MARYLAND STATE CHILD FATALITY REVIEW TEAM

2017 Annual Legislative Report

Health-General Article, § 5-704(b)(12)

Larry Hogan
Governor

Boyd K. Rutherford
Lt. Governor

Robert R. Neall
Secretary,
Maryland Department of Health

https://phpa.health.maryland.gov/mch/Pages/cfr-home.aspx

(This page intentionally left blank)

TABLE OF CONTENTS

(This page intentionally left blank)

Executive Summary

This report is a review of unexpected deaths occurring among children 0 to 17 years of age during calendar year 2016 and trend data from 2012 to 2016. The Office of the Chief Medical Examiner referred 176 unexpected child death cases to local child fatality review teams for review in Maryland jurisdictions in 2016. The State Child Fatality Review Team developed recommendations based on the data presented in this report. Major findings include the following:

1. The largest proportion of unexpected child deaths (40 percent) in 2016 occurred among infants (under one year of age).

2. Deaths were 1.4 times more frequent among non-Hispanic Black children than among non-Hispanic White children, and 11.4 times more frequent than among Hispanic children.

3. The four leading causes of death were injury, Sudden Unexpected Infant Death (including Sudden Infant Death Syndrome or SIDS), homicide, and suicide.

4. Motor vehicle accidents were the leading cause of injury death, followed by fire and burns, and asphyxia. These three types of injuries accounted for 79 percent of all injury deaths.

5. The largest proportion of deaths occurred among residents of Baltimore City, followed by Montgomery, Anne Arundel, Prince George's, and Baltimore counties. These five jurisdictions accounted for 64 percent of all unexpected child deaths.

6. From 2012 to 2016, the number of unexpected child deaths decreased by nine percent. During this time period, injury and Sudden Unexpected Infant Death were consistently the leading causes of death, racial disparities remained unchanged, and child residents of the same five jurisdictions noted above accounted for the largest proportions of child deaths.

7. Child death cases from 2012 to 2016 involving Sudden Unexpected Infant Death or motor vehicle accidents were reviewed in detail, looking at age, gender, racial and geographic distribution, and other incident characteristics.

8. Based on the data presented, the State Child Fatality Review Team has put forward recommendations related to Sudden Unexpected Infant Death, motor vehicle accidents, and several other potentially preventable causes of unexpected child death.

Overview of Maryland Child Fatality Review

Child Fatality Review is a systematic, multi-agency, multi-disciplinary review of unexpected child deaths. This review process, which began in Los Angeles in 1978 as a mechanism to identify fatal child abuse and neglect, has grown into a national system to examine unexpected child fatalities in the context of prevention.

The purpose of the Maryland State Child Fatality Review (CFR) Team is to prevent child deaths by: (1) understanding the causes and incidence of child deaths; (2) implementing changes within the agencies represented on the State CFR Team to prevent child deaths; and (3) advising the Governor, the General Assembly, and the public on changes to law, policy, and practice to prevent child deaths. The State CFR Team envisions the elimination of preventable child fatalities by successfully using the CFR process to understand the circumstances around incidents of child fatality and to recommend strategies for prevention of future fatalities.

The Maryland CFR Program, established in statute in 1999, is housed within the Maryland Department of Health (MDH) for budgetary and administrative purposes. The 25 member State CFR Team is comprised of representatives from multiple State agencies and professional organizations, as well as two pediatricians and 11 members of the general public with interest and expertise in child safety and welfare who are appointed by the Governor (see Appendix A). The State CFR Team meets at least four times a year to address 13 statutorily-mandated duties (see Appendix B). One of these meetings is in conjunction with an all-day conference for local CFR team members on select topics related to child fatality issues (see Appendix C).
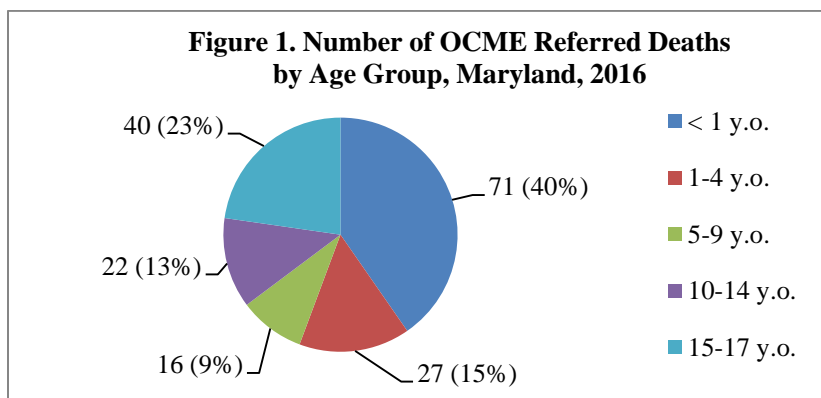
The State CFR Team provides support to local CFR teams that operate in each jurisdiction. Each month the local CFR teams receive notice from the Office of the Chief Medical Examiner (OCME) of unexpected resident child deaths (under age 18). The local CFR teams are required to review each of these deaths. Local teams meet at least quarterly to review cases and make recommendations for local level systems changes to statute, policy, or practice to prevent future child deaths, and work to implement these recommendations. This report covers data for calendar year 2016 OCME referred deaths.

Other teams in Maryland have similar charges to prevent child injury and death. The State Council on Child Abuse and Neglect (SCCAN) and the Citizen Review Board for Children (CRBC) examine policies and practices for protecting children. The State CFR Team is encouraged to work collaboratively with SCCAN and CRBC to coordinate prevention efforts. Also, the MDH Morbidity, Mortality, and Quality Review Committee (MMQRC), established by legislation in 2008, is charged with reviewing morbidity and mortality associated with pregnancy, childbirth, infancy, and early childhood. The MMQRC provides another opportunity for review and dissemination of information and recommendations developed through the CFR process. The local CFR teams also work collaboratively with local Fetal and Infant Mortality Review (FIMR) teams in each jurisdiction.
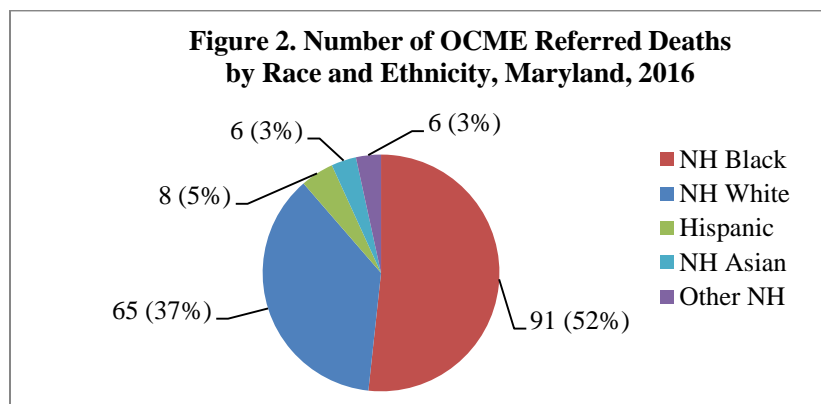
Unexpected Child Deaths - Maryland, 2016

Childhood deaths are a major public health concern, as many of these deaths are preventable. Surveillance of childhood deaths is important because it helps to measure the magnitude of the problem, and to assess the causes and populations affected. These data are crucial in identifying trends and targeting interventions to prevent childhood deaths. The CFR process reviews unexpected child deaths referred by the OCME. This subset of child deaths includes cases of Sudden Unexplained Infant Death (SUID), unintentional injury, homicide, suicide, and some deaths due to natural causes. The Office of Maternal and Child Health Epidemiology within the MDH Maternal and Child Health Bureau has reviewed OCME referred child deaths for summary in this report. This report examines data related to 2016 child deaths available as of September 12, 2017.

In 2016, the OCME referred 176 child deaths to the local CFR teams for review. Figure 1 shows the distribution of these deaths by age. The largest proportion, 71 deaths (40 percent) occurred among infants (under one year of age). Of the 176 child deaths, 103 deaths (59 percent) occurred among male children and 73 deaths (41 percent) among female children.

Figure 1. Number of OCME Referred Deaths by Age Group, Maryland, 2016

- 40 (23%)
- 71 (40%)
- 22 (13%)
- 16 (9%)
- 27 (15%)

Legend: < 1 y.o.; 1-4 y.o.; 5-9 y.o.; 10-14 y.o.; 15-17 y.o.

Source: OCME Referral Tracker (a database of cases referred by the OCME for local CFR team review); referrals made as of 9/12/2017. y.o: years old.

Figure 2 shows the distribution of 2016 OCME referred deaths by race and ethnicity. Deaths among non-Hispanic Black children were 1.4 times more frequent than deaths among non-Hispanic White children, and 11.4 times more frequent than deaths among Hispanic children.

Figure 2. Number of OCME Referred Deaths by Race and Ethnicity, Maryland, 2016

- 6 (3%)
- 6 (3%)
- 8 (5%)
- 65 (37%)
- 91 (52%)

Legend: NH Black; NH White; Hispanic; NH Asian; Other NH

Source: OCME Referral Tracker; referrals made as of 9/12/2017. NH: Non-Hispanic

In Table 1, the number and percentage of OCME referred deaths occurring in 2016 are shown by cause of death category. Among the 176 referred deaths, the three leading causes of death were injury, SUID, and homicide. Together these three causes accounted for 73 percent of all OCME referred deaths. For two cases from 2016, the final cause of death is still pending.

