Mississippi Child Death Review Panel
2015 Annual Report

The 2015 Annual Report Presents Data Related to Child Deaths that Occurred in Mississippi during 2014

This report is dedicated to all children who died in Mississippi during 2014 and to their grieving families
INTRODUCTION
THE CHILD DEATH REVIEW PROCESS: PURPOSE AND DATA

KEY FINDINGS

- In 2014, there were 523 child deaths between 0 and 17 years of age.
- Among the 523 all-cause deaths, 172 (33%) cases were deemed preventable and extensively reviewed by the CDR panel.
- Accidents were the leading cause of preventable deaths, accounting for 124 (72%) cases. Motor-vehicle accidents were responsible for 31 (18%) cases of all non-natural deaths.
- Thirty-four percent (59 cases) of all preventable deaths were among the age group of 15 to 17 years of age, followed by the group of infants with 33% (57 cases).
- Male children accounted for over two-third (116 or 67%) of all reviewed deaths.

Overview: The Mississippi Child Death Review (CDR) report is produced annually to describe child deaths reviewed by the CDR panel. The panel reviews child death cases that are attributed to non-natural causes such as sudden unexpected infant deaths, accidents, injuries, homicide, suicide, or undetermined causes.

Goal: The objectives of the review process are to identify risk factors associated with preventable child deaths, improve child death investigation, identify gaps in preventive measures, make recommendations for policy implementations, share information on patterns and trends of child deaths, and educate the public about child safety. Utilizing detailed child death surveillance data, the end goal of this collaborative work between different state agencies, experts, community organizations and state legislature is preventing future child deaths in Mississippi.

CDR Data: Allowing for an in-depth analysis of child death causes, the CDR data set is compiled from multiple sources of information. Data abstraction for the panel-reviewed cases includes death and birth certificates, autopsy reports, coroner’s reports, sudden unexplained infant death investigation reporting forms, toxicology reports, clinical records, and on-scene case narratives.

Case Selection: The CDR data set includes all potentially preventable infant deaths (live births ≥ 20 weeks of gestation and birth weight ≥ 350 grams) and child deaths (between the age of 1 and 17 years of age) that occur in Mississippi.

All-Cause Mortality: In addition to CDR data, this report presents data on all-cause child mortality. The source of all-cause (preventable and non-preventable) child deaths is based on death certificate data coded by implementing the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM).
KEY FINDINGS

- Infant deaths accounted for the highest percentage (319 cases or 61%) of all 523 preventable and non-preventable child deaths during 2014 (Figure 1).

- Compared to Caucasian children, African American children were disproportionately affected and had a higher mortality rate of 89 versus 60 child deaths per 100,000 Mississippi children (Figure 2).

- Accidents, homicide and suicide, accounted for a total of 161 deaths - nearly one third of all deaths. These findings reveal that the group of preventable child deaths was the leading cause of the child mortality in Mississippi during 2014 (Table 1).

Table 1. All-Cause Child Mortality: All Child Deaths including Infant Deaths, MS, 2014

<table>
<thead>
<tr>
<th>Causes</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accidents, homicide, and suicide</td>
<td>161</td>
<td>31%</td>
</tr>
<tr>
<td>Conditions originating in the perinatal period</td>
<td>151</td>
<td>29%</td>
</tr>
<tr>
<td>Congenital malformations and deformations (birth defects)</td>
<td>78</td>
<td>15%</td>
</tr>
<tr>
<td>Malignant neoplasms</td>
<td>14</td>
<td>3%</td>
</tr>
<tr>
<td>Heart diseases</td>
<td>9</td>
<td>2%</td>
</tr>
<tr>
<td>Septicemia</td>
<td>8</td>
<td>1%</td>
</tr>
<tr>
<td>Other and unknown</td>
<td>102</td>
<td>19%</td>
</tr>
<tr>
<td>Total</td>
<td>523</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: Number of deaths: African Americans = 282, Caucasians = 230, all other racial groups = 11. The death rates for all other racial groups were excluded from this analysis and figure because the number of deaths for all other racial groups was small (less than 20 cases). Therefore, the calculated rates may be unreliable.
In spite of the overall decrease in the child death totals, deaths due to accidents, homicide and suicide as a group increased by 2% (3 cases) from 2013 to 2014, a finding underscoring the importance of the CDR process for establishing the causes of preventable deaths and proposing policy measures for their reduction (Figure 3 and Figure 4).

