Michigan Child Death
State Advisory Team
Third Annual Report

Child Deaths in Michigan

A report on the causes and trends of child deaths in Michigan based on findings from community-based Child Death Review Teams.

With recommendations for policy and practice to prevent child deaths.

The Michigan Family Independence Agency
Michigan Public Health Institute

Fall 2002

The Honorable John Engler, Governor
Honorable Members of the Michigan Legislature

I am submitting this third annual report of child deaths in Michigan, in accordance with Public Act 167 of 1997.

This report presents findings from the reviews of 714 child deaths in the year 2000 and 2,108 reviews conducted since 1995. Seventy-four review teams covering seventy-six counties conducted these reviews. These teams are comprised of 1,170 professionals, representing more than 20 different disciplines. These professionals volunteer their time in the hopes that their understanding of the circumstances of a death can lead to local and state action to prevent other deaths. Because of their reviews and commitment to child health and safety, local communities have recommended more than 800 actions, and begun implementation of more than 240 of these.

The Michigan Child Death State Advisory Team has reviewed the findings of the local teams. This report presents their recommendations that we believe can prevent child deaths. As we continue our work, we hope to use this report to further the awareness of state and local officials as well as the citizens of Michigan on how we can keep kids alive.

Thank you for your continued support of the child death review effort.

Respectfully Submitted,

Douglas E. Howard

Douglas E. Howard
Director
Michigan Family Independence Agency

ACKNOWLEDGEMENTS

The dedication and unwavering support of the more than eleven hundred volunteers who serve on child death review teams throughout Michigan make this report possible. It is an act of courage to acknowledge that the death of a child is a community problem. Members of the teams step outside of their traditional professional roles to examine all of the circumstances that lead to child deaths in order to work toward the prevention of other deaths.

The reviews would not be possible without the efforts of the Child Death Review Team Coordinators. They volunteer their time to organize, facilitate and report on the findings of their local teams' reviews.

The Michigan Department of Community Health, Office of the State Registrar, Division for Vital Records and Health Statistics provides local teams timely access to death certificates and to child mortality data.

The Michigan Family Independence Agency provides
the funding and oversight for the Child Death Review program.

This report was authored by the Michigan Public Health Institute
under contract with the Michigan Family Independence Agency.

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CHILD DEATHS IN MICHIGAN

Michigan Child Death State Advisory Team

THIRD ANNUAL REPORT

MISSION

To understand how and why children die in Michigan,
in order to take action to prevent other child deaths.

SUBMITTED TO

The Honorable John Engler, Governor, State of Michigan
The Honorable Dan L. DeGrow, Majority Leader, Michigan State Senate
The Honorable Rick Johnson, Speaker of the House,
Michigan House of Representatives

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*Funding for these positions supported in part by the Michigan Department of Community Health, the Centers for Disease Control and Prevention or the Wayne County Health Department.

Keeping Kids Alive©

EXECUTIVE SUMMARY

The Michigan Child Death Review (CDR) Program was established in 1995 to support the local case reviews of child deaths. These reviews help communities and the state better understand why children die and promote the development of initiatives to prevent other deaths. Natural causes, accidents, homicides and suicides caused the deaths of 1,895 children from birth to age 18 in Michigan in the year 2000. It is believed that almost half of these deaths could have been prevented.

The year 2000 marked the third year that local teams have been meeting to review deaths in all but seven Michigan counties. It is the fifth year of review for 17 counties. Through a careful study of 714 deaths in 2000 and a total of 2,108 deaths since the program began in 1995, local teams were able to better understand the circumstances surrounding child deaths and the major risk factors involved. The 1,170 volunteers, including professionals from more than 20 different disciplines, are using their findings to identify and implement changes in policy, services and programs that can prevent other deaths.

The Michigan Child Death State Advisory Team, mandated by Public Act 167 of 1997, meets regularly to discuss the findings of the local review teams in order to develop recommendations for improvements to state policy and practice to prevent child deaths.

The operating principle of child death review is that the death of a child is a community problem and that the circumstances involved in most child deaths are too multidimensional for responsibility to rest in any one place.

The objectives of child death review are the:

- ***Accurate identification and uniform reporting of the cause and manner of every child death.***
- ***Improved agency responses to child deaths in the investigation and delivery of services.***
- ***Improved communication and linkages among agencies and enhanced coordination of efforts.***
- ***Identification of needed changes in legislation, policy and practices; and expanded efforts in child health and safety to prevent child deaths.***

The Michigan Child Death State Advisory Team has reviewed the findings from the local teams. This report summarizes those findings and presents recommendations to our Governor and the Michigan Legislature for changes in state policy and practice that may prevent other deaths. It offers suggestions for parents and caregivers on how they can best protect their children from harm. The local teams attempt to review all child deaths by manner and cause.

The numbers of child deaths reviewed by manner of death were:

Manner of Death	2000	1995-2000
Natural	344	987
Accidental	229	727
Homicide	60	180
Suicide	37	109
Undetermined	33	90
No Answer	11	15
Total	714	2,108

The deaths reviewed by cause included*:

Cause of Death	2000	1995-2000
Natural, Under Age One	174	508
Motor Vehicle Crashes	149	421
Natural, Over Age One	100	260
SIDS	76	248
Suffocations	54	143
Firearms	46	126
Fires	19	114
Suicides	37	109
Drownings	34	105
Child Abuse and Neglect	33	93
Poisonings	4	21
Falls	4	6
Electrocutions	0	2
All Others	25	93

Local teams attempt to review all accidents, homicides, suicides and undetermined deaths. Because there are so many more natural deaths, teams in larger counties are only able to review a small, representative sample of their natural deaths. In the year 2000, a total of 1,895 children under the age of 19 died in Michigan. Teams reviewed 38% of these deaths. The percent of deaths reviewed by manner, compared to the actual number of deaths officially reported through death certificates included:

* A team may review a death by more than one cause. For example, a drowning death may have been a child neglect death or a firearm death may have been a suicide. Therefore, the total numbers by cause are greater than the total number of reviews.

Manner of Death	Number of Michigan Deaths Under Age 19*	Number of Reviews**	Percent Reviewed
Natural	1,345	344	26
Accidental	417	229	55
Homicide	75	60	80
Suicide	43	37	86
Undetermined	15	33	100
No Answer	0	11	-
Total	1,895	714	38

The percent of all child deaths reviewed by age, race and family income level included:

Age of Child	2000	1995-2000
Under One	43	43
1-4	13	15
5-9	9	9
10-14	9	10
15-18	24	22
Unknown	2	1
Total	100%	100%

Race of Child	2000	1995-2000
White	66	69
Black	30	27
American Indian	2	2
Asian	1	1
Unknown	1	1
Total	100%	100%

Family Income Level	2000	1995-2000
High	1	1
Middle	22	14
Low	30	20
Unknown	47	65
Total	100%	100%

* Source: 2000 Michigan Resident Death File, Division for Vital Records and Health Statistics, Office of the State Registrar, Michigan Department of Community Health.

**If the number is greater than reported on vital records, teams may have reported a death as occurring from more than one cause or reported that they believed the actual cause of death differed from that reported on death certificate, e.g. an accidental drowning may have been reported by teams as a child neglect death. A death may also have occurred in a different year than the year in which it was reviewed.

The primary mission of child death review teams is to reduce preventable child fatalities. According to the teams' findings, 40% of the deaths reviewed were classified as definitely or probably preventable. Since the program began, local communities have made 863 recommendations and have taken action to implement 240 of these within 1-3 months after review.

The teams operate under the principle that a child's death is a community problem that must be addressed on a multidimensional level in order to prevent other deaths. Individuals and agencies involved in the CDR process have come to learn that working together results in a more coordinated response to a tragic situation. This has led to improvements in fatality investigations and the delivery of services at the local level when a child death occurs.

This report is issued as a memorial and lasting tribute to all of the children in Michigan who have died. It is the hope of the Child Death State Advisory Team that this report will galvanize further efforts in local communities and among our state leaders to keep the children of Michigan healthy and safe.

Findings by the teams for specific causes of deaths are as follows and are ordered by the magnitude of the actual number of child deaths in Michigan in 2000.

Natural Deaths Under Age One, Other than SIDS

KEY FINDINGS AND COMMUNITY ACTIONS

- There were 943 natural deaths to children under one year of age in 2000, not including SIDS. Teams reviewed 174 such deaths in 2000 and 508 from 1995-2000.
- Babies who die within the first 28 days of life accounted for more than two-thirds of these deaths.
- From 1995-2000, 64% of the reviews were of white babies and 28% were black babies.
- When reported, poor babies represented 74% of the cases reviewed from 1995-2000.
- Prematurity and low birthweight are the leading predicators of infant morbidity and mortality.
- Fifteen of the 174 mothers in the cases reviewed in 2000 were known to have had very few or no prenatal care visits.
- Ten communities in Michigan conducted more in-depth reviews of infant deaths by establishing specialized Fetal Infant Mortality Review (FIMR) programs.
- Local CDR teams proposed a total of 15 prevention initiatives in 2000 and 48 from 1995-2000. The teams took action to implement four of these in 2000 and 24 from 1995-2000.

RECOMMENDATION FOR STATE POLICY MAKERS

- Implement a mechanism to encourage medical care organizations to have plans in place to ensure early access to and continuity of care for all pregnant women.

RECOMMENDATIONS FOR PARENTS

- If you think you are pregnant, see your health care provider early and often, and follow their advice.
- If you are pregnant, do not smoke anything, drink alcohol or take any recreational drugs.
- If you experience any warning signs for pre-term labor, call your doctor or midwife right away.

Motor Vehicle Crashes

KEY FINDINGS AND COMMUNITY ACTIONS

- There were 261 Michigan residents age 0-18 who died in motor vehicle related incidents in 2000. Teams reviewed 149 such deaths during 2000 and 421 between 1995-2000. These deaths included all forms of motor vehicle, bicycle and pedestrian deaths.
- Motor vehicle crashes are the leading cause of accidental death for all children, and the leading cause of all deaths for teenagers.
- For all ages in motor vehicle deaths reviewed, 60% were boys and 40% were girls, but teams reviewed almost twice as many teen male victims as teen female victims.
- Forty-nine percent of these deaths were to teens ages 15-19.
- In deaths reviewed from 1995-2000, 86% of the victims were white, 12% were black and two percent were Asian or American Indian children.
- Unlike most other causes of death, more middle income children than poor children were victims in motor vehicle deaths reviewed between 1995-2000: four percent were high income, 70% were middle income and 26% were low income.
- New drivers, 16-18 years of age, were at fault in approximately 45% of the cases reviewed in 2000. Driver error was the number one cause of the crashes reviewed.
- Normal road conditions were reported in 51% of the crashes. Teen drivers' inability to control their cars on loose gravel was a major risk factor in 16 cases reviewed in 2000.
- A recent study found that 16-year-olds driving one teen passenger were 39% more likely to get killed than those driving alone. This percentage increased to 86% with two passengers and 182% with three or more passengers.
- For crash deaths reviewed from 1995-2000 when restraint use was known, 51% of the victims were unrestrained.
- Properly installed child safety seats reduce fatal injuries by more than half for young children. From 1995-2000, teams reviewed 10 deaths in which it was known that children under age 10 were not in car seats or wearing seat belts.
- The local teams proposed a total of 63 prevention initiatives in 2000 and 195 from 1995-2000. The teams took action to implement 19 of these in 2000 and 118 from 1995-2000.

RECOMMENDATIONS FOR STATE POLICY MAKERS

- Amend the current graduated licensing law to limit the number of teen passengers allowed in vehicles driven by teens with Level Two Intermediate Licenses.

- Encourage auto dealerships to provide point-of-sale information and resources about proper installation and usage of child safety seats and booster seats when selling new or used vehicles.

RECOMMENDATIONS FOR PARENTS

- Put limits on the number of teen passengers allowed in a car with your teen.
- Ensure that you use the correct car seat for your child's age and weight. Children ages four to eight should be in booster seats.

Natural Deaths Over Age One

KEY FINDINGS AND COMMUNITY ACTIONS

- There were 303 natural deaths to children over one year of age in 2000. Teams reviewed 100 such deaths in 2000 and 260 from 1995-2000.
- Death from a natural cause is the leading cause of mortality to children over age one.
- Cancer, congenital anomalies and cardiac conditions were the top three causes of death in this category, both for 2000 reviews and for those conducted from 1995-2000.
- The largest percentage of the reviews was of deaths to children between one and four years of age.
- From 1995-2000, 72% of these deaths were of white children and 23% were black children.
- When known, 55% of the children were low income in all reviews from 1995-2000.
- From 1995-2000, teams reviewed 10 deaths from asthma, a usually preventable, yet natural cause of death. These deaths often occurred when treatment regimens were not followed.
- Local teams proposed a total of 15 prevention initiatives related to natural child death in 2000 and 42 from 1995-2000. The teams took action to implement nine of these in 2000 and 22 from 1995-2000.

RECOMMENDATION FOR STATE POLICY MAKERS

- Support partnerships with statewide chronic disease organizations to share findings from the child death reviews in order to improve prevention efforts, and the diagnosis and treatment of chronic diseases.

RECOMMENDATIONS FOR PARENTS

- Ensure that your children receive regular preventive medical care.
- Promptly seek medical care when you think your children need to see a doctor and make sure your children follow their treatment plans.

Sudden Infant Death Syndrome (SIDS)

KEY FINDINGS AND COMMUNITY ACTIONS

- There were 99 SIDS deaths in 2000. Teams reviewed 76 deaths in 2000 and 248 SIDS cases from 1995-2000.
- SIDS is the sudden death of an infant under one year of age, which remains unexplained after completion of a complete autopsy, examination of the death scene and review of the baby's health history. If any of these three steps are not conducted, a SIDS diagnosis should not be made.
- An infant is believed to be at the highest risk for SIDS when three risk variables converge for him or her: 1) a physiological defect; 2) the critical development period, which peaks between two and four months of age; and 3) environmental stressors such as oxygen depletion while sleeping face down, exposure to prenatal or second-hand smoking and overheating while wrapped in heavy blankets.
- Comprehensive scene investigations are still lacking in many of the SIDS deaths reviewed. For 1995-2000, a scene investigation was not conducted by law enforcement in 41% of cases or by medical examiners in 63% of the cases.
- All but three of the babies were under one year of age from 1995-2000.
- From 1995-2000, 63% of the deaths were of white children, 33% were black children and two percent were American Indian.
- When known, from 1995-2000, 80% of the children were low income and 20% were middle income.
- The Back to Sleep Campaign is credited with reducing the SIDS death rate by at least half since 1994. Yet only 25% of infants whose deaths were reviewed in 2000 and 21% from 1995-2000 were known to be sleeping on their backs when they died of SIDS.
- For the 2000 SIDS reviews, 30% of the infants were sharing a sleep surface with at least one other person at the time of death. Thirty-six percent of the SIDS babies were bed-sharing in the cases reviewed from 1995-2000.
- Only 26% of the infants in 2000 and 30% of the infants in 1995-2000 were reported to have been sleeping in cribs when they died.
- Only one baby reviewed in 2000 and 12 babies from 1995-2000 were found sleeping alone, in their cribs and on their backs.
- Both prenatal smoking and second-hand smoke exposure have been identified as high risk factors for SIDS. Of the cases reviewed in 2000, 26% of the mothers reported that they smoked during pregnancy and 33% of the babies were reported as living in smoke-filled environments.
- The local teams proposed a total of 33 prevention initiatives in 2000 and 133 from 1995-2000. The teams took action to implement 18 of these in 2000 and 81 from 1995-2000.