The OCME defines SUID as "…the sudden death of an infant less than one year of age that cannot be explained after a thorough investigation is conducted, including a complete autopsy, examination of the death scene, and a review of the clinical history. All potentially non-natural causes of death cannot reasonably be excluded by the investigation and/or there is an issue of concern; for example an unsafe sleeping environment or other environmental concerns, previous SIDS in the immediate family, healed unexplained injuries, parental substance abuse etc." Sudden Infant Death Syndrome (SIDS) is included in this category.

Table 1. OCME Referred Deaths by Cause of Death Category, Maryland, 2016		
	#	**%**
Injury	52	29.5
SUID*	48	27.3
Homicide	28	15.9
Suicide	16	9.1
Medical Conditions	16	9.1
Infectious Disease	11	6.3
SUDIC**	3	1.7
Pending	2	1.1
Total	**176**	**100**

Source: OCME Referral Tracker; referrals as of 9/12/2017
* Sudden unexplained infant death (<1 y.o.)
** Sudden unexplained death in childhood (SUDIC) (1-5 y.o.)

Injury was the leading cause of 2016 OCME referred deaths. Table 2 further breaks down the injury deaths by subcategory. Motor vehicle accidents (MVAs) were the leading cause of injury death (46 percent), followed by fire and burns (17 percent) and asphyxia (which includes suffocation, strangulation, choking, confinement in a tight space, etc.) (15 percent). These three types of injuries accounted for 79 percent of all referred injury deaths.

Table 2. OCME Referred Injury Deaths by Subcategory, Maryland, 2016		
	#	%
MVA	24	46.2
Fires/Burns	9	17.3
Asphyxia	8	15.4
Drug Related	5	9.6
Drowning	3	5.8
Firearm	2	3.8
Multiple Injuries	1	1.9
Total	**52**	**100**

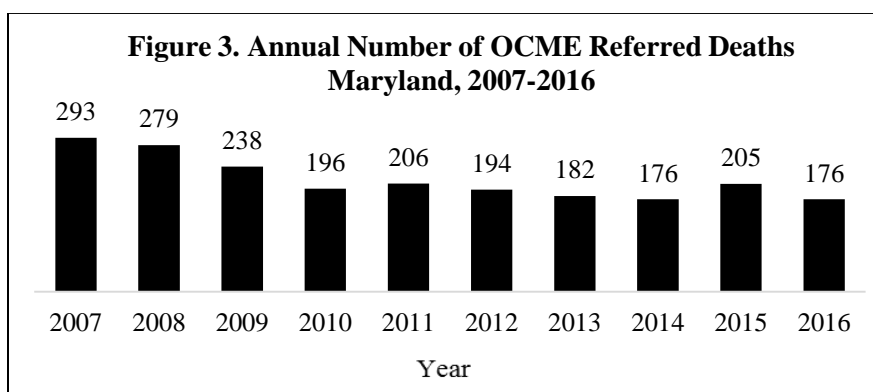Source: OCME Referral Tracker; referrals as of 9/12/2017

In Table 3, the number and percentage of deaths in 2016 are shown by jurisdiction of residence of the child at the time of death. Five jurisdictions (Baltimore City; Montgomery, Anne Arundel, Prince George's, and Baltimore counties) accounted for 64 percent of all referred child deaths. Almost one quarter of all OCME referred deaths occurred among Baltimore City resident children.

Table 3. OCME Referred Deaths by Jurisdiction of Residence, Maryland, 2016		
	#	%
Baltimore City	40	22.7
Montgomery	24	13.6
Anne Arundel	18	10.2
Prince George's	16	9.1
Baltimore County	14	8.0
Harford	9	5.1
Howard	8	4.6
Frederick	7	4.0
Cecil	5	2.8
Charles	5	2.8
Washington	5	2.8
Wicomico	5	2.8
Allegany	3	1.7
Carroll	3	1.7
Calvert	2	1.1
Caroline	2	1.1
Dorchester	2	1.1
Kent	2	1.1
St. Mary's	2	1.1
Garrett	1	0.6
Queen Anne's	1	0.6
Somerset	1	0.6
Worcester	1	0.6
Talbot	0	0.0
Total	**176**	**100**

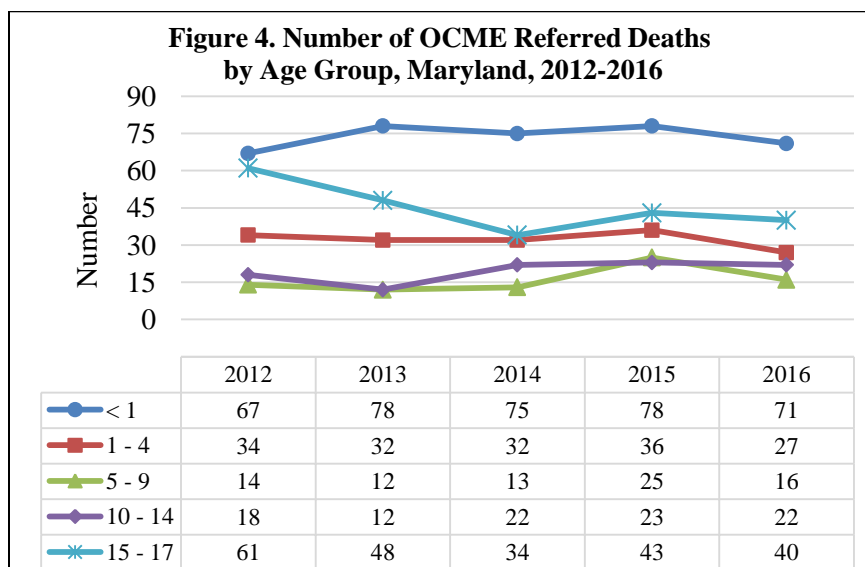Source: OCME Referral Tracker; referrals as of 9/12/2017

Trends in Maryland Unexpected Child Deaths

Figure 3 shows the annual number of unexpected child deaths referred by the OCME for the past ten years (2007 to 2016). The figures in this report represent updated values. Any discrepancies between the numbers of annual OCME referred deaths reported here and in previous CFR annual reports are attributable to the removal of fetal deaths and to late data entries. On occasion, fetal deaths are included in OCME referrals, however, these cases are not reviewed by the CFR teams and have therefore been removed. The annual number of referred deaths changed very little from the beginning of the CFR program in 2000 through 2008. From 2008 to 2014, the number of referred deaths decreased by 37 percent. This represented an actual decrease in the number of unexpected child deaths in the State since there was no change in the case selection or reporting process during that period. Although there was a 16 percent increase in the number of referred deaths from 2014 to 2015, the number decreased again in 2016.

Figure 3. Annual Number of OCME Referred Deaths Maryland, 2007-2016

Year	Number
2007	293
2008	279
2009	238
2010	196
2011	206
2012	194
2013	182
2014	176
2015	205
2016	176

Source: OCME Referral Tracker; referrals made as of 9/12/2017

Figure 4 shows the number of OCME referred deaths by age group over the five year period from 2012 to 2016. Between 2015 and 2016, the number of deaths decreased in all age groups, but the largest decreases were among children age one to four and five to nine.

Figure 4. Number of OCME Referred Deaths by Age Group, Maryland, 2012-2016

	2012	2013	2014	2015	2016
< 1	67	78	75	78	71
1 - 4	34	32	32	36	27
5 - 9	14	12	13	25	16
10 - 14	18	12	22	23	22
15 - 17	61	48	34	43	40

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

During the same period (2012 to 2016), the number of referred deaths was consistently higher among male children than among female children (Figure 5). In 2016, unexpected deaths were 1.4 times more likely among male children than among female children.

Figure 5. Number of OCME Referred Deaths by Gender, Maryland, 2012-2016

	2012	2013	2014	2015	2016
Male	122	106	113	122	103
Female	72	76	63	83	73

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

Similarly, Figure 6 shows the continued disparities among racial and ethnic groups. Deaths referred for review among non-Hispanic Black children were 1.4 to 1.7 times more frequent than deaths among non-Hispanic White children, and 5.2 to 11.4 times more frequent than deaths among Hispanic children. Between 2015 and 2016, OCME referred deaths among non-Hispanic Black children decreased by 22 percent, while those among non-Hispanic White children decreased by 3 percent. Referred deaths among Hispanic children remained much lower, with a 33 percent decrease in 2016.

Figure 6. Number of OCME Referred Deaths by Race and Ethnicity, Maryland, 2012-2016

