Nashville Child Death Review Annual Report, 2010

Metro Public Health Dept
Nashville/Davidson County

Davidson County Child Death Review Team Annual Report

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Preface

For the calendar year 2010, the Davidson County Child Death Review Team (CDRT) reviewed 90 infant and child deaths (ages 0 to 17), to better understand how and why these children died. The CDRT is empowered by a Mayoral Executive Order to conduct reviews to achieve the following goals:

1. Identify factors that put a child at risk of injury or death.
2. Share information among agencies that provide services to children and families or that investigate child deaths.
3. Improve participating agencies' investigations of unexpected/unexplained child deaths.
4. Improve existing services and service delivery systems, and identify areas in the community that require additional services.
5. Identify trends relevant to child injuries and deaths.
6. Educate the public about the causes of child injuries and deaths, while also defining the public's role in helping to prevent such tragedies.

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

When a Child Dies

- The birth and death certificates are sent from the Tennessee Department of Health (TDH) to the Metro Public Health Department (MPHD) Child Death Review Team data coordinator. These data are supplemented with records from the MPHD Office of Vital Records.
- Copies of the birth and death records are sent to the team members.
- All team members search their agency/hospital 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 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. This information may include autopsy results or information provided by the police or hospital medical records.
- 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 from individuals or systems would have alleviated the circumstances that led to that particular child death.
- The TDH data collection form is completed and the data coordinator enters the information obtained from the meetings into a statewide database managed by the National MCH Center for Child Death Review.
- 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.

Recommendations

Each year, the CDRT makes recommendations for policy, infrastructure, and service changes based on the results of child death investigations in an effort to prevent future childhood mortality. Based on results for 2010 deaths, the CDRT made the following recommendations:

Develop outreach programs on safe sleep and child CPR for grandparents and other non-custodial caregivers.

Discourage the use of homeopathic remedies for infants.

Change DCS (Department of Children's Services) policy to indicate neglect when there is a sleep-related death and documentation that the parents/caregivers were provided education on safe sleep.

Ensure timely bereavement referrals and counseling for families, continuing those services for up to one year after infant's death.

Implement more mentoring programs and services to preteens (aged 12 and younger) at risk of gang involvement.

Continue efforts to improve accuracy of birth certificate data. (TN AAP and/or the TN chapter of the hospital association might be enlisted to help.)

Reduce time lag in presenting cases to an investigative body. (Child death reviews are too far removed and should not be the forum for investigation.)

Promote continued training and education for law enforcement on child death protocol.

Provide "Cribs 4 Kids" Pack and Plays with accompanying educational information to needy families. (In those homes where Pack and Plays have been provided by service organizations, utilize home visiting staff to determine whether education was provided with the crib and whether or not the family is using the crib properly.)

Require fellows and attending physicians to undergo formal training by the Medical Examiner's staff in the completion of a death certificate.

Executive Summary

The CDRT reviewed the deaths of 90 children residing in Davidson County who died in 2010.

- 54 deaths (60%) occurred among male children.
- 47 deaths (52.2%) occurred among non-Hispanic black children.
- 34 deaths (37.8%) occurred among non-Hispanic white children.
- 7 deaths (7.8%) occurred among Hispanic children.
- 2 deaths (2.2%) occurred among Asian children.
- 58 deaths (64.4%) occurred among children less than 1 year of age.
- 8 deaths (8.9%) occurred among children aged 1 to 4 years.
- 11 deaths (12.2%) occurred among children aged 15 to 17 years.

Manner of Death

- 43 deaths (47.8%) were due to natural causes:
  - 18 deaths (41.9% of natural causes): congenital anomalies (birth defects)
  - 15 deaths (34.9% of natural causes): prematurity
- 18 deaths (20%) were due to unintentional injuries:
  - 6 deaths (33.3% of unintentional injuries): motor vehicle crashes
  - 5 deaths (27.8% of unintentional injuries): asphyxia (suffocation)
- 7 deaths (7.8%) were due to homicide.
- 3 deaths (3.3%) were due to suicide.
- 18 deaths (20%) were undetermined.
- The manner of death was unknown in 1 case (1.1%).

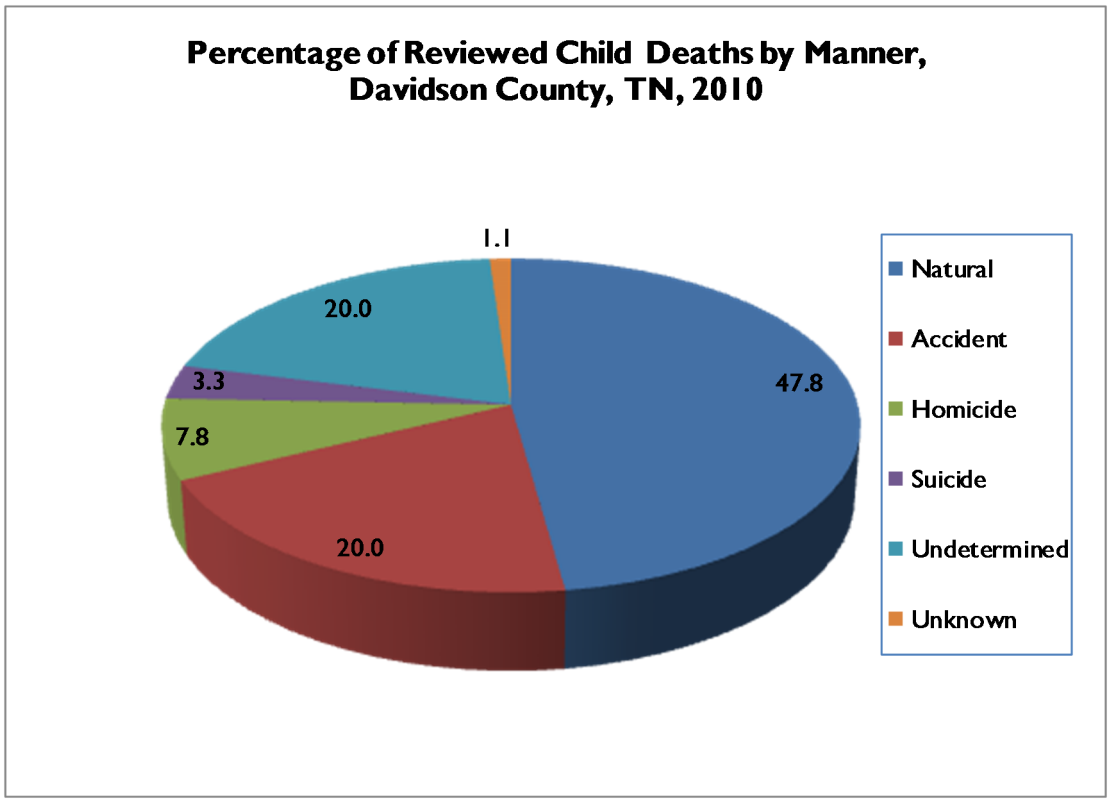
Preventability of Deaths

For 2010, 43 deaths (47.8%) were judged to have been preventable, and in four deaths (4.4%), preventability could not be determined. (Table 3)

