Data
Statistics
Information
Graphs
Tables
Charts
Trends

Davidson County Child Death Report

Data for 2012

Metro Public Health Dept
Nashville/Davidson County
Protecting, **Improving**, and **Sustaining** Health

Davidson County Child Death Review Team Annual Report, Data for 2012
Author: Brook McKelvey, MPH, MA, Lead Author
Epidemiology Program
Metro Public Health Department of Nashville/Davidson County, TN

Leaders of the Child Death Review Team:
William Paul, MD, MPH, Team Chair
Director of Health
Metro Public Health Department of Nashville/Davidson County, TN

Adele Lewis, MD, Team Chair
Deputy Chief Medical Examiner
Metropolitan Nashville/Davidson County, TN

Carol Jones, BSHA, Team Staff Support
Bureau of Family, Youth, and Infant Health
Metro Public Health Department of Nashville/Davidson County, TN

Suggested Citation

McKelvey, B., Holley, A., Thomas-Trudo, S. & Rogers, B. (2014). Davidson County Child Death Review Team Annual Report, Data for 2012. Nashville, TN; Metro Public Health Department of Nashville/Davidson County.

Table of Contents

The Child Death Review Process

When a child dies:

- The birth and death certificates are sent from the Tennessee Department of Health (TDOH) to the Metro Public Health Department (MPHD) Child Death Review Team Coordinator. Deaths are put on the docket for review if they resided in Davidson County at the time of death, were aged 0 to 17 years, and did not die out of state. Infants are included if they were born on or after 22 weeks gestation, or were born at a weight greater than 500 grams. Copies of the birth and death records are sent to the team members.
- All team members search their agency or organization for applicable files and bring either the records or case summaries to team meetings. Available records are also requested from programs within MPHD.
- At the team's monthly meetings, each case is reviewed until a consensus is reached to close the case. A case remains under review (sometimes 2-3 months) until all information relating to the case is obtained and discussed. This information may include autopsy results, hospital medical records, school disciplinary records, investigation information provided by the police and the Department of Children's Services (DCS), and judicial information provided by the District Attorney and Juvenile Court.
- The team reviews available information and comes to a consensus on whether the child death was preventable. A preventable death is defined as one in which some action or actions of individuals or systems would have alleviated the circumstances that led to a specific child death.
- The TDOH data collection form is completed using the information obtained in the review process. The team coordinator enters the information into a statewide database managed by the National Center for the Review & Prevention of Child Deaths (NCRPCD).
- After all cases are reviewed for the calendar year, an annual report is produced. The purpose of the report is to share findings and assist in the development of data-driven recommendations for the prevention of child deaths.

Preface

The Davidson County Child Death Review Team (CDRT) reviewed eighty-four infant and child deaths (ages 0 to 17) for the calendar year 2012, to better understand how and why these children died. Case review for children who died during the 2012 calendar year began in April 2012 and ended in January 2014. The CDRT is empowered by State statute (T.C.A. 68-42-101) and Mayoral Executive Order to conduct reviews to achieve the following goals:

1. Assure an accurate inventory of child fatalities by age, location, cause, manner, and circumstance.
2. Support adequate child death investigation.
3. Enable multi-agency collaboration, cooperation, and communication at the state and local levels regarding child fatalities.
4. Analyze patterns and trends in child deaths from all causes, including abuse and neglect, unsafe sleep environment, and inadequate medical care or public health services.
5. Enhance the general awareness of child death through the understanding of why and how children die.
6. Develop community prevention initiatives from the findings of the child death review team.

This report presents the key findings and recommendations from the CDRT, designed to help prevent future deaths of children in Davidson County.

Recommendations and Actions

Each year, based on the results of child death investigations, the CDRT makes recommendations for policy, infrastructure, and service changes in an effort to prevent future childhood mortality. Recommendations are forwarded to the TDOH State Child Fatality Team where they are consolidated with recommendations from other teams across the State. These recommendations fuel legislative, programmatic, and policy agendas for the State of Tennessee. When recommendations are applicable to the local level, the Davidson County CDRT takes a role in the implementation either through direct interaction with the agencies and organizations involved, or through facilitating contacts and partnerships with appropriate community groups. The Davidson County CDRT made the following recommendations based on review of 2012 cases:

1. If there is a positive maternal drug screen, a referral to DCS should be made if there are living siblings in the mother's care. If the baby is born positive for drugs, a report should be made to the police regardless of the viability of the child.

2. In cases in which CPR is performed on an infant, providers and investigators should record who performed CPR and whether a one-handed or two-handed technique was used. Implementation of this practice may prevent erroneous investigation and/or accusation of child abuse in cases in which nondisplaced, minimally hemorrhagic rib fractures are found.

3. Service providers need to be educated on the potentially significant effects of domestic violence in the home on children. The needs of those children should be adequately met by ensuring services are available, and that situations are investigated by an appropriate entity. To that end, we recommend that if police respond to a domestic violence report and there are children in the home, they make a referral to DCS.

4. In order to facilitate better communication between agencies that investigate and prosecute cases of child abuse, the CDRT recommends that in addition to both the police and the office of the District Attorney attending review team meetings, that a representative from the Child Protective Investigative Team (CPIT) also be present.

   Action: As of the writing of this report, the CDRT in Davidson County has acquired representation from CPIT on the team.

Recommendations and Actions, continued

5. The Medical Examiner's Office should create internal guidelines and policies to ensure that consistent criteria and language are used when evaluating deaths that occur in unsafe sleep environments.

   Action: At the recommendation of the CDRT, the Metropolitan Nashville/Davidson County Medical Examiner's Office developed internal guidelines and policies for the use of uniform criteria and language when evaluating deaths that occur in unsafe sleep environments. This has allowed for more consistent data collection and review.

6. The CDRT recognizes the value of home visiting programs and recommends an expansion of visitation to include non-custodial parents and caregivers, including any seniors involved with the care of the child in order to provide safe sleep education.

7. The CDRT recommends the incorporation of a safe sleep component into the health and wellness curriculum in schools.

8. The CDRT recommends the incorporation of mental health services into home visiting programs.

Executive Summary

The CDRT reviewed the deaths of eighty-four children who died in 2012.

Demographics

- 57 deaths (67.9%) occurred among children less than 1 year of age.
- 9 deaths (10.7%) occurred among children aged 1 to 4 years.
- 6 deaths (7.1%) occurred among children aged 5 to 9 years.
- 4 deaths (4.8%) occurred among children aged 10 to 14 years.
- 8 deaths (9.5%) occurred among children aged 15 to 17 years.
- 2 deaths (2.4%) occurred among Asians.
- 9 deaths (10.7%) occurred among Hispanics.
- 39 deaths (46.4%) occurred among non-Hispanic blacks.
- 34 deaths (40.5%) occurred among non-Hispanic whites.
- 48 deaths (57.1%) occurred among males.

Manner of Death

- 52 deaths (61.9%) were due to natural causes.
- 15 deaths (17.9%) were due to undetermined[a] causes.
- 10 deaths (11.9%) were due to unintentional injuries.
- 6 deaths (7.1%) were due to homicide.
- 1 death (1.2%) was due to suicide.

67.9% of child deaths occurred to children less than one year of age and 46.4% of deaths occurred to non-Hispanic black children.

[a] Undetermined deaths are defined as "any death for which manner is unknown after extensive autopsy and crime scene investigation". In 2012, 14 of 17 sleep-related deaths were catagorized as undetermined. Changes in classification of SIDS deaths have increased the number of deaths marked undetermined. A specific section on sleep-related deaths is included in this report.

Preventability of Deaths

For 2012, twenty-nine deaths (34.5%) were judged to have been preventable, and in three deaths (3.6%), preventability could not be determined.

- 12 (80%) undetermined deaths were judged as preventable.
- 9 (90%) deaths due to unintentional injuries were judged as preventable.
- 7 (100%) homicide and suicide cases were judged as preventable.
- 1 (1.9%) death due to natural causes was judged as preventable.

Factors that Hindered Review or Resulted in Specific Action

- Inaccurate or incomplete death/birth certificates hindered case review in 14 (16.7%) cases.
- The CDRT disagreed with the official manner of death in 7 (8.3%) cases, and disagreed with the official cause of death in 4 (4.8%) cases.
- In 1 (1.2%) case, review was hindered by a lack of communication between agencies.
- Information was needed from another state in 1 (1.2%) case.
- Official manner or cause was changed because of the case review in 3 (3.6%) cases.
- Review led to additional investigation in 2 (2.4%) cases.
- Review led to the delivery of services in 1 (1.2%) case, and changes in agency policies or practices in 2 (2.4%) cases.
- Action was taken by the Department of Children's Services (DCS) as a result of the death in 8 (9.5%) cases.