RECOMMENDATIONS FOR STATE POLICY MAKERS

- Encourage local jurisdictions to require that those medical examiners and law enforcement officers assigned to investigate child deaths be trained on protocols for investigating child deaths modeled after the State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths.
- Expand state efforts to educate parents on safe infant sleep, including an emphasis on the risk of SIDS and suffocation when infants sleep on the same surface with others.

RECOMMENDATIONS FOR PARENTS

- Always keep your baby in a smoke-free environment.
- Practice the recommendations from the Consumer Product Safety Commission (CPSC) for safe infant sleep environments. Place your baby:
  - On his/her back on a firm, tight-fitting mattress in a crib that meets current safety standards.
  - Remove pillows, quilts, comforters, sheepskins, stuffed toys and other soft products from the crib.
  - Use a sleeper or other sleep clothing as an alternative to blankets, with no other covering.
  - If using a blanket, put your baby with feet at the foot of the crib. Tuck a thin blanket around the crib mattress, reaching only as far as your baby's chest.
  - Make sure your baby's head remains uncovered during sleep.
  - Do not place your baby on a waterbed, sofa, soft mattress, pillow or other soft surface to sleep.
  - Do not let your baby sleep on the same surface with adults or other children.

Firearms

KEY FINDINGS AND COMMUNITY ACTIONS

- There were 71 firearm-related deaths in 2000, including six unintentional deaths, 42 homicides and 23 suicides. Teams reviewed 46 such deaths in 2000 and 126 from 1995-2000.
- In 2000, teams reviewed 28 homicides and 18 suicides involving firearms. There were no unintentional firearm-related deaths reviewed in 2000. From 1995-2000, teams reviewed 64 homicides, 50 suicides and 12 unintentional deaths involving firearms.
- Of all firearm deaths reviewed 1995-2000, 52% were white and 45% were black victims.
- From 1995-2000, 55% of the victims were middle income and 45% were low income.
- Of the 12 unintentional firearm deaths from 1995-2000, all of the persons handling the weapons were teen males, and all but one victim was male. The victims' ages ranged from 6-9 (42%), 11-14 (33%) and 17-18 (25%).
- Of the 12 unintentional firearm deaths from 1995-2000, all of the deaths occurred in homes. Three cases involved a child playing with the gun after having attended gun safety classes. In seven of the deaths, the guns were not kept in a locked cabinet and did not have trigger locks on them.
- Sixty-seven percent of all firearm homicide victims from 1995-2000 reviews were ages 15-18 and 11% were under age five.
- Of all firearm homicides reviewed from 1995-2000, the race and sex of the victims were 54% black males, 16% white males, 16% white females and 13% black females.
- In 2000, 20 of the 26 firearm homicides were reviewed by Wayne County. This team believes most of these deaths were related to drug dealing and/or gangs, and involved high-risk youth with long histories of family and peer problems and school failures. When known, the perpetrator was a friend or acquaintance in 35% of the homicides.
- Handguns were the type of firearms used in 50% of the 2000 reviews and in 47% of all homicides reviewed from 1995-2000.

- At the time of the reviews, arrests had been made in 11% of the homicides.
- The local teams proposed a total of 13 firearm injury prevention initiatives in 2000 and 75 from 1995-2000. The teams took action to implement six of these in 2000 and 40 from 1995-2000.

RECOMMENDATIONS FOR STATE POLICY MAKERS

- Support enforcement of new laws that require gun safety mechanisms on all firearms at the point of sale.
- Target intensive and early intervention services for families and alternative education, after-school recreation and employment opportunities for youth in neighborhoods with high teen homicide rates.

RECOMMENDATIONS FOR PARENTS

- If you own guns, they should be properly stored. Keep them in locked cabinets with gun safety devices in place. Store ammunition in a separate locked cabinet.
- Recognize and seek professional help if your child displays violent behavior.

Suicides

KEY FINDINGS AND COMMUNITY ACTIONS

- There were 43 suicides in Michigan in 2000. Teams reviewed 37 suicides in 2000 and 109 since 1995.
- Suicide is the third leading cause of death for teenagers, following motor vehicle crashes and firearm-related homicides.
- In 2000 reviews, 48% of the teens used firearms and 37% hung themselves. From 1995-2000, firearms were used in 46% of the suicides and 42% were hangings.
- In six of the 18 firearm suicides reviewed in 2000, the guns were not stored in a locked cabinet and did not have a trigger lock. (National studies show a strong correlation between accessible guns in the home and suicides.) Two of these six teens had made prior suicide attempts. In 21 of the 50 firearm suicides reviewed from 1995-2000, the guns were not stored in a locked cabinet. Five of these 21 teens had made prior attempts.
- Seventy-six percent of the 37 suicide deaths reviewed in 2000 were boys. Although adolescent females are twice as likely to attempt suicide as males, males are four times more likely to complete suicide because they tend to use firearms.
- Seventy-nine percent of the suicide victims whose deaths were reviewed from 1995-2000 were ages 15-18, but 19 victims were only 10-14 years of age.
- White teens accounted for 81% and black teens for 16% of the suicides reviewed from 1995-2000.
- When reported, from 1995-2000, 67% of the teens were middle income, 31% were low income and two percent were high income.
- Of the 37 suicides reviewed in 2000, 43% had known prior mental health problems and 35% had received mental health services in the past. From 1995-2000, 30% of the teens had known mental health problems and had received services.

- In 2000 reviews, 27% of the teens had made prior verbal threats to kill themselves; 21% had done so in cases reviewed from 1995-2000.
- Most cases reviewed identified a precipitating event that may have led to the suicide. These included arguments with family members, relationship breakups, incarcerations, loss of friends and not graduating from high school.
- Local teams proposed a total of 11 suicide prevention initiatives in 2000 and 60 from 1995-2000. The teams took action to implement six of these in 2000 and 40 from 1995-2000.

RECOMMENDATIONS FOR STATE POLICY MAKERS

- Institute training for teachers and health, mental health and substance abuse human service professionals on suicide prevention.
- Update and coordinate state efforts to develop an adolescent suicide prevention plan in line with the recommendations of the U.S. Surgeon General's Call to Action for Suicide Prevention.

RECOMMENDATIONS FOR PARENTS

- If you notice a change in your child's behavior or habits, talk to them about it immediately and do not be afraid to seek professional help.
- If your child seems depressed, highly anxious or has made suicide threats, seek help from a professional and make sure your child cannot gain access to weapons or other means of suicide in your home.

Suffocations

KEY FINDINGS AND COMMUNITY ACTIONS

- There were 80 suffocation deaths in 2000, including 52 unintentional deaths, seven homicides, 18 suicides and three undetermined. Teams reviewed 54 such deaths in 2000 and 143 from 1995-2000.
- In 2000, teams reviewed 29 unintentional suffocations, 14 suicides by hanging, seven homicides and four undetermined suffocations. From 1995-2000, teams reviewed 73 unintentional suffocations, 46 suicides by hanging, 13 homicides and 11 suffocations of undetermined manner.
- From 1995-2000, 76% of the deaths were of white children, 20% were black children and two percent were American Indian.
- When known, 63% of the children were low income and 35% were middle income in all suffocation reviews conducted from 1995-2000.
- Teams reviewed 12 deaths in 2000, and 27 from 1995-2000 in which an adult or older child unintentionally smothered the baby while sleeping with them. All of these babies were under one year of age, and most were low income. The National Institute of Child Health and Human Development reports that an infant sleeping with others in an adult bed is 20 times more likely to suffocate than an infant who sleeps alone.
- Teams reviewed 11 deaths in 2000 and 26 from 1995-2000 in which a child suffocated in bedding or furniture while sleeping, including waterbeds, couches and heavy or thick blankets. These include three infants who died when they suffocated in plastic bags left in their beds. The majority of these children were low income.

- In 2000, five deaths were reviewed in which curtain cords strangled a toddler, five children choked on toys or food and one child suffocated in a toy chest.
- The local teams proposed a total of 33 suffocation prevention initiatives in 2000 and 133 from 1995-2000. The teams took action to implement 18 of these in 2000 and 81 from 1995-2000.

RECOMMENDATIONS FOR STATE POLICY MAKERS

(Note: these recommendations are the same as in the section on SIDS)

- Encourage local jurisdictions to require that those medical examiners and law enforcement officers assigned to investigate child deaths be trained on protocols for investigating child deaths modeled after the State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths.
- Expand state efforts to educate parents on safe infant sleep, including an emphasis on the risk of SIDS and suffocation when infants sleep on the same surface with others.

RECOMMENDATIONS FOR PARENTS

- Practice the recommendations from the CPSC for safe infant sleep environments. (See the Section on SIDS.)
- Keep all small objects, cords and ropes away from infants and toddlers and make sure toy chests have safety hinges.

Fires

KEY FINDINGS AND COMMUNITY ACTIONS

- There were 46 fire deaths in 2000. Teams reviewed 19 such deaths in 2000 and 114 from 1995-2000.
- Children who die in house fires in the U.S. account for the third largest segment of children ages fourteen and under who die of unintentional injuries.
- Young, poor male children are most vulnerable. Of all deaths reviewed, more than half of the victims were less than five years old, 64% were boys and 74% were low income.
- From 1995-2000 reviews, 55% of the victims were white, 40% were black and five percent were American Indian.
- From 1995-2000 reviews, when known, the top four fire sources were lighters (15), cigarettes (14), matches (13) and candles (10).
- From 1995-2000, when known, fires resulting in child fatality were started by matches or lighters (26%), arson (12%), smoking (9%) or cooking (4%). Children playing with lighters caused 14 deaths and children playing with matches caused nine deaths.
- The single most important factor in reducing fatalities from fires is the presence of a working smoke detector. The teams reported that when known, in seven deaths reviewed in 2000 and 52 deaths from 1995-2000, the children's homes had no working smoke detectors at the time of the fire.
- The teams proposed a total of 11 fire prevention initiatives in 2000 and 117 from 1995-2000. The teams took action to implement six of these in 2000 and 65 from 1995-2000.

RECOMMENDATIONS FOR STATE POLICY MAKERS

- Encourage public education on the increasing number of candle-related fire deaths and develop campaigns to promote safe candle use in homes.
- Encourage local efforts to increase the number of lithium powered or hard-wired smoke detectors and sprinkler systems in residential dwellings.
- Encourage school districts and daycare organizations to offer fire safety education such as Risk Watch, especially in preschools and daycare settings.

RECOMMENDATIONS FOR PARENTS

- Install smoke detectors outside every sleeping area and on every floor of your home; test them monthly, clean them periodically and keep fresh batteries in them if they are not hard-wired or equipped with 10-year lithium batteries.
- Keep matches, lighters and candles well out of the reach of children and teach your family how to escape from your home in case of a fire.

Drownings

KEY FINDINGS AND COMMUNITY ACTIONS

- There were 36 drowning deaths in 2000. Teams reviewed 34 such deaths in 2000 and 105 deaths from 1995-2000.
- In the 2000 reviews, over half of the victims were children ages 0-4.
- Boys were the drowning victims in 76% of the deaths reviewed in 1995 and 70% of the cases from 1995-2000.
- From 1995-2000, 73% of the victims were white, 24% were black and three percent were either Asian or American Indian children.
- When reported, 55% of the victims were middle income and 45% were low income.
- For reviews conducted from 1995-2000, 77% of the infant victims drowned in bathtubs. Over half of children ages 1-4 drowned in swimming pools. Seventy-five percent of children over the age of five drowned in open bodies of water.
- Proper supervision is the best prevention tool to prevent childhood drowning: in 60% of the reviews, both for 2000 and overall, the teams noted that supervision had been inadequate. In four deaths, alcohol use by caretakers was a factor in the lack of supervision.
- From 1995-2000, 22 of 32 children who drowned entered a pool through a gate while unsupervised. In 17 of these deaths, the gate was known to have been unlocked. In 12 of these deaths, the communities did not have a local ordinance requiring pool fencing.
- None of the 13 teen drowning deaths reviewed were alcohol-related.
- The local teams proposed a total of 23 drowning prevention initiatives in 2000 and 71 from 1995-2000. The teams took action to implement three of these in 2000 and 24 from 1995-2000.

RECOMMENDATIONS FOR STATE POLICY MAKERS

- Ensure local enforcement of the recent changes in the Michigan Construction Codes that require local units of government to adopt and enforce pool fencing regulations.
- Review current daycare licensing guidelines on access to pools, hot tubs or open bodies of water at regulated daycare homes.

RECOMMENDATION FOR PARENTS

- When you are near any pool or body of water, always designate one adult to keep sight of all the children, at all times.

Child Abuse and Neglect

KEY FINDINGS AND COMMUNITY ACTIONS

- There were 17 child abuse and neglect deaths recorded on death certificates in 2000. Teams identified and reviewed 33 deaths due to child abuse and neglect in 2000 and 93 deaths from 1995-2000*.
- In the cases reviewed in 2000, 79% of the children were under the age of three, including 16 children under the age of one. From 1995-2000, 81% of the victims were under age three.
- Boys and girls were equally at risk: in 2000, there were 17 boy and 16 girl victims. From 1995-2000, 48 boys and 45 girls died of abuse or neglect.
- For deaths reviewed in 2000, 60% were white, 33% were black, and there was one American Indian and one Asian victim. From 1995-2000, 53% were white and 44% were black. There was one American Indian and two Asian victims.
- When reported, teams found that 90% of the victims in 2000 and 89% from 1995-2000 were low income.
- From 1995-2000, 34% of the children died from head injuries when they were severely shaken, hit or thrown. The second most common cause of abuse deaths (26%) was severe beating or battering. Six children were strangled or smothered. Five newborn babies died when they were abandoned shortly after birth.
- In 17 of the 33 cases reviewed in 2000, the perpetrator was either the father (9) or the mother's boyfriend (8); from 1995-2000, the perpetrators were father (23), mother's boyfriend (26) or mother (17). Thirteen of the perpetrators were arrested for murder or manslaughter. In 2000, no perpetrators had received FIA's Family Preservation Services.
- Most fatal abuse occurs when a caregiver loses patience with a child, and the most common explanation given by perpetrators was that the child would not stop crying.
- A family history of domestic violence or substance abuse increases the risk for fatal abuse and neglect. Of the cases reviewed in 2000, 21% of the perpetrators had prior records as batterers. Drugs and alcohol were listed as a factor in only six percent of these deaths.

* It is widely accepted that child abuse and neglect homicides are underreported in vital statistics data. In 2000, FIA identified an additional 31 deaths, over the 17 reported in vital statistics as due to abuse or neglect. Teams reviewed 33 of these. Many of these were recorded as accidental or natural deaths on death certificates, but a study of the deaths found circumstances indicating that neglect or abuse caused the deaths. A federally funded pilot project is helping Michigan better determine the actual count of abuse and neglect.

- In 2000, there was a Child Protective Services (CPS) history with the child's family in 13 of the cases, with eight known to have involved the child who died. From 1995-2000, the child's family had a prior CPS history in 45 of the 93 cases, with 17 of those involving the deceased child.
- In 2000, in the cases in which it was known, seven children had evidence of prior abusive injuries, but these had not been reported to CPS. Between 1995-2000 there were at least 10 children with unreported prior injuries.
- The local teams proposed a total of nine child abuse prevention initiatives in 2000 and 39 from 1995-2000. Although no prevention initiatives were recorded as implemented in 2000, the team took action on 16 recommendations from 1995-1999.

RECOMMENDATIONS FOR STATE POLICY MAKERS

- Increase and improve the resources available to educate and support the medical community, other mandated reporters and the general public in understanding, identifying and reporting child abuse and/or neglect.
- Expand opportunities for high-risk families to receive intensive and effective home visiting services which offer instruction and support regarding prenatal care, parenting skills, household management and coping with environmental dangers.
- Enhance the Family Independence Agency's Child Protective Services caseworkers' ability to recognize potential indicators of abuse and neglect in high-risk environments.