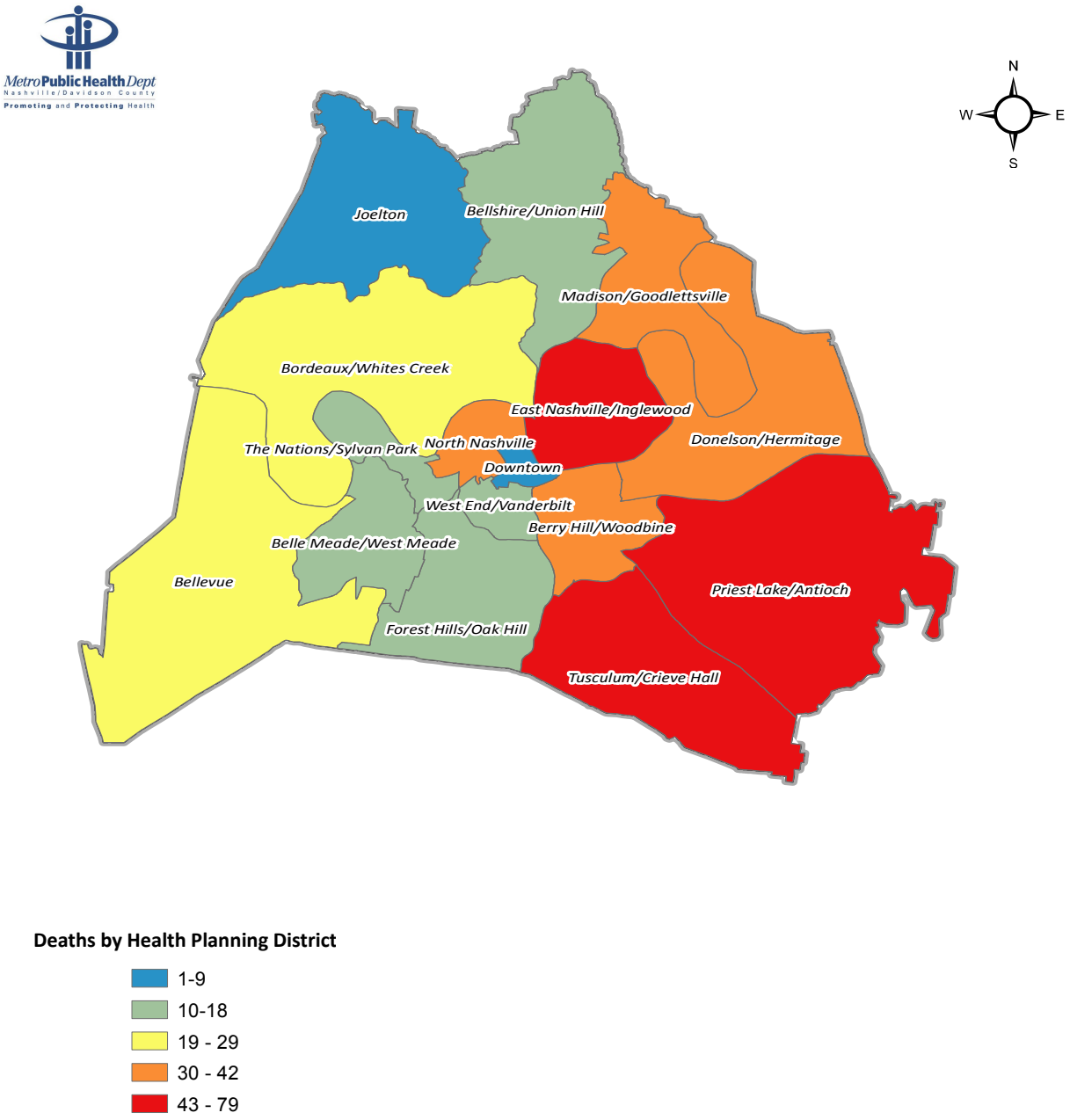
- 100% of suicide and homicide cases were judged as preventable.
- 17 (94.4%) of deaths due to unintentional injuries were judged as preventable.
- 4 (9.3%) of deaths due to natural causes were judged as preventable.
- 12 (66.7%) of undetermined deaths were judged as preventable.

Factors that Hindered Review or Resulted in Specific Action

- The CDRT team disagreed with the official cause of death in 2 cases (2.2%).
- Confidentiality issues prevented the full exchange of information in 2 cases (2.2%).
- Evidence of prior abuse was found in 2 cases (2.2%), and action was taken by Child Protective Services (CPS) as a result of the death in 10 cases (11.1%).
- Other factors (such as an inaccurate or incomplete death/birth certificate) hindered review in 17 cases (18.9%).



Child Deaths (age 0-17) by Health Planning District, 2006-2010



The Priest Lake/Antioch, Tusculum/Crieve Hall, and East Nashville/Inglewood health planning districts had the greatest number of deaths (43-79 deaths) to children aged 0 to 17 during the years 2006 through 2010.

The next highest frequency of child deaths (30-42 deaths) occurred in Madison/Goodlettsville, Berry Hill/ Woodbine, Donelson/Hermitage, and North Nashville health planning districts.

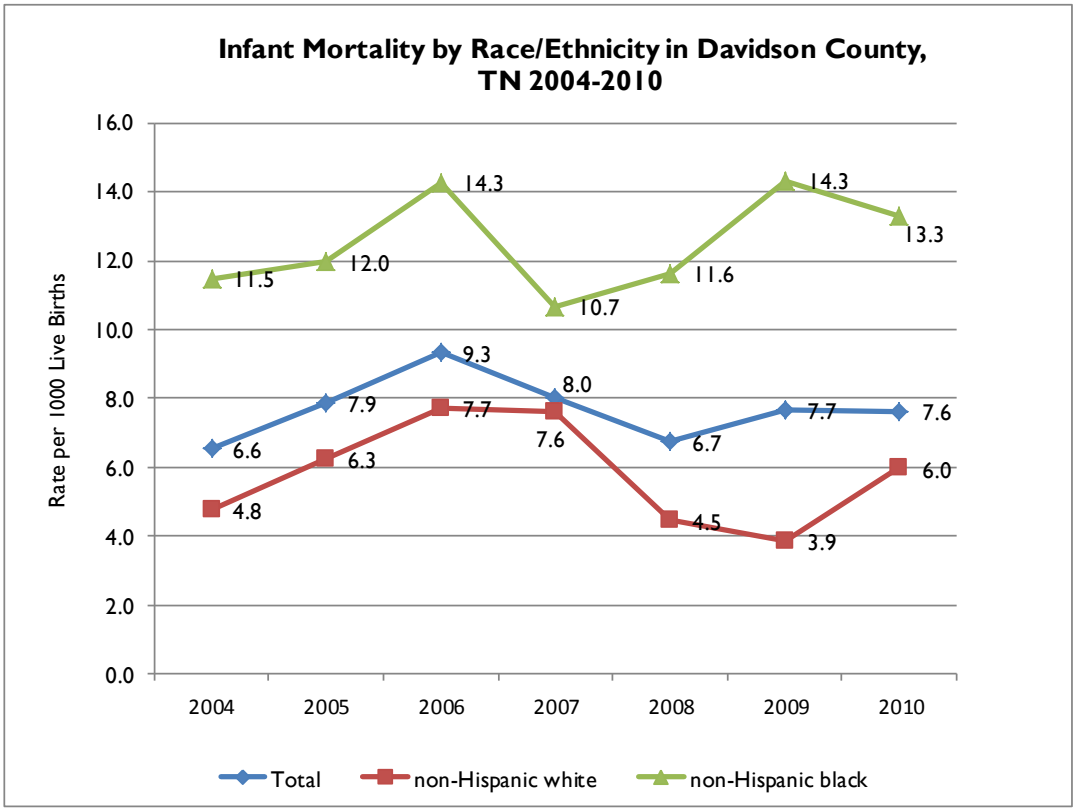
Infant Mortality in Davidson County

Infant Mortality

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.[1] Nationally, infant mortality rates have remained stable since 2000 and child mortality rates have decreased since 2002.[1] On average in Davidson County, infant deaths comprise fifty percent or greater of the total number of child deaths. Because the CDRT can only review a certain percentage of child death cases, the following sections reflect data on the total number of infants and children who die in Davidson County (regardless of case review) and thus provide a more succinct picture of the true burden of child mortality in Davidson County. Due to small numbers, Hispanics births were excluded in the analysis of infant and child mortality.

- In 2010, the infant mortality rate in Davidson County was 7.6 per 1,000 live births, a rate that was 26.7% higher than the Healthy People (HP) 2020 Objective (MICH-1.3).[a]
- The non-Hispanic white infant mortality rate in 2010 was 6 deaths per 1,000 live births, and the non-Hispanic black rate was 13.3. The non-Hispanic black infant mortality rate was more than 2 times the non-Hispanic white rate.
- The non-Hispanic white infant mortality rate in 2010 was 25% higher than the non-Hispanic white rate in 2004. The non-Hispanic black infant mortality rate in 2010 was 15.6% higher than the non-Hispanic black rate in 2004.

[a] Refers to HP 2020 Maternal, Infant, and Child Health Objective 1.3: reduce infant deaths to 6.0 per 1,000 live births



Neonatal & Post-neonatal Mortality (Table 11)

Neonatal mortality is defined as the death of an infant within the first 28 days of life. More than two-thirds of babies die within the first 28 days of life. Most of these babies are born prematurely (before 37 weeks gestation) and with a low birth-weight (under five pounds). Post-neonatal mortality is defined as an infant death between 28 days and one year of life. Prematurity and low birth weights are the greatest predictors of infant mortality.