On the positive side, deaths due to medical causes decreased. In fact, heart disease deaths declined by 57% from 21 cases in 2013 to 9 cases in 2014. During the same year, the numbers of other important medical causes of childhood death improved: deaths due to congenital conditions decreased by 14% from 91 cases to 78 cases and deaths due to perinatal conditions decreased by 10% from 168 cases to 151 cases.

While further research is needed, the decline in the number of child deaths due to medical conditions may suggest:

- Improved quality of pediatric medical care in the state
- Increased access to such care for the children of Mississippi
FINDINGS

- Among the 172 reviewed deaths, 85 (49%) were Caucasian and 84 (49%) were African American (Figure 5).
- As depicted in Figure 6, children in the age group of 15-17 years of age accounted for 59 cases (34%) of all reviewed deaths, followed closely by infants (57 cases or 33%).
- Over two-thirds of the cases reviewed were male (116 cases or 67%). This discrepancy was particularly noted in the age group from 15 through 17 years of age and infants (Figure 7).
**FINDINGS**

- The majority of reviewed death cases were caused by accidents (124 cases or 72%).
- Homicide accounted for 12% (21 cases) and suicide for 5% (8 cases) of all reviewed deaths.
- All three natural deaths that were reviewed were due to sudden infant death syndrome (SIDS). While SIDS cases are considered natural by manner of death, these deaths are still reviewed by the CDR panel.
- Sixteen cases (9%) of all reviewed child deaths were categorized as undetermined (Figure 8).

**Figure 8. Manner of Death:**

**Number and Percentage of Deaths among Reviewed Cases, MS, 2014**
**REVIEWED CHILD DEATHS: CAUSE OF DEATH**

**Cause of Death** is the reason of a child death. The cause of death may be further classified as underlying (disease or injury that initiated the events resulting in death) or immediate (final disease or condition resulting in death).

**FINDINGS**

- Of the reviewed cases, motor vehicle accidents (MVA) were the leading cause of death (54 cases or 31%) among children aged 0-17 years in 2014.
- Asphyxia, which is usually associated with infant deaths due to an unsafe sleep environment and practices, was the second leading cause of death (48 or 28%).
- Firearm injuries (21 deaths or 12%) and drowning (14 cases or 8%) were the third and fourth leading causes of death, respectively.

![Figure 9. Causes of Death: Number and Percentage of Child Deaths among Reviewed Cases, MS, 2014](image)

**ALARMING NEWS**

Over the past decade, there has been a downward trend in traffic fatalities due to technological improvements in car safety features. From 2014 to 2015, however, fatalities from motor vehicle crashes rose by 7.2%, the largest percentage increase in five decades. Distraction-affected fatalities demonstrated the highest increase of 8.8%, but other type of crashes also went up, including unrestrained passenger vehicle occupant fatalities by 4.9%, alcohol-impaired driving fatalities by 3.2%, and speeding-related fatalities by 3.0%. This alarming finding requires the urgent implementation of new state-level preventive initiatives against MVA-related child deaths in Mississippi.

FINDINGS

- Thirty-four of all 54 MVA-related deaths occurred among teenage drivers and passengers (15-17 years of age). In other words, this age group accounted for 63% of all MVA-accidents (Figure 10).
- More male (35 cases or 65%) than female child deaths (19 cases or 35%) were attributable to motor vehicle accidents (Figure 11).
- There were more MVA-related deaths among Caucasians (32 cases or 59%) compared to African Americans (22 cases or 41%) (Figure 12).
**KEY FINDINGS**

- Car accidents accounted for the majority of MVA-related child deaths (40 cases or 74%), but all-terrain vehicle (ATV) accidents claimed the lives of 9 children or 16% of all MVA-related deaths (Figure 13).
- Among the 54 motor vehicle accidental deaths, 31 (57%) children were passengers, 19 (35%) children were drivers, 3 (6%) children were pedestrians, and the position of one child remains unknown (Figure 14).
- Not using seat belts was confirmed in 29 cases (54%) of all MVA-related deaths and a seat belt or car seat was reported being used in 16% (9 cases) (Figure 15).