RECOMMENDATIONS FOR PARENTS

- Make sure that your choice of a caretaker or babysitter is a patient person, who is experienced in caring for children, has positive feelings for your child and is not prone to violent behavior, drug abuse or alcoholism.
- If you are feeling overwhelmed or frustrated by your child, call someone you trust and find a way to calm yourself. Never strike, shake or throw your child.

Other and Undetermined Deaths

KEY FINDINGS AND COMMUNITY ACTIONS

- There were 31 child deaths of other or undetermined causes in 2000. Teams reviewed 33 such deaths in 2000 and 101 from 1995-2000.
- Deaths in this category in 2000 included those caused by poisonings (4), falls (4) and other deaths of undetermined cause or manner (25). From 1995-2000, these deaths included poisonings (21), falls (6), electrocutions (2) and others (72).
- In 2000 reviews, 61% of the deaths were to children under the age of five, and 57% from 1995-2000. For both time frames, 55% were boys.
- From 1995-2000, 62% of the children were white, 30% were black and four percent were American Indian.
- When known, from 1995-2000 reviews, 60% of the children were low income, 35% middle income and five percent were high income.
- Lack of adequate supervision by caregivers was a frequent factor in these deaths. Teams reported that supervision was inadequate or questionable in over 40% of the deaths.
- The local teams proposed a total of 10 prevention initiatives in 2000 and 49 from 1995-2000. The teams took action to implement two of these in 2000 and 18 from 1995-2000.

RECOMMENDATION FOR STATE POLICY MAKERS

- Promote educational programs for parents, childcare providers and children on the issues surrounding safe environments for children, especially the safe storage and dispensing of medication.

RECOMMENDATION FOR PARENTS

- Be sure that all areas of the house are "child proofed," including stairs, electrical outlets, storage cabinets and medication bottles.

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Introduction

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Introduction

1,895 children under the age of 19 died in Michigan in 2000. Almost half of these deaths could have been prevented

The Michigan Child Death Review Program was established in 1995 to support local case reviews of child deaths, in order to better understand why children die and to encourage communities and the state to take actions to prevent other child deaths. Natural causes, accidents, homicides and suicides caused the deaths of 1,895 children under the age of 19 in Michigan in 2000. It is believed that almost half of these deaths could have been prevented.

The year 2000 marked the third year that the program has supported the reviews of child deaths in most Michigan counties and the fifth year of reviews for 17 counties. Through a careful study of 714 deaths in 2000 and a total of 2,108 deaths since the program began in 1995, local teams were able to better understand the circumstances surrounding child deaths and the major risk factors involved. Appendix A lists the number of reviews reported by counties.

The 74 child death review teams were meeting in 76 counties in 2000. Comprised of 1,170 professionals from more than 20 different disciplines, the teams use their findings to identify and implement changes in policy, services and programs to prevent other deaths.

The Michigan Child Death State Advisory Team, mandated by Public Act 167 of 1997, meets regularly to discuss the findings of the local review teams in order to develop recommendations for improvements to state policy and practice to prevent child deaths.

The operating principle of Michigan's child death review is that the death of a child is a community problem and that the circumstances involved in most child deaths are too multidimensional for responsibility to rest in any one place.

The objectives of Michigan's CDR program are the:

- ***Accurate identification and uniform reporting of the cause and manner of every child death.***
- ***Improved agency responses to child deaths in the investigation and delivery of services.***
- ***Improved communication and linkages among agencies and enhanced coordination of efforts.***
- ***Identification of needed changes in legislation, policy and practices; and expanded efforts in child health and safety to prevent child deaths.***

The Michigan Child Death State Advisory Team has reviewed the findings from the local teams. This report summarizes those findings and presents recommendations to the Governor and the Michigan Legislature for changes in state policy and practice that may prevent other deaths. It offers suggestions for parents and caregivers on how they can best protect their children from harm. This report is issued as a memorial and lasting tribute to all of the children in Michigan who have died. It is the hope of the State Advisory Team that this report will galvanize further efforts in local communities and among our state leaders to keep the children of Michigan healthy and safe.

Summary of Findings

Teams in 76 counties reviewed 714 deaths in 2000, for a total of 2,108 deaths reviewed since 1995.

Table 1
Number of Deaths Reviewed by Year

Year of Review	Number of Cases
1995	3
1996	128
1997	177
1998	488
1999	598
2000	714
Total	2,108

The official manner of death as determined by county medical examiners for all deaths reviewed included:

Table 2
Number of Deaths Reviewed by Manner

Manner of Death	2000	1995-2000
Natural	344	987
Accident	229	727
Homicide	60	180
Suicide	37	109
Undetermined	33	90
No Answer	11	15
Total	714	2,108

The cause of death as listed on death certificates refers to the diseases, injuries or complications that actually caused the death.

The deaths reviewed by cause included:*

Table 3
Number of Deaths Reviewed by Cause

Cause of Death	2000	1995-2000
Natural, Under Age One	174	508
Motor Vehicle Crashes	149	421
Natural, Over Age One	100	260
SIDS	76	248
Suffocations	54	143
Firearms	45	126
Fire	19	114
Suicides	37	109
Drownings	34	105
Child Abuse and Neglect	33	93
Poisonings	4	21
Falls	4	6
Electrocutions	0	2
All Others	25	93

Local teams attempt to review all accidents, homicides, suicides and undetermined deaths. Because of the large numbers, many teams are able to review only a small, representative sample of their natural deaths. In the year 2000, a total of 1,895 children under the age of 19 died in Michigan. Teams reviewed 38% of these deaths. Teams may also have reviewed cases in 2000 of deaths occuring in a previous year. The percent of deaths reviewed by manner compared to the actual number of deaths officially reported through death certificates included:

Table 4
Comparison of Actual Number of Deaths by Number Reviewed in 2000

Cause of Death	Number of Michigan Deaths Under Age 19**	Number of Reviews	Percent Reviewed of Total Deaths
Natural	1,345	344	26%
Accident	417	229	55%
Homicide	75	60	80%
Suicide	43	37	86%
Undetermined	15	33	100%
No Answer	N/A	11	-
Total	1,895	714	38%

* A team may review a death by more than one cause, for example a drowning death may have been a child neglect death or a firearm death may have been a suicide. Therefore the total numbers by cause are greater than the total number of reviews.
** Source: 2000 Michigan Resident Death File, Division for Vital Records and Health Statistics, Office of the State Registrar, Michigan Department of Community Health.

Actions Taken to Prevent Other Deaths

Teams review deaths to improve investigations, services for families and agency practices. But most importantly, they review child deaths in order to prevent other deaths. A child's death is considered preventable if the team believes that an individual or community could reasonably have done something that would have changed the circumstances leading to the death. Teams are challenged to consider if a death could have been prevented from individual, agency and community perspectives. The most important lesson learned from the 2,108 deaths reviewed is that 48% of them could have been prevented, and that local actions can help to keep children safer and healthier.

Teams found that a majority of the unintentional, homicide and suicide deaths were preventable, but only a small percent of the natural deaths were believed to be preventable.

A death is preventable if an individual or group could reasonably have done something that would have changed the circumstances leading to the death.

The percent of all deaths reviewed by age, race and family income levels included:

Table 5
Percent of Deaths Reviewed by Age of Child

Age of Child	2000	1995-2000
Under One	43	43
1-4	13	15
5-9	9	9
10-14	9	10
15-18	24	22
Unknown	2	1
Total	100%	100%

Table 6
Percent of Deaths Reviewed by Race of Child

Race of Child	2000	1995-2000
White	66	69
Black	30	27
American Indian	2	2
Asian	1	1
Unknown	1	1
Total	100%	100%

Table 7
Percent of Deaths Reviewed by Family Income Level

Income Level	2000	1995-2000
High	1	1
Middle	22	14
Low	30	20
Unknown	47	65
Total	100%	100%

Local child death review teams try to understand how and why children die, and take action to prevent other deaths.

Teams found that 47% of the 602 child deaths they reviewed could have been prevented. Team findings led to the implementation of 188 prevention initiatives.

Table 8
Percent of Deaths Reviewed Believed to be Preventable

Cause of Death	2000	1995-2000
Natural, Under Age One	6	5
Motor Vehicle Crashes	86	88
Natural, Over Age One	8	9
SIDS	12	14
Suffocations	77	76
Firearms	53	67
Fire	84	87
Suicides	70	60
Drownings	88	93
Child Abuse and Neglect	69	77
Others	38	55

Teams found that the percent of preventable deaths increased with the age of the child. Most deaths to teens were preventable, whereas most deaths to infants were not preventable:

Table 9
Percent of Preventable Deaths Reviewed by Age

Age	2000	1995-2000
Under One	20	22
1-4	46	60
5-9	53	61
10-14	51	59
15-18	68	69

Since 1995, local teams have made 863 prevention recommendations and taken action on 464 of these.

Once a team determines that a death could have been prevented, they identify the risk factors that may have contributed to the death. By understanding these risks, teams are able to identify community and state level actions that could minimize these risk factors and prevent similar deaths.

In many cases, the teams have been successful and the reviews have led to important changes in communities to help keep kids alive. In 2000, teams made 212 recommendations for prevention, and within a short time after their review (one to three months), action was being taken in communities to implement 74 of these. Since the program has been in place, local communities have made 863 recommendations and taken action on 464 of these shortly after their reviews. It is known that many more actions and prevention initiatives have been implemented after the case report was submitted, but have not been documented in the data.

Table 10
Number of Prevention Actions Proposed and Implemented

Action	Proposed		Implemented	
	2000	1995-00	2000	1995-00
Education in Media	37	177	18	117
Education in Schools	40	157	16	90
Community Safety Project	33	130	15	64
Legislation	3	56	6	31
Public Forums	9	40	0	22
Changes in Agency Practice	23	75	4	20
Product Safety	4	26	2	17
Advocacy	15	31	2	16
New Services	10	31	1	14
Other	38	140	10	73
Total	212	863	74	464

Table 11*
Number of Prevention Actions by Cause of Death

Cause of Death	Proposed		Implemented	
	2000	1995-00	2000	1995-00
Natural, Under Age One	15	48	4	24
Motor Vehicle Crashes	63	195	19	118
Natural, Over Age One	15	42	9	22
SIDS	33	133	18	81
Firearms	13	75	7	38
Suicides	11	60	6	40
Fire	11	117	6	65
Drownings	23	71	3	24
Suffocations	23	87	9	49
Child Abuse and Neglect	6	46	0	25
Other	10	49	2	18
Total	223	923	83	504

* May be more than one cause for death for each action.

Table 12
Target Populations for the Prevention Actions

Population	2000	1995-2000
General Public	78	378
Parents and Caregivers	77	331
Children	57	234
Professionals	37	164
Others	17	48

Child Death Review Teams are encouraged to delegate responsibility for implementing their recommendations for action to one or more community agency or group. Many organizations and agencies have taken the lead to implement initiatives; and in some cases the team works on an activity during a review meeting. Some teams, meet even when there are no reviews to complete, using the meeting to plan prevention activities.

Table 13
Organizations Taking the Lead in Prevention Actions

Organization	2000	1995-2000
Health Department	39	91
Law Enforcement	14	50
Schools	12	31
Local Community Group	9	23
Family Independence Agency	5	15
Mental Health	1	7
Other	28	73

Each of the sections highlighting team findings by cause of death describes major community efforts implemented as a result of the review. Some examples include:

Improving Interagency Collaboration to Prevent Deaths

- Many county CDR teams work with their local SAFE KIDS* chapters to spearhead local unintentional injury prevention initiatives. Two new SAFE KIDS chapters were organized as a direct result of Child Death Review: Mason/Lake/Oceana now have a regional SAFE KIDS chapter and Mecosta County has recently convened a chapter.
- In Livingston County, the team coordinator created a comprehensive list of all the resources in the county so that agencies know whom they can contact in the event of a death or serious injury.

* SAFE KIDS is a national program, coordinated in Michigan by the Unintentional Injury Division at the Michigan Department of Community Health. SAFE KIDS community chapters work to prevent unintentional injuries and deaths to children. There are 47 chapters or coalitions in Michigan.

- Many teams share their review findings with their interagency human service collaborative bodies. Luce County invited the state CDR coordinator to their HSCB meeting to describe the program and how findings can drive local prevention efforts. A representative from the District 10 Health Department prepares reports and presents regularly on the findings of the ten counties' CDR teams involved in that district.

Improving Death Investigations

- Wayne County now funds a staff position to assist in collecting child death scene investigation information and in interviewing family members for the Detroit Police Department and the Wayne County Medical Examiner's office.
- Many counties are working to implement death investigation protocols to better determine the cause of sudden and unexpected child deaths. For example, in Lapeer County, all law enforcement agencies now use the State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths.
- Oakland County's Prosecuting Attorney's Office sponsored a two-day training on child death investigation for area law enforcement and medical examiner investigators.
- In Gladwin County, agency systems have been improved due to the work of the CDR team. Now, local emergency rooms and emergency medical services routinely dispatch law enforcement to a home where there has been a sudden and unexpected infant death, ensuring a complete scene investigation.
- Members of the Wayne County team provided training to emergency deparment staff at area hospitals to improve the early notification of deaths to the medical examiners' office and local law enforcement, ensuring a more coordinated response of these agencies in their death investigations.

Improving Bereavement Services for Families

- CDR team members in Livingston County were unaware of the bereavement/grief counseling resources in the community, so a comprehensive listing of these services was provided to county agencies.
- Many counties, including Grand Traverse, now refer child deaths to their local public health departments. Trained professionals, usually nurses, provide home-based bereavement services through a contract with the Michigan SIDS Alliance.
- Ionia County gathered information regarding available emergency mental health and 24 hour grief counseling for the area, adding it to the Help Cards that the Department of Public Safety officers make available to victims of trauma.

Preventing Natural Deaths

- Because of the complex issues surrounding infant deaths, 10 counties have formed specialized review teams to study their infant deaths. These teams, known as Fetal and Infant Mortality Review teams, or FIMRs, help communities improve their systems of care in maternal and infant health. These teams work closely with the local CDR teams.
- Berrien County is planning to train park rangers in CPR and the use of defibrillator equipment. This will improve provision of emergency assistance pending arrival of ambulance and police support services.
- Supported by the prosecutor, the sheriff's department and FIA, the health department coordinated an effort in Lake County to help a family obtain screening for heart defects and treatment for chronic health problems, after the sudden death of a teenage girl in the family. Other counties have taken steps to ensure that genetic screening is provided to family members after it has been determined that a child died of a genetic disorder.

Preventing Motor Vehicle Deaths

- In Berrien County, a detective with the Benton Township Police Department is pursuing changing an intersection from a two-way to a four-way stop.
- In Livingston County, a letter was sent to high school driver education teachers, encouraging them to teach skills in off-road recovery, and requesting that they provide additional training on snow and ice driving to students who were trained in the spring and summer.
- Saginaw County's CDR team composed a letter for high school seniors and their parents, to be distributed in all area schools, encouraging safe driving behavior during prom and graduation time.
- In St. Joseph County, the CDR team worked with the Michigan State Police and was able to secure funds to purchase car seats to be given away at the county fair. Staff were trained as to how to properly install the seats and recognize damaged seats. Car seat safety checks are now held three times a year.
- Mecosta County convened a "Safe Teen Driving" task force, including students and administrative representatives from three area schools and the CDRT. They wrote a letter outlining concerns to the Michigan Secretary of State, and subsequently met with representatives from that office to discuss these concerns. They developed a more comprehensive driving log for teens and their parents to use when accumulating supervised driving hours. This log, as well as mandatory parent meetings, has been adopted as a requirement by two area high schools.
- After several traffic crashes and a child's death at an intersection in the county, the Kalamazoo County CDR team wrote a letter to the road commission asking them to add a stop-

light. After the work of many community groups, the stoplight was installed.