- In 2010, the neonatal mortality rate in Davidson County was 4.5 (9.8% higher than HP 2020 Objective (MICH-1.4).[b] The non-Hispanic black neonatal rate was 7.4 and the non-Hispanic white rate was 3.8.
- The overall post-neonatal rate was 2.9 (45% higher than HP MICH 1.5).[c] The non-Hispanic black post-neonatal rate was 6.0 and the non-Hispanic white rate was 2.1.

[b] Refers to HP 2020 Maternal, Infant, and Child Health Objective 1.4: reduce neonatal deaths to 4.1 per 1,000 live births
[c] Refers to HP 2020 Maternal, Infant, and Child Health Objective 1.5: reduce post-neonatal deaths to 2.0 per 1,000 live births

Out of 58 infants deaths reviewed in 2010, 28 cases (48.3%) were neonatal deaths.

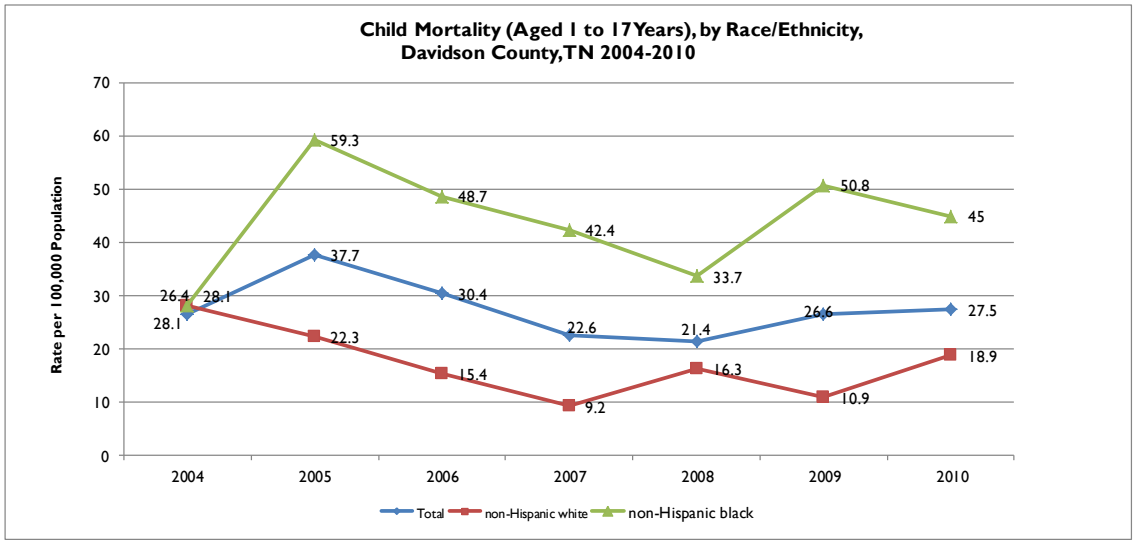
- 24 neonates were born prematurely (23 to 37 weeks of gestation).
- 6 neonates were low birth weight (1500 to 2499 grams) and 18 neonates were very low birth weight babies (500 to 1499 grams).
- 20 neonates were male.
- 15 neonates were non-Hispanic white.
- 3 neonates were Hispanic.

30 (51.7%) cases were post- neonatal deaths.

- 13 post-neonates were born prematurely (23 to 37 weeks of gestation).
- 6 post-neonates were low birth weight babies and 5 post-neonates were very low birth weight.
- 17 post-neonates were male.
- 18 post-neonates were non-Hispanic black.
- 1 post-neonate was Hispanic.

Child Mortality in Davidson County

- In 2010, the mortality rate in Davidson County of children aged 1 to 17 years was 26.4 deaths per 100,000 population. There is no comparable Healthy People 2020 Objective for this measure.
- The non-Hispanic white child death rate in 2010 was 18.9 deaths per 100,000 population, and the non-Hispanic black rate was 45. The non-Hispanic black rate was almost 2.5 times higher than the non-Hispanic white rate.
- The non-Hispanic white child death rate in 2010 was 32.7% lower than the 2004 rate. The non-Hispanic black child death rate in 2010 was 60.1% higher than the rate in 2004.



Age-Specific Mortality

Age is one of the most important factors to consider when describing the occurrence of any disease or illness.[1] Mortality rates are lowest among children aged 5 to 9. Mortality rates are highest among children less than one year of age and aged 15 to 17. The leading cause of death among infants is congenital anomalies and the leading cause of death among children, ages 1 to 17, is unintentional injuries.[2]

The CDRT in Davidson County reviewed 90 deaths that occurred in 2010. Fifty-eight (64.4%) of the cases reviewed were of children less than 1 year of age. The leading causes of death for infants were as follows: 14 deaths (24.1%) resulted from prematurity, 17 deaths (29.3%) resulted from congenital anomalies, and 3 deaths (5.2%) resulted from an infection or some type of medical condition. (Tables 1 &4)

Demographics and manner of death among Infants

- 28 (48.3%) were non-Hispanic black.
- 26 (44.8 %) were non-Hispanic white.
- 4 (6.9%) were Hispanic.
- 37 (63.8%) were male.
- 36 (62.1%) were premature (less than 37 weeks gestation).
- 35 (60.3%) were low birth weight (less than 2500 grams).
- 16 (27.6%) experienced intrauterine tobacco exposure.
- 9 (15.5%) experienced intrauterine drug exposure.
- 7 (12.1%) mothers received late or no prenatal care.

Demographics and manner of death of the remaining 32 reviewed deaths are as follows:

- 8 deaths (8.9% of total) occurred to children aged 1 to 4:
    - 4 deaths: non-Hispanic white
    - 3 deaths: non-Hispanic black
    - 5 deaths: male
    - 4 deaths: natural
    - 3 deaths: unintentional injury
- 8 deaths (8.9% of total) occurred to children aged 5 to 9:
    - 1 death: non-Hispanic white
    - 7 deaths: non-Hispanic black
    - 8 deaths: female
    - 4 deaths: natural
    - 3 deaths: unintentional injury

- 5 deaths (5.6% of total) occurred to children aged 10 to 14:
    - 1 death: Asian
    - 4 deaths: non-Hispanic black
    - 3 deaths: male
    - 1 death: natural
    - 3 deaths: homicide
    - 1 death: suicide

- 11 deaths (12.2% of total) occurred to children aged 15 to 17:
    - 5 deaths: non-Hispanic black
    - 3 deaths: non-Hispanic white
    - 2 deaths: Hispanic
    - 9 deaths: male
    - 6 deaths: unintentional injury
    - 3 deaths: homicide
    - 2 deaths: suicide

Deaths Due to Natural Causes

Death from natural causes is the leading cause of death in children under one and the seconding leading cause of death to children over one year of age. Death from natural causes are usually the result of common health conditions such as prematurity, congenital anomalies (birth defects), genetic disorders, and cancers. Although many health conditions that contribute to natural deaths are not preventable, certain public health practices can be implemented to decrease/prevent fatalities.[3] These may include genetic counseling and screening, preconception health, decreasing exposure to environmental hazards, and increasing compliance with treatment regimens.[3]

A total of 43 deaths reviewed by the CDRT were due to natural causes, representing 47.8% of the reviewed child deaths. (Table 1)

Demographics

- 34 deaths (79.1%) occurred to infants less than 1 year of age.
- 4 deaths (9.3%) occurred to children aged 1 to 4.
- 4 deaths (9.3%) occurred to children aged 5 to 9.
- 1 (2.3%) death occurred to a child aged 10 to 14.
- 25 children (58.1%) were male.
- 20 children (46.5%) were non-Hispanic white.
- 20 children (46.5%) were non-Hispanic black.
- 3 children (7%) were Hispanic.

Causes of Death

In the United States, one in every eight babies are born premature (more than half a million) and approximately one in every thirty-three babies are born with a birth defect.[4] Reflective of national trends, in Davidson County, prematurity and congenital anomalies are the leading causes of natural deaths, and occur almost exclusively 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 for both phenomena. These include having a previous preterm birth, medical conditions such hypertension, diabetes, and smoking/substance abuse, genetic disposition, and age. Early access to quality preconception and prenatal care can reduce the likelihood of pre-term births and congenital anomalies.[4]

- 18 (41.2%) deaths were due to congenital anomalies. Of these:
  - 10 (55.5%) received prenatal care.[d]
  - 3 (16.7%) mothers had a medical condition during pregnancy.
  - 2 (11.1%) had a positive drug screen.