100% of homicide and suicide cases, 90% of unintentional injury deaths, and 80% of undetermined deaths were judged as preventable.

Note on Interpretation

It is important to note that the data presented in this report are compiled from many different sources, and may not be representative of the characteristics of children in Davidson County as a whole. Additionally, since details emerge from a variety of sources on each death, errors in the data are more readily identified. For this reason, the data presented in this report might differ from data published from other standalone sources, such as vital records. For example, an analysis of prenatal care based on information from vital records and medical records could differ from an analysis of prenatal care from vital records alone.

Death is the final outcome of a continuum of circumstances, and the data collected by the CDRT represents this extreme. Therefore, caution should be used when extrapolating these results to the general population. However, the data collected by the CDRT clearly illustrates areas where the systems, policies, and practices of a community fail to adequately protect children. As such, this information provides a valuable tool to promote and advocate for systems change.

Demographics and Spatial Analysis

Demographics

The population in Davidson County, according to the 2012 census estimates, was nearly 650,000, of which 21.9% were under the age of 18. The racial and ethnic composition of the population was mostly White (65.8%) and Black (28.1%), with a growing percentage of Hispanic residents (9.9%)[1]. There were 9,721 births in Davidson County in 2012 (birth rate: 15.0 per 1,000 population), 9.2% of which were born weighing less than 2500 grams (low birth weight).

Five-year census estimates (2008-2012) indicate that among persons under the age of 18, 29.2% subsisted on an income below the federal poverty level[2]. Among family households, 24.8% contain children under the age of 18, and 42.2% of grandparents living with their grandchildren are the primary caretakers[3].

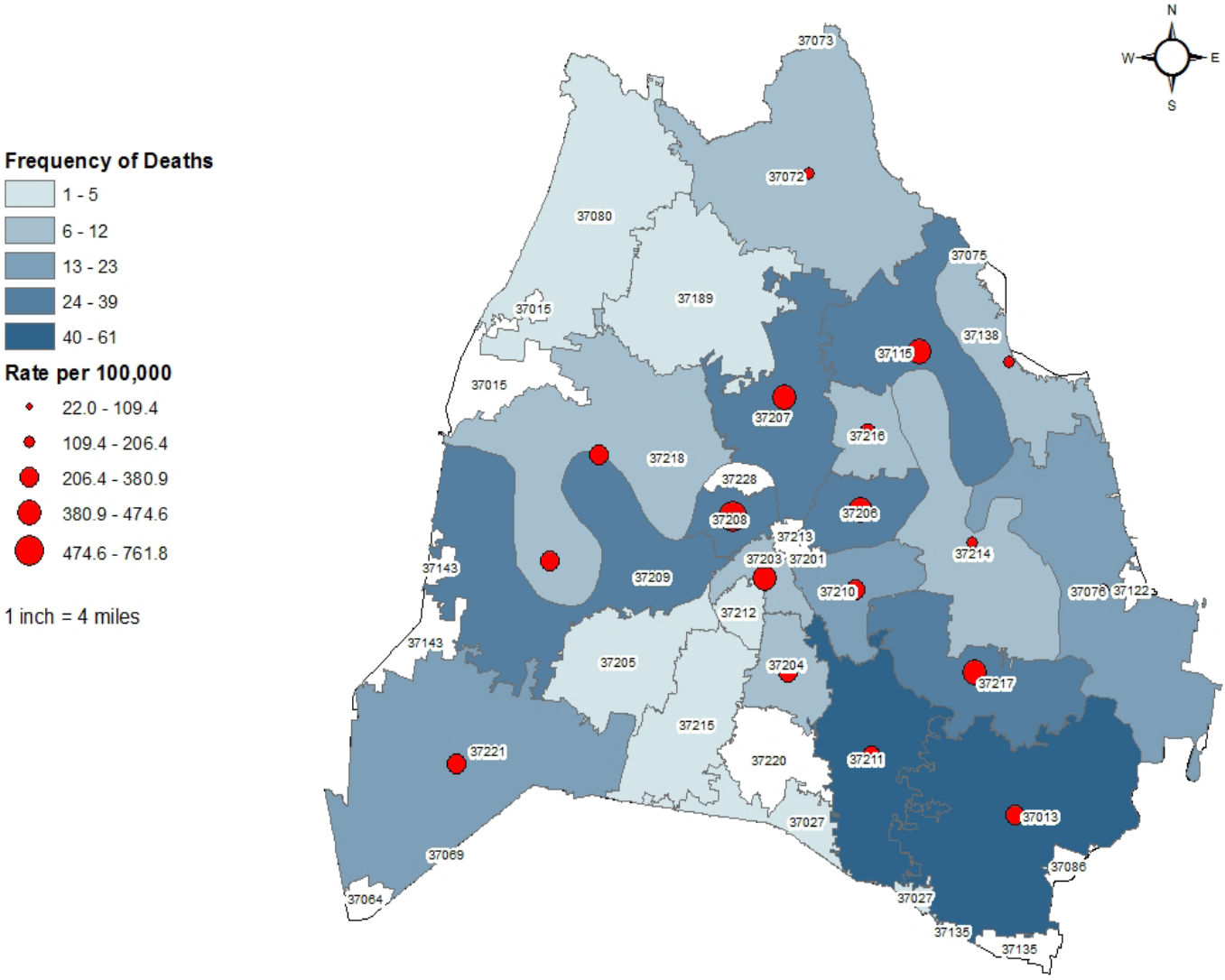
Spatial Analysis

Figure 1 depicts the distribution and rates of the reviewed infant and child deaths that occurred between 2008 and 2012 by zip code (442 deaths). The zip codes with the greatest number of deaths were located in the southeast of the county (37211 and 37013). A wide band of deaths also occurred from the southwest through the center of the county and extended into the northeast (37209, 37208, 37207, 37206, 37115). According to the Census Bureau estimates for 2008 through 2012, the areas with the highest number of child deaths correspond to the zip codes with the highest percentage of families living below the povery level ranging from 10.3% in zip code 37013 to 39.7% in zip code 37208. In stark contrast is zip code 37215, which had between 1 and 5 total child deaths for the 5-year period and 1.6% of families living below the poverty level[4].

The mortality rate (deaths per 100,000) in each zip code of children aged 0 to 17 years is also depicted in Figure 1. The zip codes with the highest mortality rates were 37208 (761.8), 37115 (474.6), and 37206 (474).

It is important to note that rates calculated with small numbers can appear artifically inflated. For this reason, mortality rates were not mapped when the number of deaths in the zip was 5 or less. Additionally, it is important to note that there are some zip codes that are not fully contained within the county line. As the CDRT only reviews deaths among resident children, the rates and frequencies present for some zip codes along the county border represent only the Davidson County portion of the area. Lastly, there were some zip codes for which no deaths were recorded during the 5-year period. These areas are indicated in white.

Figure 1: Child Deaths by Zip Code According to Resident Address at the time of Death, Davidson County, TN, 2008-2012



Infant Mortality in Davidson County[b]

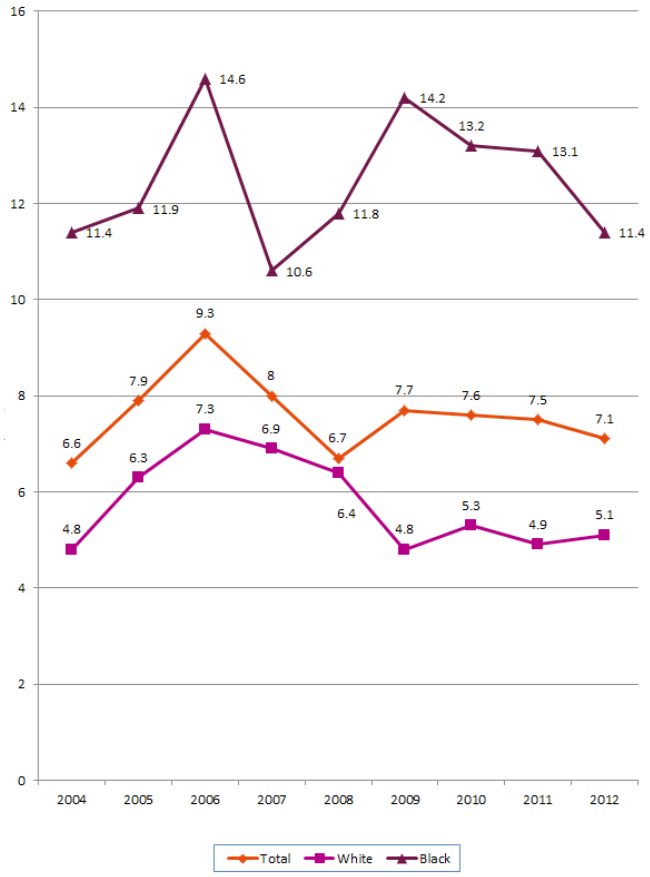
Infant and child mortality are important indicators of the health of a nation and are associated with several factors such as access to health care, maternal health, and socioeconomic status[5]. Nationally, neither the infant nor child mortality rates differed significantly in 2011 from 2010, though older age groups did experience modest declines[6].