- Due to the high number of deaths to children on bicycles, the Kent County team wrote a letter to local township boards and commissions advocating for more bicycle trails in the community, especially within new housing developments.
- Lapeer County's team advocated with state legislators to restrict passenger use of truck cargo areas.
- Monroe County's CDR team has focused on educating professionals and the public on safe driving and has published articles in the local newspapers.
- In Saginaw County, after the review of a child's death in a bike accident, the CDR team partnered with a national program to improve community education on the use of bike helmets. One elementary school in Saginaw Township piloted a program to mandate helmet wearing for children riding their bikes to and from school. One hundred helmets were ordered at reduced cost, and helmets were offered free to children who demonstrated need. A small grant was obtained by the Children's Assessment Center to provide free bike helmets to older children who receive services there.

Reducing the Risk of SIDS and Suffocation Deaths

- Wayne County's CDR team developed a media campaign to promote safe infant sleep and discourage parents from sleeping with their infants. Staff from the county health department developed materials promoting "Keep your baby alive-don't let it sleep by your side."
- Newspaper articles were published on the importance of crib safety, following reviews of infant deaths by the Monroe County team.
- Crib distribution programs were established in Muskegon and Eaton Counties after the teams found that many families could not afford cribs for their babies.
- Ingham County's CDR team has formed a special committee to address the problem of infant suffocation in beds and plan a community-wide education campaign. The team coordinator wrote an article in the local paper about the dangers of bed-sharing with young infants.
- Kalamazoo County made recommendations to their local hospitals on providing safe infant sleep materials to new mothers. The team has worked with their local newspaper and published articles on crib safety.
- Literature on safe sleep and SIDS was added to the "Welcome Baby Bags" that families of newborns receive in St. Joseph County.
- The Berrien County CDR team has begun a series of trainings on SIDS and infant safe sleep environments. FIA prevention workers received specialized training so that they can promote safe infant sleep when working with families. Other trainings are planned for first responders and medical personnel.

Preventing Suicides

- Berrien County organized a major suicide prevention effort in southeastern Michigan, with the national Yellow Ribbon Suicide Prevention Campaign serving as the centerpiece of their effort. Educators, community leaders and tens of thousands of children have received suicide prevention education. Yellow Ribbon support programs are now in place in many area schools.
- Kalamazoo County's CDR team invited in a speaker from Michigan State University to speak to the team on suicide prevention.
- In Monroe County, following the review of a number of teen suicides in the community, the CDR team worked with a local hospital and started training on the Yellow Ribbon Suicide Prevention program.
- The Oakland County CDRT formed a subcommittee to further examine teen suicides and identify prevention opportunities. Their recommendations were presented to the Oakland Intermediate School District so that the schools in their communities could be made more aware of and more prepared to deal with the issues surrounding adolescent depression and suicide.
- Following a number of teen suicides, Mason County coordinated with Community Mental Health and an area leadership council to develop a protocol for a "Community Response to the Death of a Child." It outlines protocols for both the schools and the larger community to use following the death of any child attending area schools.

Preventing Fire Deaths

- Due to a high number of child deaths in house fires, Kent County's Child Death Review Team supported an initiative that worked to pass an ordinance requiring smoke detectors in all housing in Grand Rapids.
- Berrien County brought together a number of different agencies to discuss the county-wide implementation of a model housing inspection/smoke detector distribution program in place in one village in the county.

Preventing Drowning

- Livingston County sent letters to townships requesting that they survey their communities regarding home pools with unrestricted access. They also requested that the townships educate all residents, but especially pool owners and neighbors, regarding the law to help prevent further drownings.
- St. Clair County conducted an assessment of the ordinances in each township and city to identify and encourage compliance with state regulations on pool fencing.
- Iosco County worked with a local power company to have signage placed at dangerous swimming areas along a riverbank on company property.

- In Lapeer County, the team discussed their findings on pool safety with the local fire department, which then helped to get prevention messages out.
- The Monroe County team worked to have pool and swimming safety materials distributed to area campgrounds.
- The St. Joseph County CDR team launched a media campaign to inform parents about water safety. As a result of the campaign, the Sheriff's Department increased their patrol of the lakes and the Parks and Recreation Department posted signs at each lake. A local civic group supported the project, funding swimming lessons and educational materials.

Preventing Child Abuse and Neglect

- Mecosta County developed an advisory on the duties of mandated reporting of child abuse and neglect that was distributed to local human service agencies, hospitals and physicians in the county.
- Clinton and Monroe Counties, using the materials developed by Mecosta County, updated local human service providers, physicians and other health care providers in their community regarding the responsibilities of mandatory reporters.
- Members of the Wayne County team, including homicide detectives and prosecutors, provided training to hospital emergency room staff to improve their ability to identify child abuse fatalities and injuries and improve reporting to the appropriate agencies.
- Following the murder of an infant by a mother suffering postpartum psychosis, Oakland County worked to ensure that protocols were in place at area hospitals to educate new mothers on postpartum depression, and to ensure that interpreters would be available to teach non-English speaking parents.

There are at least 1,170 professionals volunteering their time to participate on review teams.

The Child Death Review Process

Local Teams

Local teams are the foundation for the program and their experiences drive the state effort. There is no state mandate to have a local review team, yet 76 counties were meeting in 2000 to review their child deaths. Several counties are still in the process of organizing their review teams or began reviews in 2001. It is expected that all of these counties will be conducting reviews in 2002.

There are at least 1,170 professionals volunteering their time to participate on review teams. Statute requires that where teams are established, they include at least the county medical examiner, the prosecuting attorney, a law enforcement officer and representatives from local public health departments and FIA. All of the teams meet this requirement, and most teams have much broader representation including persons from community mental health, education, emergency medical services (EMS), pediatricians and hospitals. The average team size is 20 members. Team members represent the following agencies:

Table 14
Agency Representatives on Child Death Review Teams

Agency	Number
Law Enforcement	306
Local Public Health	139
FIA	122
Hospitals	114
Medical Examiners	106
Prosecuting Attorneys	101
Community Mental Health	54
Emergency Medical Services	48
Health Clinics and Physicians	34
Education	32
Courts	24
Social Work	9
Community-based Pediatrician	8
Human Service Coordinationg Body	8
Clergy	5
Funeral Home	5
Daycare Licensing	4
Tribal Health and Social Services	4
Fire Department	2
Other Community Groups	46

Each CDR team determines the agency or individual that will coordinate their team activities. In some counties, this role is shared. These volunteers are listed in Appendix B. Coordinators must identify all child deaths, communicate with team members, coordinate and facilitate the meetings and complete the review reports. Most coordinators have continued to serve since their teams were established. Coordinators also attend annual state program meetings. The coordinators represent many different agencies including:

Table 15
Agencies Coordinating Child Death Review Teams

Agency	Number
Local Public Health	22
FIA	16
Medical Examiners	10
Prosecuting Attorneys	10
Human Service Coordinating Body	5
Health Care Provider	5
Community Mental Health	4
Law Enforcement	3
Child Abuse Prevention Council	1

The teams attempt to review all deaths of children under the age of 19, with the exception of the largest counties in Michigan. Because of their high number of child deaths, these counties review a select sample of deaths. For example, many of these teams only review deaths that fall under the jurisdiction of the medical examiner (accidents, homicides, suicides and sudden and unexpected deaths).

Wayne County was able to increase the number of deaths they reviewed four-fold in 2000, due in large part to the county health department's funding of a half-time person who prepares case abstracts for the review team meetings.

The most difficult type of death for counties to review is natural deaths, especially to infants. Often the maternal and perinatal health histories are not available, and the medical complexities of these cases make it difficult for teams to review and understand the circumstances. More intensive reviews of infant deaths and community-based strategies to improve systems of care for infants and mothers were made possible through the Michigan Fetal Infant Mortality Review (FIMR) program*.

Teams vary on how often they meet; dependent on the number of deaths they review. Teams attempt to review the deaths of children that occurred since their last meetings. Most mid-sized counties meet bi-monthly or monthly. Rural counties with few deaths may meet only when a death occurs; some smaller counties may meet quarterly, even when there are no deaths to review. The coordinators report that these meetings enable the team to focus on prevention planning efforts and/or to review non-fatal but serious injury events to children. Some teams may meet within 48 hours of the death to aid in the early investigation.

The Office of the State Registrar has facilitated a process that enables teams to obtain the death certificates of children

*FIMR is a program of the Division of Children and Families at MDCH. Federal and state funding, and the collaborative efforts of MDCH, Michigan State University and MPHI supported the establishment or on-going operations of FIMR teams in 10 counties from 1999-2001.

from their counties within two months of the death. Counties that border other states still find it difficult to obtain information from those states in a timely manner.

The enabling legislation of 1997 (Public Act 167) provides teams the authority to meet and requires that the meetings are confidential.

The enabling legislation of 1997 (Public Act 167) provides teams the authority to meet and requires that the meetings are confidential, but it does not address access to records. Many teams continue to report difficulty in gaining access to the information necessary for a complete and quality review, especially health and medical information on the child. Much of the information missing from the death review case reports is due to team members' inability to gather and/or share information.

The Child Death State Advisory Team

The Michigan FIA provides funding to the Michigan Public Health Institute to manage the program.

This report is the product of the third year's work of the Michigan Child Death State Advisory Team. The Director of the Michigan Family Independence Agency (FIA) appoints the members of the team. The team met five times during 2001 to review findings from the year 2000. Meetings are designed to review findings from local teams, provide opportunities for local teams to present their experiences and to prepare this report with recommendations. At each meeting, state experts make presentations to the team on specific topics. In 2001, the State Advisory Team focused on teen-related motor vehicle deaths, SIDS and suffocations, child abuse and neglect fatalities and teen suicides.

Through legislation signed into law in 1999, the State Advisory Team became one of the three federally mandated Citizens Review Panels for FIA. These panels are required for states that receive federal Child Abuse Prevention and Treatment Act funds. The panel reviews child abuse-related fatalities in Michigan and makes recommendations to FIA for improvements in the state's child protection system. A subcommittee of the State Advisory Team met four times in 2001 to review child abuse and neglect-related fatalities. A separate report will be submitted to the Director of FIA from this subcommittee.

State Program Support

The Michigan FIA provides funding to the Michigan Public Health Institute to manage the program. This funding supports training, technical assistance and consultation to local teams. Four staff support local teams by attending review team meetings, assisting teams in identifying deaths and accessing information and assisting in organizing and facilitating effective meetings. Staff provide information on death investigation, services, prevention and in procuring information on specific deaths. CDR staff manage the database and assist counties in utilizing the Child Death Review Reporting System.

The sixth New Team Member Training was held in May 2001. More than 100 team members attended. Currently, more than half of team members have attended the two-day annual training event.

The Michigan child death review process is a national model because of its focus on the prevention of deaths. CDR staff serve on the Executive Committee of the National Center for Child Fatality Review. CDR staff presented at more than 30 national, state and local conferences, meetings and trainings to educate and increase interest and participation in the review process. Technical assistance was provided to a number of states developing or expanding their child death review programs.

The Michigan FIA provides funding to the Michigan Public Health Institute to manage the program.

Child Deaths Reviewed by Cause:*

Natural Deaths Under Age One, Other than SIDS
Motor Vehicle Crashes
Natural Deaths Over Age One
SIDS
Firearms
Suicides
Suffocations
Fires
Drownings
Child Abuse and Neglect
Other and Undetermined Deaths

*In order of magnitude of the total number of child deaths in 2000, as reported by the Office of the State Registrar, Michigan Department of Community Health.

Natural Deaths Under Age One

Prematurity and low birthweight are the greatest predictors of infant mortality.

Background

There were 943 natural deaths of children under the age of one in Michigan in 2000, excluding SIDS. Deaths of infants due to natural causes, but not including SIDS, accounted for 50% of all child deaths in 2000. More than two-thirds of these babies die within the first 28 days of life. Most of these babies are born prematurely (before 37 weeks gestation) and/or are born with a low birthweight (under five pounds). Prematurity and low birthweight are the greatest predictors of infant mortality.

While vast improvements have been made in treating premature infants, preventing pre-term low birthweight babies is still a great challenge. The rate of pre-term birth has increased 17% in the U.S. since the 1980's, and the rate of low birthweight has risen 10%. For reasons not fully understood, these problems take a disproportionate toll on black Americans. Nationally, black mothers are twice as likely to give birth pre-term as white mothers.

There are still many gaps in our understanding of why some women go into labor well ahead of schedule. It is believed that cigarette smoking, disorders that raise blood pressure, prior pre-term birth and certain pregnancy complications increase the risk of prematurity. Other significant risks include genital tract infections, stress, anxiety, depression and other psychological factors.

Adequate prenatal care is an effective intervention that improves pregnancy outcomes. Early access to quality prenatal care, including health promotion, risk assessment and appropriate interventions can prevent both pre-term births and ensure that babies are born at normal birthweights.

Major Risk Factors

- ***Poverty.***
- ***Less than adequate prenatal care.***
- ***Smoking and substance use during pregnancy.***
- ***First birth as a teen and maternal age under 20 or over 40.***
- ***Physical abuse or other serious stress during pregnancy.***
- ***Unintended or unwanted pregnancy.***

MICHIGAN CHILDREN WHO DIED IN 2000

May:

A new baby boy spent three days in the neonatal intensive care unit, having been born to a mom who admitted to smoking a pack of cigarettes a day and using cocaine and marijuana during her pregnancy. She received some prenatal care through a large clinic, but missed many appointments and was not utilizing other available support services. This baby was born at 25 weeks gestation weighing one pound, nine ounces. He died of respiratory insufficiency, secondary to prematurity.

November:

An 18-year-old female with a one-year-old daughter was pregnant. This young mom had Medicaid insurance and a part-time job, but did not have reliable transportation. She ended the relationship with the baby's father because he was physically abusive to her. She entered prenatal care at 17 weeks gestation. She went into pre-term labor at 23 weeks, but did not realize it for more than 24 hours. She then had difficulty finding a ride to the hospital. Her baby girl was born at one pound, four ounces and lived for only 30 minutes.

Child Death Review Team Findings

CDR teams reviewed 174 natural deaths to children under one year of age in 2000. From 1995–2000, a total of 508 such cases have been reviewed.*

Table 16
Percent Natural Infant Deaths Reviewed by Sex

Sex	2000	1995-2000
Male	57	53
Female	41	45
Unknown	2	2
Total	100%	100%

Gestation is the period from conception to birth. Babies born under 24 weeks gestation are considered extremely premature and have very low birthweights. They are at the highest risk for infant death.

Table 17
Percent Natural Infant Deaths Reviewed by Gestational Age

Gestational Age	2000	1995-2000
Under 24 weeks	18	14
24 to 31 weeks	16	16
32 to 37 weeks	10	8
Over 37 weeks	16	13
Unknown	40	49
Total	100%	100%

Table 18
Percent Natural Infant Deaths Reviewed by Age

Age	2000	1995-2000
Fetal	5	7
0 to 23 hours after birth	30	32
24 to 47 hours after birth	4	4
48 hours to 5 weeks	23	22
6 weeks to 5 months	22	16
6 moths to 1 year	8	8
Unknown	8	11
Total	100%	100%

When reported, babies from low income families represented 74% of the cases reviewed from 1995-2000.

*Throughout this section, the teams were often unable to report findings, in part due to the difficulties teams had in accessing medical records related to the pregnancy or newborn medical care.