[d] Interpret data with caution: data is only reliable for those who received prenatal care due to a large percentage of missing information.

- 15 (34.9%) deaths were due to prematurity. Of these:
  - 7 (46.7%) received prenatal care.[d]
  - 9 (60%) had a medical condition during pregnancy.
  - 3 (20%) had a positive drug screen.[e]
- 13 (7%) deaths were due to neurological disorders.
- 2 (4.7%) deaths were due to asthma.
- 1 (2.3%) death was due to malnutrition/dehydration.
- 1 (2.3%) death was due to an unspecified infection.

Circumstances

- 2 children (4.7%) were not receiving treatment for the medical condition.
- 26 children (60.5%) were receiving treatment for the medical condition within 48 hours of death.
- In 22 (51.2%) cases, death was expected result due to a medical condition.
- In 4 cases (9.3%), environmental tobacco smoke was a contributing factor

[e] There were a total of 55 (61.1%) positive drugs screens in 2010.

Deaths Due to Sleep-Related Factors

More than 4,000 infants die suddenly and unexpectedly in the United States annually, without a prior known illness or injury.[5] Prior to 1998, sudden infant death syndrome (SIDS) was frequently declared as a legitimate cause of death among infants in these cases.[6] Since 1998, the classification of infant deaths as SIDS has decreased. As more deaths appear to be "sleep related," more deaths are being defined as sudden unexpected infant death (SUID). Many SUID deaths are classified as accidental suffocation, SIDS, or undetermined. The classification of "SIDS" is only declared after rigorous autopsy, death scene investigation, and review of infant's clinical history. A small percentage of SUID cases are classified as undetermined. This usually results when the requirements for a SIDS classification are not fully met (e.g., no autopsy or death scene investigation).[5]

Twenty-two deaths reviewed by the CDRT were determined to be sleep-related, representing 24.4% of the total deaths. Of these: 5 deaths were due to asphyxia (suffocation), 2 deaths were due to a medical condition, 1 death was due to sudden infant death syndrome (SIDS), and 14 deaths were due to other causes. (Table 5)

Demographics

- 21 deaths (95.5%) occurred to children less than 1 year of age.
- 7 deaths (31.8%) occurred to non-Hispanic white children.
- 14 deaths (63.6%) occurred to non-Hispanic black children.
- 1 death (4.5%) occurred to a Hispanic child.
- 12 deaths (54.5%) were male.

Risk factors

- 17 children (77.3%) were not placed to sleep in a crib or bassinet.
- 12 children (54.5%) were not sleeping on their back.
- 8 children (36.4%) were placed to sleep on unsafe bedding or with toys.
- 13 children (59.1%) were sleeping with other people.
- In 2 cases (9.1%), an adult was alcohol or drug impaired.
- 15 cases (68.2%) involved some type of negligence.

Circumstances

- 8 children (36.4%) were found with their nose and mouth unobstructed by a person or object.
- 4 children (18.2%) were found on top of an object or person (blankets, pillows, etc.).
- 3 children (13.6%) were found under an object (blankets, towels, stuffed animals, etc.).
- 3 children (13.6%) were found pressed or wedged into an object or between persons (e.g. mattress or blankets).
- The circumstances were unknown in 3 deaths (13.6%).

Deaths Due to Unintentional Injuries

Although deaths due to unintentional injuries contribute as much to the public health burden as do smoking and obesity, deaths due to unintentional injuries are a highly under-recognized public health problem.[7] Unintentional injuries are the leading cause of death and disability in the United States. The costs of unintentional injuries are staggering, both financially and psychologically. Economically, unintentional injuries cost 17 billion dollars annually. Disabilities that can occur as a result of unintentional injuries can lead to productivity loss, non-medical expenditures (wheelchair, personal caregivers), and diminished quality of life.[7]

Unintentional injuries were the seconding leading cause of death among children in Davidson County who died in 2010. There were 18 deaths due to unintentional injuries, representing 20% of the total deaths. The greatest number of deaths occurred to infants and children age 15 to 17, (6, 33.3%), females (11, 61.1%), and non-Hispanic blacks (8, 44.4%). Only three deaths (16.7%) occurred among Hispanics. (Table 7)

Motor Vehicle Deaths

Motor vehicle crashes consistently remain the leading cause of death among children and young adults (age 5 to 34) in the United States. Approximately 11.2% of young adults were killed in motor vehicle accidents and 2.3 million children were treated in emergency rooms for motor vehicle injuries in 2009. Children, teens, and older adults are the highest risk for being killed in motor vehicle accidents. Prevention efforts are currently focused on improving car and booster seat use, seat belt use, and impaired driving.[8]

Motor vehicle deaths were the leading cause of death due to unintentional injuries in 2010. There were six deaths due to motor vehicle accidents, representing 6.7% of the total deaths and 33.3% of deaths due to unintentional injuries. (Table 7)

Demographics

- 4 deaths (22.2%) occurred to teens aged 15 to 17.
- 1 death (5.6%) occurred to a child aged 5 to 9.
- 1 death (5.6%) occurred to a child aged 1 to 4.
- 4 deaths (22.2%) were male.
- 2 deaths (11.1%) were non-Hispanic white.
- 2 deaths (11.1%) were Hispanic.

Circumstances

- 4 children were passengers in the vehicle.
- 2 children were pedestrians.
- The driver was alcohol/drug impaired in one incident.
- In 2 cases, the drivers were in violation of Tennessee graduated drivers law.
- In 3 cases, there were other teen passengers in the vehicle with the driver.
- 2 incidents involved unsafe driving conditions (fog, rain, etc.).

Additional deaths due to unintentional injuries were caused by suffocations (5, 27.8%), fires/burns (3, 16.7%), and drowning (2, 11.1%).

Poisoning Circumstances

One death (5.6%) was due to an accidental overdose of a prescription drug. The child had a history of substance abuse, problems in school, and was previously in juvenile detention and drug rehabilitation.

Fire Circumstances

In the incidents involving fires/burns, all three were caused by space heaters. Smoke detectors were present in the home in all three cases. In one case, the smoke detector was not working properly and in the two remaining cases, the smoke detector was damaged due to intense fire flames.

Drowning Circumstances

Both incidents were caused by the child drowning in a home pool. One incident involved possible violation of Tennessee fence laws and a lack of supervision. The remaining incident involved a medical event by a caretaker other than the biological parent.

Suffocation Circumstances

The cases involving suffocation were due to sleep-related conditions in children less than one year of age.

- 5 (27.8% of unintentional injuries) deaths were female.
- 4 (22.2% of unintentional injuries) deaths were non-Hispanic black.

Deaths Due to Violence

Approximately 51,000 people die from violence related deaths in the United States each year. Violence related deaths primarily include suicides and homicides, with suicides ranking as the 10th leading cause of death in the United States and homicides as the 15th leading cause of death. Homicide is the third leading cause of death among children in Davidson County and suicide is the fourth leading cause of death (excluding undetermined deaths).[9]

A total of 10 deaths (11.1%) were due to some type of violence, representing 11.1% of the total deaths. The greatest number of deaths occurred to children aged 15 to 17 (5, 50%), males (9, 90%), and non-Hispanic blacks (7, 70%). (Table 9)

Suicides

Among youth, suicide is the third leading cause of death. The three leading methods of suicidal deaths include firearms, suffocations, and poisoning. Teen males are four times more likely to commit suicide compared to females, although females are more likely to report attempting to commit suicide.[10] The risk for suicide is highest among non-Hispanic white male teens, although suicidal rates among non-Hispanic blacks and Hispanics are increasing. Additional risk factors for suicide include previous suicide attempts, alcohol/drug abuse, history of mental illness, and easy access to lethal methods.[11]

There were three deaths due to suicide, representing 30% of deaths due to violence and 3.3% of the total deaths. (Table 9)

Demographics

- 2 deaths occurred to teens aged 15 to 17 years.
- 1 death occurred to a child aged 10 to 14.
- 2 deaths were male.
- 2 deaths were non-Hispanic black.
- 1 death was non-Hispanic white.