On average in Davidson County, infant deaths comprise sixty percent or more of the total number of child deaths. Fifteen to twenty percent of child deaths each year do not meet the CDRT review inclusion criteria[c]. This section presents data on the total number of infants and children residing in Davidson County who died in 2012 (regardless of case review) to provide the most accurate picture of the magnitude of infant and child mortality (Figure 2).

- In 2012, the infant mortality rate in Davidson County was 7.1 deaths per 1,000 live births, a 5.3% decrease from the rate in 2011 (7.5).
- The White infant mortality rate in 2012 was 5.1 deaths per 1,000 live births, and the Black rate was 11.4. The Black infant mortality rate was 2.2 times higher than the White rate.
- The White infant mortality rate in 2012 was 6.3% higher than the White rate in 2004. The Black infant mortality rate in 2012 was the same as the Black rate in 2004.

Nationally, infant mortality has demonstrated a modest but steady decline since 2005. The declines were greatest for non-Hispanic black women (16%), and though the highest infant mortality rates are in Southern states, most of the South has experienced significant declines[7]. Davidson County does not share in the overall reduction of infant mortality. Not only are the Black rates the same as they were in 2004, but the White rate has increased. This means that any reduction of the disparity between Black and White rates is the result of a small but gradual increase in the White infant mortality rate as opposed to reductions across all groups. This deviation from the national trend illustrates the need for continuing vigilance through review in order to identify the issues and find ways to resolve them.

Figure 2: Infant Mortality by Race, Davidson County, TN, 2004-2012



[b]2012 data were not available locally for analysis. Infant mortality rates were taken from the Tennessee Department of Health (TDOH) website. TDOH only reports data by race; therefore, Hispanic ethnicity is not presented.

[c]Deaths that occurred out of state, and infants that were born before 22 weeks of gestation, or weigh less than 500 grams were excluded from review.

Child Mortality in Davidson County

At the writing of this report, the 2012 mortality data were not available locally for analysis. Mortality rates for children aged 1 to 17 are not regularly published by TDOH. Child mortality rates were not available from the TDOH. For this reason, Davidson County mortality rates for children age 1 to 17 are not included in this report.

Age-Specific Mortality

Age is one of the most important factors to consider when describing the occurrence of any disease or illness[5]. In the United States, mortality rates are highest among children less than one year of age followed by those aged 15 to 17 years. Mortality rates are lowest among children aged 5 to 9. Nationally, the overall leading cause of death among children is unintentional injuries while the leading causes of death among infants are congenital anomalies (birth defects), disorders related to short gestation, low birth weight, and SIDS[6]. Key risk factors for these leading causes of death include maternal smoking and placing the infant in unsafe sleeping environments[7].

Nationally, the overall leading cause of death among children is unintentional injuries while the leading cause of death among infants is congenital anomalies (birth defects), disorders related to short gestation, low birth weight, and SIDS.

Infant Deaths

The CDRT in Davidson County reviewed eighty-four deaths that occurred in 2012. Fifty-seven (67.9%) of the cases reviewed were of children less than 1 year of age. The leading causes of death for infants were as follows: eighteen deaths (31.6%) resulted from prematurity, fourteen deaths (24.6%) resulted from birth defects, and seven deaths (12.3%) resulted from asphyxia.

Demographics, Manner of Death, and Risk Factors among Infants (Tables 1 & 4)

Demographics

- 1 (1.8%) was Asian.
- 6 (10.5%) were Hispanic.
- 30 (52.6%) were non-Hispanic black.
- 20 (35.1%) were non-Hispanic white.
- 30 (52.6%) were male.

Manner of Death

- 1 death: homicide
- 38 deaths: natural
- 14 deaths: undetermined
- 4 deaths: unintentional injury

Risk Factors[d]

- 37 (64.9%) were low birth weight (less than 2500 grams).
- 32 (56.1%) were premature (less than thirty-seven weeks gestation).
- 14 (24.6%) experienced intrauterine tobacco exposure.

Child Deaths

Demographics and manner of death of the remaining twenty-seven reviewed deaths are as follows (Table 1):

9 deaths (10.7% of total) occurred to children aged 1 to 4:

Demographics

- 1 death: non-Hispanic black
- 8 deaths: non-Hispanic white
- 5 deaths: male

Manner of Death

- 1 death: homicide
- 5 deaths: natural
- 2 deaths: unintentional injury
- 1 death: undetermined

6 deaths (7.1% of total) occurred to children aged 5 to 9:

Demographics

- 3 deaths: non-Hispanic black
- 3 deaths: non-Hispanic white
- 4 deaths: male

Manner of Death

- 5 deaths: natural
- 1 death: unintentional injury

4 deaths (4.8% of total) occurred to children aged 10 to 14:

Demographics

- 1 death: Asian
- 1 death: Hispanic
- 2 deaths: non-Hispanic black
- 2 deaths: male

Manner of Death

- 1 death: homicide
- 2 deaths: natural
- 1 death: unintentional injury

8 deaths (9.5% of total) occurred to children aged 15 to 17:

Demographics

- 2 deaths: Hispanic
- 3 deaths: non-Hispanic black
- 3 deaths: non-Hispanic white
- 7 deaths: male

Manner of Death

- 3 deaths: homicide
- 2 deaths: natural
- 1 death: suicide
- 2 deaths: unintentional injury

[d]Risk factors related to unsafe sleep are discussed in a later section in this report.

Deaths Due to Natural Causes

Nationally, deaths from natural causes are the leading cause of death in children under one and the second leading cause of death to children over one year of age, following unintentional injuries. These deaths generally result from common health conditions such as prematurity, birth defects, genetic disorders and cancers. Although many health conditions that contribute to natural deaths are not preventable, case review provides quality assurance that medical and public health practices are working properly to ensure these children have the best chance for survival. Such practices include preconception health, genetic counseling and screening, preconception health, decreasing exposure to environmental hazards, and increasing compliance with treatment regimens[8].

A total of fifty-two deaths reviewed by the CDRT were due to natural causes, representing 61.9% of the reviewed child deaths. (Table 1)

A total of fifty-two deaths reviewed by the CDRT were due to natural causes, representing 61.9% of the reviewed child deaths.

Demographics

- 38 deaths (73.1%) occurred to infants.
- 5 deaths (9.6%) occurred to children aged 1 to 4.
- 5 deaths (9.6%) occurred to children aged 5 to 9.
- 2 deaths (3.8%) occurred to children aged 10 to 14.
- 2 deaths (3.8%) occurred to children aged 15 to 17.
- 2 children (3.8%) were Asian.
- 5 children (9.6%) were Hispanic.
- 20 children (38.5%) were non-Hispanic black.
- 25 children (48.1%) were non-Hispanic white.
- 29 children (55.8%) were male.

Causes of Death

In the United States, one in every eight babies (more than half a million) is born prematurely[9] and approximately one in every thirty-three babies is born with a birth defect[10]. Reflective of national trends, in Davidson County, prematurity and birth defects are the leading causes of natural deaths with most of these deaths occurring among infants. Many gaps exist in understanding why some women experience premature labor and why some babies are born with a birth defect; however, there are several known risk factors. These include having a previous preterm birth, maternal medical conditions such as hypertension, diabetes, and smoking/substance abuse, genetic pre-disposition, and maternal age. Early access to quality preconception and prenatal care, and the daily consumption of folic acid can reduce the likelihood of pre-term births and birth defects[9,10].

- 21 deaths (40.4%) were due to prematurity. Of these:
    - 16 (76.2%) had prenatal care, and 1 (4.8%) had no prenatal care.
    - In 14 (66.7%) cases, the mother had a medical condition during pregnancy.
    - 4 (19%) were exposed to tobacco or drugs during pregnancy.
- 15 deaths (28.8%) were due to birth defects. Of these:
    - 13 (86.7%) had prenatal care, and prenatal care status was unknown in 2 (13.3%) cases.
    - In 7 (46.7%) cases, the mother had a medical condition during pregnancy.
    - 1 (6.7%) was exposed to tobacco or drugs during pregnancy.
- 8 deaths (15.4%) were due to a medical condition (such as cerebral palsy, seizure disorders, hemorrhage).
- 4 deaths (7.7%) were due to cancer.
- 4 deaths (7.7%) were due to perinatal conditions (any medical condition that occurred between three months before birth and twenty eight days after birth).
- 1 death (1.9%) was due to a parvovirus infection.

