uses the classification scheme recommended by the National Association of Medical Examiners and the American Academy of Pediatrics and thus helps us avoid the distraction of differing definitions.

CATEGORIZING SLEEP-RELATED INFANT DEATHS

Sudden Infant Death Syndrome (SIDS) has long been used to categorize sleep-related infant deaths where a cause cannot be pinpointed. Over the last two decades, public health efforts to change sleep practices (such as the Back to Sleep Campaign) have reduced the SIDS rate substantially. However, SIDS has been redefined to include a smaller group of cases over this period as well. Because the definition of SIDS has narrowed, more deaths are classified as “unintentional suffocation in bed” or having an “undetermined” cause. To address the inconsistent cause of death classifications, the CDC now recognizes the term Sudden Unexpected Infant Deaths (SUID) to include SIDS, unintentional suffocation in bed, deaths of undetermined cause and other causes (such as homicide and certain metabolic conditions). We look only at the SUID categories that have historically or that explicitly relate to sleep.

WHY ARE UNDETERMINED INFANT DEATHS NOT CLASSIFIED AS SIDS?

The undetermined infant deaths examined here share many circumstances with SIDS deaths. However, each has at least

one circumstance that automatically precludes them from being classified as SIDS. The classification scheme adopted by the National Association of Medical Examiners (and employed by the Cook County Medical Examiner) requires that the investigation into the death consider eleven factors before classifying a case as SIDS. The 11 factors are: 1) the death must be sleep-related, 2) the infant must be 21 days to nine months of age, 3) the infant must not have been born preterm, 4) the infant must have shown normal growth and development, 5) there should not be another infant in the family who died from SIDS, 6) the scene investigation cannot identify another cause, 7) the infant must be found in a safe sleep environment, 8) there should be no fatal pathology, 9) there should be no signs of trauma, 10) there should be no evidence of thymic stress, and 11) the toxicology findings should be negative.

Of our 67 undetermined cases, 19 failed to meet the SIDS classification because they did not meet one of the SIDS requirements, 23 did not meet two SIDS requirements, 21 did not meet three SIDS requirements, and four did not meet four or more SIDS requirements.

WHY ARE UNDETERMINED DEATHS NOT CONSIDERED SUFFOCATION DEATHS?

In order to classify a death as an unintentional suffocation, the scene investigator must be persuaded that suffocation occurred either by physical evidence present at the scene of death or by witness reports. For example, if a parent indicates that he or she may have “overlayed” an infant during sleep, the medical examiner would classify the death as unintentional suffocation. But in cases of undetermined cause, even though the parent may have shared a bed with the infant, parents report that they did not overlay the infant. When the medical examiner cannot determine a cause of death from witness accounts, physical evidence definitely or autopsy, the death is classified as undetermined.

Preventing sleep-related infant deaths

IN THE HOME: The American Academy of Pediatrics recommends that the following guidelines should be used when putting infants to sleep:

- Infants should be put to sleep on their backs.
- Infants should be placed in a safety-approved crib with a firm mattress and a fitted sheet.
- Never put an infant to sleep on a chair, sofa, water bed, cushion or sheepskin.
- The safest place for the infant to sleep is in the room where the caregiver sleeps, in the baby's own crib or bassinet (not sharing the adult's bed).
- Place the infant's crib/bassinet near the caretaker's bed (within an arm's reach) to make breastfeeding easier and assist in monitoring the baby.
- Blankets, if used, should be tucked in around the crib mattress. They should not reach any higher than the baby's chest. Sleep sacks or sleep clothing instead of a blanket will help to avoid the risk of overheating.
- Keep pillows, quilts, comforters, sheepskins and stuffed toys out of the baby's crib. They can cover the infant's face — even if she is lying on her back.

IN THE COMMUNITY: Many families cannot afford a crib or bassinet that is safe. To assure that every infant has a safe place to sleep, many

communities are beginning crib giveaway programs. SIDS of Illinois, Inc., is embarking on a pilot program to study the best way to offer cribs to low income families. SIDS of Illinois also provides other educational opportunities for communities; please see their website, sidsillinois.org. In addition, DCFS provides cribs and educates families receiving DCFS services if it is determined that the family does not have a crib or bassinet for an infant.