Circumstances

- 1 case involved asphyxia.
- 2 cases involved use of weapons (handguns). In one case, the handgun was owned by the biological parent.
- A note was left in one case.
- In 2 cases, suicide was unexpected.
- 1 case involved a family history of suicide.
- 1 case was related to gang activity.
- 1 case involved a child with mental health problems, substance abuse, and problems in school.

- 1 incident involved an open CPS case.

Homicides

Homicides are the leading cause of death for non-Hispanic black and Hispanic male teens.[9] Although racial differences in homicidal deaths are apparent, "race" alone is not a significant risk factor for homicidal deaths. Contributing factors for differences in homicidal rates include poverty, access of handguns, family dynamics, drug/gang activity, and decreased school performance. Homicidal deaths are usually the result of an argument/ dispute between casual acquaintances and usually involve inexpensive, easily acquired handguns.[12]

There were seven deaths due to homicide, representing 70% of deaths due to violence and 7.8% of the total deaths. (Table 9)

Demographics

- 3 deaths occurred to teens aged 15 to 17 years.
- 3 deaths occurred to children aged 10 to 14.
- 1 death occurred to a child less than 1 year of age.
- 7 deaths were male.
- 5 deaths were non-Hispanic black.
- 1 death was non-Hispanic white.
- 1 death was Asian.

Circumstances

- 1 case involved suffocation.
- 6 cases involved use of weapons (5 handguns, 1 hunting rifle).
- 2 cases were gang related.
- 3 cases involved children with a positive drug screen.
- 3 cases involved children with a mental health history.
- 3 cases involved children with problems in school and past criminal history.
- There was an open CPS case in 1 incident.

Acts of Omission or Commission

In the United States, every 6 minutes, state and local agencies receive a report of child maltreatment and slightly over 2% of these reports result in death. Children younger than four years of age and with special needs are at the greatest risk for abuse/death in these cases.[13]

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/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 self or others that may be involved in a child's death.

A total of 38 deaths (42.2%) reviewed by the CDRT involved an act of omission (i.e. neglect) or commission (i.e. abuse or assault). In 14 cases, the acts of omission or commission caused the death of the child. In 12 cases, the act that caused the death was intentional. Among the remaining 24 cases, the act of omission or commission contributed to the death of the child. In 20 cases, the act that contributed to the death was unintentional and in 3 cases intent was undetermined. (Table 6)

Demographics

- 22 deaths (57.9%) occurred among infants.
- 2 deaths (5.3%) occurred among children aged 1 to 4 years.
- 3 deaths (7.9%) occurred among children aged 5 to 9 years.
- 5 deaths (13.2%) occurred among children aged 10 to 14 years.
- 6 deaths (15.8%) occurred among teens aged 15 to 17 years.
- 21 (55.3%) deaths were male.
- 1 (2.6%) death was Hispanic.
- 9 (23.7 %) deaths were non-Hispanic white.
- 26 (68.4%) deaths were non-Hispanic black.

Circumstances

Most cases involving acts of commission/omission are homicidal or suicidal in nature; however, there were 4 cases involving child neglect/abuse.

- 1 case involved physical child abuse.
- 3 cases involved medical neglect.
- In 2 cases, neglect was chronic with the child or a pattern in the family.
- 2 of the cases involving neglect had an open CPS case.
- Action was taken by CPS in all 3 cases involving neglect.

Child Deaths from 2006 to 2010

Small numbers of events often makes it difficult to discern patterns and possibilities for prevention. For this reason, all deaths reviewed by the Davidson County CDRT occurring from 2006 through 2010 were analyzed in aggregate. Due to accuracy of coding in the child death database, ethnicity was not reported separately from race in the analysis of child deaths. Totals will add up to more than 100% due to the dual reporting of ethnicity and race.

The CDRT reviewed the deaths of 513 resident children of Davidson County that died from 2006 to 2010.

- 301 deaths (58.7%) occurred among male children.
- 260 deaths (50.7%) occurred among black children.
- 9 deaths (1.8%) occurred among Asian children.
- 69 deaths (13.5%) occurred among Hispanic children.
- 349 deaths (68%) occurred among children less than 1 year of age.

Manner of Death

- 325 deaths (63.4%) were due to natural causes. Of these:
    - 94 deaths (28.9% of natural causes): congenital anomalies
    - 145 deaths (44.6% of natural causes): prematurity
- 72 deaths (14%) were due to unintentional injuries. Of these:
    - 30 deaths (41.7% of unintentional injuries): motor vehicle crashes
    - 24 deaths (33.3% of unintentional injuries): asphyxia
- 38 deaths (7.4%) were due to homicide.
- 9 deaths (1.8%) were due to suicide.
- 58 deaths (11.3%) were undetermined.
- 11 deaths (2.1%) were of unknown manner (left blank on the death certificate).

Preventability of Deaths

From 2006 to 2010, 143 deaths (27.9%) were judged to have been preventable, and in 39 deaths (7.6%), preventability could not be determined. (Table 3)

- 100% of suicide and homicide cases were judged as preventable.
- 71 (98.6%) deaths due to unintentional injuries were judged as preventable.
- 9 (2.8%) deaths due to natural causes were judged as preventable.
- 16 (27.6%) undetermined deaths were judged as preventable.

Factors that Hindered Review or Resulted in Specific Action

- The CDRT team disagreed with the official manner of death in 26 cases (5.1%) and the official cause of death in 15 cases (2.9%).
- Confidentiality issues prevented the full exchange of information in 6 cases (1.2%).
- Review led to additional investigation in five cases (1%).
- Review led to implementation of a policy or prevention initiative in 4 cases (0.8%).
- Evidence of prior abuse was found in 13 cases (2.5%), and action was taken by Child Protective Services (CPS) as a result of the death in 25 cases (4.9%).
- Other factors such as an inaccurate or incomplete death/birth certificate hindered the review in 149 cases (29%).

Age-Specific Mortality

The CDRT in Davidson County reviewed 513 deaths from 2006 through 2010. Approximately 349 (68%) of the cases reviewed were of children less than 1 year of age. (Table 2)

Demographics and Manner of Death among Infants

- 175 (50.1%) were white.
- 166 (47.6%) were black.
- 2 (0.6%) were Pacific Islanders.
- 4 (1.1%) were Asian.
- 51 (14.6%) were Hispanic.
- 234 (67%) were premature (less than 37 weeks gestation).
- 229 (65.6%) were low birth weight (less than 2500 grams).
- 64 (18.3%) experienced intrauterine tobacco exposure.
- 25 (7.2%) experienced intrauterine drug exposure.
- 61 (17.5%) mothers received late or no prenatal care.

Demographics and manner of death of the remaining 164 reviewed deaths are as follows:

- 50 deaths (9.7% of total) occurred to children aged 1 to 4:
    - 26 deaths: black
    - 23 deaths: white
    - 5 deaths: Hispanic
    - 26 deaths: male
    - 21 deaths: natural
    - 18 deaths: unintentional injury
    - 4 deaths: homicide
- 27 deaths (5.3% of total) occurred to children aged 5 to 9:
    - 12 deaths: white
    - 15 deaths: black
    - 1 death: Hispanic
    - 14 deaths: male
    - 15 deaths: natural
    - 9 deaths: unintentional injury
    - 1 death: suicide
    - 1 death: homicide

- 35 deaths (6.8% of total) occurred to children aged 10 to 14:
    - 26 deaths: black
    - 8 deaths: white
    - 2 deaths: Hispanic
    - 1 death: Asian
    - 19 deaths: male
    - 20 deaths: natural
    - 2 deaths: unintentional injury
    - 6 deaths: homicide
    - 4 deaths: suicide
- 52 deaths (10.1% of total) occurred to children aged 15 to 17:
    - 26 deaths: black
    - 23 deaths: white
    - 3 deaths: Asian
    - 10 deaths: Hispanic
    - 42 deaths: male
    - 7 deaths: natural
    - 19 deaths: unintentional injury
    - 21 deaths: homicide
    - 4 deaths: suicide

Deaths Due to Natural Causes

A total of 325 deaths (63.4%) reviewed by the CDRT were due to natural causes. (Table 2)

Demographics

- 262 deaths (80.6%) were to infants less than 1 year of age.
- 21 deaths (6.5%) occurred to children aged 1 to 4.
- 20 deaths (6.2%) occurred to children aged 10 to 14.
- 15 deaths (4.6%) occurred to children aged 5 to 9.
- 7 deaths (2.2%) occurred to children aged 15 to 17.
- 183 children (56.3%) were male.
- 161 children (49.5%) were white.
- 156 children (48%) were black.
- 44 children (13.5%) were Hispanic.
- 6 children (1.8%) were Asian.