Deaths Due to Sleep-Related Factors

Annually, more than 4,000 infants die suddenly and unexpectedly in the United States, without a prior known illness or injury[11]. These sudden unexpected infant deaths (SUID) can be from a variety of causes, including accidental suffocation, sudden infant death syndrome (SIDS), or may remain undetermined. The classification of SIDS is only declared after a rigorous autopsy, death scene investigation, and review of an infant's clinical history. It is a diagnosis of exclusion. With advances in death scene investigations and a growing recognition that many of the deaths previously thought unpreventable might have modifiable risk factors associated with them, the diagnosis of SIDS has declined[12]. The most important modifiable risk factor for SUIDs is the sleep environment of the infant[11].

Seventeen deaths reviewed by the CDRT were determined to be sleep-related, representing 20.2% of the total deaths. Of these: seven deaths were due to asphyxia (suffocation), and the remaining ten deaths were due to other causes, including unknown causes and deaths where it was undetermined if the death resulted from a medical or injury cause.

Demographics

- 16 deaths (94.1%) occurred to children less than 1 year of age.
- 1 death (5.9%) occurred to a Hispanic.
- 12 deaths (70.6%) occurred to non-Hispanic blacks.
- 4 deaths (23.5%) occurred to non-Hispanic whites.
- 11 deaths (64.7%) occurred among male children.

Risk factors (Table 5)

- 15 children (88.2%) were not placed to sleep in a crib or bassinette.
- 12 children (70.6%) were sleeping with other people.
- 11 children (64.7%) were not sleeping on their back.
- 6 children (35.3%) were premature.
- 5 children (29.4%) were placed to sleep on unsafe bedding or with toys.
- In 4 cases (23.5%) there was no crib in the home.
- 4 children (23.5%) were exposed to second-hand smoke.
- In 2 cases (11.8%) an adult was alcohol or drug impaired at the time of the incident.

Circumstances

- 5 children (29.4%) were found pressed or wedged into or between objects (such as mattress, pillows) or between people.
- 4 children (23.5%) were found on top of a person or object (such as blankets, pillows, comforters).
- 2 children (11.8%) were found under a person or object (such as blankets, towels, stuffed toys).
- The circumstances were unknown in 6 deaths (35.3%).

Deaths Due to Unintentional Injuries

Nationally, unintentional injuries are the leading cause of death among people aged 1 to 19, and are the fifth leading cause of death among infants[13]. Further, for every child death from an unintentional injury, there are 1,000 nonfatal injuries that require treatment or medical consultation. It is estimated that child and adolescent unintentional injuries that result in death, hospitalization, or emergency room visits cost $11.5 billion in medical expenses[13]. These injuries are preventable and represent the most effective way for a community to reduce its mortality rates.

In 2012, there were ten infant and child deaths due to unintentional injury, representing 11.9% of the total deaths. The greatest number of deaths occurred among infants (4, 40%), females (6, 60%), and non-Hispanic whites (5, 50%). The leading cause of unintentional injury was motor vehicle crashes, representing 4.8% of the total deaths and 40% of deaths due to unintentional injuries. Additional deaths due to unintentional injuries were caused by drowning (2, 20%), suffocation (3, 30%), and exposure (1, 10%) (Table 7). The circumstances are below:

Motor Vehicle Crash

The child was a pedestrian in two deaths, a passenger in one death, and the driver in one death. The child was backed over in two incidents, and the vehicle rolled over the child in one incident. Speeding was indicated in one incident, and driver distraction was cited in one incident. Weather conditions were normal in all incidents. Seatbelts were present and used incorrectly in one incident, and not used in one incident. In two incidents, a child seat or a booster seat was present and used incorrectly.

Drowning

One incident occurred in a pool, and the other occurred in a recreational lake. No flotation device was used in one incident. In both instances someone on the scene attempted rescue, and in one of those incidents the rescuer was another child.

Suffocation

All three incidents of suffocation were sleep-related.

Exposure

A child was left in a vehicle for almost eight hours during the summer. No malicious intent was uncovered during the investigation.

Deaths Due to Violence

Estimates indicate that 55,000 people in the United States die from injuries related to violence each year[14]. Deaths due to violence include weapons such as firearms, knives and other instruments, brutal force such as a physical fight, and suffocation (Table 9). Both homicides and suicides are counted as violence-related deaths, and the CDRT considers them to be preventable. In Davidson County, a total of seven child deaths were the result of violence, representing 8.3% of the total deaths in 2012. Four deaths (57.1%) occurred in children aged 15 to 17, and one death (14.3%) each occurred in children less than one year old, aged 1 to 4 years, and aged 10 to 14 years. Violence-related deaths occurred to non-Hispanic black children more frequently (5, 71.4%) than other racial/ethnic groups.

Suicides

Nationally, suicide is the third leading cause of death among persons aged 10 to 14 and 15 to 19 years[14]. The three leading methods of suicide deaths include firearms, suffocations, and poisoning. Males are more likely than females to die from suicide, but females are more likely to report suicide attempts. Risk factors for suicide include previous attempts, alcohol or drug abuse, a history of mental illness, and exposure to the suicidal behavior of others[15].

There was one death due to suicide, representing 14.3% of deaths due to violence and 1.2% of the total deaths. (Table 9)

Circumstances

The death resulted from manual strangulation with a ligature. The victim had a history of previous attempts and had received mental health treatment in the past. The precipitating events were the ending of a romantic relationship and bullying at school. A note was left, and the death did involve the internet and social media.

Homicides

Nationally, homicide is the second leading cause of death among persons aged 15 to 19 years, the third leading cause of death for persons aged 1 to 4 years and the fourth leading cause of death for persons aged 5 to 9 and 10 to 14. Rates of homicide deaths among youth are highest among non-Hispanic black males, and can be precipitated by a variety of factors including poverty, mental health issues, drug or gang activity, and relationship problems[14].

In Davidson County, six deaths were due to homicide, representing 85.7% of deaths due to violence and 7.1% of the total deaths (Table 9).

Circumstances

Three deaths involved a firearm, one death involved a sharp instrument, and two deaths involved people using their body parts as weapons. Three deaths were caused by relatives. Two deaths were caused by acquaintances of the child, and in one death the perpetrator was unknown. All six instances occurred during the commission of a crime. One child was a bystander that got caught in the crossfire, two deaths involved gang activity, and one death occurred as part of a triple homicide. Two victims had been in the foster care system, and one victim had a sibling who had been in the foster care system. Two victims had a criminal history, and two victims had involvement with DCS at the time of their death. Two decedents had a history of problems in school and one had received mental health treatment.

Acts of Omission or Commission

The rate of child maltreatment in the United States during 2011 was estimated at 9.1 cases per 1,000 children, or 681,000 children. This figure is acknowledged to be an underestimate. Most of these victims were maltreated by a parent (80.8%). Among those who died from maltreatment, 81.6% were under the age of 4[16]. The CDRT recognizes that these deaths are preventable, and that prevention strategies need to promote safe, stable, and nurturing relationships and environments for children and families[17].

Acts of omission or commission are defined as any act, or failure to act, that either causes or substantially contributes to the death of a child. Although acts of omission or commission are not exclusively defined as child maltreatment, many cases involve types of abuse that are common to child maltreatment (neglect, physical, emotional, and sexual abuse). This section is designed to reveal any behaviors of others that may be involved in a child's death.

A total of twenty-nine deaths reviewed by the CDRT involved an act of omission (e.g. neglect) or commission (i.e. abuse or assault), and with four additional deaths, an act of omission or commission was probable. Together, the thirty-three deaths represented 39.3% of all reviewed deaths. For the purposes of this analysis, cases when omission or commission was probable are included in the total number of cases. In sixteen cases (48.5%), the acts of omission or commission caused the death of the child. In six of the sixteen cases,the act that caused the death was intentional. In seventeen deaths, the act contributed to the death of the child, with an additional case showing evidence of multiple acts that both caused or contributed to the death. Among the eighteen deaths demonstrating evidence of acts that contributed to the death, fourteen were unintentional.