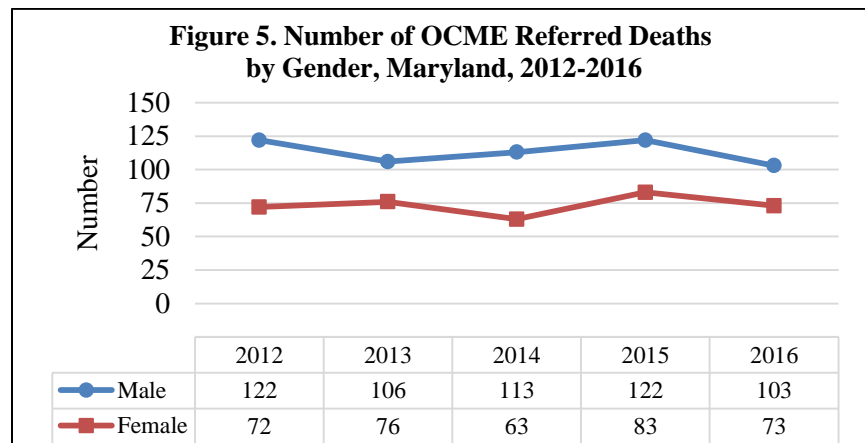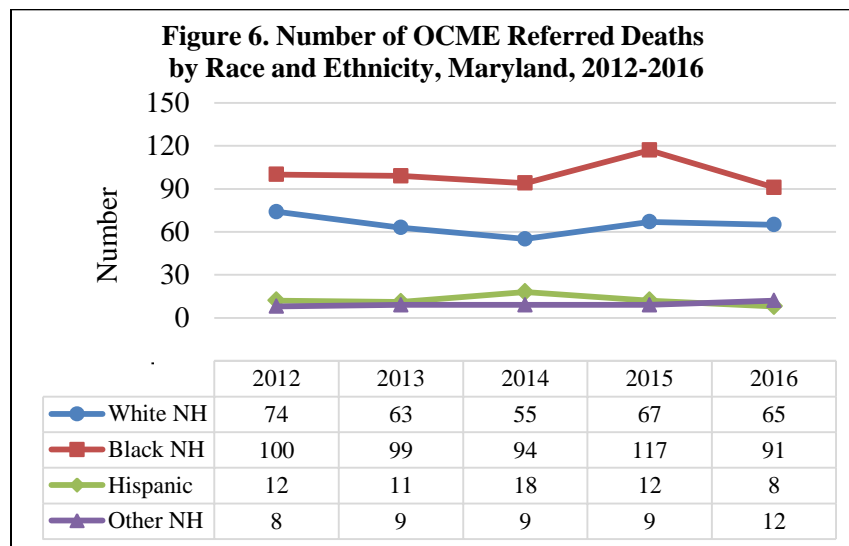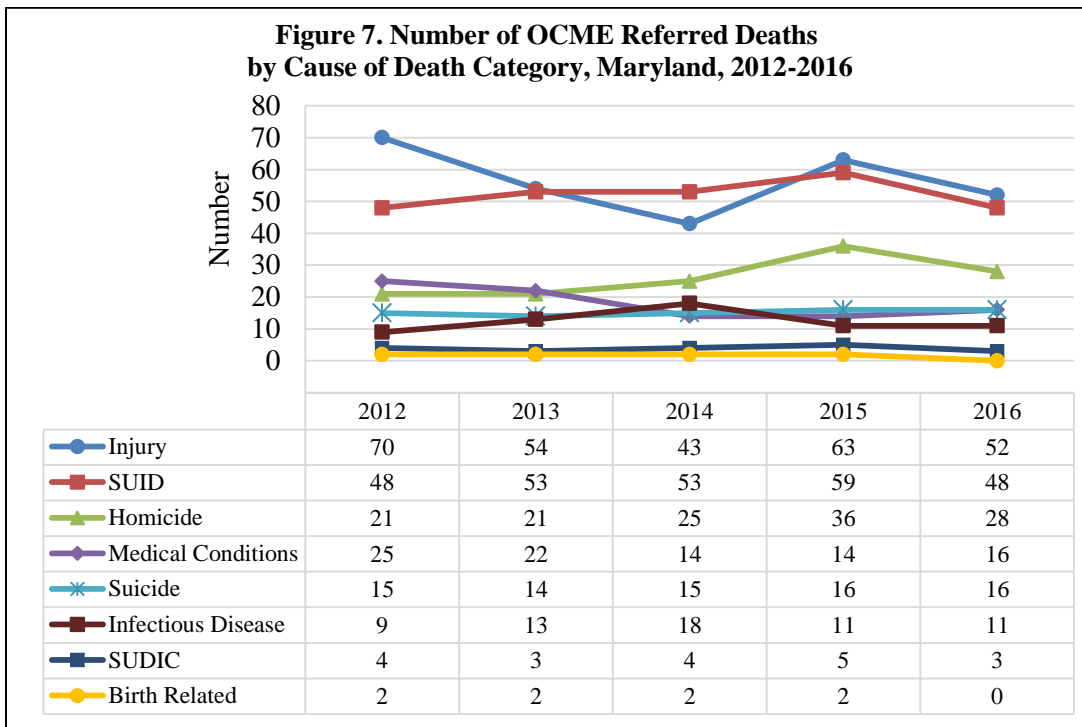|	2012	2013	2014	2015	2016
White NH	74	63	55	67	65
Black NH	100	99	94	117	91
Hispanic	12	11	18	12	8
Other NH	8	9	9	9	12

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

Figure 7 shows the number of OCME referred deaths by cause of death for the past five years. Injury was the leading cause and SUID the second leading cause of death for each year except 2014 when SUID became the leading cause. Between 2015 and 2016, the number of injury deaths decreased by 17 percent and SUID deaths decreased by 19 percent, and deaths due to homicide decreased 22 percent.

Figure 7. Number of OCME Referred Deaths by Cause of Death Category, Maryland, 2012-2016

	2012	2013	2014	2015	2016
Injury	70	54	43	63	52
SUID	48	53	53	59	48
Homicide	21	21	25	36	28
Medical Conditions	25	22	14	14	16
Suicide	15	14	15	16	16
Infectious Disease	9	13	18	11	11
SUDIC	4	3	4	5	3
Birth Related	2	2	2	2	0

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017. Excludes 'pending' cases (2 in 2014; 1 in 2015; 2 in 2016).

Figure 8 shows the subcategories of injury deaths over the past five years. The increase in injury deaths in 2015 was largely due to a near doubling of the number of deaths from MVAs. There was a slight increase in MVA and asphyxia deaths from 2015 to 2016, while deaths in all other subcategories of injury deaths decreased.

Figure 8. Number of OCME Referred Injury Deaths by Subcategory, Maryland, 2012-2016

	2012	2013	2014	2015	2016
MVA	30	25	12	22	24
Fires/Burns	10	5	9	11	9
Asphyxia	12	8	6	5	8
Drowning	11	9	9	6	3
Other	4	4	4	4	3
Drug Related	3	3	1	6	5
Poisoning	0	0	2	7	0

Source: OCME Referral Tracker; referrals made as of 9/12/2017

Table 4 shows the number of OCME referred deaths by jurisdiction of residence of the child at the time of death. The number of deaths by jurisdiction is relatively small and varies from year to year, making it difficult to determine trends. Baltimore City has had the highest number of resident child deaths for each of the past five years, accounting for 24 percent of all referred deaths during that period.

Table 4. Number of OCME Referred Deaths by Jurisdiction of Residence, Maryland, 2012-2016						
	2012	**2013**	**2014**	**2015**	**2016**	**Total**
Baltimore City	48	40	45	49	40	222
Montgomery	19	15	31	17	24	106
Baltimore County	23	19	21	23	14	100
Prince George's	20	26	14	18	16	94
Anne Arundel	19	11	11	19	18	78
Harford	12	13	9	5	9	48
Washington	6	7	9	12	5	39
Howard	9	6	2	5	8	30
Charles	5	9	3	8	5	30
Frederick	1	11	6	3	7	28
Cecil	5	3	3	6	5	22
Wicomico	5	3	2	7	5	22
Carroll	5	3	3	5	3	19
Allegany	3	3	5	4	3	18
St. Mary's	1	1	5	5	2	14
Caroline	5	2	2	1	2	12
Somerset	0	0	2	8	1	11
Calvert	4	1	1	2	2	10
Dorchester	0	3	1	1	2	7
Garrett	0	2	1	2	1	6
Queen Anne's	1	0	0	3	1	5
Worcester	1	2	0	1	1	5
Talbot	2	1	0	1	0	4
Kent	0	1	0	0	2	3
Total	**194**	**182**	**176**	**205**	**176**	**933**

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017
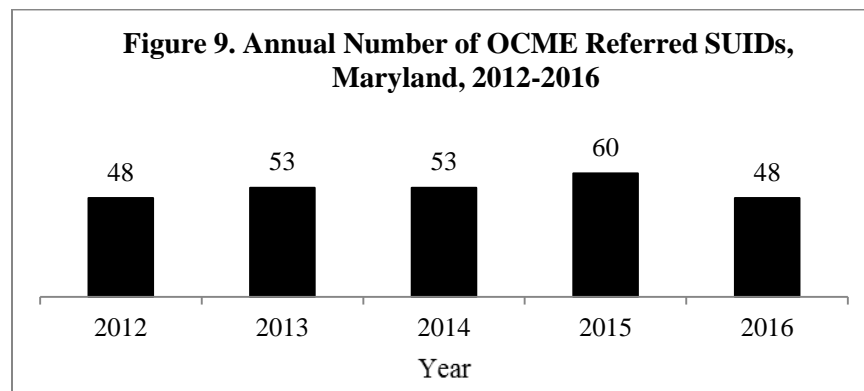
Sudden Unexplained Infant Deaths in Maryland

SUID is the sudden death of an infant less than one year of age that cannot be fully explained after a thorough review of the medical history, a complete autopsy, and examination of the death scene. Approximately 3,500 infants die suddenly and unexpectedly each year in the United States. The majority of these deaths occur while the infant is sleeping in an unsafe sleep environment. The majority of these deaths could have been prevented if safe sleep practices were always followed. Key components of a safe sleep environment are placing infants to sleep alone (not sharing a sleep surface with another person), on their backs, on a firm sleep surface with no soft objects, in a smoke-free environment.