**Public Health Prevention Strategies**

- Seat belt use: parents should be good role models and always have their seat belts on
- Child seats: correct use of the appropriate car seat for each age group
- Attentive driving: no texting and driving
- No alcohol/drug use before or during driving
- Caution driving in neighborhoods, especially at night
- Wearing reflective gear while walking at night in neighborhoods
- Graduated licensing: children should be carefully evaluated for adequacy in emotional readiness, experience, and driving skills by parents and authorities
REVIEWED CHILD DEATHS: MOTOR VEHICLE ACCIDENTS (CONTINUED)

Child Death Review Panel Recommendations

- Enhancement and strengthening of Mississippi’s Graduated Driver Licensing law
- Passage of Primary Enforcement Seat Belt Law covering all seating positions
- Adding a punishment to the current all-terrain vehicle law that provides a ban for driving on roads, but not a fine
- Introduction of community-based initiatives for increased safety education and training for ATV use, emphasizing the importance of helmet use
- More active enforcement of existing laws by law enforcement, including texting ban, seat belt and car seat use
- Implementation of toxicology reports for all teen driver MVA deaths
- Continuous strengthening of in-school driving/passenger/pedestrian safety education

### Table 2. Graduated Driver Licensing, MS, 2016

<table>
<thead>
<tr>
<th>Learner Stage</th>
<th>Intermediate Stage</th>
<th>Full Privilege</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum age (Years/months)</td>
<td>Minimum age (Years/months)</td>
<td>Minimum age (Years/months)</td>
</tr>
<tr>
<td>Minimum duration (Months)</td>
<td>Minimum duration (Months)</td>
<td>Minimum duration (Months)</td>
</tr>
<tr>
<td>Required supervised driving hours (night)</td>
<td>Night time driving restrictions</td>
<td>Passenger restrictions</td>
</tr>
<tr>
<td>Minimum age (Years/month)</td>
<td>16</td>
<td>16/6</td>
</tr>
<tr>
<td>15</td>
<td>Sunday - Thursday (10 p.m. - 6 a.m.) Friday - Saturday (11:30 p.m. – 6 a.m.)</td>
<td>None</td>
</tr>
<tr>
<td>12</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Best Practice</th>
<th>Implemented in MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permit age at 16</td>
<td>No</td>
</tr>
<tr>
<td>70 supervised practice hours</td>
<td>No</td>
</tr>
<tr>
<td>Licensing age of 17</td>
<td>No</td>
</tr>
<tr>
<td>8 p.m. night driving restriction</td>
<td>No</td>
</tr>
<tr>
<td>No teen passengers</td>
<td>No</td>
</tr>
</tbody>
</table>


Number of Fatal Childhood Accidents per County, MS, 2014

Note: Some accidents had more than one childhood fatality. The geocoding per county, however, represents the number of accidents not the number of fatalities.
**REVIEWED CHILD DEATHS: SUICIDE**

**FINDINGS**
- In 2014, firearm injuries accounted for 75% (6 cases) and hanging accounted for 25% (2 cases) of all suicides.
- Suicidal deaths in 2014 occurred predominantly among male children (6 or 75%) (Figure 16). The youngest child was only 10 year old (Figure 17).
- There were more Caucasian children (6 or 75%) than African American children (2 or 25%) among the suicides (Figure 18).

**WORK IN THE COMMUNITY: PREVENTING SUICIDE**

In December 2016, the Oak Grove Schools in Hattiesburg, Mississippi organized a community suicide prevention meeting. We would like to commend the educators at the Oak Grove Schools for organizing this event and for their professionalism and humanity. Summarized below are some of the messages shared with parents during this meeting:

- Watch for warning signs such as falling grades, anger, withdrawal, talking and writing about suicide, giving away possessions, changing sleeping and eating habits, and changes in physical appearance for the worse.
- Children may have parallel lives; your job is to protect your children even from themselves.
- Connect to your children emotionally; engage in their world.
- The friends of your children may know more about them than you do; make sure that you get to know your children’s friends.
- Tell your children not to keep a secret; if they know that a friend wants to commit suicide, they should tell you. Even if they lose a friend, they may save a life.
- Monitor your children’s social media and check their phones regularly.
- Talk to your children about the harm of drugs; drug abuse is a major risk factor for suicide.
- Watch out for depression and treat mental health issues seriously.
REVIEWED CHILD DEATHS: HOMICIDE

FINDINGS

- In 2014, there were 21 child deaths due to homicide. Firearm injuries accounted for 71% (15 cases), trauma (abuse) accounted for 24% (5 cases), and strangulation for 5% (1 case) of all homicides.
- As depicted in Figure 19, male deaths accounted for the overwhelming majority of homicides (16 or 76%). Teenage deaths accounted for almost half of all homicides (Figure 20).
- Most of the homicide child deaths were among African Americans (15 or 71%) (Figure 21).