Demographics

- 19 deaths (57.6%) occurred among infants.
- 5 deaths (15.2%) occurred among children aged 1 to 4 years.
- 1 death (3%) occurred to a child aged 5 to 9 years.
- 2 deaths (6.1%) occurred among children aged 10 to 14 years.
- 6 deaths (18.2%) occurred among teens aged 15 to 17 years.
- 4 deaths (12.1%) occurred among Hispanic children.
- 19 deaths (57.6%) occurred among non-Hispanic black children.
- 10 deaths (30.3%) occurred among non-Hispanic white children.
- 20 deaths (60.6%) occurred among male children

Circumstances (Table 6)

- In 11 cases (33.3%), the perpetrator was impaired (e.g. using substances, asleep, absent, ill).
- In 8 cases (24.2%), the perpetrator of the act was the biological parent of the child.
- 8 victims (24.2%) were involved with DCS at the time of the death.
- In 7 cases (21.2%), the act of omission or comission was either chronic with the child or a pattern in the family or with the perpetrator.
- 6 cases (18.2%) involved poor or absent supervision.
- 4 cases (12.1%) involved child neglect.
- 2 cases (6.1%) involved child abuse.
- 1 case (3%) involved suicide.

Child Deaths from 2008 to 2012

Small numbers of events often make it difficult to discern patterns and opportunities for prevention. For this reason, all deaths reviewed by the Davidson County CDRT occurring from 2008 through 2012 were analyzed in aggregate. The CDRT reviewed the deaths of 442 resident children of Davidson County that died from 2008 to 2012.

Demographics

- 295 deaths (66.7%) occurred among children less than 1 year of age.
- 41 deaths (9.3%) occurred among children 1 to 4 years of age.
- 29 deaths (6.6%) occurred among children 5 to 9 years of age.
- 31 deaths (7%) occurred among children 10 to 14 years of age.
- 46 deaths (10.4%) occurred among children 15 to 17 years of age.
- 8 deaths (1.8%) occurred among Asian children.
- 48 deaths (10.9%) occurred among Hispanic children.
- 231 deaths (52.3%) occurred among non-Hispanic black children.
- 154 deaths (34.8%) occurred among non-Hispanic white children.
- 260 deaths (58.8%) occurred among male children.

Manner of Death

- 276 deaths (62.4%) were due to natural causes.
- 60 deaths (13.6%) were due to unintentional injuries.
- 34 deaths (7.7%) were due to homicide.
- 8 deaths (1.8%) were due to suicide.
- 60 deaths (13.6%) were undetermined[e].
- In 4 deaths (0.9%), the manner of death was left blank on the death certificate.

Preventability of Deaths

From 2008 to 2012, 141 deaths (31.9%) were judged to have been preventable, and in 30 deaths (6.8%), preventability could not be determined.

- 100% of suicide and homicide cases were judged as preventable.
- 57 deaths (95%) due to unintentional injuries were judged as preventable.
- 32 undetermined deaths (53.3%) were judged as preventable.
- 10 deaths (3.6%) due to natural causes were judged as preventable.

Factors that Hindered Review or Resulted in Specific Action

- The CDRT team disagreed with the official manner of death in 20 cases (4.5%) and the official cause of death in 13 cases (2.9%).
- Confidentiality issues prevented the full exchange of information in 5 cases (1.1%).
- Review led to additional investigation in 7 cases (1.6%).
- Review led to implementation of a policy or prevention initiative in 6 cases (1.4%).
- Evidence of prior abuse was found in 16 cases (3.6%).
- Action was taken by DCS as a result of the death in 32 cases (7.2%).
- Other factors such as an inaccurate or incomplete death/birth certificate hindered the review in 113 cases (25.6%).

[e]Undetermined deaths are defined as any death for which manner is unknown after extensive autopsy and crime scene investigation. Changes in classification of SIDS deaths have increased the number of deaths marked undetermined (see recommendations). In 2012, 14 of 17 sleep-related deaths were categorized as undetermined. A specific section on sleep-related deaths in included in this report.

Age-Specific Mortality

From 2008 to 2012, 295 (66.7%) of the child death cases reviewed were of children less than 1 year of age.

Demographics and Risk Factors among Infants (Table 2 & 4)

Demographics

- 4 (1.4%) were Asian.
- 34 (11.5%) were Hispanic.
- 152 (51.5%) were non-Hispanic black.
- 104 (35.3%) were non-Hispanic white.
- 1 (0.3%) was a Pacific Islander.
- 169 (57.3%) were male.

Manner of Death

- 211 deaths: natural
- 53 deaths: undetermined
- 22 deaths: unintentional injury
- 6 deaths: homicide

Risk Factors

- 198 (67.1%) were low birth weight (less than 2500 grams).
- 190 (64.4%) were premature (less than thirty-seven weeks gestation).
- 58 (19.7%) experienced intrauterine tobacco exposure.
- 14 (4.7%) experienced intrauterine drug exposure.

Demographics and manner of death of the remaining 147 reviewed deaths are as follows:

41 deaths (9.3% of total) occurred to children aged 1 to 4:

Demographics

- 2 deaths: Hispanic
- 17 deaths: non-Hispanic black
- 22 deaths: non-Hispanic white
- 20 deaths: male

Manner of Death

- 20 deaths: natural
- 13 deaths: unintentional injury
- 5 deaths: undetermined
- 3 deaths: homicide

29 deaths (6.6% of total) occurred to children aged 5 to 9:

Demographics

- 1 death: Hispanic
- 16 deaths: non-Hispanic black
- 12 deaths: non-Hispanic white
- 15 deaths: male

Manner of Death

- 19 deaths: natural
- 9 deaths: unintentional injury
- 1 death: undetermined

31 deaths (7% of total) occurred to children aged 10 to 14:

Demographics

- 2 deaths: Asian
- 1 death: Hispanic
- 6 deaths: non-Hispanic white
- 20 deaths: male

Manner of Death

- 17 deaths: natural
- 7 deaths: homicide
- 4 deaths: suicide
- 2 deaths: unintentional injury
- 1 death: undetermined

46 deaths (10.4% of total) occurred to children aged 15 to 17:

Demographics

- 2 deaths: Asian
- 10 deaths: Hispanic
- 24 deaths: non-Hispanic black
- 10 deaths: non-Hispanic white
- 36 deaths: male

Manner of Death

- 18 deaths: homicide
- 14 deaths: unintentional injury
- 9 deaths: natural
- 4 deaths: suicide
- 1 death: unknown manner

Deaths Due to Natural Causes

A total of 276 deaths (62.4%) reviewed by the CDRT from 2008 to 2012 were due to natural causes. (Table 2)

Demographics

- 211 deaths (76.4%) were to infants less than 1 year of age.
- 20 deaths (7.2%) occurred to children aged 1 to 4.
- 19 deaths (6.9%) occurred to children aged 5 to 9.
- 17 deaths (6.2%) occurred to children aged 10 to 14.
- 9 deaths (3.3%) occurred to children aged 15 to 17.
- 5 children (1.8%) were Asian.
- 31 children (11.2%) were Hispanic.
- 136 children (49.3%) were non-Hispanic black.
- 103 children (37.3%) were non-Hispanic white.
- 155 children (56.2%) were male.

Causes of Death

- 107 deaths (38.8%) were due to prematurity.
- 96 deaths (34.8%) were due to birth defects.
- 31 deaths (11.2%) were due to medical conditions.
- 14 deaths (5.1%) were due to cancer.
- 12 deaths (4.3%) were due to some type of infection.
- 7 deaths (2.5%) were due to neurological and seizure disorders.
- 7 deaths (2.5%) were due to perinatal conditions.
- 4 deaths (1.4%) were due to influenza or pneumonia.
- 3 deaths (1.1%) were due to SIDS.
- 2 deaths (0.7%) were due to asthma.
- 2 deaths (0.7%) were due to malnutrition or dehydration.

Circumstances

- 252 children (91.3%) received treatment for the medical condition within 48 hours of deaths.
- In 155 cases (56.2%), death was the expected outcome of the medical condition.
- In 4 cases (1.4%), the medical condition was associated with an outbreak.
- Environmental tobacco exposure was a contributing factor in 7 (2.5%) deaths.
- In cases in which family compliance to a medical treatment regime was necessary (n=144), 11 (7.6%) were not compliant.

Deaths Due to Sleep-Related Factors

A total of eighty-six deaths (19.5%) reviewed by the CDRT from 2008 to 2012 were determined to be sleep-related. Of these: twenty-four deaths were due to asphyxia, twelve deaths were due to medical conditions, and three deaths were due to SIDS. The cause of death was undetermined in two cases and forty-five deaths were due to other causes[f] (Table 5).

Demographics

- 80 deaths (93%) occurred to children less than 1 year of age.
- 5 deaths (5.8%) occurred to Hispanic children.
- 50 deaths (58.1%) occurred to non-Hispanic black children.
- 31 deaths (36%) occurred to non-Hispanic white children.
- 56 deaths (65.1%) occurred among male children.