Causes of Death

- 94 deaths (28.9%) were due to congenital anomalies.
- 13 deaths (4%) were due to cancer.
- 145 deaths (44.6%) were due to prematurity.
- 10 deaths (3.1%) were due to pneumonia.
- 12 deaths (3.7%) were due to neurological and seizure disorders.
- 3 deaths (0.9%) were due to asthma.
- 19 deaths (5.8%) were due to some type of infection.
- 2 deaths (0.6%) were due to SIDS.

Circumstances

- 14 children (4.3%) were not receiving treatment for the medical condition.
- 275 children (84.6%) were receiving treatment for the medical condition within 48 hours of death.
- In 257 cases (79.1%), death was the expected result of the medical condition.
- In cases for which family compliance was necessary for treatment, 6 (1.8%) were not compliant.
- Environmental tobacco exposure was a contributing factor in 11 (3.4%) deaths.

Deaths Due to Sleep-Related Factors

A total of 86 deaths (16.8%) reviewed by the CDRT were determined to be sleep-related, representing 16.8% of the total deaths. Of these: 24 deaths were due to asphyxia deaths, 11 deaths were due to a medical condition and 4 deaths were due to SIDS. The cause of death was undetermined in 2 cases and 45 deaths were due to other causes. (Table 5)

Demographics

- 79 deaths (91.9%) occurred to children less than 1 year of age.
- 36 deaths (41.9%) occurred to white children.
- 42 deaths (48.8%) occurred to black children.
- 8 deaths (9.3%) occurred to Hispanic children.
- 43 deaths (50%) occurred to males.

Risk factors

- 59 children (68.6%) were not placed to sleep in a crib or bassinet.
- 44 children (51.2%) were not sleeping on their back.
- 30 children (34.9%) were placed to sleep on unsafe bedding or with toys.
- 40 children (46.5%) were sleeping with other people.
- 4 children (4.7%) were sleeping with an obese adult.
- In 4 cases (4.7%), the supervising adult was drug impaired.

Circumstances

- 33 children (38.4%) were found with their nose and mouth unobstructed by a person or object.
- 8 children (9.3%) were found on top of another person or object.
- 7 children (8.1%) were found under an object (blankets, towels, stuffed animals, etc.).
- 6 children (7%) were found between a person or object (e.g. between mattress and wall).
- 16 children (18.6%) were found pressed or wedged into an object (e.g. mattress or blankets).
- 2 children (2.3%) were tangled in an object and 1 child (1.2%) fell or rolled into an object.
- The circumstances were unknown in 11 deaths (12.8%).

Deaths Due to Unintentional Injuries

There were 72 deaths due to unintentional injuries, representing 14% of the deaths that occurred from 2006 to 2010. The greatest number of deaths occurred among infants (24, 33.3%), males (39, 54.2%), and blacks (37, 51.4%). There were 12 deaths (16.7%) among Hispanic children. (Table 8)

Motor Vehicle Deaths

There were 30 deaths due to motor vehicle crashes, representing 41.7% of the deaths due to unintentional injuries and 5.8% of the total deaths. (Table 8)

Demographics

- 14 deaths (46.7%) occurred to teens aged 15 to 17.
- 10 deaths (33.3%) occurred to children aged 1 to 4.
- 5 deaths (16.7%) occurred to children aged 5 to 9.
- 1 death (3.3%) occurred to a child less than 1 year of age.
- 19 deaths (63.3%) were male.
- 15 deaths (50%) were white.
- 14 deaths (46.7%) were black.
- 1 death (3.3%) was Asian.
- 6 deaths (20%) were Hispanic.

Circumstances

- In 20 cases, children were passengers in the vehicle and in 3 cases children were drivers.
- In 2 cases, children were on a bicycle and in 5 cases children were pedestrians.
- The driver was alcohol/drug impaired in 2 incidents.
- In 6 cases, the drivers were in violation of the Tennessee graduated driver's license law or did not have a license.
- In 9 cases, there were other teen passengers in the vehicle with driver.
- 4 incidents involved unsafe driving conditions (fog, rain, etc.).
- In 10 cases vehicle protective measures (seatbelt, airbag, child seat etc.) were present but used incorrectly. In 17 cases vehicle protective measures were present but not used.

Additional deaths due to unintentional injuries were caused by suffocations (24, 33.3%), fires/burns (7, 9.7%), falls/crush (4, 5.6%) and drowning (3, 4.2%). Two deaths (2.8%) were caused by accidental overdose of prescription drugs and one (1.4%) death was weapon related.

The following descriptions of circumstances exclude information related to 2010 cases

Fire Circumstances

In the incidents involving fires/burns, three incidents were caused by space heaters, one incident was due to electrical wiring, and one incident was categorized as a grease fire. The smoke detector was not working properly in one case. In one case a smoke detector was present but not working. One case involved an extensive Department of Children's Services (DCS) history and prior reports of similar incidents.

Drowning Circumstances

The child was playing around a lake with a restricted swim zone. The child could not swim well but decided to get in the lake with other friends. Signs and gates for the restricted swim zone were visible.

Fall/Crushes Circumstances:

There were two cases that involved an object falling on a child. The remaining cases involved a child falling from a surface such as staircase, etc. One incident involved an open CPS case and one incident involved violation of child labor laws and questionable immigration status of the child.

Poisoning Circumstances

The incident involved accidental overdose of crack cocaine that belonged to a friend of the biological mother. The substance was stored in an open area and supervision was needed but not provided at the time of the incident.

Suffocation Circumstance

The majority of cases (20, 83.3%) involving suffocation were due to sleep-related conditions in children less than one year of age. Two cases involved a child accidentally falling into or being covered by an object. In two cases, the circumstances were unknown.

- 8 (40% of unintentional injuries) deaths were male.
- 10 (50% of unintentional injuries) deaths were black.
- 2 (10% of unintentional injuries) deaths were Hispanic.

Deaths Due to Violence

There were 47 deaths (9.2%) attributed to violence from 2006 to 2010. The greatest number of deaths occurred among children aged 15 to 17 (25, 53.2%), males (37, 78.7%), and blacks (30, 63.8%). There were 7 deaths (14.9%) among Hispanic children. (Table 10)

Suicides

There were 9 deaths due to suicide, representing 19.1% of violence related deaths and 1.8% of the total deaths. (Table 10)

Demographics

- 4 deaths occurred to children aged 15 to 17 years.
- 4 deaths occurred to children aged 10 to 14 years.
- 1 death occurred to a child aged 5 to 9 years.
- 6 deaths were male.
- 5 deaths were black.

Circumstances (excludes circumstantial information related to 2010 cases)

- 5 cases involved asphyxia (strangulation).
- 1 case involved use of a weapon (handgun), which was owned by an acquaintance of the biological parent.
- A note was left in 3 cases.
- In 5 cases, suicide was unexpected. One case involved a prior suicide attempt and in one case, suicide was premeditated (child talked about plans for suicide).
- In 2 cases, the suicide was triggered by family discord.
- 2 cases involved children with a history of mental health problems.
- In 1 case, a child had a physical disability.
- 1 incident involved an open CPS case.

Homicides

There were 38 deaths due to homicide, representing 80.9% of violence related deaths and 7.4% of the total deaths. (Table 10)

Demographics

- 21 deaths occurred among teens aged 15 to 17 years.
- 6 deaths occurred among children aged 10 to 14 years.
- 6 deaths occurred among children less than 1 year of age.
- 4 deaths occurred among children aged 1 to 4 years.
- 1 death occurred to a child aged 5 to 9 years.
- 31 deaths were male.
- 25 deaths were black.
- 7 deaths were Hispanic.