Table 19
Percent Natural Infant Deaths Reviewed by Birthweight in Grams*

Weight	2000	1995-2000
Under 750 grams	18	16
750 to 1499 grams	5	5
1500 to 2499 grams	7	5
Over 2500 grams	13	12
Unknown	57	62
Total	100%	100%

Of the 174 natural infant deaths reviewed in 2000, 69% were white, 31% were black, and one infant was American Indian. From 1995-2000, 64% of the reviews were of white infants and 28% were black infants. When reported, babies from low income families represented 74% of the cases reviewed from 1995-2000.

Seventeen of the infant deaths were part of a multiple birth. When known, 15 of the mothers in 2000 reviews had 0-3 prenatal visits. When known, mothers in 28 of these cases said that they smoked during pregnancy, seven admitted using alcohol and nine admitted using drugs.

Actions Taken to Prevent Other Deaths

Based on the findings and the risk factors identified during the review process, the local teams proposed a total of 15 prevention initiatives in 2000 and 48 from 1995-2000. The teams took action to implement four of these in 2000 and 24 from 1995-2000. Examples of the initiatives implemented by teams include:

- A number of counties across the state are ensuring that families are offered and provided grief support services, through a program funded by MDCH and managed by the Michigan SIDS Alliance. Many communities were unaware of these services prior to their death review team process.

* A baby is considered low birthweight if she weighs under 2,500 grams.

Taking Action to Prevent Infant Deaths
Fetal Infant Mortality Review in Ten Communities

Fetal Infant Mortality Review (FIMR), an effort in 10 Michigan communities, enhances the child death review process by helping these communities conduct in-depth studies of the complex issues that cause infant mortality. FIMR reviews include extensive medical record abstractions and home interviews with mothers who have experienced infant loss. FIMR teams operate under the medical research project designation of MDCH. They are encouraged to share their findings with their counties' CDR teams, so that the power of joint FIMR and CDR findings can lead to improvements in systems of care for mothers and infants.

The Saginaw FIMR has been in existence the longest in Michigan and has been reviewing infant deaths since 1991. In the 10 years that the Saginaw FIMR has been operating, there has been over a 50% reduction in local infant mortality, from 14.7 deaths per 1,000 live births in 1992 to 7.2 deaths/1,000 live births in 1999. Many initiatives have come out of FIMR reviews in Saginaw, such as standard routine screening of pregnant women for domestic violence, increased number of prenatal care providers for low income women and improved transportation and systems for pregnant women and families with babies.

Kalamazoo's FIMR has been reviewing infant deaths since 1998, and has experienced a dramatic one-year drop in their local infant mortality rate in 1999 (4.8 deaths per 1,000 live births from 9.7/1,000 live births). Much of their success has been centered around enhanced education to women on recognizing signs and symptoms of preterm labor.

In only one year of reviewing infant deaths, the City of Pontiac has launched safe sleep campaigns after finding a large number of suffocation deaths to infants in inappropriate sleep environments. The Pontiac team is also working with the city of Southfield, who are now reviewing their infant deaths as well.

Other communities that organized FIMRs include the counties of Branch, Calhoun, Genesee, Kent, Lapeer and Tuscola and the City of Detroit.

Recommendation for State Policy Makers

- ***Implement a mechanism to encourage medical care organizations to have plans in place to ensure early access to and continuity of care for all pregnant women.***

Recommendations for Parents

- ***If you think you are pregnant, see your health care provider early and often, and follow their advice.***
- ***If you are pregnant, do not smoke anything, drink alcohol or take any recreational drugs.***
- ***If you experience any warning signs for pre-term labor, call your doctor or midwife right away.***

Motor Vehicle Crashes

Background

Motor vehicle crashes are the leading cause of unintentional deaths to children. In Michigan in 2000, 260 children were killed in motor vehicle crashes, including one that was ruled a suicide. This includes all deaths occurring to children who are drivers, passengers, pedestrians or other types of occupants in a form of transport. Child Death Review collects information from deaths that involve cars, trucks, sport utility vehicles, bicycles, trains, snowmobiles, motorcycles, buses, tractors and all-terrain vehicles.

Children Under 16

Proper child restraints are the key to preventing fatalities to children under 16 when riding in a motor vehicle. When properly installed in passenger cars, child safety seats reduce fatal injury by 71% for children under age one, and by 54% for toddlers ages 1-4. According to the Centers for Disease Control and Prevention (CDC), among children younger than five, an estimated 3,894 lives were saved by child restraints from 1975-1997. In the U.S. in 1998, 47% of the children under age five that died in motor vehicle crashes were not restrained.

Only about six percent of children 4-8 years of age currently use booster seats, the recommended child safety seat for this age group.

Booster seats are also an important, but little used, protection for children riding in cars. The National Highway Traffic Safety Administration (NHTSA) recommends booster seats for children weighing between 40 and 80 pounds. Only about six percent of children 4-8 years of age currently use booster seats, the recommended child safety seat for this age group, when riding in motor vehicles.

Children Over 16

New teen drivers are at very high risk for causing motor vehicle crashes. In a recent study at the University of North Carolina, almost 70% of 16-year-olds involved in automobile crashes were at fault. This percent drops to 63% for 17-year-olds. In the largest driving population (ages 21-59), the percentage of drivers at fault is 45%. It is believed that inexperience and recklessness are the primary causes for the high rates of crashes for teen drivers. In addition, speeding was involved in 17% of crashes to 16-year-old drivers. Only five percent of drivers over age 21 were speeding at the time of the crash.

A major new finding is the increased risk of injury or death for teens when young passengers ride in the car with a new driver. One recent study found that 16-year-olds driving with one teen passenger were 39% more likely to get killed than those driving alone. This percentage increased to 86% with two and 182% with three or more teen passengers. The study found that the rates increased even more with 17-year-old drivers: 48% with one teen passenger, 158% with two and 207% with three or more teen passengers. The study found that "general foolishness and distractions" increased with each additional teen passenger.

States that have limited the number of teen passengers in a new young driver's

car are seeing a significant reduction in fatalities. In these states, the death and injury rate for teenage passengers fell by 21% in 1999. In Massachusetts, the number of teenagers who died in motor vehicle crashes was down 15% in the first six months of 1999 after the number of teen passengers was restricted.

Major Risk Factors

Children Under 16

- ***Not using or improper use of child restraints, including seat belts, infant and booster seats.***
- ***Not wearing adequate safety equipment, especially helmets for motorcycles, bicycles and all-terrain vehicles.***
- ***Riding in truck beds or other unrestrained areas of motor vehicles.***
- ***Unskilled or unsupervised drivers of recreational vehicles, including snowmobiles, jet skis, all terrain vehicles, go-carts and dirt bikes.***

Children Over 16

- ***New driver inexperience and/or recklessness.***
- ***Riding in a car with two or more teen passengers.***
- ***Exceeding safe speeds for driving conditions.***
- ***Not using appropriate restraints.***
- ***Riding in a car as a passenger with a new teen driver.***
- ***Using alcohol while driving, or riding with someone who is under the influence of alcohol.***

MICHIGAN CHILDREN WHO DIED IN 2000

June:

A group of teenagers had been at a party at a friend's house to celebrate the end of the school year. At about 2:00 am, three of them decided to go out for breakfast at an all-night restaurant. The driver was chosen because she herself had not been drinking. On the way to the restaurant, the driver tried to "catch air" on the rural gravel roads. The car was going in excess of 100 mph. The driver lost control of the car as she was going around a corner and hit a tree. Seat belts were not used and all of the teens were thrown from the car. While the driver lived, the three passengers (all age 17) were pronounced dead at the scene.

September:

A three-year-old boy was riding to the corner store in a car being driven by his mother. His mom set him in his car seat, but did not buckle the seat in properly. At a busy intersection, a truck ran a stop sign and broadsided the boy's car. The boy was thrown from his seat and died instantly.

Child Death Review Team Findings

Local CDR teams examined 149 cases of motor vehicle death during 2000 and 421 such deaths between 1995-2000. Of these, the manners of death were:

Table 20
Number of Motor Vehicle Deaths Reviewed by Manner

Manner	2000	1995-2000
Accident	145	407
Homicide (Vehicular)	2	7
Suicide	2	5
Undetermined	0	2
Total	149	421

The following includes information on all motor vehicle crashes reviewed, including the suicides.*

In 2000, teams reviewed deaths to 57 girls and 92 boys. Approximately 55% of these deaths were to children over age 15. Of the deaths reviewed from 1995-2000, the teams reviewed 251 deaths of boys and 163 deaths of girls (gender was not recorded in seven cases).

Table 21
Number of Motor Vehicle Deaths Reviewed by Age and Sex, 2000

Age	Male	Female	Total
Under One	3	0	3
1-4	7	6	13
5-9	13	9	22
10-14	17	13	30
15-19	52	29	81
Total	92	57	149

* The two suicide deaths are also described in the suicide section.

Table 22
Number of Motor Vehicle Deaths Reviewed by Age and Sex, 1995-2000

Age	Male	Female	No Answer	Total
Under One	5	7	0	12
1-4	31	21	0	52
5-9	38	27	0	65
10-14	50	25	0	75
15-19	125	82	0	207
No Answer	2	1	7	10
Total	251	163	7	421

Approximately 44% of cases reviewed in 2000 found that the driver at fault between 16 and 18 years of age.

In deaths reviewed from 1995-2000, 86% of the victims were white, 12% were black and two percent were Asian or American Indian children.

Unlike most other causes of death, more middle income children than poor children were victims in deaths reviewed between 1995-2000: four percent were high income, 70% were middle income and 26% were low income.

In 2000 reviews, fifty-eight children were passengers in cars at the time of the crash. This compares to 41 of the victims who were driving. Thirty-six deaths reviewed were to children as pedestrians and eight were on bicycles. For cases reviewed from 1995-2000, 46% of the children were passengers, 26% were drivers and 25% were bicyclists or pedestrians.

As the literature supports, younger drivers were more likely to cause a crash. Approximately 44% of cases reviewed in 2000 listed the driver at fault between 16 and 18 years of age.

Table 23
Number of Motor Vehicle Deaths Reviewed by Age of Driver at Fault

Age of Driver at Fault	2000	1995-2000
Under 16	9	30
16-18	66	161
19-21	7	39
22-35	8	31
36-59	18	49
Over 59	3	10
NoAnswer	38	101
Total	149	421

In addition to age, gender is also a risk factor for fatalities. Males were more likely than females to drive recklessly, whereas female drivers were more likely to have driver error identified as the cause of the crash.

Table 24
Number of Motor Vehicle Deaths
Reviewed by Primary Cause of Crash and Sex, 2000

Primary Cause	Male	Female	Total
Driver Error	22	18	40
Speeding	15	6	21
Recklessness	14	3	17
Poor Weather	2	2	4
Other	18	13	31
No Answer	21	15	36
Total	92	57	149

In 2000, normal road conditions were reported in 51% of incidents. Loose gravel is an emergent risk factor in the teams' findings. Teams reported gravel roads as a factor in 16 cases (11%).

For crash deaths reviewed in 2000 when restraint use was known, 44% of the victims were unrestrained. For reviews from 1995-2000, 51% were known to have been unrestrained. Females of all ages were more likely than males to have been properly restrained at the time of the crash (77% vs 46% in 2000 and 56% vs 45% from 1995-2000).

Table 25
Number of Motor Vehicle Deaths
Reviewed by Sex and Restraint Use, 2000

Restraint	Male	Female	Total
Used Correctly	20	23	43
Present, Not Used	26	8	34
None in Vehicle	6	1	7
Not Needed*	0	2	2
Used Incorrectly	1	0	1
No Answer	39	23	62
Total	92	57	149

* Not needed means that a restraint was not needed, as in a pedestrian death.

Two deaths reviewed were vehicular homicides in 2000. The teams found that in one death, the child was playing on a sidewalk when struck by a car being pursued by the police. In the other death, a vehicle driven by an intoxicated, middle-aged driver hit a teen driver. The teen was wearing a seat belt, and driving under normal conditions.

Actions Taken to Prevent Other Deaths

Based on the findings and the risk factors identified during the review process, the local teams proposed a total of 63 motor vehicle death prevention initiatives in 2000 and 195 from 1995-2000. The teams took action to implement 19 of these in 2000 and 118 from 1995-2000. Examples of the prevention initiatives implemented by teams include:

- In Berrien County, a detective with the Benton Township Police Department is pursuing changing an intersection from a two-way to a four-way stop.
- In Livingston County, a letter was sent to high school driver education teachers encouraging them to teach skills in off-road recovery, and requesting that they provide additional training on snow and ice driving to students who were trained in the spring and summer.
- Saginaw County's CDR team composed a letter from the team for high school seniors and their parents, to be distributed in all area schools, encouraging safe driving behavior during prom and graduation time.
- In St. Joseph County, the CDR team worked with the Michigan State Police and was able to secure funds to purchase car seats to be given away at the county fair. Staff were trained as to how to properly install the seats and recognize damaged seats. Car seat safety checks are now held three times a year.
- Mecosta County convened a "Safe Teen Driving" task force, including students and administrative representatives from three area schools and the CDRT. They wrote a letter outlining concerns to the Michigan Secretary of State and, subsequently met with representatives from that office to discuss these concerns. They developed a more comprehensive driving log for teens and their parents to use when accumulating supervised driving hours. This log, as well as mandatory parent meetings, has been adopted as a requirement by an area high school.
- After several traffic crashes and a child's death at an intersection in the county, the Kalamazoo County CDR team wrote a letter to the road commission asking them to add a stoplight. After the work of many community groups, the stoplight was installed.
- Due to the high number of deaths to children on bicycles, the Kent County team wrote a letter to local township

boards and commissions advocating for more bicycle trails in the community, especially within new housing developments.

- Lapeer County's team advocated with state legislators to restrict passenger use of truck cargo areas.
- Monroe County's CDR team has focused on educating professionals and the public on safe driving and has published articles in the local newspapers.
- In Saginaw County, after the review of a seven-year-old child's death in a bike accident, the CDR team partnered with a national program to improve community education on the use of bike helmets. One elementary school in Saginaw Township piloted a program to mandate helmet wearing for children riding their bikes to and from school. One hundred helmets were ordered at reduced cost, and helmets were offered free to children who demonstrated need. A small grant was obtained by the Children's Assessment Center to provide free bike helmets to older children who receive services there.

Taking Action to Prevent Motor Vehicle Deaths in Eaton County

A County-Wide Driver's Education Seminar

Eaton County volunteered to serve as a pilot county for child death review in 1995. Since that time, the team has reviewed numerous motor vehicle crashes involving teen drivers. From the reviews, the team discovered that gravel roads, high-risk intersections and inexperience were the leading causes of these deaths.

The team started gathering information about traffic safety in their community. They began with crash reports from their team member representing the Michigan State Police. The most dangerous intersections in the county were identified by the team. They then wanted to learn more about the process the teens in their communities go through to obtain their drivers' licenses. They invited representatives from their school district to help them understand the current curricula available to local drivers' education programs.

The team then decided that they had to do something to address teen driver's education. They began planning a seminar for all drivers' education instructors in their county. Representatives from the Michigan State Police and the Eaton County Sheriff's Department agreed to speak at the seminar. The Charlotte Fraternal Order of Police and a local insurance agency funded the seminar, including dinner.

Representatives from all local police departments and drivers' education instructors from throughout Eaton County attended. Everyone learned how and why teens were dying on Eaton County roads. The seminar helped build relationships with the drivers' education programs. Now, instructors have a contact person from law enforcement, and vice versa. It is the hope of the Eaton County Child Death Review Team that this seminar provided the driver's education instructors with more tools they can use to keep teen drivers safe.

Recommendations for State Policy Makers

- ***Amend the current graduated licensing law to limit the number of teen passengers allowed in vehicles driven by teens with Level Two Intermediate Licenses.***
- ***Encourage auto dealerships to provide point-of-sale information and resources about proper installation and usage of child safety seats and booster seats when selling new or used vehicles.***

Recommendations for Parents

- ***Put limits on the number of teen passengers allowed in a car with your teen.***
- ***Ensure that you use the correct car seat for your child's age and weight. Children ages four to eight should be in booster seats.***

Natural Deaths Over Age One

Child deaths from natural causes, under certain circumstances, can and should be prevented.