Risk factors

- 66 children (76.7%) were not placed to sleep in a crib or bassinette.
- 49 children (57%) were sleeping with other people.
- 46 children (53.5%) were not sleeping on their back.
- 30 children (34.9%) were placed to sleep on unsafe bedding or with toys.
- 21 children (24.4%) were premature.
- 15 children (17.4%) were exposed to second-hand smoke.
- In 12 cases (14%), the supervising adult was drug impaired.
- In 11 cases (12.8%), there was no crib in the home.
- 3 children (3.5%) were sleeping with an obese adult.

Circumstances

- 22 children (25.6%) were found on top of a person or object.
- 17 children (19.8%) were found pressed or wedged into or between objects or people.
- 15 children (17.4%) were found under an object.
- The circumstances were unknown in 15 (17.4%) deaths.

A total of eighty-six deaths (19.5%) reviewed by the CDRT from 2008 to 2012 were determined to be sleep-related. 76.7% were not placed to sleep in a crib or bassinette.

[f]Other causes include child deaths for which it was undetermined if the death was due to injury or medical cause.

Deaths Due to Unintentional Injuries

There were sixty deaths due to unintentional injuries, representing 13.6% of the deaths that occurred from 2008 to 2012. The greatest number of deaths occurred among infants (22, 36.7%), males (34, 56.7%), and non-Hispanic blacks (29, 48.3%). There were nine deaths (15%) among Hispanic children. (Table 8)

Motor Vehicle Deaths

There were nineteen deaths due to motor vehicle crashes, representing 31.7% of the deaths due to unintentional injuries and 4.3% of the total deaths.

Demographics (Table 8)

- 6 deaths (31.6%) occurred to children 1 to 4.
- 3 deaths (15.8%) occurred to children aged 5 to 9.
- 10 deaths (52.6%) occurred to teens aged 15 to 17.
- 1 child (5.3%) was Asian.
- 5 children (26.3%) were Hispanic.
- 6 children (31.6%) were non-Hispanic black.
- 7 children (36.8%) were non-Hispanic white.
- 12 children (63.2%) were male.

Circumstances

- Driving conditions were normal in 16 cases.
- In 11 cases, children were passengers in the vehicle.
- In 4 cases, children were pedestrians.
- In 2 cases, children were drivers.
- In 2 cases, children were on a bicycle.
- Speeding was indicated in 8 cases, reckless driving in 2 cases, distracted driving in 1 case, and driver inexperience in 1 case.
- The driver was alcohol/drug impaired in 1 incident.
- The child was responsible for causing the incident in 3 cases, and in an additional 8 cases the child's driver was responsible.
- In 13 cases, the drivers were in violation of the Tennessee graduated driver's license law, driving with a suspended license, or did not have a license.
- In 8 cases, vehicle protective measures (such as seatbelt, airbag, child seat, helmet) were present but used incorrectly.
- In 6 cases, seat belts were present in the vehicle but not used.
- In 3 cases, vehicle protective meausres (such as seatbelt, airbag, child seat, helmet) were needed but not available.

Additional Unintentional Injury Deaths

Additional deaths due to unintentional injuries were caused by suffocations (20, 33.3%), fires or burns (7, 11.7%), drowning (7, 11.7%), poisoning (3, 5%), and falls or crushing (2, 3.3%). One incident involved prematurity subsequent to maternal cocaine use and was ruled as accidental. The exposure death was presented in the unintentional injury section for 2012.

Deaths Due to Violence

Forty-two deaths (9.5%) were attributed to violence from 2008 to 2012. The greatest number of deaths occurred among children aged 15 to 17 (22, 52.4%), and non-Hispanic blacks (29, 69%). There were four deaths (9.5%) among Hispanic children. (Table 10)

Suicides

There were eight deaths due to suicide, representing 19% of violence-related deaths and 1.8% of the total deaths. (Table 10)

Demographics

- 4 deaths occurred to children aged 10 to 14 years.
- 4 deaths occurred to children aged 15 to 17 years.
- 1 child was Hispanic.
- 4 children were non-Hispanic black.
- 3 children were non-Hispanic white.
- 3 children were male.

Circumstances

- 4 cases involved asphyxia.
- 4 cases involved the use of a weapon.
- In 7 cases, suicide was unexpected, despite the fact that the child had threatened, attempted, or premeditated a suicide attempt in 3 cases.
- A note was left in 5 cases.
- There was a family history of suicide in 1 case.
- An argument with a parent was noted in 3 cases, family discord in 2 cases, divorce in 1 case, and a breakup with a boyfriend/girlfriend in 1 case.
- One case involved a victim of bullying.

In 7 cases, suicide was unexpected, despite the fact that the child had threatened, attempted, or premeditated a suicide attempt in 3 of those cases.

Homicides

There were 34 deaths due to homicide, representing 81% of violence-related deaths and 7.7% of the total deaths. (Table 10)

Demographics

- 6 deaths occurred among children less than 1 year of age.
- 3 deaths occurred among children aged 1 to 4 years.
- 7 deaths occurred among children aged 10 to 14 years.
- 18 deaths occurred among teens aged 15 to 17 years.
- 2 children were Asian
- 3 children were Hispanic.
- 25 children were non-Hispanic black.
- 4 children were non-Hispanic white.
- 28 children were male.

Common Factors in Homicide Deaths

- Criminal History: 16(47.1%)
- Positive drug screen at autopsy: 15 (46.9%) of 32 cases with toxicology screens
- Open DCS case: 10 (29.4%)
- Problems in school: 12 (35.3%)
- Juvenile detention history: 8 (23.5%)
- Received mental health services: 6 (17.6%)
- History of drug abuse: 5 (14.7%)

Type of Weapon Involved in Homicide Death

- Firearm: 24 (77.4%)
- Physical trauma (such as beating, kicking): 6 (19.4%)
- Sharp or Blunt Instrument: 1 (3.2%)

Circumstances Related to Homicide Deaths Involving the Use of Firearms (n=31):

- 16 incidents (51.6%) were related to the commission of a crime.
- 10 incidents (32.6%) involved gang activity.
- 8 incidents (25.8%) involved an argument.
- 2 incidents (6.5%) involved someone playing with the weapon.

Other homicide deaths that were not weapon related:

There were three homicide deaths that were not weapon-related, a poisoning, a suffocation, and a starvation. All three homicides were committed by the mother of the child. In two cases, the mother had documented mental health issues, and in two cases there was maternal drug and alcohol abuse. DCS had prior involvement with the family in two of the cases.

In 47.1% of homicide deaths, the child had a criminal history. In 35.3% of homicide deaths, the child had documented problems in school.

Acts of Omission or Commission

A total of 121 deaths (27.4%) reviewed by the CDRT involved an act of omission (i.e. neglect) or commission (i.e. abuse or assault), with an additional 20 deaths where an act of omission or commission was probable. Together, the 141 deaths represented 31.9% of all reviewed deaths. For the purposes of this analysis, probable omission or commission is included in the total number of cases with evidence of omission or commission. In 63 cases (44.7%), the acts of omission or commission caused the death of the child. In 38 of the 63 cases (60.3%), the act that caused the death was intentional. In 75 cases (53.2%), the act contributed to the death of the child, with 3 additional cases showing evidence of multiple acts that both caused and contributed to the death. Among the 78 cases demonstrating evidence of acts that contributed to the death, 62 (79.4%) were unintentional.

Demographics

- 71 deaths (50.4%) occurred among infants.
- 19 deaths (13.5%) occurred among children aged 1 to 4 years.
- 7 deaths (5%) occurred among children aged 5 to 9 years.
- 16 deaths (11.4%) occurred among children aged 10 to 14.
- 28 deaths (19.9%) occurred among teens aged 15 to 17 years.
- 3 deaths (2.1%) occurred among Asian children.
- 12 deaths (2.1%) occured among Hispanic children.
- 87 deaths (61.7%) occurred among non-Hispanic black children.
- 39 deaths (27.7%) occured among non-Hispanic white children.
- 87 deaths (61.7%) occurred among males.

Circumstances (Table 6)

- In 87 cases (61.7%), the perpetrator of the act was a biological parent of the child.
- In 53 cases (37.6%), the perpetrator was impaired (such as using substances, asleep, absent, ill).
- 34 victims (24.1%) were involved with DCS at the time of the death.
- 17 cases (12.1%) involved poor or absent supervision.
- In 15 cases (10.6%), the act of omission or commission was either chronic with the child or a pattern in the family or with the perpetrator.
- 12 cases (8.5%) involved child neglect.
- 7 cases (5%) involved child abuse.

A total of 121 deaths (27.4%) reviewed by the CDRT involved an act of omission (i.e. neglect) or commission (i.e. abuse or assault). Half of these deaths, 50.4%, occurred among infants.