IN ILLINOIS: The funding for sleep-related infant death prevention efforts is limited. Investigations are not always completed so these deaths are not always fully understood.

- Unlike other states, the Illinois Child Death Review Team (CDRT) does not consistently review these deaths, and does not promote a public health agenda to prevent these deaths, because it is more narrowly focused on Department of Children and Family Services (DCFS) deaths. Adopting the recommendations of the American Academy of Pediatrics and the Centers for Disease Control and Prevention for CDRTs would assure that these deaths and other unexpected child deaths are investigated and that preventive efforts are put into place and evaluated.
- The SIDS/Infant Mortality Program of the Illinois Department of Public Health tracks sudden unexpected infant deaths, provides family bereavement services (through SIDS of Illinois, Inc.) and implements public health interventions to prevent sleep-related infant deaths. However, its resources are very limited and IDPH is not able to launch comprehensive prevention efforts.

For more information, see the websites for the American Academy of Pediatrics (aap.org), SIDS of Illinois, Inc. (sidsillinois.org) or the Illinois Department of Public Health SIDS/Infant Mortality Program (idph.state.il.us/sids).

HOW ARE THESE DEATHS INVESTIGATED?

One of the most troubling characteristics of cases of undetermined infant death is that many of them are not fully investigated. Despite repeated efforts by the Cook County Medical Examiner's Office, 33.3% of undetermined infant deaths studied did not have a scene investigation because the parents could not be contacted (Table 4).

Of those infants who did not get a scene investigation, eight involved a caregiver with prior Department of Children and Family Services (DCFS) involvement and three involved evidence of physical trauma.

In most states, the Child Fatality Review Team examines such cases (a) to assure the public that the death did not result from neglect or abuse and (b) to support the development of public health approaches to reducing infant deaths. The current review system in Illinois cannot capture all of the 23 cases that the Cook County Medical Examiner was not able to fully investigate.

The Illinois Child Death Review Team: In Illinois, the Child Death Review Team (CDRT) is charged with reviewing only the deaths of DCFS wards (regardless of cause), or deaths involving a caregiver who has had involvement with DCFS in the 12 months prior to the death. While this supports continuing quality improvement efforts for DCFS, the scope does not promote a broader, public health approach to preventing infant death for all Illinois children. The CDRT may choose to investigate other childhood deaths, and has begun investigating undetermined infant deaths in parts of Illinois.

TABLE 4: Undetermined infant deaths, no scene investigation, 2005-07

	Number	Percent
No scene investigation	23	33.3
Of those with no scene investigation:		
DCFS involvement	8	34.8
Evidence of trauma	3	13.0
Unsafe sleep situation	18	78.3
Reason for not being SIDS (besides no scene investigation)		
One other reason (mostly sleep environment)	8	34.8
Two or more other reasons (no pattern)	14	60.9

TECHNICAL NOTES

The Illinois Violent Death Reporting System (IVDRS) is a project of the Child Health Data Lab at Children's Memorial Hospital. It is based on the National Violent Death Reporting System (NVDRS). The project seeks to help researchers and policymakers determine the circumstances and risk factors associated with homicide, suicide and other violent deaths by linking timely data from multiple sources. In Illinois, we collect this information in Cook, Kane and Peoria counties. We gratefully acknowledge the assistance of our data-providing agencies including the Cook County Medical Examiner, the Kane and Peoria County Coroners, the Illinois Department of Public Health, and the Chicago Police Department. For additional information on NVDRS, see preventviolence.net.

What is a violent death?

The Centers for Disease Control and Prevention (CDC) establishes standards for all of the state-level Violent Death Reporting Systems, such as the one in Illinois. The CDC defines violent death as homicide, suicide, unintentional firearm death, death from legal intervention, death related to terrorism and death from undetermined causes.

- Cook County (which includes Chicago) is the source of the majority of IVDRS data; the data cannot be understood as representative of Illinois as a whole.
- All rates calculated for this newsletter are based on resident deaths. Rates are not computed for fewer than six cases. All data is accurate as of the date received and is subject to change due to ongoing investigations. Numbers will not always match as data is incomplete in some cases.
- Population data for IVDRS counties, including Chicago, from U.S. Census Bureau, American Community Survey (2005, 2006, and 2005-07 Estimates). Available from URL: <http://factfinder.census.gov>

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