Background

Death from natural causes is the second leading cause of mortality to children over one year of age, following unintentional injuries. In 2000, 303 children over the age of one died in Michigan from natural causes. A death due to a natural cause can result from one of many serious health conditions. Congenital anomalies, genetic disorders (such as cystic fibrosis), cancers, heart and cerebral problems, serious infections and respiratory disorders such as asthma can be fatal to children. Many of these conditions are not believed to be preventable in the same way in which accidents, homicides or suicides are preventable. But there are some illnesses, such as asthma, infectious diseases and some screenable genetic disorders, in which under certain circumstances, fatalities can and should be prevented.

For example, deaths due to asthma are usually preventable. Asthma is a chronic respiratory disease that involves episodes of the airways constricting from inflammation. Triggers for an asthmatic event include allergens, infections, exercise, changes in weather or exposure to airway irritants including tobacco smoke or pollution. Asthma affects approximately five million children a year in the U.S. The asthma death rate for children 19 years and younger increased by 78% between 1980 and 1993, many believe due to environmental conditions. Despite these statistics, treatments for asthma are numerous and generally very effective. The Michigan Asthma Coalition is working with Child Death Review to conduct case reviews of all child asthma deaths. They hope to use their understanding of asthma deaths to improve the diagnosis and treatment of children living with asthma.

Major Risk Factors

- ***Children with congenital anomalies and other genetic disorders.***
- ***Children who do not receive preventive medical care.***
- ***Children who live in poverty.***
- ***Children exposed to environmental toxins.***

MICHIGAN CHILDREN WHO DIED IN 2000

July:

A 15-year-old boy was living with his aunt in a large metropolitan community. He was diagnosed with asthma at an early age. He disliked taking his medication and using a peak flow meter. On a warm summer day, after playing two games of basketball, he told his friends he was not feeling well and went home. When his aunt arrived at the house after work, he had already died. He had not taken his medications on the day of his death.

September:

A nine-year-old girl went to the dentist with an abscessed tooth. She was placed on antibiotics and sent home. After 48 hours, there was no improvement in the infection. Her dentist recognized this as a warning sign of cancer and sent her to the family doctor. She was admitted to the hospital that night, and an abdominal tumor was found. Despite treatment, she only lived for two more months.

Child Death Review Team Findings

Local teams in Michigan reviewed 100 natural deaths to children over one year of age during 2000, and a total of 260 since 1995.

The conditions from which these children suffered included cancers, such as lymphoma and brain stem cancers, congenital anomalies leading to heart and respiratory problems and infectious diseases. Many children may have had more than one cause of death.

Table 26
Number of Natural Deaths Over Age One Reviewed by Condition

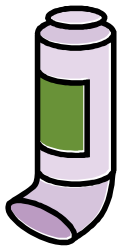
Condition	2000	1995-2000
Cancer	16	40
Genetic/Congenital	11	38
Cardiac/Heart	20	32
Cerebral	10	25
Cerebral Palsy	6	19
Respiratory	8	12
Asthma	6	10
Pneumonia	6	9
Meningitis	3	7
Other Infections	3	7
SIDS*	2	3
Medical Complications	1	3
Cystic Fibrosis	1	2
Other	4	8
Not Reported	3	45
Total	100	260

Most deaths reviewed were of children between one and four years of age. For all natural deaths reviewed, 54% were female and 46% were male.

Table 27
Number of Natural Deaths Over Age One Reviewed by Age

Age	2000	1995-2000
1-4	33	84
5-9	16	45
10-14	18	54
15-18	30	73
No Answer	3	4
Total	100	260

* An interesting finding is that three SIDS deaths are reported for children over one year of age in the cases reviewed from 1995-2000. By definition, SIDS is an unexplained infant death that occurs to children under one year of age. These deaths are also included in the SIDS section.



For natural deaths over age one reviewed between 1995 and 2000, 72% of the children were white, 23% were black, three percent were American Indians and two percent were Asian.

When reported, the teams found that from 1995-2000, 55% of all deaths were to low income children, 43% were middle income and two percent were high income.

Teams found that in at least half the asthma deaths, the children did not take the correct dose of medication on the day of their deaths.

Actions Taken to Prevent Other Deaths

Based on the findings and the risk factors identified during the review process, the local teams proposed a total of 15 related prevention initiatives in 2000 and 42 from 1995-2000. The teams took action to implement nine of these in 2000 and 22 from 1995-2000. Examples of the prevention initiatives implemented by teams include:

- Berrien County is planning to train park rangers in CPR and the use of defibrillator equipment. This will improve provision of emergency assistance pending arrival of ambulance and police support services.
- Supported by the prosecutor, the sheriff's department and FIA, the health department coordinated an effort in Lake County to help a family obtain screening for heart defects and treatment for chronic health problems, after the sudden death of a teenage girl in the family. Several other counties have taken steps to ensure that genetic screening is provided to family members after it has been determined that a child died of a genetic disorder.

Teams found that in at least half of the asthma deaths, the children did not take the correct dose of medication on the day of their deaths.

Recommendation for State Policy Makers

- ***Support partnerships with statewide chronic disease organizations to share findings from the child death reviews in order to improve prevention efforts, and the diagnosis and treatment of chronic diseases.***

Recommendations for Parents

- ***Ensure that your children receive regular preventive medical care.***
- ***Promptly seek medical care when you think your children need to see a doctor and make sure your children follow their treatment plans.***

Sudden Infant Death Syndrome

Studies throughout the world have found that infants that sleep on their backs are much less likely to die of SIDS.

Background

Ninety-nine children died of SIDS in Michigan in 2000. Sudden Infant Death Syndrome (SIDS) is the sudden death of an infant under one year of age which remains unexplained after completion of a complete autopsy, examination of the death scene and review of the baby's health history. If any of these three steps are not conducted, a SIDS diagnosis should not be made. The SIDS diagnosis reflects the clear admission by medical examiners that an infant's death remains completely unexplained.

One model that guides our understanding of SIDS is the triple risk hypothesis. An infant is believed to be at the highest risk for SIDS when three risk variables converge for him or her: 1) a physiological defect; 2) the critical development period (SIDS risk peaks between two and four months of age); and 3) environmental stressors such as sleeping face down, exposure to second-hand smoke or overheating while wrapped in heavy blankets.

Studies throughout the world have found that infants that sleep on their backs are much less likely to die of SIDS. Although the reasons for this are still not fully explained, the U.S launched the *Back to Sleep* education campaign in 1994. Since then, the rate of SIDS deaths has been reduced by more than half. Between 1983 and 1992, more than 5,000 babies died each year due to SIDS in the U.S. By 1999, this number had dropped to 2,648.

Despite major improvements, SIDS remains the leading cause of death for infants between one month and one year of age. Racial and ethnic disparities are still evident in SIDS rates nationwide. Blacks and American Indians still have rates two to three times higher than the national average. Many believe one major reason for this is that the *Back to Sleep* message is not effectively reaching these populations of parents and caregivers. In Michigan, MDCH and the Michigan SIDS Alliance have developed targeted messages and conducted a major media campaign beginning in 2000, to reach African American families with the *Back to Sleep* message.

By definition, SIDS cannot be prevented or predicted. There are, however, many known risk factors that can put a baby at higher risk for SIDS.

Major Risk Factors

- ***Infants sleeping on their stomachs.***
- ***Soft infant sleep surfaces and loose bedding.***
- ***Maternal smoking during pregnancy.***
- ***Second-hand smoke exposure.***
- ***Overheating.***
- ***Prematurity and/or low birthweight.***
- ***Infants that share a bed with others.***

MICHIGAN CHILDREN WHO DIED IN 2000

August:

A three-month-old male was born prematurely and spent three weeks in the hospital. At home, the baby was congested, so his mother gave him some over-the-counter medication. They went to sleep together on the couch. When the mother awoke, the baby was unresponsive, on his stomach, with his face in a pillow. The cause of death, based only on the negative autopsy findings, was SIDS. No scene investigation or review of the baby's health history was conducted.

October:

A mother fed her two-month-old daughter and laid her to sleep at midnight. She placed her baby on her back in her crib and covered her with a light blanket. When the mother came in to check on the baby early the next morning, she found her unresponsive. After a comprehensive scene investigation, review of the baby's health history and an autopsy, the medical examiner could find no explanation for the death and ruled that the baby died of SIDS.

Child Death Review Team Findings

Teams reviewed 76 SIDS deaths in 2000, and 248 SIDS cases from 1995-2000.

For the year 2000, forty-eight of the cases were male and 28 were female. The peak age for SIDS to occur is between two and four months. The percent of deaths reviewed by age were:

Table 28
Percent of Total SIDS Deaths Reviewed by Age

Age	2000	1995-2000
Under 2 months	28	28
2 to 4 months	49	43
4 to 6 months	17	17
6 to 8 months	0	6
8 months to under 1 year	4	5
1 year and older*	2	1
Total	100%	100%

From 1995-2000, 63% of the deaths were of white infants, 33% were black and two percent were American Indian. When known, from 1995-2000, 80% of the infants were from low income families and 20% were middle income.

Death Investigations

Seventy-two of the 76 cases reviewed in 2000 were designated as medical examiner cases, while the other four reviews left this question blank. Autopsies were performed in all cases but one. Comprehensive scene investigations were lacking in the majority of cases. In 2000, no scene investigation was done by law enforcement in 47% of the cases. Medical examiners did not conduct scene investigations in 71% of the cases. The infant's medical history was not reviewed in four cases. For 1995-2000, a scene investigation was not conducted by law enforcement in 41% of cases or by medical examiners in 63% of the cases.

In only one of 76 SIDS cases reviewed in 2000, was the infant sleeping on her back, alone and in a crib.

Infant's Sleep Position and Location

Although the safest place for a baby to sleep is on his or her back, alone and in a crib, only one of 76 infants whose SIDS deaths were reviewed in 2000 (1%) and only 12 of 248 from 1995-2000 (5%) were sleeping on their backs, alone and in a crib.

Only 25% of the babies were known to be sleeping on their backs when found in 2000; and only 21% were found on their backs between 1995-2000. From 1995-2000, 30% of the white babies and 38% of the black babies were sleeping on their backs at the time of death.

*From 1995-2000, a total of three SIDS cases were reviewed in which the child was over one year of age. Because of age, these cases do not meet the standard definition of SIDS. These deaths are also listed in the previous section on natural deaths to children over the age of one.

Thirty percent of the SIDS babies in 2000 and 36% from 1995-2000 were sharing a sleep surface with other children or adults. From 1995-2000, 47% of the black infants and 32% of the white infants were sleeping with others. Only 26% of the babies from 2000 reviews and only 30% of the babies from 1995-2000 were sleeping in a crib.

Table 29
Percent of SIDS Deaths Reviewed by Infant Sleeping Location

Sleeping Location	2000	1995-2000
In Crib	26	29
In Other Bed	25	26
On Couch	3	10
In Playpen	4	3
On Floor	0	2
Other*	13	12
No Answer	29	18
Total	100%	100%

Sixty of the cases reviewed in 2000 occurred in the child's home. Six of the deaths were in a daycare setting. Only one of these babies was sleeping on his back when he died. From 1995-2000, twenty-one of the 248 deaths occurred in a daycare setting. Of these, only four infants were sleeping on their backs when they died.

Exposure to Cigarette Smoke

Of the cases reviewed in 2000, 33% of the babies were living in homes with smokers. From 1995-2000, 36% of the babies were exposed to second-hand smoke. Mothers admitted that they smoked during pregnancy in 26% of the SIDS deaths reviewed in 2000 and in 30% of the cases from 1995-2000.

Actions Taken to Prevent Other Deaths

Based on the findings and the risk factors identified during the review process, the local teams proposed a total of 33 SIDS risk reduction initiatives in 2000 and 133 from 1995-2000. The teams took action to implement 18 of these in 2000 and 81 from 1995-2000. Many of these were recommended based on SIDS and infant suffocation deaths. Examples of the prevention initiatives implemented by teams include:

- Wayne County's CDR team is developing a media campaign to promote safe infant sleep and discourage parents from sleeping with their

* For 10 (13%) of the cases reviewed in 2000, the infants' sleep locations listed as "other" included: bassinets, parents' beds, car seats, loveseat and in a chair. From 1995-2000, 30 (12%) responses were given for "other." These included: air mattress, cradle, between cushions of couch, parents' beds, sleeper sofas and waterbeds.

infants. Staff from the county health department developed materials promoting "Keep your baby alive-don't let it sleep by your side."

- Newspaper articles were published on the importance of crib safety, following reviews of infant deaths by the Monroe County team.

- Crib distribution programs were established in Muskegon and Eaton County after the teams found that many families could not afford cribs for their babies.

- Ingham County's CDR team has formed a special committee to address the problem of infant suffocation in beds, and plan a community-wide education campaign. The team coordinator wrote an article in the local paper about the dangers of bed-sharing with young infants.

- Kalamazoo County made recommendations to their local hospitals on providing safe infant sleep materials to new mothers. The team has worked with their local newspaper and published articles on crib safety.

- Literature on safe sleep and SIDS was added to the "Welcome Baby Bags" that families of newborns receive in St. Joseph County.

- The Berrien County CDR team has begun a series of trainings on SIDS and infant safe sleep environments. FIA prevention workers received specialized training so that they can promote safe infant sleep when working with families. Other trainings are planned for first responders and medical personnel.

- Many counties, including Grand Traverse, now refer child deaths to their local public health departments. Trained professionals, usually nurses, provide home-based bereavement services through a contract with the Michigan SIDS Alliance.

Recommendations for State Policy Makers

- ***Encourage local jurisdictions to require that those medical examiners and law enforcement officers assigned to investigate child deaths be trained on protocols for investigating child deaths modeled after the State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths.***
- ***Expand state efforts to educate parents on safe infant sleep, including an emphasis on the risk of SIDS and suffocation when infants sleep on the same surface with others.***

Recommendations for Parents

- ***Always keep your baby in a smoke-free environment.***
- ***Practice the recommendations from the Consumer Product Safety Commission for safe infant sleep environments. Place your baby:***
  - ***On his/her back on a firm, tight-fitting mattress in a crib that meets current safety standards.***
  - ***Remove pillows, quilts, comforters, sheepskins, stuffed toys and other soft products from the crib.***
  - ***Use a sleeper or other sleep clothing as an alternative to blankets, with no other covering.***
  - ***If using a blanket, put your baby with feet at the foot of the crib. Tuck a thin blanket around the crib mattress, reaching only as far as your baby's chest.***
  - ***Make sure your baby's head remains uncovered during sleep.***
  - ***Do not place your baby on a waterbed, sofa, soft mattress, pillow or other soft surface to sleep.***
  - ***Do not let your baby sleep on the same surface with adults or other children.***

Firearms

Background

In 2000, 76 Michigan children died from firearm-related injuries. This included six unintentional injuries, 44 homicides, 23 suicides and three deaths of undetermined manner. Unintentional injuries are usually caused when children play with guns or are hunting. Homicides of children are most often murders of teens by other teens. The majority of teen suicide victims use firearms, as opposed to hangings or poisonings.

The easy availability of firearms is believed to be the number one risk factor for unintentional firearm deaths.

Firearm Deaths, Unintentional

Unintentional injuries from firearms represent less than two percent of all firearm deaths in the U.S. But of this two percent, children and adolescents are involved in 55% of the deaths. The majority of the injuries occur to children playing with or showing the weapons to friends.