References

1. U.S. Census Bureau; State and County QuickFacts, Davidson County, Tennessee; generated by Brook McKelvey; using American FactFinder; http://factfinder2.census.gov; (29 May 2014).
2. U.S. Census Bureau; American Community Survey, 2008-2012 American Community Survey 5-year Estimates, Selected Economic Characteristics, Table DP03; generated by Brook McKelvey; using American FactFinder; http://factfinder2.census.gov; (29 May 2014).
3. U.S. Census Bureau; American Community Survey, 2008-2012 American Community Survey 5-year Estimates, Selected Social Characteristics in the United States, Table DP02; generated by Brook McKelvey; using American FactFinder; http://factfinder2.census.gov; (29 May 2014).
4. U.S. Census Bureau; American Community Survey, 2008-2012 American Community Survey 5-year Estimates, Selected Economic Characteristics by Zip Code Tabulation Area, DP03; generated by Brook McKelvey; using American FactFinder; http://factfinder2.census.gov; (29 May 2014).
5. MacNorman, M.F. and Matthews, M.S. (2008). Recent Trends in Infant Mortality in the United States. Centers for Disease Control and Prevention National Center for Health Statistics Data Brief, no 9.
6. Hoyert, D.L. and Xu, J. (2012). Deaths: Preliminary Data for 2011. National Vital Statistic Report, volume 61:6. Retrieved from http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_06.pdf.
7. Centers for Disease Control and Prevention. CDC Grand Rounds: Public Health Approaches to Reducing U.S. Infant Mortality. MMWR, 2013;62(31):625-628. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6231a3.htm.
8. National Center for Child Death Review: Keeping Kids Alive. Retrieved April 15, 2014 from www.childdeathreview.org/causesNNS.htm.
9. Centers for Disease Control and Prevention: Premature Births. Retrieved April 16, 2014 from http://www.cdc.gov/Features/PrematureBirth/.
10. Centers for Disease Control and Prevention: Facts about Birth Defects. Retrieved April 16, 2014 from http://www.cdc.gov/ncbddd/birthdefects/facts.html.
11. Schmitzer, P.G., Covington, T. M. & Dykstra, H.K. (2012). Sudden Unexpected Infant Deaths: Sleep Environment and Circumstances. American Journal of Public Health, e1-e9.
12. Task Force on Sudden Infant Death Syndrome. SIDS and Other Sleep-Related Infant Deaths: Expansion of Recommendations for a Safe Infant Sleeping Environment. (2011) Pediatrics;128;e1341.
13. Centers for Disease Control and Prevention. Vital Signs: Unintentional Injury Deaths Among Persons Aged 0-19 Years - United States, 200-2009. MMWR (2012);61(15):270-276.
14. Centers for Disease Control and Prevention. Surveillance for Violent Deaths – National Violent Death Reporting System, 16 States, 2010. MMWR (2014);63(SS01);1-33.
15. Centers for Disease Control and Prevention. Suicide Prevention. Retrieved April 22, 2014 from http://www.cdc.gov/violenceprevention/pub/youth_suicide.html.
16. Centers for Disease Control and Prevention. Child Maltreatment: Facts at a Glance, 2013. Retrieved April 22, 2014 from http://www.cdc.gov/violenceprevention/pdf/cm-data-sheet--2013.pdf.
17. Centers for Disease Control and Prevention. Understanding Child Maltreatment. Retrieved April 22, 2014 from http://www.cdc.gov/violenceprevention/pdf/cm-factsheet--2013.pdf.

Child Death Review Team Members

William Paul, MD, MPH
Director of Health
Metro Public Health Department of Nashville/Davidson County, TN (MPHD)
Child Death Review Team, Chair

Adele Lewis, MD
Deputy Chief Medical Examiner
Metropolitan Nashville/Davidson County, TN
Child Death Review Team, Chair

Maryam Abdallah
TN Department of Children's Services

Vickie Beaver, RN
Nurses for Newborns of TN

Bonnie Beneke, LCSW
TN Chapter of Children's Advocacy Centers

Vickie Blair Fleming, LMSW
Metro Public Schools of Nashville/Davidson County, TN

Verena Brown, MD
Monroe Carell Jr. Children's Hospital at Vanderbilt

Det. Sarah Bruner
Metro Police Department of Nashville/Davidson County, TN

Alison Butler, RN, BSN, CDE, ICCE
Fetal and Infant Mortality Review (FIMR), MPHD

Abbey Chamness, LMSW
Prevent Child Abuse Tennessee

Amy Campbell-Pittz
TN Department of Children's Services, Legal

Det. Ron Carter
Metro Police Department of Nashville/Davidson County, TN

Karen Grimm, BSW, MA
Epidemiology Program, MPHD

Charlsi Legendre
Child Protective Investigative Team (CPIT)

Amanda Holley, MPH
Epidemiology Program, MPHD

Atty. Brian Holmgren
Assistant District Attorney of Nashville/Davidson County, TN

Leslie Howell
Emergency Medical Technician (EMT), Nashville Fire Department

Carol Jones, BSHA
Bureau of Family, Youth, and Infant Health, MPHD
Child Death Review Team, Administrative Support

Det. Selene Julia
Metro Police Department of Nashville/Davidson County, TN

Tina Lester, RN, MSN
Bureau of Family, Youth, and Infant Health, Interim Director, MPHD

Deborah Lowen, MD
Monroe Carrell Jr. Children's Hospital at Vanderbilt

Brook McKelvey, MPH, MA
Epidemiology Program, MPHD
Child Death Review Team, Team Coordinator

Michael Meadors, MD
St. Thomas Midtown Hospital

Katy Miller, JD
Assistant District Attorney of Nashville/Davidson County, TN

Janet Nielsen, MA
Juvenile Court of Nashville/Davidson County, TN

Sgt. Daniel Postiglione
Metro Police Department of Nashville/Davidson County, TN

Michelle Rikli, LCSW
Metro Social Services of Nashville/Davidson County, TN

Carolyn Riviere, BSN, MS
Fetal and Infant Mortality Review (FIMR), MPHD

Sue Ross, RNC, PNP
Our Kids of Nashville/Davidson County, TN

Danielle Russell, RN, BSN
Fetal and Infant Mortality Review (FIMR), MPHD

Tom Sharp
Office of the Director of Health, MPHD

Robert Taylor
Fatherhood Program, MPHD

Purnima Unni, MPH, CHES
Monroe Carell Jr. Children's Hospital at Vanderbilt

Jennifer Weatherly, RN, BSN
Help Us Grow Successfully Program (HUGS), MPHD

Appendix

Table 1: Number and Percentage of Deaths by Manner of Death and Age, Race/Ethnicity, and Sex, Davidson County, Tennessee, 2012

	Total		Age					Sex		Race		
Manner of Death	N	%	< 1 year	1-4 years	5-9 years	10-14 years	15-17 years	Male	Female	non-Hispanic white	non-Hispanic black	Hispanic
Natural	52	61.9	38	5	5	2	2	29	23	25	20	5
Unintentional Injury	10	11.9	4	2	1	1	2	4	6	5	2	3
Suicide	1	1.2	0	0	0	0	1	0	1	0	0	1
Homicide	6	7.1	1	1	0	1	3	5	1	1	5	0
Undetermined	15	17.9	14	1	0	0	0	10	5	3	12	0
Total	84		57	9	6	4	8	48	36	34	39	9
Percentage*		100	67.9	10.7	7.1	4.8	9.5	57.1	42.9	40.5	46.4	10.7

*Percentage of total deaths.

Table 2: Number and Percentage of Deaths by Manner of Death and Age, Race/Ethnicity, and Sex, Davidson County, Tennessee, 2008-2012

	Total		Age					Sex		Race/Ethnicity			
Manner of Death	N	%	< 1 year	1-4 years	5-9 years	10-14 years	15-17 years	Male	Female	non-Hispanic white	non-Hispanic black	Asian	Hispanic
Natural	276	62.4	211	20	19	17	9	155	121	103	136	5	31
Unintentional Injury	60	13.6	22	13	9	2	14	34	26	21	29	1	9
Suicide	8	1.8	0	0	0	4	4	3	5	3	4	0	1
Homicide	34	7.7	6	3	0	7	18	28	6	4	25	2	3
Undetermined	60	13.6	53	5	1	1	0	38	22	21	36	0	3
Unknown*	4	0.9	3	0	0	0	1	2	2	2	1	0	1
Total	442		295	41	29	31	46	260	182	154	231	8	48
Percentage**		100	66.7	9.3	6.6	7	10.4	58.8	41.2	34.8	52.3	1.8	10.9

*Percentage of total deaths.