Circumstances (n=38)

- Child had problems in school: 10 (26.3%)
- Mental health history: 5 (13.2%)
- Child had physical disability: 3 (7.9%)
- Open CPS case: 13 (34.2%)
- Criminal history: 15 (39.5%)
- Juvenile Detention: 9 (23.7%)
- Positive drug screen: 32 (84.2%)

Weapon Circumstances (n=35)

- History of weapon offenses: 5 (14.3%)
- Used weapon for commission of a crime: 12 (34.3%)

Type of Weapon

- Sharp or blunt instrument: 4 (11.4%)
- Person body part: 6 (17.1%)
- Firearm: 24 (68.6%)
    - Handgun: 20 (57.1%)
    - Shotgun: 1 (2.9%)
    - Hunting rifle: 3 (8.6%)

***Firearm licensed in only 2 (5.7%) cases. ***

Weapon Owner

- Acquaintance: 4 (11.4%)
- Rival gang member: 5 (14.3%)
- Other: 4 (11.4%)

Incident triggered by

- Argument/Jealousy: 11 (31.4%)
- Gang related: 10 (28.6%)

One homicide death was due to poisoning and involved deliberate poisoning of a child by the mother. The mother had history of depression and prior DCS history with unsubstantiated claims.

Five of the homicidal cases were children less than one year of age. Death resulted from physical abuse of a child by beating or shaking.

- Two cases involved a prior history of intimate partner violence.
- In 2 cases, the child was in custody of caregiver other than biological parent and other children were removed.
- In one case, the father was the perpetrator.
- In one case, the mother had a history of drug/alcohol abuse, criminal history, and suicidal ideations, but there was no CPS investigation until after death of the child.

Acts of Omission or Commission

A total of 90 deaths (17.5%) reviewed by the CDRT involved an act of omission (i.e. neglect) or commission (i.e. abuse or assault). The acts of omission or commission caused the death of the child in 43 incidents, and among these 32 were intentional. The acts of omission or commission contributed to the death of the child in 50 incidents, and among these 4 were intentional. (Table 6)

Demographics

- 39 deaths (43.3%) occurred among infants.
- 19 deaths (21.1%) occurred among teens aged 15 to 17 years.
- 15 deaths (16.7%) occurred among children aged 1 to 4 years.
- 13 deaths (14.4%) occurred among children aged 10 to 14 years.
- 4 deaths (4.4%) occurred among children aged 5 to 9 years.
- 54 (60%) deaths were male.
- 10 (11.1%) deaths were Hispanic.
- 56 (62.2%) deaths were black.
- 31 (34.4%) deaths were white.
- 3 (3.3%) deaths were Asian.

Circumstances: A total of 19 (21.1%) cases involved child abuse/neglect.

- **9 cases involved child abuse:**
    - 8 of those cases involved physical abuse of some type (head trauma, beating/kicking etc.).
    - In 2 cases, the abuse was chronic with the child.
    - In 2 cases, the abuse was a pattern within the family.
    - In 3 cases, the abuse was an isolated incident.

CPS Information

- 3 incidents involved open CPS cases.
- In 3 cases, there was evidence of prior abuse.
- In 3 cases, the child had history of child maltreatment as a victim.
- In 2 cases, the child was placed outside of the home.
- CPS action was taken as a result of the death review in 5 cases.

Perpetrator Information

- Someone other than the biological parent was responsible for abuse in 3 of the cases.
- In 2 cases, the perpetrator was drug/alcohol impaired.
- In 4 cases, the perpetrator had a history of substance abuse.
- In 5 cases, the perpetrator had a history of child maltreatment.
- In 2 cases, the perpetrator had a history of intimate partner violence.
- In 2 cases, the perpetrator had a disability or chronic illness that caused the death of a child.

- **10 cases involved child neglect:**
  - 1 case involved abandonment.
  - 2 cases involved a failure to provide necessities.
  - 3 cases involved a failure to protect from hazards.
  - 6 cases involved medical neglect.
  - Neglect was chronic with the child in 4 cases and a pattern in the family in 2 cases.
  - Someone other than the biological parent was responsible for the neglect in 1 case.

CPS Information

- In 5 cases, there was an open CPS case.
- In 5 cases, CPS found evidence of prior abuse.
- In 4 cases, the child had a history of child maltreatment as a victim.
- In 1 case, the child was placed outside of the home.
- Action was taken as a result of the death in 8 cases.

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References

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.

2. Centers for Disease Control and Prevention: Child Health. Retrieved April 19, 2012 from http://www.cdc.gov/nchs/fastats/children.html.

3. National Center for Child Death Review: Keeping Kids Alive. Retrieved April 19, 2012 from www.childdeathreview.org/causesNNS.htm.

4. Centers for Disease Control and Prevention: Premature Births. Retrieved April 19, 2012 from http://www.cdc.gov/Features/PrematureBirth/.

5. 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.

6. Centers for Disease Control and Prevention: Sudden Unexplained Infant Death Initiative. Retrieved April 26, 2012 from http://www.cdc.gov/sids/SUIDSabout.html.

7. Borse, N.N., Gilchrist, J., Dellinger, A. M., Rudd, R. A., Ballesteros, M.F., and Sleet, D. A. (2008). Childhood Injury Report: Patterns of Unintentional Injuries among 0-19 Year Olds in the United States, 2000-2006. Centers for Disease Control and Prevention Division of Unintentional Injury Prevention.

8. Centers for Disease Control and Prevention: Injury Prevention and Control: Motor Vehicle Safety. Retrieved April 26, 2012 from http://www.cdc.gov/motorvehiclesafety/.

   Centers for Disease Control and Prevention: Injury Prevention and Control: Violence Prevention. Retrieved April 26, 2012 from http://www.cdc.gov/ViolencePrevention/index.html.

10. Centers for Disease Control and Prevention: Suicide Prevention. Retrieved April 27, 2012 from http://www.cdc.gov/ViolencePrevention/pub/youth_suicide.html.

11. National Center for Child Death Review: Keeping Kids Alive. Retrieved April 20, 2012 from www.childreview.org/causesSUI.htm.

12. National Center for Child Death Review: Keeping Kids Alive. Retrieved April 20, 2012 from www.childreview.org/causesHF.htm.

13. Centers for Disease Control and Prevention: Suicide Prevention. Retrieved April 27, 2012 from http://www.cdc.gov/violenceprevention/pdf/CM-DataSheet-a-pdf.

Appendix

Table 1. Number and Percentage of Deaths by Manner of Death and Age, Race/Ethnicity, and Sex, Davidson County, Tennessee, 2010

	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
Natural	43	47.8	34	4	4	1	0	25	18	20	20
Unintentional Injury	18	20	6	3	3	0	6	7	11	6	8
Suicide	3	3.3	0	0	0	1	2	2	1	1	2
Homicide	7	7.8	1	0	0	3	3	7	0	1	5
Undetermined [1]	18	20	16	1	1	0	0	12	6	5	12
Unknown [2]	1	1.1	1	0	0	0	0	1	0	1	0
Total	90		58	8	8	5	11	54	36	34	47
Percentage*	100		64.4	8.9	8.9	5.6	12.2	60	40	37.8	52.2

*Percentage of total deaths

[1] Undetermined due to suspicious circumstances

[2] Team does not have information on the primary cause of death.

Table 2. Number and Percentage of Deaths by Manner of Death and Age, Race, and Sex, Davidson County, Tennessee, 2006-2010

	Total		Age					Sex		Race			Ethnicity	
Manner of	N	%	< 1 year	1-4	5-9	10-14	15-17	Male	Female	White	Black	Asian	non-	Hispanic
Natural	325	63.4	262	21	15	20	7	183	141	161	156	6	279	44
Unintentional Injury	72	14	24	18	9	2	19	39	33	34	37	1	60	12
Suicide	9	1.8	0	0	1	4	4	6	3	4	5	0	9	0
Homicide	38	7.4	6	4	1	6	21	31	7	11	25	2	31	7
Undetermined [1]	58	11.3	48	7	1	2	0	34	24	25	32	0	53	5
Unknown [2]	11	2.1	9	0	0	1	1	8	3	6	5	0	10	1
Total	513		349	50	27	35	52	301	211	241	260	9	442	69
Percentage*	100		68	9.7	5.3	6.8	10.1	58.7	41.1	47	50.7	1.8	86.2	13.5

*Percentage of total deaths

[1] Undetermined due to suspicious circumstances

[2] Team does not have information on the primary cause of death.