Child Death Review Panel Recommendations: Stricter gun control law in Mississippi

During 2014, there were 21 firearm-related child deaths (homicide and suicide) in Mississippi. Many of these deaths were incredibly violent and brutal. Some of these deaths were horrifying accidents involving siblings. None of these deaths should have happened. The CDR panel members plead for supportive legislative measures aimed at reducing gun violence and increasing gun safety.

THE CULTURE OF GUN VIOLENCE: A PUBLIC HEALTH ISSUE

Public Health Prevention Strategies: An American epidemic, the culture of gun violence is a growing and urgent public health concern. Successful preventive measures for reducing gun-related deaths include identifying the complex underlying causes of this problem and recommending appropriate and common sense solutions to address it.

Exposure to violent pop culture from early childhood, mental health issues, drug abuse, dysfunctional family relations, economic disparities, improper firearm storage, and the high prevalence of gun ownerships are all risk factors for gun violence.

Providing adequate educational and economic opportunities in every community and changing the cultural attitude toward this harmful behavior are key protective measures for building a healthier, more prosperous, and less violent society.
REVIEWED CHILD DEATHS: DROWNING, FIRE/ELECTROCUTION AND POISONING

DROWNING

In 2014, there were 14 deaths due to drowning:
- Male (11 or 79%) and female (3 or 21%)
- Caucasian (5 or 36%) and African American (9 or 64%)
- The youngest child was only 11 month old

Child Death Review Panel Recommendations:
- Regulations on swimming equipment for apartment complexes (e.g., locked gates and fences)
- Campaigns promoting water safety awareness, including utilizing of life jackets

Public Health Prevention Strategy: The state of Mississippi does not have a well-developed infrastructure of community swimming pools. Therefore, children have limited opportunities to learn how to swim. Community-based organizations need to advocate for the funding of community pools and introduce free swimming lessons for low-income children. The public health benefit of having access to community pools and knowing how to swim is two-fold; children can exercise and learn a livelong, lifesaving skill.

FIRE AND ELECTROCUTION DEATHS

In 2014, there were 10 deaths due to fire or electrocution
- Male (6 or 60%) and female (4 or 40%)
- Caucasian (3 or 30%) and African American (7 or 70%)
- There were 3 infants among all fire or electrocution-related deaths

Child Death Review Panel Recommendations:
- Ensuring working smoke detectors, especially in mobile homes and other low-income homes
- Utilization of newer smoke alarms with battery life of 10 years
- Family fire escape plans
- Installing residential sprinklers when possible

Public Health Prevention Strategy: Installing and maintaining smoke and carbon monoxide (CO) alarms can save lives. The newer devices have many improved features, including dual sensors for detecting fast burning, flaming fires, and smoldering fires. Parents and homeowners should try to equip their homes with the most up-to-date smoke detectors.

POISONING

In 2014, there were 3 deaths due to substance toxicity among children, all of them classified as accidental. The involved substances were: caffeine, over-the-counter acetaminophen/diphenhydramine, and concerta, a prescription drug for attention deficit disorder.

Child Death Review Panel Recommendations:
- Parents, child care givers and children should save the poison prevention number, (800) 222-1222 on their cell phones.

Public Health Prevention Strategies: The diverse nature of the substances that led to fatal child poisoning in 2014 demonstrates the need for a holistic preventive approach that targets the entire spectrum of potential poisonous substances, from common substances like caffeine and over-the-counter drugs to prescription medications.
Sleep-related Deaths: There were 48 sleep-related infant deaths in 2014. In other words, 84% of all reviewed infant deaths were associated with unsafe sleeping environment or practices.

Asphyxia was the cause of death in 40 of the 48 sleep-related deaths. This is an important finding since asphyxia deaths often occur as a result of suffocation, overlay, wedging, entrapment, or strangulation in an unsafe sleep environment.

Table 4. Sleep-related Deaths, MS, 2014

<table>
<thead>
<tr>
<th>Causes</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphyxia</td>
<td>40</td>
</tr>
<tr>
<td>Undetermined</td>
<td>5</td>
</tr>
<tr>
<td>SIDS</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>48</strong></td>
</tr>
</tbody>
</table>
REVIEWED CHILD DEATHS: RECOMMENDATIONS FOR SAFE SLEEP PRACTICES

Child Death Review Recommendations

- Continue statewide education of parents and other caregivers about safe sleep, focusing on the hazards of bed sharing, sofa and chair sleeping.
- Incorporate universal safe sleep education in routine prenatal care, hospital delivery care, and pediatric infant visits.
- Continue efforts to decrease smoking around children, especially newborns and infants.
- Continue efforts to have coroners complete child death scene investigations for all unexpected infant and child deaths.