While unsafe sleep factors are present in a majority of cases, an exact cause of death cannot always be determined. These deaths are often not witnessed, the death scene may be disturbed before it can be examined, key facts may be forgotten or go unreported, and there may be no autopsy finding or medical test that can prove the exact cause of death (e.g., suffocation). The mechanisms that lead to many sleep-related deaths include:

- Accidental suffocation by a soft sleep surface (e.g., an adult bed, waterbed mattress, pillows, soft couch or chair cushions) or other soft materials placed in the infant's sleep environment (e.g., pillows, stuffed toys, blankets, crib bumpers).
- Overlay when the infant is bed-sharing with another person who rolls on top of or against the infant.
- Wedging or entrapment of the infant between two objects (e.g., a mattress and wall or bed frame, or between furniture cushions).
- Strangulation when the infant's head and neck become caught between crib railings, or the infant's neck becomes entangled in a cord or other material within the sleep environment.
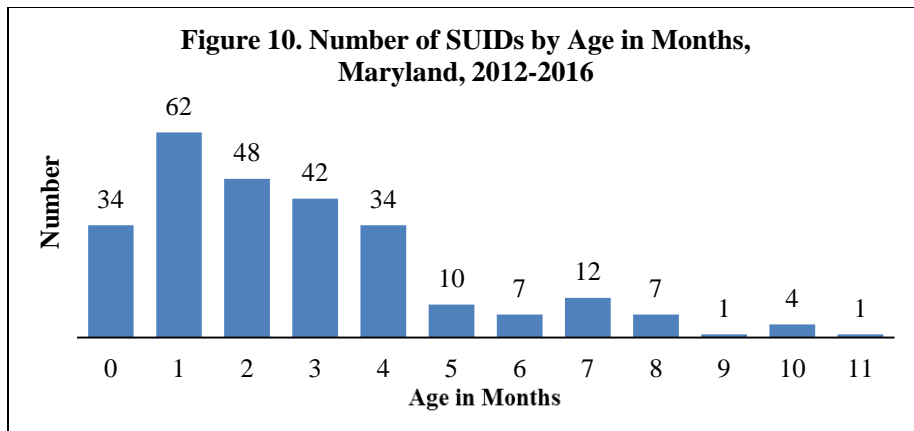
Even after a thorough investigation, there are some SUID cases in which there is no evidence of non-natural cause of death or issues of concern within a reasonable degree of certainty. These cases fall under the subcategory of SIDS. SIDS is a diagnosis of exclusion, assigned only when all known and possible causes of death have been ruled out.

In Maryland, there is an average of 52 SUID cases referred by the OCME for review each year. A total of 262 SUID cases occurred between 2012 and 2016 (Figure 9).

Figure 9. Annual Number of OCME Referred SUIDs, Maryland, 2012-2016
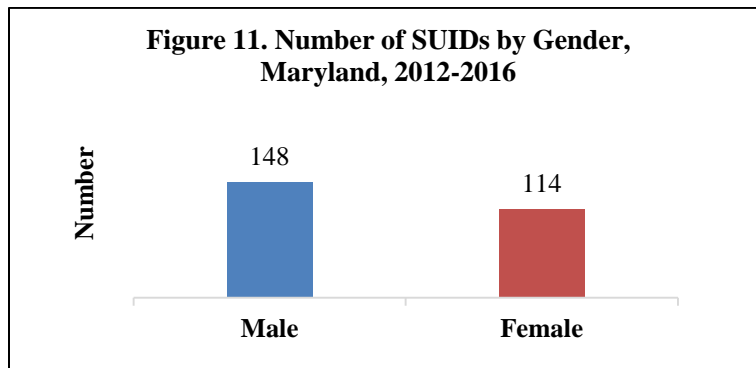
Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

Of the 262 SUIDs during this period, 220 (84 percent) occurred before five months of age (Figure 10). Fifty-six percent of these deaths occurred among male infants, and 44 percent occurred among female infants (Figure 11).
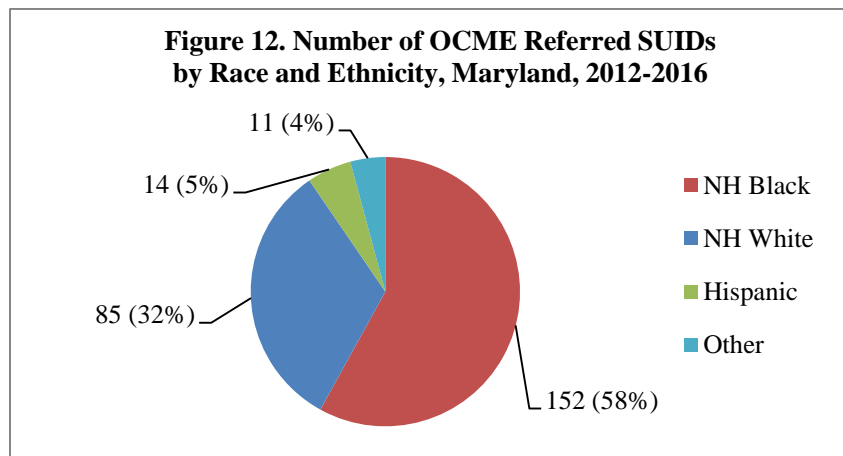
Figure 10. Number of SUIDs by Age in Months, Maryland, 2012-2016

Age in Months	Number
0	34
1	62
2	48
3	42
4	34
5	10
6	7
7	12
8	7
9	1
10	4
11	1

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

Figure 11. Number of SUIDs by Gender, Maryland, 2012-2016

Gender	Number
Male	148
Female	114

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

Of the SUID cases occurring from 2012 to 2016, 152 deaths (58 percent) occurred among non-Hispanic Black infants. This is 1.8 times the number of cases among non-Hispanic White infants, and almost 11 times the number among Hispanic infants (Figure 12).

Figure 12. Number of OCME Referred SUIDs by Race and Ethnicity, Maryland, 2012-2016

Race and Ethnicity	Number (Percent)
NH Black	152 (58%)
NH White	85 (32%)
Hispanic	14 (5%)
Other	11 (4%)

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

11

Table 5 shows the number of SUIDs by jurisdiction of residence of the infant at the time of death for each of the last five years (2012 to 2016). The largest number of SUIDs each year occurred among residents of Baltimore City, which accounted for 25 percent of all SUIDs during this period. However, the number of SUID cases among residents of Baltimore City decreased by 46 percent from 2015 to 2016. The number of SUID cases is small in most other jurisdictions, making it difficult to identify trends.
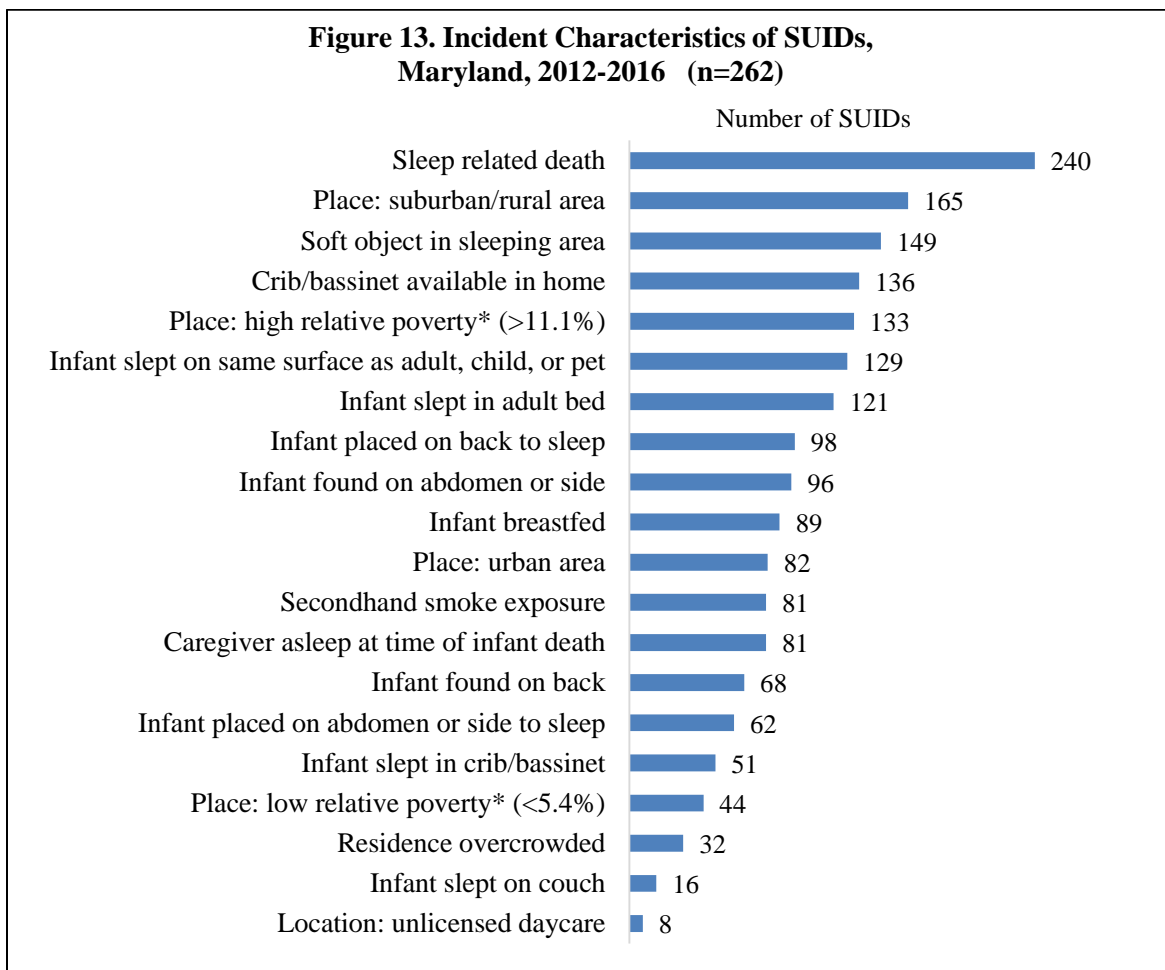
Table 5. Number of OCME Referred SUIDs by Jurisdiction of Residence, Maryland, 2012-2016						
	2012	**2013**	**2014**	**2015**	**2016**	**Total**
Baltimore City	13	19	14	13	7	66
Baltimore County	6	5	11	8	4	34
Prince George's	6	5	5	7	7	30
Anne Arundel	6	7	3	1	7	24
Montgomery	6	4	4	5	5	24
Harford	2	3	5	1	3	14
Washington	0	1	3	6	3	13
Howard	2	2	0	4	3	11
Cecil	2	1	1	3	3	10
Charles	1	2	1	1	3	8
Allegany	0	1	2	3	1	7
St. Mary's	0	1	1	2	0	4
Talbot	1	1	0	1	0	3
Worcester	1	1	0	1	0	3
Calvert	0	0	1	1	0	2
Carroll	1	0	0	1	0	2
Frederick	0	0	1	0	1	2
Caroline	1	0	0	0	0	1
Dorchester	0	0	0	1	0	1
Garrett	0	0	0	1	0	1
Somerset	0	0	1	0	0	1
Wicomico	0	0	0	0	1	1
Kent	0	0	0	0	0	0
Queen Anne's	0	0	0	0	0	0
Total	**48**	**53**	**53**	**60**	**48**	**262**