The easy availability of firearms is believed to be the number one risk factor for unintentional firearm deaths. Michigan enacted the Family Safety package of laws and funding appropriations in 2000 and 2001. Some of these laws require that all guns sold have locking devices on them, be sold with a gun case or storage container that can be secured and the dealer must provide free written information on the safe use and storage of firearms in the home environment. The dealer must also post a notice that states that a person "may be criminally and civilly liable for any harm caused by a person less than 18 years of age who lawfully gains unsupervised access to your firearm if unlawfully stored." More than one million dollars were appropriated for gun safety initiatives now being implemented by the Michigan State Police.

Firearm Homicides

Youth homicides represent the greatest proportion of all firearm deaths. Each day in the U.S., firearms kill an average of 10 children and teens, even though the number of teens killed by firearms in the U.S. has dropped by 35% in the past four years. In 1999, the Youth Risk Behavior Surveillance Survey reported that almost one-fifth of the 10th and 12th graders indicated that they had carried a firearm within the previous 30 days for self-defense or to settle disputes.

Youth homicide is a serious problem in large urban areas, especially among black males. Homicides are the number one cause of death for black and Hispanic teens. Yet when socio-economic status is held constant, differences in homicide rates by race become insignificant. Major contributing factors in addition to poverty include easy access to handguns, involvement in drug and gang activity, family disruption and school failure. These homicides usually occur in connection with an argument or dispute. They almost always are committed by casual acquaintances of the same gender, race and age, using inexpensive, easily acquired handguns.

There are a myriad of prevention strategies available to communities to reduce gun violence among youth. Many of these make sense and are easy to imple-

ment. However, research indicates that preventing youth violence requires complex, long-term solutions that should be focused in targeted neighborhoods where homicides occur. Violence prevention research has demonstrated that strategies are most effective when they identify high-risk children in their earliest years and intervene at multiple levels through collaborative community partnerships.

Major Risk Factors

- ***Easy availability of and access to firearms.***
- ***Youth living in neighborhoods with high rates of poverty, social isolation and family violence.***
- ***Youth active in drug and gang activity, with prior histories of early school failure, delinquency and violence.***
- ***Youth with little or no adult supervision.***

Effective youth homicide intervention strategies identify high-risk children in their earliest years and intervene at multiple levels.

MICHIGAN CHILDREN WHO DIED IN 2000

August:
A 14-year-old boy had been in an argument earlier in the day over the sale of a small quantity of street drugs. Later that night, he was shot from behind while walking home with friends. He had a long record with the police. He had not been in school for several months and his mother had lost contact with him.

October:
A 16-year-old girl was at a party with her friends from school. Toward midnight, an argument broke out in another part of the room, gunfire went off and a bullet hit her in the back. She had many friends, had no record of trouble, was a good student and planned to go to college.

Child Death Review Team Findings

The teams reviewed 45 firearm-related deaths in 2000 and a total of 126 such deaths from 1995-2000. Of these, the manner of death was:*

Table 30
Number of Firearm-Related Deaths Reviewed by Manner

Manner	2000	1995-2000
Homicide	26	63
Suicide	18	50
Accident (Unintentional)	0	12
Undetermined**	1	1
Total	45	126

Since 1995, teams have reviewed the unintentional firearm deaths of eleven boys and one girl.

Firearm Deaths, Unintentional

The teams did not review any unintentional firearm deaths in 2000. From 1995-1999, the teams reviewed 12 such deaths. Of these, eleven boys and one girl died from unintentional gunshot injuries. Five of these children were ages 6-9; four child victims were ages 11-14 and three youths ages 17-18 died in this way. When known, the persons handling the weapons were other youths: six children were killed by adolescents ages 12-14 and four were killed by youths ages 17-18. An eight-year-old killed one child.

Handguns killed seven children; two were killed by rifles and three by shotguns. All of the deaths reviewed occurred in homes. Ten of the deaths occurred when the children were playing with the guns, and in one death a child was showing a friend how to shoot the gun. In three deaths, the child playing with the gun had attended gun safety classes. It was known that in seven of the deaths, the guns were not kept in locked cabinets and did not have trigger locks on them.

Firearm Homicides

The teams reviewed 26 firearm homicides in 2000 and a total of 63 firearm homicides from 1995-2000. Wayne County reviewed 20 of the 26 deaths in 2000. They did not review any firearm homicides in 1999. One other large urban county reviewed firearm homicides but did not submit reports on them. The race, sex and ages of the victims were:

* The suicide deaths are discussed in the suicide section. One homicide stabbing death from 2000 is discussed in the child abuse and neglect section.

** One gunshot death was undetermined. A boy shot his brother during an argument and his intent was unknown.

Table 31
Number of Firearm Homicides Reviewed by Race and Sex of Child Victims

Race and Sex	2000	1995-2000
Black Male	15	34
White Male	4	10
White Female	3	10
Black Female	4	8
Unknown	0	1
Total	26	63

Table 32
Number of Firearm Homicides Reviewed by Age of Child Victims

Age	2000	1995-2000
Under One	0	1
1-4	2	6
5-9	2	5
10-12	4	5
13-14	0	4
15-16	6	15
17	5	16
18	7	11
Total	26	63

In 2000, the child was believed to be the intended victim in 17 cases reviewed, and the random victim in one case. From 1995-2000, the child was believed to be the intended victim in 49 deaths and a random victim in two deaths.

The children were murdered by the following perpetrators:

Table 33
Relationship of Person Handling Weapon to Child

Relationship	2000	1995-2000
Acquaintance	3	13
Friend	1	9
Stranger	4	7
Mother's Boyfriend	1	5
Mother	2	4
Father	1	1
Sibling	2	2
Other	1	3
Unknown	11	19
Total	26	63

In cases reviewed from 1995-2000, the shooters had made prior verbal threats in three cases. Drug dealing was known to be involved in four deaths reviewed in 2000 and a total of 13 deaths from 1995-2000. Gang activity was related to one death in 2000 and seven deaths from 1995-2000. There were three drive-by shooting deaths reviewed in 2000. In 2000, there were three murder-suicide events: a father shot his child and then killed himself, a mother shot her two children and then committed suicide and one brother killed his sibling and then himself. Two deaths occurred during robberies. In 2000, handguns were used in 14 homicides reviewed, and in 30 cases from 1995-2000. At the time of the reviews, two arrests had been made in 2000, and seven arrests had been made in all cases reviewed from 1995-2000.

Actions Taken to Prevent Other Deaths

Based on the findings and the risk factors identified during the review process, the local teams proposed a total of 13 prevention initiatives in 2000 and 75 from 1995-2000 related to firearm deaths. The teams took action to implement six of these in 2000 and 40 from 1995-2000. An example of the prevention initiatives implemented by teams:

- Many counties are participating in the Michigan State Police effort to distribute gun safety mechanisms, such as trigger locks, to all households with firearms.

In 2000, handguns were used in 14 homicides reviewed, and in 30 cases from 1995-2000.

Recommendations for State Policy Makers

- ***Support enforcement of new laws that require gun safety mechanisms on all firearms at the point of sale.***
- ***Target intensive and early intervention services for families, and alternative education, after-school recreation and employment opportunities for youth in neighborhoods with high teen homicide rates.***

Recommendations for Parents

- ***If you own guns, they should be properly stored. Keep them in locked cabinets with gun safety devices in place. Store ammunition in a separate locked cabinet.***
- ***Recognize and seek professional help if your child displays violent behavior.***

Suicides

Suicide is the third leading cause of death for young people.

Background

In Michigan, there were 43 teen suicides in 2000, including 44 shootings, 18 hangings, one poisoning and one motor vehicle crash. For young people ages 15-24, suicide is the third leading cause of death, behind unintentional injury (mostly motor vehicle crashes) and homicide. In 1998, more young people in the U.S. died due to suicide than from cancer, heart disease, AIDS, birth defects, stroke, pneumonia, influenza and chronic lung disease combined.

Currently, the risk for suicide is highest among young white males. Yet from 1980 through 1995, suicide rates in the U.S. increased the most among young black males. Adolescent males of all races are four times more likely to commit suicide than females. From 1980-1997, males committed 84% of suicides for ages 15-19. Adolescent females are twice as likely as adolescent males to attempt suicide. In 1997, 27% of high school aged females and 15% of males seriously thought about suicide. Firearms (60%) and hanging (26%) were the most common methods of suicide used by young people in the U.S.

Recent research confirms that there is a strong link between adolescent sexual orientation and suicide. Findings from the first national study on the issue indicate that gay or lesbian youths are more than twice as likely to attempt suicide than their heterosexual peers.

New research is examining the protective factors that can prevent teen suicide. A strong and positive connection to parents, family and/or school appears to provide immunity for teens when they are troubled and may prevent suicides.

Major Risk Factors

- ***Long term or serious depression.***
- ***Previous suicide attempt.***
- ***Mood disorders and mental illness.***
- ***Substance abuse.***
- ***Childhood maltreatment.***
- ***Parental separation or divorce.***
- ***Inappropriate access to firearms.***
- ***Interpersonal conflicts or losses without social support.***
- ***Previous suicide by a relative or close friend.***

MICHIGAN CHILDREN WHO DIED IN 2000

April:
Following a fight with her boyfriend, a 17-year-old female hung herself in her bedroom closest. She had been known to frequently smoke marijuana and was taking anti-depressants prescribed by a mental health care professional due to chronic depression. She had never attempted suicide in the past but had made verbal threats.

April:
A 15-year-old male called his father and asked him to pick him up from school because he was not feeling well. After his father dropped him off at home, he took a shotgun from the cabinet in the living room and shot himself in the backyard. He had not been performing well in school. His younger brother found him when he arrived home from school and he has since attempted suicide.

Child Death Review Team Findings

CDR teams reviewed 37 deaths to children due to suicide in 2000. Teams reviewed 109 suicide cases since 1995. Almost all deaths were shootings or hangings. The method of suicide, or cause, included the following:*

Table 34
Number of Suicides Reviewed by Cause

Cause	2000	1995-2000
Firearm	18	50
Strangulation (Hanging)	14	46
Motor Vehicle	2	5
Poisoning	1	5
Fall (Jump)	1	1
Other	1	2
Total	37	109

Of the 37 suicide cases reviewed in 2000, boys accounted for three-quarters of the deaths. Twenty-eight of the victims were white, eight were black and one was of unknown race.

Table 35
Number of Suicides Reviewed by Sex

Sex	2000	1995-2000
Male	28	91
Female	9	18
Total	37	109

Seventy-nine of the suicide victims were between ages 15-18, but 19 victims were only ages 10-14:

Table 36
Number of Suicides Reviewed by Age

Age	2000	1995-2000
10-14	3	19
15-18	31	86
19	3	4
Total	37	109

*The two motor vehicle suicide deaths are also included in the motor vehicle section, the poisoning and falls are listed in the other and undetermined death section and the strangulations are counted in the overall total in the suffocation section.

White teens accounted for 81% and black teens for 16% of the suicides reviewed from 1995-2000. When reported, from 1995-2000, 67% of the teens were middle income, 31% were low income and two percent were high income.

Of the 37 suicides reviewed in 2000, 16 of the teens were known to have had prior mental health problems and 13 of the teens had received mental health services in the past. Thirty-three of the 109 cases reviewed from 1995–2000 show that the teens had known mental health problems and received mental health services.

From the 2000 reviews, five of the teens had made prior attempts, and 10 teens had made previous verbal threats. Thirteen youths in the cases reviewed from 1995–2000 had made prior attempts and 23 had made verbal threats. In nine of the cases reviewed in 2000, teams reported the suicide as being completely unexpected, and one case was noted as a possible cluster suicide. For cases reviewed from 1995-2000, 33 were listed as having been completely unexpected, while six were noted as possible cluster suicides.

Most cases identified a precipitating event that may have triggered the suicide. These included arguments with family members, relationship breakups, incarcerations, losing friends due to motor vehicle crashes and not graduating from high school. Suicide risk is especially high for teens who experience more than one of these events as well as having problems with depression or substance abuse.

In six of the 18 firearm suicides reviewed in 2000, the guns were not stored in a locked cabinet and did not have a trigger lock. Two of these six teens had made prior suicide attempts. In 21 of the 50 firearm suicides reviewed from 1995-2000, the guns were not stored in a locked cabinet. Five of these 21 teens had made prior suicide attempts.

In four cases reviewed in 2000, the teams identified alcohol as a factor in the death. Four of the teens had a history of domestic violence.

Two of the suicide deaths were due to a motor vehicle crash. Both teens crashed into trees; one had left a suicide note and the other had pointed out to friends which tree he was planning on hitting, but they did not take him seriously.

Actions Taken to Prevent Other Deaths

Based on the findings and the risk factors identified during the review process, the local teams proposed a total of 11 suicide prevention initiatives in 2000 and 60 from 1995-2000. The teams took action to implement six of these in 2000 and 40 from 1995-2000. Examples of the prevention initiatives implemented by teams include:

- Kalamazoo County's CDR team invited in a speaker from Michigan

In 21 of the 50 firearm suicides reviewed from 1995-2000, the guns were not stored in a locked cabinet.

State University to speak to the team on suicide prevention.

- In Monroe County, following the review of a number of teen suicides in the community, the CDR team worked with a local hospital and started training on the Yellow Ribbon Suicide Prevention program.

- The Oakland County CDRT formed a subcommittee to further examine teen suicides and identify prevention opportunities. Their recommendations were presented to the Oakland Intermediate School District so that the schools in their communities could be more aware of and more prepared to deal with the issues surrounding adolescent depression and suicide.

- Following a number of teen suicides, Mason County coordinated with Community Mental Health and an area leadership council to develop a protocol for a "Community Response to the Death of a Child." It outlines protocols for both the schools and the larger community to use following the death of any child attending a school in Mason County.

Recommendations for State Policy Makers

- ***Institute training for teachers and health, mental health and substance abuse human service professionals on suicide prevention.***
- ***Update and coordinate state efforts to develop an adolescent suicide prevention plan in line with the recommendations of the U.S. Surgeon General's Call to Action for Suicide Prevention.***

Recommendations for Parents

- ***If you notice a change in your child's behavior or habits, talk to them about it immediately and do not be afraid to seek professional help.***
- ***If your child seems depressed, highly anxious or has made suicide threats, seek help from a professional. Make sure your child cannot gain access to weapons or other tools of suicide in your home.***

Taking Action to Prevent Suicide in Berrien County

The Yellow Ribbon Campaign and S.P.E.C.I.A.L. Task Force

Cassie Root serves on the Berrien County Child Death Review Team and works for Coloma Ambulance. In 1999, Cassie attended a teen suicide prevention conference sponsored by the Michigan Child Death Review Program. Just two years prior to this conference, Cassie's daughter Janelle died due to suicide.

Using the information gained at the conference, Cassie contacted over 50 agencies in Southwest Michigan, including community mental health, hospitals, Berrien County Child Death Review Team members, Michigan State Police and school counselors. A meeting was held and the group decided to adopt the Yellow Ribbon Program. This is a national prevention campaign that ensures every school has available supportive staff that children can talk to when troubled. Presentations are then made to teach children that it is always okay to ask for help. They are taught to use their yellow ribbon card to seek help when they or their friends are troubled.

The Suicide Prevention Education Crisis Intervention Affirming Life (S.P.E.C.I.A.L.) Task Force was formed to provide suicide prevention presentations and materials for all ages. Presentations have been made to over 19,000 youth, mostly in southeastern Michigan schools, and touched thousands more at festivals and health events for all ages. The task force designed a pilot program for elementary students, which is now being used by the National Yellow Ribbon Program. On September 16, 2001, the "Third Annual Yellow Ribbon Suicide Prevention Awareness Walk for Life" was held in Coloma with over 200 walkers from all over Michigan.