Table 3. Deaths by Manner and Preventability, Davidson County, 2010 and 2006-2010					
	Could the Death Have Been Prevented?				
2010					
Manner	No	Yes	Could not determined	Unknown	Total
Natural	39	4	0	0	43
Unintentional Injury	1	17	0	0	18
Suicide	0	3	0	0	3
Homicide	0	7	0	0	7
Undetermined	2	12	4	0	18
Unknown	1	0	0	0	1
Total	43	43	4	0	90
2006-2010					
Natural	309	9	5	2	325
Unintentional Injury	1	71	0	0	72
Suicide	0	9	0	0	9
Homicide	0	38	0	0	38
Undetermined	8	16	34	0	58
Unknown	11	0	0	0	11
Total	329	143	39	2	513

Table 4. Characteristics of Infant Deaths by Manner of Death Listed on Death Certificate,

	Manner of Death on Death Certificate						
	Natural	Unintentional Injury	Homicide	Undetermined	Unknown	Total	
2010	N	N	N	N	N	N	%
Deaths Reviewed	34	6	1	16	1	58	100.0
Premature (<37 weeks)	29	3	0	3	1	36	62.1
Low Birth Weight (<2500 grams)	28	2	0	4	1	35	60.3
Intrauterine Smoke Exposure	7	3	0	5	1	16	27.6
Intrauterine Drug Exposure	3	2	1	3	0	9	15.5
Late(>6 weeks) or No Prenatal Care	3	2	1	1	0	7	12.1
2006-2010							
Deaths Reviewed	262	24	6	48	9	349	100.0
Premature (<37 weeks)	209	8	0	9	8	234	67
Low Birth Weight (<2500 grams)	203	6	1	11	8	229	65.6
Intrauterine Smoke Exposure	39	8	0	16	1	64	18.3
Intrauterine Drug Exposure	15	3	1	6	0	25	7.2
Late(>6 weeks) or No Prenatal Care	43	6	2	8	2	61	17.5

*Categories are mutually exclusive.

Table 5. Factors Involved in Sleep-Related Deaths By Age Group, Davidson County, 2010 and 2006-2010								
	Age Group							
2010	0-1 mos	2-3 mos	4-5 mos	6-7 mos	8-11 mos	1-4 years	Total	%
Deaths Reviewed	6	12	2	1	0	1	22	100
Not in a crib or bassinette	5	9	1	1	0	1	17	77.3
Not sleeping on back	3	7	2	0	0	0	12	54.5
Placed on unsafe bedding or with toys	2	4	2	0	0	0	8	36.4
Sleeping with other people	4	7	0	1	0	1	13	59.1
Obese adult sleeping with child	1	0	0	0	0	0	1	4.5
Adult was alcohol or drug impaired	0	2	0	0	0	0	2	9.1
2006-2010								
Deaths Reviewed	20	29	14	8	8	7	86	100
Not in a crib or bassinette	15	20	10	5	4	5	59	68.6
Not sleeping on back	9	19	10	3	3	0	44	51.2
Placed on unsafe bedding or with toys	6	13	7	3	0	1	30	34.9
Sleeping with other people	11	16	4	3	3	3	40	46.5
Obese adult sleeping with child	2	2	0	0	0	0	4	4.7
Adult was alcohol or drug impaired	0	2	0	0	0	2	4	4.7

*Categories are not mutually exclusive.

Table 6. Acts of Omission and Commission By Age Group, Davidson County, 2010 and 2006-2010								
2010	Deaths Reviewed	Poor/Absent Supervision	Child Abuse	Child Neglect	Other Negligence	Assault (not child abuse)	Suicide	Other
<1 year	22	0	1	1	17	0	0	2
1-4 years	2	1	0	0	1	0	0	0
5-9 years	3	0	0	1	0	0	1	1
10-14 years	5	0	0	1	0	3	1	0
15-17 Years	6	0	0	0	1	2	2	0
Total	38	1	1	3	19	5	4	3
2006-2010								
<1 year	39	0	6	4	26	0	0	3
1-4 years	15	3	3	2	7	0	0	1
5-9 years	4	0	0	1	1	0	1	1
10-14 years	13	1	0	3	0	4	4	2
15-17 Years	19	0	0	0	3	8	2	5
Total	90	4	9	10	37	12	7	12

*Categories are not mutually exclusive.

Table 7. Number and Percentage of Deaths Due to Unintentional Injury by Age, Sex, Race, and Ethnicity, Davidson County, Tennessee, 2010

	Total		Age				Sex		Race/Ethnicity	
Cause of Death	N	%	< 1 year	1-4 years	5-9 years	15-17 years	Male	Female	non-Hispanic white	non-Hispanic black
Vehicular	6	33.3	0	1	1	4	4	2	2	1
Fire/Burns	3	16.7	0	0	2	1	0	3	0	2
Drowning	2	11.1	0	2	0	0	1	1	2	0
Suffocation	5	27.8	5	0	0	0	1	4	1	4
Poisonings	1	5.6	0	0	0	1	1	0	1	0
Other	1	5.6	1	0	0	0	0	1	0	1
Total	18	100	6	3	3	6	7	11	6	8
Percentage*	100		33.3	16.7	16.7	33.3	38.9	61.1	33.3	44.4

*Percentage of deaths due to unintentional injuries

Table 8. Number and Percentage of Deaths Due to Unintentional Injury by Age, Sex, Race, and Ethnicity, Davidson County, Tennessee, 2006-2010

	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	White	Black	Non-Hispanic	Hispanic
Vehicular	30	41.7	1	10	5	0	14	19	11	15	14	24	6
Fire/Burns	7	9.7	1	1	3	1	1	2	5	3	4	6	1
Drowning	3	4.2	0	2	0	0	1	2	1	2	1	3	0
Suffocation	24	33.3	21	3	0	0	0	10	14	11	13	20	4
Weapon	1	1.4	0	0	0	1	0	1	0	0	1	1	0
Fall/Crush	4	5.6	0	1	1	0	2	4	0	2	2	3	1
Poisonings	2	2.8	0	1	0	0	1	1	1	1	1	2	0
Other	1	1.4	1	0	0	0	0	0	1	0	1	1	0
Total	72	100	24	18	9	2	19	39	33	34	37	60	12
Percentage*	100		33.3	25	12.5	2.8	26.4	54.2	45.8	47.2	51.4	83.3	16.7

*Percentages of total deaths due to unintentional injuries

Table 9. Number and Percentage of Deaths Due to Violence by Age, Sex, Race/Ethnicity, Davidson County, Tennessee, 2010

		Total		Age			Sex		Race/Ethnicity	
Manner of Death	Cause of Death	N	%	< 1 year	10-14 years	15-17 years	Male	Female	non-Hispanic white	non-Hispanic black
Homicide	Suffocation	1	10	1	0	0	1	0	1	0
	Weapon	6	60	0	3	3	6	0	0	5
Suicide	Suffocation	1	10	0	1	0	0	1	0	1
	Weapon	2	20	0	0	2	2	0	1	1
	Total	10	100	1	4	5	9	1	2	7
	Percentage*	11.1		10	40	50	90	10	20	70

*Percentage of total deaths due to violence

Table 10. Number and Percentage of Deaths Due to Violence by Age, Sex, Race, and Ethnicity, Davidson County, Tennessee, 2006-2010

		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	White	Black	Non-Hispanic	Hispanic
Homicide	Suffocation	1	2.1	1	0	0	0	0	1	0	1	0	1	0
	Weapon	35	74.5	5	2	1	6	21	29	6	9	24	28	7
	Poisoning	1	2.1	0	1	0	0	0	0	1	1	0	1	0
	Other	1	2.1	0	1	0	0	0	1	0	0	1	1	0
Suicide	Suffocation	6	12.8	0	0	1	3	2	4	2	2	4	6	0
	Weapon	3	6.4	0	0	0	1	2	2	1	2	1	3	0
	Total	47	100	6	4	2	10	25	37	10	15	30	40	7
	Percentage *	100		12.8	8.5	4.3	21.3	53.2	78.7	21.3	31.9	63.8	85.1	14.9

*Percentages of total deaths due to violence

Table 11. Number and Percentage of Deaths by Gestational Age, Age at Death, Birth Weight, Sex, and Race/Ethnicity, Davidson County, TN, 2010

	Total		Gestational Age		Birth weight in grams			Sex		Race/Ethnicity	
Age at Death	N	%	<23 weeks	23-37 weeks	500-1499	1500-2499	2500+	Male	Female	non-Hispanic white	non-Hispanic Black
1-28 days	28	48.3	1	24	18	6	4	20	8	15	10
29-364 days	30	51.7	2	13	5	6	18	17	13	11	18
Total	58	100	3	37	23	12	22	37	21	26	28
Percentage*	100		5.2	63.8	39.7	20.7	37.9	63.8	36.2	44.8	48.3

*Percentage of total infant deaths