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

All OCME referred deaths, including SUIDs, are reviewed by the local CFR team in the jurisdiction of residence. Data from these case reviews are entered into a national database, the Child Death Review Case Reporting System (CDRCRS), which is maintained by the National Center for the Review and Prevention of Child Death. Maryland data have been entered into the CDRCRS since January 2010. This database provides more detailed information on SUIDs. The OCME referred cases were linked to their case reviews in the CDRCRS based on a match of the case number and, if missing, the child's name and date of death. Ninety-nine percent of Maryland's 262 SUID referrals were found in the CDRCRS, and 89% had a completed case review. Ten of the 28 incomplete reviews were 2016 SUID cases, which may still be under review.

The SUID case reviews entered into the CDRCRS database were further analyzed to determine more detailed information surrounding these deaths. Information on every item was not available for every case. The specific information may not have been known or reported. Therefore, the numbers of cases shown in Figures 13, 14, and 15 represent a minimum number of cases with a given characteristic.
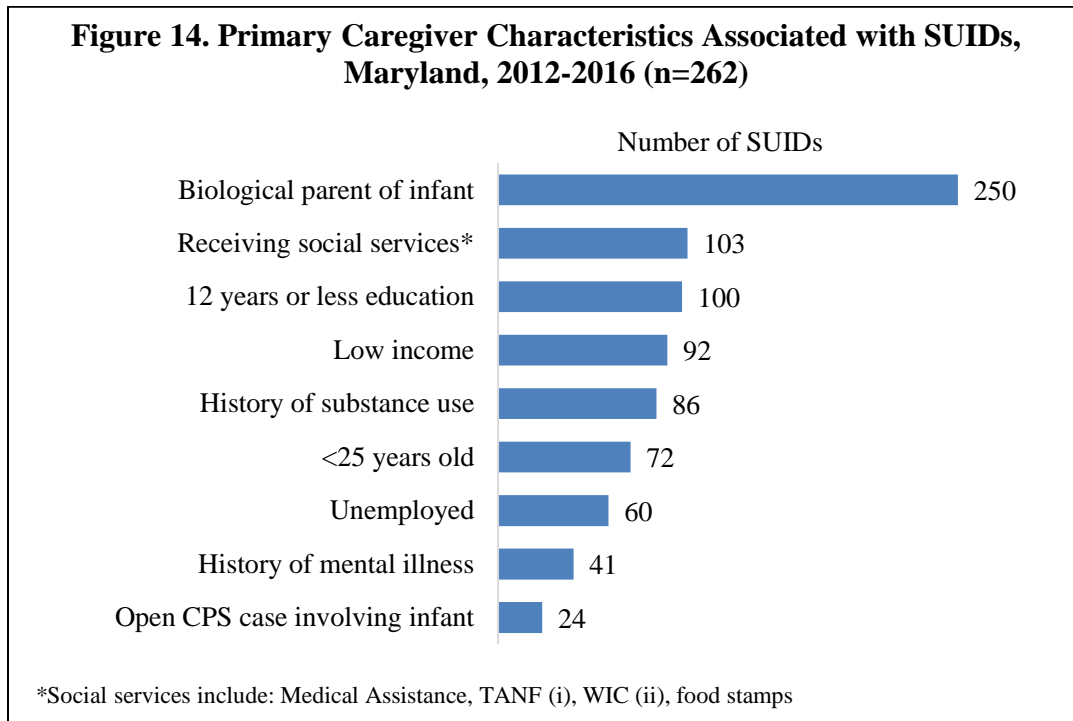
Figure 13 shows incident characteristics of SUIDs in Maryland. The death was determined to be sleep-related in 240 (92 percent) of the 262 SUID cases. Sixty-three percent of cases occurred in suburban or rural areas and 42 percent in relatively high poverty areas. In 57 percent cases, soft objects were present in the infant's sleep environment. In 50 percent of cases, the infant was sleeping on the same surface as an adult, child, or pet (bed-sharing). Twenty-four percent of infants were placed on their abdomen or side to sleep and 37 percent of infants were found in one of these positions. Thirty-one percent of the infants were exposed to secondhand smoke. Eight deaths occurred at an unlicensed daycare setting.

Figure 13. Incident Characteristics of SUIDs, Maryland, 2012-2016 (n=262)

Number of SUIDs

Characteristic	Number
Sleep related death	240
Place: suburban/rural area	165
Soft object in sleeping area	149
Crib/bassinet available in home	136
Place: high relative poverty* (>11.1%)	133
Infant slept on same surface as adult, child, or pet	129
Infant slept in adult bed	121
Infant placed on back to sleep	98
Infant found on abdomen or side	96
Infant breastfed	89
Place: urban area	82
Secondhand smoke exposure	81
Caregiver asleep at time of infant death	81
Infant found on back	68
Infant placed on abdomen or side to sleep	62
Infant slept in crib/bassinet	51
Place: low relative poverty* (<5.4%)	44
Residence overcrowded	32
Infant slept on couch	16
Location: unlicensed daycare	8

Source: OCME Referral Tracker and CDRCRS Database as of 9/12/2017
* Poverty estimates are taken from US Census American Community Survey 2015 five-year census tract estimates; eight percent of SUID deaths were not successfully linked to a census tract. Poverty rates are defined by the percentage of residents reporting poverty status in the past 12 months on the survey. The low and high poverty percentage cut-points used are based on the first and third tertiles of census tract poverty rates, respectively.

Characteristics of the primary caregiver for the infants who died of SUID are shown in Figure 14. A biological parent was the primary caregiver in 95 percent of the cases. Thirty-nine percent of caregivers were receiving social services. Twenty-seven percent of caregivers were under 25 years old, 38 percent had a high school education or less, 35 percent were low-income, and 23 percent were unemployed. Thirty-three percent of caregivers had a history of substance use and 16 percent had a history of mental illness. In nine percent of SUID cases there was an open Child Protective Services case involving the infant at the time of death. In addition to social services received by the caregiver, forty-seven percent of the infants were enrolled in Medical Assistance.

Figure 14. Primary Caregiver Characteristics Associated with SUIDs, Maryland, 2012-2016 (n=262)

Number of SUIDs

Characteristic	Number of SUIDs
Biological parent of infant	250
Receiving social services*	103
12 years or less education	100
Low income	92
History of substance use	86
<25 years old	72
Unemployed	60
History of mental illness	41
Open CPS case involving infant	24

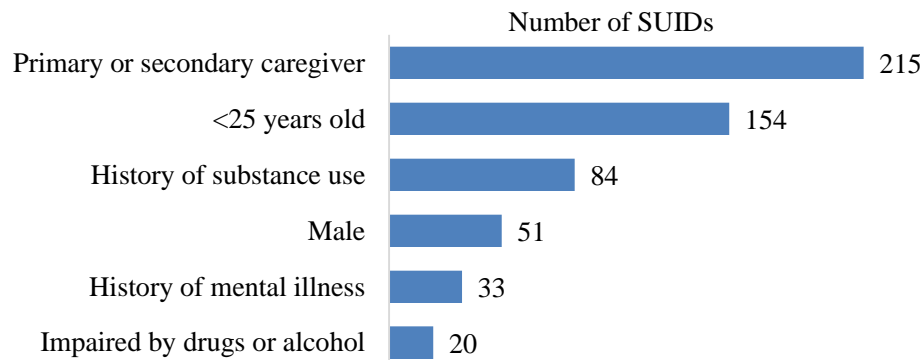*Social services include: Medical Assistance, TANF (i), WIC (ii), food stamps

Source: OCME Referral Tracker and CDRCRS Database as of 9/12/2017
(i) Temporary Assistance for Needy Families (TANF)
(ii) Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)

Only 82 percent of infants who died of SUID were directly under the supervision of their primary or secondary caregiver at the time of death. Figure 15 shows characteristics of the individuals supervising the infants at the time of death. Fifty-nine percent of supervisors were under the age of 25. Thirty-two percent had a history of substance use, 13 percent has a history of mental illness, and eight percent were determined to be impaired by drugs or alcohol at the time of the infant's death.

Figure 15. Supervisor Characteristics Associated with SUIDs, Maryland, 2012-2016 (n=262)

Number of SUIDs

Characteristic	Number
Primary or secondary caregiver	215
<25 years old	154
History of substance use	84
Male	51
History of mental illness	33
Impaired by drugs or alcohol	20

Source: OCME Referral Tracker and CDRCRS Database as of 9/12/2017

Half of all SUID cases from 2012 to 2016 occurred when the infant was sleeping on the same surface as an adult, child, or pet (bed-sharing). Table 6 compares characteristics of bed-sharing and non-bed-sharing SUID cases.