THE VOICE OF MISSISSIPPI’S PEDIATRICIANS

During a Fetal and Infant Mortality Review meeting in October 2016, pediatricians at Forrest General Hospital in Hattiesburg, Mississippi made the following suggestions for the successful implementation of safe sleep practices:

- Twenty-first-century parents often depend on social media for information and guidance. Therefore, physicians and public health practitioners should approach parents accordingly using social media outlets to spread the message on creating a safe sleep environment for infants.
- Many parents are aware of the safe sleep environment recommendations, but they do not follow them because of fatigue. Sharing tips and techniques on how to train baby to sleep alone should be a routine part of pediatric visits.
- Responsible parenthood is a skill that should be taught from early childhood both at home and at school. Classes, lesson plans, and other educational interventions should be delivered in these, and other appropriate, venues to reinforce the message about safe and responsible infant care.

SAFE SLEEP ENVIRONMENT AND PREVENTION OF SUDDEN UNEXPECTED INFANT DEATHS

RECOMMENDATIONS BY THE AMERICAN ACADEMIC OF PEDIATRICS

- Always place your baby on his or her back for every sleep time, at night and during naps.
- Always use a firm sleep surface. Car seats and other sitting devices are not recommended for routine sleep.
- The baby should sleep in the same room as the parents, but not in the same bed (room-sharing without bed-sharing).
- Keep soft objects or loose bedding out of the crib. This includes pillows, blankets, and bumper pads. Wedges and positioners should NOT be used.
- Avoid covering the infant’s head or overheating (e.g., blankets, hats, and excess clothing).
- Breastfeeding is recommended and is associated with a reduced risk of SIDS.
- Infants should be immunized. Evidence suggests that immunization reduces the risk of SIDS by 50 percent.
- Bumper pads should not be used in cribs. There is no evidence that bumper pads prevent injuries, and there is a potential and real risk of suffocation, strangulation or entrapment.

CONCLUDING NOTES

This report aims to provide useful information regarding potentially preventable causes of death. While not all deaths are preventable, there are many measures that parents, child care givers, state agencies, local authorities, and the community can embrace to improve the safety of Mississippi’s children and help save lives. Our findings demonstrate that the key areas of child death prevention are motor vehicle accidents, unsafe sleep environment and practices, homicide, suicide, drowning, poisoning, and fire.

Successful prevention, however, is only possible with supportive legislative measures, effective law enforcement, and adequate financial resources. Therefore, the CDR process is also geared toward identifying emerging child death trends, establishing priorities, and recommending achievable goals. Summarized below are the CDR panel's recommendations on the most urgently needed efforts to reduce preventable child deaths.

Motor vehicle accidents
• Enact legislation for Mississippi Primary Seat Belt Law covering all seating positions
• Increase penalty for violating seatbelt law
• For preventative strategies, please visit the Centers for Disease Control and Prevention's website: www.cdc.gov/motorvehiclesafety/seatbelts/states.html

All-terrain vehicles
• Increase safety education and training
• Stricter enforcement of helmet usage
• Add a financial penalty for riding on streets, roads, and highways

Safe sleep environment and practices
• Reach out to medical and nursing schools with a request to include enhanced training on infant safe sleeping in their curriculum
• Offer educational venues for Coroners regarding the correct completion of sudden unexplained death investigation reporting forms
• Continue educational efforts for a smoke-free environment around infants

This report was prepared by:
Manuela Staneva, MPH, Maternal and Child Health Epidemiologist, Office of Health Data and Research, Mississippi State Department of Health

Contributing team members:
Geri McElroy, CNM, NP, Clinical Nurse Practitioner, CDR Panel Coordinator, Project Manager, Health Services, Mississippi State Department of Health
Charlene Collier, MD, MPH, MHS, FACOF, Perinatal Consultant, Health Services, Mississippi State Department of Health
Lei Zhang, PhD, MSc, MBA, Director, Office of Health Data and Research, Mississippi State Department of Health

Acknowledgements:
We would like to thank the members of the Mississippi’s Child Death Review panel for their time, contributions, and passion devoted to saving the lives of children in our state. We would like to acknowledge Richard Johnson, MS, Office of Vital Records, Mississippi State Department of Health for providing summary statistics on all-cause childhood mortality and Carl Haydel, MS, Office of Health Informatics, Mississippi State Department of Health for data geocoding.