**Describes deaths for which the manner on the death certificate was left blank.

Table 3: Deaths by Manner and Preventability, Davidson County, 2012 and 2008-2012					
	Could the Death Have Been Prevented?				
2012					
Manner	No	Yes	Could not determine	Unknown	Total
Natural	50	1	1	0	52
Unintentional Injury	1	9	0	0	10
Suicide	0	1	0	0	1
Homicide	0	6	0	0	6
Undetermined	1	12	2	0	15
Unknown	0	0	0	0	0
Total	52	29	3	0	84
2008-2012					
Natural	258	10	6	2	276
Unintentional Injury	2	57	1	0	60
Suicide	0	8	0	0	8
Homicide	0	34	0	0	34
Undetermined	5	32	23	0	60
Unknown	4	0	0	0	4
Total	269	141	30	2	442

Table 4: Characteristics of Infant Deaths by Manner of Death Listed on Death Certificate, Davidson County, 2012 and 2008-2012

	Manner of Death on Death Certificate*					
	Natural	Unintentional Injury	Homicide	Undetermined	Unknown	Total
2012						
Total Deaths Reviewed	38	4	1	14	0	57
Premature (<37 weeks)	34	1	1	5	0	41
Low Birth Weight (<2500 grams)	35	1	1	5	0	42
Late (> 6 months) or No Prenatal Care	3	0	1	2	0	6
Intrauterine Drug Exposure	0	0	0	1	0	1
Intrauterine Smoke Exposure	3	0	0	6	0	9
2008-2012						
Total Deaths Reviewed	211	22	6	53	3	295
Premature (<37 weeks)	166	8	1	12	3	190
Low Birth Weight (<2500 grams)	175	5	1	14	3	198
Late (> 6 months) or No Prenatal Care	26	3	2	5	0	36
Intrauterine Drug Exposure	6	2	1	5	0	14
Intrauterine Smoke Exposure	28	7	0	22	1	58

*Categories are not mutually exclusive. Infants should not have a suicide manner of death, so this manner is not included in this table.

Table 5: Factors Involved in Sleep-Related Deaths By Age Group, Davidson County, 2012 and 2008-2012

	Age Group						
2012	0-1 mos	2-3 mos	4-5 mos	6-7 mos	8-11 mos	1-4 years	Total
Total Deaths Reviewed	7	4	2	3	0	1	17
Not in a crib or bassinette	6	3	2	3	0	1	15
Not sleeping on back	3	3	2	2	0	1	11
Placed on unsafe bedding or with toys	3	1	1	0	0	0	5
Sleeping with other people	6	2	1	2	0	1	12
Obese adult sleeping with child	0	0	0	0	0	0	0
Adult was alcohol or drug impaired	2	0	0	0	0	0	2
2008-2012							
Total Deaths Reviewed	25	26	17	8	4	6	86
Not in a crib or bassinette	21	20	14	6	2	3	66
Not sleeping on back	10	18	11	3	1	3	46
Placed on unsafe bedding or with toys	8	11	7	2	0	2	30
Sleeping with other people	18	14	9	4	2	2	49
Obese adult sleeping with child	2	1	0	0	0	0	3
Adult was alcohol or drug impaired	6	4	1	0	0	1	12

*Categories are not mutually exclusive.

Table 6: Acts of Omission and Commission By Age Group, Davidson County, 2012 and 2008-2012

2012	Total Deaths Reviewed	Poor/Absent Supervision	Child Abuse	Child Neglect	Other Negligence	Assault (not child abuse)	Suicide	Other
<1 year	16	3	0	0	5	1	0	6
1-4 years	4	2	0	0	1	0	0	0
5-9 years	2	1	0	0	1	0	0	0
10-14 years	1	0	0	0	1	0	0	0
15-17 Years	3	1	0	0	0	1	1	0
Total	26	7	0	0	8	2	1	6
2007-2011								
<1 year	56	3	6	4	31	1	0	10
1-4 years	15	5	2	1	6	0	0	0
5-9 years	6	1	0	1	2	0	1	1
10-14 years	14	1	0	3	1	4	4	2
15-17 Years	22	1	0	0	3	9	3	5
Total	113	11	8	9	43	14	8	18

*Categories are not mutually exclusive. Includes all cases where action of omission/commision caused or contributed to the death was reported by the team as Yes or Probable.

Table 7: Number and Percentage of Deaths Due to Unintentional Injury by Age, Sex, Race, and Ethnicity, Davidson County, Tennessee, 2012

	Total		Age					Sex		Race/Ethnicity		
Cause of Death	N	%	< 1 year	1-4 years	5-9 years	10-14 years	15-17 years	Male	Female	non-Hispanic white	non-Hispanic black	Hispanic
Vehicular	4	40	0	2	0	0	2	2	2	3	0	1
Drowning	2	20	0	0	1	1	0	0	2	0	1	1
Suffocation	3	30	3	0	0	0	0	1	2	1	1	1
Exposure	1	10	1	0	0	0	0	1	0	1	0	0
Total	10		4	2	1	1	2	4	6	5	2	3
Percentage*		100	40	20	10	10	20	40	60	50	20	30

*Percentage of total deaths due to unintentional injury.

Table 8: Number and Percentage of Deaths Due to Unintentional Injury by Age, Sex, Race, and Ethnicity, Davidson County, Tennessee, 2008-2012

	Total		Age					Sex		Race/Ethnicity			
Cause of Death	N	%	< 1 year	1-4 years	5-9 years	10-14 years	15-17 years	Male	Female	non-Hispanic white	non-Hispanic black	Asian	Hispanic
Vehicular	19	31.7	0	6	3	0	10	12	7	7	6	1	5
Fire/Burns	7	11.7	1	1	4	0	1	3	4	2	4	0	1
Drowning	7	11.7	1	2	1	2	1	3	4	2	4	0	1
Suffocation	20	33.3	18	2	0	0	0	11	9	7	12	0	1
Fall/Crush	2	3.3	0	1	1	0	0	2	0	1	1	0	0
Poisonings	3	5.0	0	1	0	0	2	2	1	1	1	0	1
Exposure	1	1.7	1	0	0	0	0	1	0	1	0	0	0
Other*	1	1.7	1	0	0	0	0	0	1	0	1	0	0
Total	60		22	13	9	2	14	34	26	21	29	1	9
Percentage**		100	36.7	21.7	15	3.3	23.3	56.7	43.3	35.0	48.3	1.7	15

**Percentage of total deaths due to unintentional injuries.

*This was a death due to prematurity subsequent to maternal cocaine use and was ruled accidental.

Table 9: Number and Percentage of Deaths Due to Violence by Age, Sex, Race/Ethnicity, Davidson County, Tennessee, 2012

		Total		Age					Sex		Race/Ethnicity		
Manner of Death	Cause of Death	N	%	< 1 year	1-4 years	5-9 years	10-14 years	15-17 years	Male	Female	non-Hispanic white	non-Hispanic black	Hispanic
Homicide	Weapon**	6	85.7	1	1	0	1	3	5	1	1	5	0
Suicide	Suffocation	1	14.3	0	0	0	0	1	0	1	0	0	1
	Total	7		1	1	0	1	4	5	2	1	5	1
	Percentage*		100	14.3	14.3	0	14.3	57.1	71.4	28.6	14.3	71.4	14.3

*Percentage of total deaths due to violence for all ages.

**Weapon includes firearm, knives and other instruments, as well as a person's body part.

Table 10: Number and Percentage of Deaths Due to Violence by Age, Sex, Race, and Ethnicity, Davidson County, Tennessee, 2008-2012

		Total		Age					Sex		Race/Ethnicity			
Manner of Death	Cause of Death	N	%	< 1 year	1-4 years	5-9 years	10-14 years	15-17 years	Male	Female	non-Hispanic white	non-Hispanic black	Asian	Hispanic
Homicide	Suffocation	1	2.4	1	0	0	0	0	1	0	0	1	0	0
	Weapon**	31	73.8	5	1	0	7	18	26	5	24	2	2	3
	Poisoning	1	2.4	0	1	0	0	0	0	1	0	1	0	0
	Starvation	1	2.4	0	1	0	0	0	1	0	1	0	0	0
Suicide	Suffocation	4	9.5	0	0	0	3	1	1	3	3	0	0	1
	Weapon**	4	9.5	0	0	0	1	3	2	2	1	3	0	0
	Total	42		6	3	0	11	22	31	11	29	7	2	4
	Percentage*		100	14.3	7.1	0	26.2	52.4	73.8	26.2	69	16.7	4.8	9.5

*Percentage of total deaths due to violence.

**Weapon includes firearm, knives and other instruments, as well as a person's body part.