The SUID cases that involved bed-sharing were significantly more likely to involve several other unsafe sleep practices. Bed-sharing infants were twice as likely to be placed on their stomach or side to sleep. They were five times more likely to be sleeping on an adult bed and 15 times more likely to be sleeping on a couch than non-bed-sharing infants. These unsafe sleep surfaces were used although a crib or bassinet was available in the home more often in bed-sharing SUID cases (60 percent) than in non-bed-sharing cases (44 percent). Soft objects in the sleeping area and secondhand smoke exposure were also significantly more frequent in bed-sharing cases.

Bed-sharing has been promoted by some groups to support breastfeeding. However, among the 2012 to 2016 SUID cases, the percentage of breastfed infants was the same among bed-sharing and non-bed-sharing cases (34 percent). Racial distribution of cases and characteristics of the infants' primary caregiver were not significantly different between the two groups. Among bed-sharing SUID cases, however, the individual directly supervising the infant at the time of death was significantly more likely to be the primary or secondary caregiver. The supervisor was impaired by drugs or alcohol three times as often among bed-sharing SUID cases.

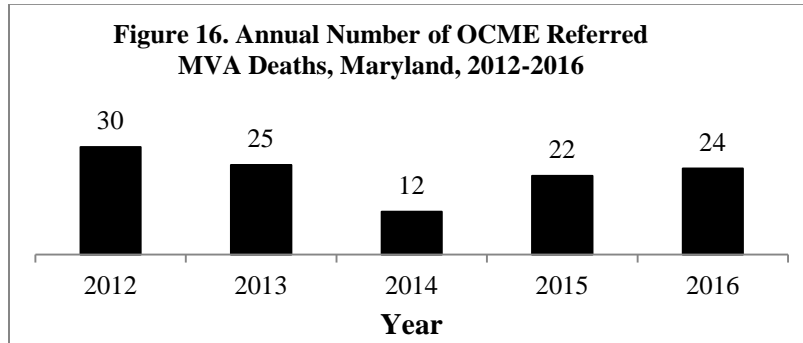| Table 6. Comparison of Bed-sharing and Non-bed-sharing SUIDs, Maryland, 2012-2016		
	Bed-sharing (n=130)	**Non-bed-sharing (n=132)**
	Data presented as number (%)	
Place:		
Urban area	46 (35)	36 (27)
Suburban/rural area	79 (61)	86 (65)
Residence overcrowded	20 (15)	12 (9)
Secondhand smoke exposure	50 (38)*	30 (23)
Infant sleep position and environment:		
Placed on stomach or side to sleep	41 (32)*	21 (16)
Sleeping in crib or bassinet	6 (5)*	45 (34)
Sleeping in adult bed	101 (78)*	20 (15)
Sleeping on couch	15 (12)*	1 (1)
Crib or bassinet available in home	78 (60)*	58 (44)
Soft objects in sleeping area	85 (65)*	64 (48)
Characteristics of infant:		
Race - non-Hispanic Black	83 (64)	69 (52)
non-Hispanic White	35 (27)	50 (38)
Hispanic	6 (5)	8 (6)
Breastfed	44 (34)	45 (34)
Characteristics of primary caregiver:		
High school education or less	57 (44)	43 (33)
Receives social services	53 (41)	50 (38)
Low income	50 (38)	42 (32)
Characteristics of supervisor at time of death:		
Primary or secondary caregiver	120 (92)*	95 (72)
< 25 years old	72 (55)	82 (62)
Male	29 (22)	22 (17)
History of mental illness	20 (15)	13 (10)
History of substance use	46 (35)	38 (29)
Impaired by drugs or alcohol	15 (12)*	5 (4)

Source: OCME Referral Tracker and CDRCRS Database as of 9/12/2017

* statistically significant difference at $p<0.05$ (differences greater than expected by chance alone)

Although the number of SUID cases decreased by 20 percent from 2015 to 2016, SUID remains the leading cause of OCME referred deaths among infants and the third leading cause overall of infant mortality in Maryland. The vast majority of these deaths are sleep-related and unsafe infant sleep practices were identified on case review. At least half of all SUID cases involved bed-sharing, and bed-sharing cases were more likely than non-bed-sharing cases to involve other unsafe sleep practices. Racial and ethnic disparities persist in SUIDs, with a disproportionate number of these deaths occurring among non-Hispanic Black infants.
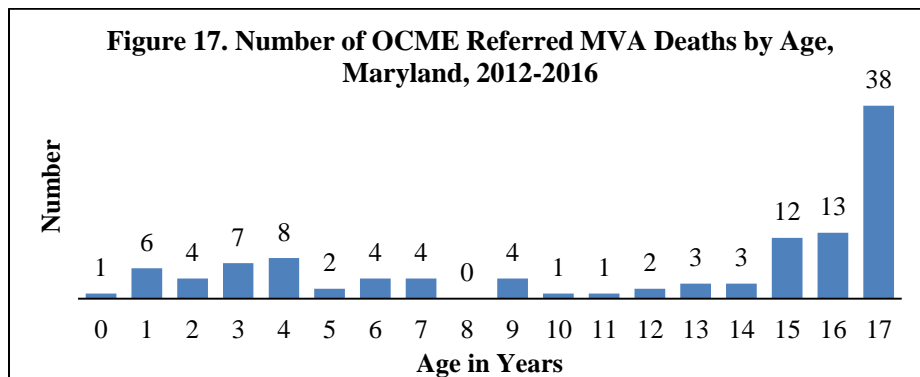
Motor Vehicle Accident Deaths in Maryland

Injury was the leading cause of 2016 OCME referred deaths, with MVAs accounting for 46 percent of injury deaths. The number of MVA child deaths had dropped by 60 percent from 2012 to 2014, but nearly doubled from 2014 to 2015, and remained at that level in 2016 (Figure 16). Because of this sharp increase, MVA deaths were reviewed in greater detail.

Figure 16. Annual Number of OCME Referred MVA Deaths, Maryland, 2012-2016

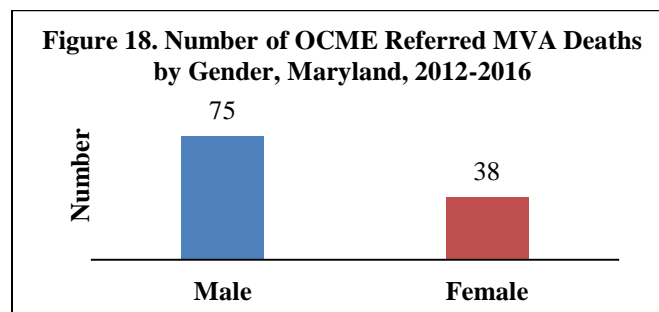| Year	2012	2013	2014	2015	2016
Number	30	25	12	22	24

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

Of the 113 MVA deaths occurring in the five year period from 2012 to 2016, 61 percent were among teens age 13-17, with 56 percent among teens age 15 to 17 (Figure 17). Thirty-two percent of deaths were among children under the age of eight. Sixty-six percent of MVA deaths occurred among male children and 34 percent among females (Figure 18).
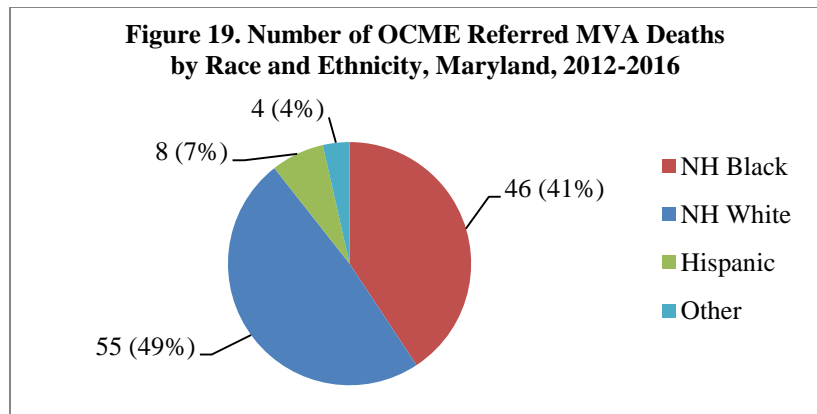
Figure 17. Number of OCME Referred MVA Deaths by Age, Maryland, 2012-2016

Age in Years	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Number	1	6	4	7	8	2	4	4	0	4	1	1	2	3	3	12	13	38

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

Figure 18. Number of OCME Referred MVA Deaths by Gender, Maryland, 2012-2016

	Male	Female
Number	75	38

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

Forty-nine percent of the MVA deaths occurred among non-Hispanic White children, 41 percent among non-Hispanic Black children, and seven percent among Hispanic children (Figure 19). MVA deaths by jurisdiction of residence are shown in Table 7.
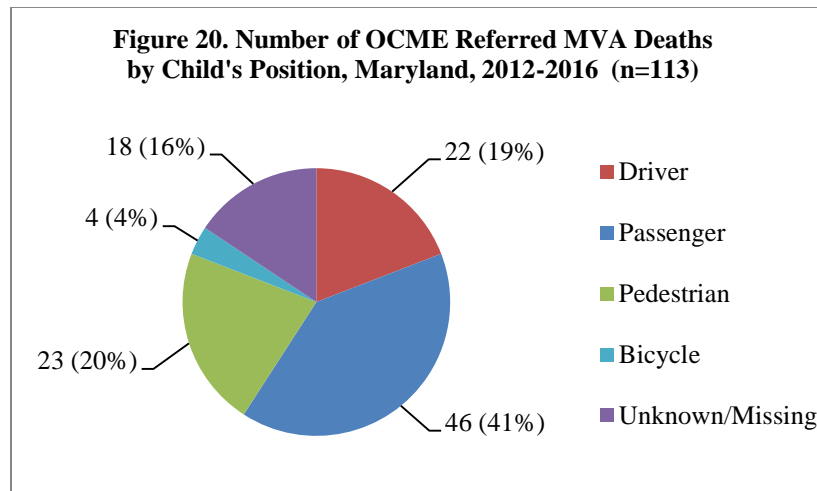

Figure 19. Number of OCME Referred MVA Deaths by Race and Ethnicity, Maryland, 2012-2016

Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

Table 7. Number of OCME Referred MVA Deaths by Jurisdiction of Residence, Maryland, 2012-2016						
	2012	2013	2014	2015	2016	Total
Baltimore City	4	2	2	3	3	14
Montgomery	3	3	3	2	3	14
Prince George's	1	5	1	5	2	14
Baltimore County	6	2	0	4	1	13
Charles	3	3	1	0	0	7
Harford	1	3	2	0	0	6
Washington	3	0	1	1	1	6
Anne Arundel	3	1	0	0	1	5
Carroll	2	1	0	1	1	5
Caroline	0	0	1	1	2	4
Wicomico	1	1	0	1	1	4
Cecil	1	0	0	1	1	3
Howard	0	0	1	0	2	3
Allegany	1	0	0	0	1	2
Calvert	0	1	0	0	1	2
Dorchester	0	1	0	0	1	2
Frederick	0	1	0	1	0	2
Queen Anne's	0	0	0	1	1	2
Garrett	0	0	0	0	1	1
Kent	0	0	0	0	1	1
Somerset	0	0	0	1	0	1
St. Mary's	1	0	0	0	0	1
Worcester	0	1	0	0	0	1
Talbot	0	0	0	0	0	0
Total	**30**	**25**	**12**	**22**	**24**	**113**

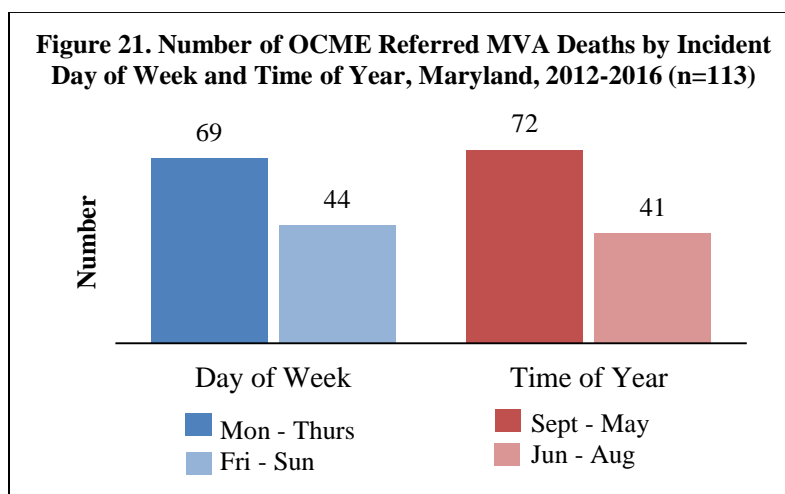Source: OCME Referral Tracker; 2016 referrals made as of 9/12/2017

More detailed information on MVA deaths is available in the CDRCRS database. Information on every item was not available for every case. The specific information may not have been known or reported. Therefore, the numbers of cases shown in the following figures represent a minimum number of cases with a given characteristic.

Figure 20 shows the position of the child in the MVA. In 41 percent of cases, the child was a passenger, in 20 percent a pedestrian, and in 19 percent the driver.
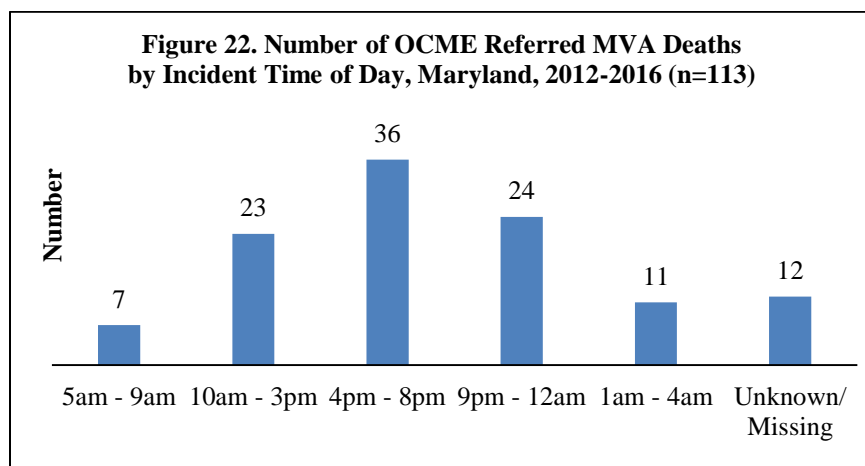

Figure 20. Number of OCME Referred MVA Deaths by Child's Position, Maryland, 2012-2016 (n=113)

- Driver: 22 (19%)
- Passenger: 46 (41%)
- Pedestrian: 23 (20%)
- Bicycle: 4 (4%)
- Unknown/Missing: 18 (16%)

Source: OCME Referral Tracker and CDRCRS Database as of 9/12/2017

Sixty-one percent of MVA deaths occurred between Monday and Thursday and 64 percent occurred between September and May, days of the week and months when school is in session (Figure 21). Seventy-three percent of MVA deaths occurred between 10:00 am and midnight, with the peak occurrence (32 percent) between 4:00 pm and 8:00 pm (Figure 22).
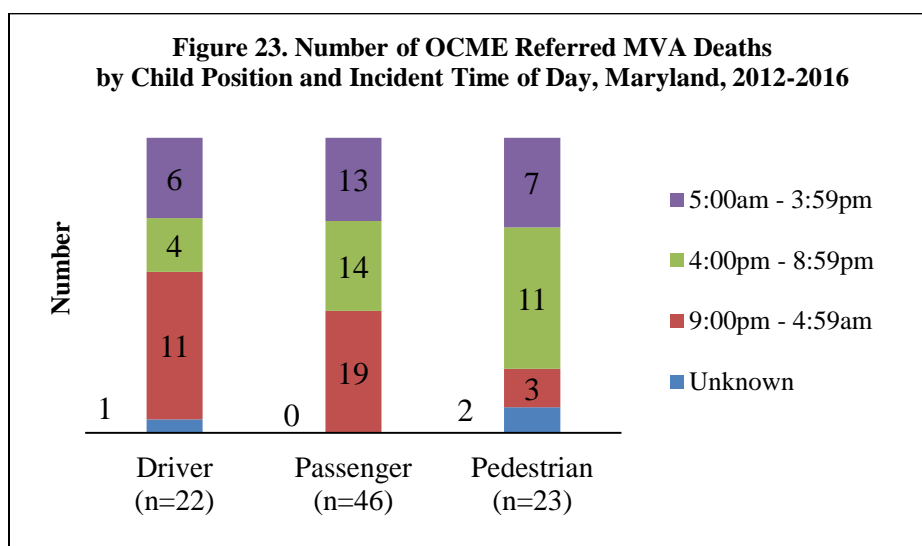

Figure 21. Number of OCME Referred MVA Deaths by Incident Day of Week and Time of Year, Maryland, 2012-2016 (n=113)

Day of Week: Mon - Thurs 69, Fri - Sun 44
Time of Year: Sept - May 72, Jun - Aug 41

Source: OCME Referral Tracker and CDRCRS Database as of 9/12/2017

19

Figure 22. Number of OCME Referred MVA Deaths by Incident Time of Day, Maryland, 2012-2016 (n=113)

Source: OCME Referral Tracker and CDRCRS Database as of 9/12/2017

Half of MVA deaths in which the victim was the driver occurred at night, between 9:00 pm to 4:59 am. Forty-eight percent of deaths where the child was a pedestrian occurred in the evening, between 4:00 pm to 8:59 pm (Figure 23).

Figure 23. Number of OCME Referred MVA Deaths by Child Position and Incident Time of Day, Maryland, 2012-2016

Source: OCME Referral Tracker and CDRCRS Database as of 9/12/2017

Among MVA deaths, male victims were six times more likely than females to be the driver, and 1.6 times as likely to be a pedestrian. In at least 40 percent of MVA deaths, speeding, racing, or reckless driving was a factor. Nearly 15 percent of MVA deaths involved drugs or alcohol, and at least two percent involved cell phone use.

Significant racial disparities exist among MVA deaths. MVA deaths involving the driver were more frequent among non-Hispanic White children than among non-Hispanic Black children. MVA deaths involving a pedestrian, however, were more common among non-Hispanic Black children. MVA deaths occurring on a city street were more frequent among non-Hispanic Black children, while MVA deaths occurring on a rural road were more frequent among non-Hispanic White children (Table 8).

20

Table 8. Racial Disparities Among Child MVA Deaths Maryland, 2012-2016		
	White NH (n=55)	**Black NH (n=46)**
	Data presented as number (%)	
Child position: driver	14 (25)	4 (9)*
Child position: pedestrian	8 (15)	13 (28)
Child responsible	13 (24)	5 (11)
Location: city street	1 (2)	12 (26)*
Location: rural road	21 (38)	4 (9)*
Cause: unsafe, speed, or reckless	22 (40)	20 (43)
Cause: inexperience	5 (9)	3 (7)
Cause: drugs/alcohol	8 (15)	7 (15)
Cellphone involved	2 (4)	1 (2)
Incident time: 10 pm – 2 am	21 (38)	16 (35)

Source: OCME Referral Tracker; referrals as of 9/12/2017. NH: Non-Hispanic
* statistically significant difference at p<0.05 (differences greater than expected by chance alone)

Summary and Recommendations

In 2016, the OCME referred 176 unexpected child deaths for review by the Maryland Child Fatality Review Program. The number of unexpected child deaths in 2016 decreased by 14 percent from 2015. Injury and SUID remained the leading causes of OCME referred deaths in 2016. MVAs continued to be the leading cause of injury deaths. MVA deaths decreased by 60 percent from 2012 to 2014, but the number of MVA deaths has doubled from 2014 to 2016. Infants under one year of age continue to account for the largest proportion of unexpected child deaths. The majority of infant deaths were due to SUID and involved unsafe infant sleep practices. Racial and ethnic disparities persist, with a disproportionate number of OCME referred child deaths occurring among non-Hispanic Black children. Based on the review of 2016 OCME referred child deaths and related trend data, the State CFR Team makes the following recommendations for the prevention of child deaths in Maryland.

Recommendations related to SUID

- Broaden safe sleep messaging campaigns, including social media, to promote the importance of safe sleep.
  - Identify or create safe sleep messages and materials that are consistent, evidence-based, culturally appropriate, and accessible to individuals with low literacy levels, and make them available in a wide variety of settings.
  - Make safe sleep materials available through provider offices (obstetric and pediatric offices), delivery hospitals, State agencies and programs (health and social services departments, WIC clinics, home visiting programs, community health workers, first responders), community organizations, and faith-based organizations.

- Strengthen delivery hospital programs to educate new parents on safe sleep.
  - Promote a statewide hospital quality improvement initiative to increase staff training on safe sleep and to ensure comprehensive and consistent parent education.

- Promote the Maryland Tobacco Quitline incentive program for pregnant women to quit smoking, and expand education on the link between both prenatal and postnatal smoke exposure and sleep-related infant deaths.

Recommendations related to MVAs

- Change the curfew on the Maryland Graduated Driver's License to an earlier hour to reduce nighttime MVA deaths.

- Include a thorough review of cell phone use at the time of an accident in all MVA investigations to better understand the role of distracted driving in teen MVA deaths.

- Provide materials and education to parents on Labor and Delivery units, at pediatric visits, and at social service provider encounters on the National Highway Traffic Safety

Administration and American Academy of Pediatrics recommendations for appropriate use of child passenger safety seats and booster seats.

Recommendations related to homicide

- Encourage community programs to develop alternative activities for youth (e.g. employment, after-school programs, sport teams, music classes, etc.) to deter youth from joining gangs.

- Encourage local child fatality review teams to review 'near fatalities' in order to identify prevention methods.

- Encourage parents and caregivers who choose to have guns in the house to follow gun safety procedures at home by keeping firearms locked up, with the ammunition stored separately. Gun safety locks are supplied by many local Maryland police and sheriff departments (http://www.projectchildsafe.org/safety/safety-kit/Maryland).

Recommendations related to child abuse and neglect

- Broaden the Maryland Birth Match program (Family Law Article, §5–715, Annotated Code of Maryland) to extend the matching time frame beyond 5 years, which will expand identification of newborns potentially at risk of abuse or neglect. The Birth Match program requires the Department of Human Services to provide MDH with a list of parents who have had their parental rights terminated within the last 5 years as a result of child abuse or neglect.

- Expand Maryland's Safe Haven program (http://dhr.maryland.gov/safe-haven/) to extend the maximum age at which an infant may be voluntarily relinquished from 10 days to at least one year of age.

- Enhance data collection during the child fatality review process to better identify child abuse and neglect cases and associated potential risk factors (e.g. parental mental health or substance use issues, environmental factors).

Recommendations related to suicide

- Increase screening among health care and behavioral health providers to ensure that at-risk youth receive proper treatment and management across all systems of care, using validated mental health screening tools.

- Improve data collection on suicide deaths to include information on sexual orientation, gender identity, socioeconomic status, living situation, and other potential factors.

Appendix A: 2016 State Child Fatality Review Team Members

Health-General Article §5-703(a), Annotated Code of Maryland provides that the State Team shall be a multidisciplinary and multiagency review team, composed of at least 25 members, including:

(1)   Attorney General – Christle Sheppard Southall, Esq, designee

(2)   Chief Medical Examiner – Ling Li, MD, designee

(3)   Secretary of Human Resources – Vernice McKee, LGSW, designee

(4)   Secretary of Health – Lawrence Reid, PhD, MPH, designee

(5)   State Superintendent of Schools – Lynne Muller, PhD, designee

(6)   Secretary of Juvenile Services – Jenny Maehr, MD, designee

(7)   Executive Director of the Governor's Office for Children – vacant

(8)   Secretary of State Police – Det. Sgt. Stephen Hall, designee

(9)   President of the State's Attorneys' Association – Ernest Reitz, JD, designee

(10)   Chief of the Division of Vital Records – Lee Hurt, DrPH, MS, designee

(11)   A Representative of the State SIDS Information and Counseling Program – LaToya Bates, LCSW-C, Director, Center for Infant and Child Loss

(12)   Director of the Behavioral Health Administration – Al Zachik, MD, designee

(13)   Two pediatricians with experience in diagnosing and treating injuries and child abuse and neglect, appointed by the Governor from a list submitted by the state chapter of the American Academy of Pediatrics –

Richard Lichenstein, MD, FAAP
Wendy Lane, MD, MPH, FAAP

(14)   Eleven members of the general public with interest or expertise in child safety or welfare, appointed by the Governor, including child advocates, CASA volunteers, health and mental health professionals, and attorneys who represent children –

Tim C. Allen
Mary C. Gentile, LCSW-C
Judith Kandel, CRNP
Roger Lerner, JD
Laurel Moody, RN, MS
John Rusinko, MSW
Martha R. Tuthill
Keith Whalen
Anntinette Williams, LICSW
Cynthia Wright Johnson
One general public vacancy

Appendix B: Duties of the State Child Fatality Review Team

Health-General Article, §5-704 (b), sets forth the State CFR Team's 13 duties. To achieve its purpose the State CFR Team shall:

1) Undertake annual statistical studies of the incidence and causes of child fatalities in the State, including an analysis of community and public and private agency involvement with the decedents and their families before and after the deaths.
2) Review reports from local teams.
3) Provide training and written materials to the local teams established under §5-705 of this subtitle to assist them in carrying out their duties, including model protocols for the operation of local teams.
4) In cooperation with the local teams, develop a protocol for child fatality investigations, including procedures for local health departments, law enforcement agencies, local medical examiners, and local departments of social services, using best practices from other states and jurisdictions.
5) Develop a protocol for the collection of data regarding child deaths and provide training to local teams and county health departments on the use of the protocol.
6) Undertake a study of the operations of local teams, including the State and local laws, regulations, and policies of the agencies represented on the local teams, recommend appropriate changes to any regulation or policy needed to prevent child deaths, and include proposals for changes to State and local laws in the annual report required by paragraph (12) of this subsection.
7) Consider local and statewide training needs, including cross-agency training and service gaps, and make recommendations to member agencies to develop and deliver these training needs.
8) Examine confidentiality and access to information laws, regulations, and policies for agencies with responsibility for children, including health, public welfare, education, social services, mental health, and law enforcement agencies, recommend appropriate changes to any regulations and policies that impede the exchange of information necessary to protect children from preventable deaths, and include proposals for changes to statutes in the annual report required by paragraph (12) of this subsection.
9) Examine the policies and procedures of the State and local agencies and specific cases that the State Team considers necessary to perform its duties under this section, in order to evaluate the extent to which State and local agencies are effectively discharging their child protection responsibilities in accordance with:
    i) The State plan under 42 U.S.C. §5106a (b);
    ii) The child protection standards set forth in 42 U.S.C. §5106a (b); and
    iii) Any other criteria that the State Team considers important to ensure the protection of children.
10) Educate the public regarding the incidence and causes of child deaths, the public role in preventing child deaths, and specific steps the public can undertake to prevent child deaths.
11) Recommend to the Secretary any regulations necessary for its own operation and the operation of the local teams.
12) Provide the Governor, the public, and subject to §2-1246 of the State Government Article, the General Assembly with annual written reports, which shall include the State Team's findings and recommendations.
13) In consultation with local teams:
    i) Define "near fatality;" and
    ii) Develop procedures and protocols that local teams and the State Team may use to review cases of near fatality.

Appendix C: Maryland State Child Fatality Review Team Annual Meeting Agenda

AGENDA
Maryland State Child Fatality Review Program Annual Meeting

Tuesday, November 15, 2016

Maryland Hospital Association
6820 Deerpath Road
Elkridge, MD 21075

8:45   **Registration**

9:00   **Welcome and Introductions**
Richard Lichenstein, MD
Chair, Maryland State Child Fatality Review Team

9:30   **Best Practices for Child Death Review**
Theresa M. Covington, MPH
Director, National Center for Fatality Review and Prevention

10:30   **Teen Suicide- Prevention and Response**
Jen Corbin
Director, Anne Arundel County Crisis Response System

11:30   **Lunch**

1:00   **Child Death Review Case Reporting System**
Lawrence Reid, PhD, MPH

2:00   **Local Coordinator Update Session**
Richa Ranade, MPH
Theresa M. Covington, MPH

2:30   **Adverse Childhood Experiences and Child Death Review**
Wendy Lane, MD, MPH
Maryland State Child Fatality Review Team
Cathy Costa, MPH
Baltimore City Child Fatality Review Coordinator

3:30   **Adjourn**