The task force members have written grants and are now funded by six Southwest Michigan foundations. This grant money is used for training groups and agencies on how to provide awareness and tools for intervention. The dedication of the members of this task force in Southwest Michigan is commendable, especially the commitment made by Cassie Root.

Suffocations

Background

Child deaths due to suffocation result when the child is in a place or position where he or she is unable to breathe. In 2000, there were 80 suffocations, including 52 unintentional deaths, 18 suicides, seven homicides and three deaths of undetermined manner. Most of the unintentional suffocations are caused by:

- ***Overlay: a person who is sleeping with a child rolls onto the child and unintentionally smothers the child.***
- ***Positional asphyxia: a child's face becomes trapped in soft bedding or wedged in a small space such as between a mattress and a wall or between couch cushions.***
- ***Covering of face or chest: an object covers a child's face or compresses the chest, such as plastic bags, heavy blankets or furniture.***
- ***Choking: a child chokes on an object such as a piece of food or small toy.***
- ***Confinement: a child is trapped in an airtight place such as an unused refrigerator or toy chest.***
- ***Strangulation: a rope, cords, hands or other objects strangle a child.***

The majority of infants suffocate when another person lays over them or when they smother in bedding or furniture.

The majority of these suffocations happen to infants while they are in unsafe sleeping environments. These infants suffocate when another person lays over them or when they smother in bedding or furniture. This is the fourth leading type of accidental death for all children, following motor vehicle crashes, fires and drowning.

Infants who suffocate often have no clinical findings at autopsy. It is only through a comprehensive scene investigation that unintentional suffocation can be distinguished from SIDS or intentional suffocations (homicides). Yet, even with complete investigations, a large number of suffocation deaths are still reported as manner undetermined, further highlighting the difficulty investigators have in determining how the infants died.

Overlay deaths are most often caused when an infant sleeps with adults or older siblings (bed-sharing). Bedding deaths occur when infants sleep with too much bedding or when they sleep in beds other than cribs. They suffocate because the bedding is usually too bulky or soft for infants. Hazardous sleeping surfaces include waterbeds, couches, large pillows, or soft or heavy comforters.

Researchers from the CPSC and the National Institute of Child Health and Human Development are now reporting that infants sleeping in adult beds are 20 times more likely to suffocate than infants who sleep alone in cribs.

Some proponents of bed-sharing argue that it promotes breastfeeding. However, researchers have shown that many of the benefits received from bed-sharing can be derived from the practice of having the infant sleep on a separate, firm surface, but in the same room with the mother.

For choking and strangulation deaths, toddlers and preschoolers are at highest risk. Because they are active, they become entangled in cords and gain access to small objects. Food and uninflated balloons remain the number one and two choking hazards, again usually for toddlers. Product safety improvements including rigorous scrutiny and recalls by the CPSC on toys with choking hazards, removal of drawstrings from children's clothing and safety cord hangers for window blinds have reduced the number of these types of suffocations in recent years.

Major Risk Factors

- ***Infants sharing sleep surfaces with other persons.***
- ***Unsafe infant bedding: may include couches, waterbeds, poor-fitting crib mattresses, infant beds filled with clutter, heavy or numerous blankets and soft mattresses.***
- ***Easy access by infants and toddlers to small objects, balloons and toys with small parts.***
- ***Easy access by infants and toddlers to cords and ropes.***
- ***Toy chests without safety latches and heavy furniture not secured to floors or walls.***

MICHIGAN CHILDREN WHO DIED IN 2000

January:
A three-year-old climbed up into her toy chest and the lid fell down on top of her. Her inattentive babysitter found that she had suffocated sometime later in the enclosed space. The chest was an older model and did not have safety hinges.

February:
A three-month-old baby awoke in the middle of the night in his crib. His mother carried the baby to the parents' bed to breastfeed. The exhausted mother fell asleep. When she awoke several hours later, she found that her baby had suffocated beneath her husband's weight.

June:
A five-month-old baby was sleeping with her father on a couch. At some point during the night, the baby's face became entrapped between the back of the couch and the couch cushion and she suffocated. There was a crib in the apartment but it was being used to store clothes and other household items.

Child Death Review Team Findings

In 2000, the teams reviewed 54 suffocation deaths and a total of 143 such deaths from 1995-2000. The manner of death for all cases reviewed was:

Table 37
Number of Suffocation Deaths Reviewed by Manner*

Manner	2000	1995-2000
Accident (Unintentional)	29	73
Suicide	14	46
Homicide	7	13
Undetermined	4	11
Total	54	143

Table 38
Number of Suffocation Deaths Reviewed by Cause, Excluding Homicides and Suicides

Suffocation Type	2000	1995-2000
Overlay while sleeping	12	27
Suffocation in bedding	11	26
Strangled by a rope or cord	4	7
Choking on food	2	3
Choking on a toy or small object	0	2
Smothered by heavy object or material (not sleeping)	1	2
Autoerotic asphyxiation	0	2
Suffocation in toy chest	1	1
Other	2	14
Total	33	84

From 1995-2000, 76% of the deaths were of white children, 20% were black children and two percent were American Indian. When known, 63% of the children were low income and 35% were middle income in reviews from 1995-2000. Excluding suicide from these numbers, 76% of the children were low income and 22% were middle income.

Unsafe Sleep Environment

In 2000, 70% of all suffocation deaths reviewed were to children who were sleeping on surfaces or in places not safe for them. Most of these children were sleeping in adult beds. The known sleeping locations of the children at the time of their deaths were:

In 2000, 70% of all suffocation deaths reviewed were to children who were sleeping on surfaces or in places not safe for them.

* This section reports only the findings on the unintentional and undetermined suffocation deaths. All of the suicides are reported in a previous section. Seven of the homicides from 2000 are described in the section on child abuse. One homicide from 2000 was of a 15-year-old girl who was raped and strangled by an unknown assailant and left to die in a field.

Table 39
Percent Child Suffocation Deaths Reviewed by Sleeping Location

Location	2000	1995-2000
Adult or other bed	43	51
Crib	17	13
Couch	22	13
Waterbed	5	9
Chair	9	9
Other	4	5
Total	100%	100%

In 2000 reviews, 81% of the deaths were to white children and 19% were black children. Poor children were the victims in 65% of the deaths related to unsafe sleep environments in 2000. Family income was not available for most deaths reviewed from 1995-1999.

The specific circumstances for the overlay and suffocation in bedding deaths included the following:

Overlay while Sleeping

Of the 12 overlay deaths in 2000:

- Six infants were suffocated by a parent while sleeping in the parents' bed.
- Four infants suffocated while sleeping with a parent on a couch.
- Two children suffocated while sleeping in a chair with a parent.

Obesity was a known factor in one death. In two cases, the child had started out sleeping alone in their own bed, but were carried to the parent's bed at some point during the night. Seven of the 12 children were low income. Four of the infants were under the age of one month. All of the infants were under six months old.

Of the other 15 overlay deaths reviewed from 1995-1999, teams found that:

- Four infants were sleeping with their mothers in adult beds.
- Three infants were sleeping with their mothers and siblings in adult beds.
- One infant was sleeping with her mother in a waterbed.
- Three infants died under their parents' arms while the parents were sleeping in chairs.
- One infant was sleeping between his parents in their bed.
- One infant was sleeping on an air mattress on the floor with her mother.
- One infant was sleeping with his father on a couch.
- One infant was sleeping with his father on a twin bed.

Many believe that most overlay deaths occur when an intoxicated caregiver falls asleep and then rolls over on their infant. The teams found that alcohol was a factor in only two deaths. Charges were brought against the intoxicated parents in both cases, resulting in one successful prosecution of involuntary manslaughter.

Suffocation in Bedding

Of the 11 deaths caused by suffocation in bedding in 2000, all but two of the children were under seven months of age. Teams found that:

- Three infants were sleeping face down in cribs. Of these, two infants suffocated when covered by heavy bedding and one infant slipped between the loose-fitting mattress and the crib slats.
- One infant fell off of an adult bed into a plastic bag.
- One infant suffocated on a small plastic food wrapper left in a bassinette.
- One infant suffocated in a pillow on a waterbed.
- One infant suffocated in her own bulky clothing, while placed face down in a playpen.
- One infant died when his face became wedged between couch cushions.
- A five-month-old girl was wedged between the mattress and the footboard of the bed, while sleeping with both parents and her sibling. The parents were intoxicated at the time and have been charged with second-degree child abuse.
- Two school-aged children with chronic diseases and breathing difficulties suffocated in soft bedding.

Of the other suffocation deaths caused by bedding between 1995-1999, the way in which the suffocations occurred was known in 14 of the 15 cases:

- Three infants were found face down on waterbeds, in one case on a pillow.
- Four infants were found face down in soft bedding; two in cribs and two in adult beds.
- One infant became wedged down the side of the crib; the crib mattress was too small.
- Two infants were wedged between a wall and an adult bed.
- One infant died while sleeping face down on a soft couch.
- Three infants died when they rolled into plastic bags, which were on adult beds.

Other Suffocation Deaths Reviewed

There were 31 unintentional or undetermined suffocation deaths not related to overlay or bedding reviewed from 1995-2000, and a total of 10 such deaths in 2000. Of these, the way in which the children suffocated was known in nine cases:

- One child was strangled by a drawstring while playing in a tree.
- Two children strangled on curtain cords.

- Two children choked on small, hard pieces of food.
- One child suffocated in a toy box.
- One teenager was smothered by earth materials while playing.
- Two children, one age nine and one age 18, were found with ropes around their necks but no signs that they were planning suicides.

Of the other 21 such deaths reviewed between 1995-1999, the teams reported information on some of the deaths, including:

- Three children were strangled while playing with the cords of window blinds.
- Two children choked on toys: one balloon and one ball. One child choked on food.
- Two youths asphyxiated during autoerotic activity.
- Two children died when plastic bags covered their faces.
- One child died of complications from a malfunctioning tracheotomy.
- One child died when a wolf-dog bite crushed his throat.

Actions Taken to Prevent Other Deaths

Based on the findings and the risk factors identified during the review process, the local teams proposed a total of 23 suffocation prevention initiatives in 2000 and 87 from 1995-2000. The teams took action to implement nine of these in 2000 and 49 from 1995-2000. Many of these actions resulted from the reviews of both SIDS and suffocation deaths. Examples of the prevention initiatives implemented by teams include:

- Wayne County's CDR team developed a media campaign to promote safe infant sleep and discourage parents from sleeping with their infants. Staff from the county health department developed materials promoting "Keep your baby alive-don't let it sleep by your side."
- Newspaper articles were published on the importance of crib safety, following reviews of infant deaths by the Monroe County team.
- Crib distribution programs were established in Muskegon and Eaton County after the teams found that many families could not afford cribs for their babies.
- Ingham County's CDR team has formed a special committee to address the problem of infant suffocation in beds, and plan a community-wide education campaign. The team coordinator wrote an article in the local paper about the dangers of bed-sharing with young infants.
- Kalamazoo County made recommendations to their local hospitals on providing safe infant sleep materials to new mothers. The team has worked with their local newspaper and published articles on crib safety.

- Literature on safe sleep and SIDS was added to the "Welcome Baby Bags" that families of newborns receive in St. Joseph County.
- Many counties, including Grand Traverse, now refer child deaths to their local public health departments. Trained professionals, usually nurses, provide home-based bereavement services through a contract with the Michigan SIDS Alliance.
- The Berrien County CDR team has begun a series of trainings on SIDS and infant safe sleep environments. FIA prevention workers received specialized training so that they can promote safe infant sleep when working with families. Other trainings are planned for first responders and medical personnel.

Recommendations for State Policy Makers

(Note: these recommendations are the same as in the section on SIDS)

- ***Encourage local jurisdictions to require that those medical examiners and law enforcement officers assigned to investigate child deaths be trained on protocols for investigating child deaths modeled after the State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths.***
- ***Expand state efforts to educate parents on safe infant sleep, including an emphasis on the risk of SIDS and suffocation when infants sleep on the same surface with others.***

Recommendations for Parents

- ***Practice the recommendations from the Consumer Product Safety Commission for safe infant sleep environments. Place your baby:***
  - ***On his/her back on a firm, tight-fitting mattress in a crib that meets current safety standards.***
  - ***Remove pillows, quilts, comforters, sheepskins, stuffed toys and other soft products from the crib.***
  - ***Use a sleeper or other sleep clothing as an alternative to blankets, with no other covering.***
  - ***If using a blanket, put your baby with feet at the foot of the crib. Tuck a thin blanket around the crib mattress, reaching only as far as your baby's chest.***
  - ***Make sure your baby's head remains uncovered during sleep.***
  - ***Do not place your baby on a waterbed, sofa, soft mattress, pillow or other soft surface to sleep.***
  - ***Do not let your baby sleep on the same surface with adults or other children.***
- ***Keep all small objects, cords and ropes away from infants and toddlers and make sure toy chests have safety hinges.***

Taking Action to Prevent Suffocation Deaths in Muskegon County

The Crib Giveaway Program

The CDR team in Muskegon County began meeting in late 1997. This team has a history of quick local action, a commendable prevention focus and an understanding of the value of pulling in ad hoc members for individual cases, so that richer information may be obtained at the review. When they first began meeting, they grouped their reviews by type of death instead of chronologically, so that they might see patterns or gaps where intervention could best occur to help keep kids alive.

After reviewing several SIDS, overlay and positional asphyxia deaths, the team found that most of the families did not have cribs for their babies. Most of these families told investigators that they could not afford to buy a new crib. With the leadership of the Chief Medical Examiner and CDR coordinator, Dr. Richard Peters and the current coordinator and Chief Medical Examiner, Dr. Joyce deJong, the team took concrete action to help families provide a safer sleep environment for their infants.

They approached their county human service collaborative board, called the Family Coordinating Council, for help. The information regarding the lack of cribs in these cases was presented to the council, who agreed that something could be done. The council appropriated $5,000 for an effort to get safe cribs to families that needed them. Working through a local faith-based charity, the idea became reality.

Agencies and families are now able to contact FIA to obtain cribs for new babies through this program. This is only one of many ways that the CDR team in Muskegon County is using their findings to keep children safe and healthy.

Background

In Michigan, 46 children died in fires in 2000, including one homicide. Young children, especially males ages 0-4, are at the greatest risk. Children of this age are less likely to recognize the dangers of playing with fire, more likely to hide once a fire breaks out and less likely to have been taught home fire escape. Poverty increases this risk. This is due in part to lower income families being more likely to live in older, wood frame housing; less likely to have working smoke alarms; less likely to have a family escape plan and to practice it; more likely to use alternative heating sources; more likely to have malfunctioning wiring or appliances and more likely to have barriers to escape or rescue. The latter includes having children's bedrooms in basements with small or no access windows, security bars on windows and back doors or windows nailed shut for security or warmth.

A significant portion of the fires that result in child fatalities are started by children in the home playing with matches and lighters.

A significant portion of the fires that result in child fatalities are started by children in the home playing with incendiary devices such as matches and lighters. Since the CPSC took action in 1994 to require that cigarette lighters be child-resistant, deaths caused by children playing with lighters has decreased by 43%.

Whereas deaths from residential fires in general have been cut dramatically in the last 20 years, fatal fires caused by candles have increased by 750% between 1980 and 1998. The CPSC has recalled several candles and candle-related products since 1994, and is currently working with the candle industry to develop safety standards to help reduce fires caused by candles.

The CPSC has also been working in recent years on standard proposals for upholstered furniture in residences, which contain highly flammable polyurethane foam that catches fire easily and spreads quickly, causing large amounts of noxious fumes and intense heat, thereby increasing the risk of fire fatality, especially multiple fatalities.

The single most important factor in reducing child fire fatalities is the presence in the home of a working smoke detector. Three-fifths of fire fatalities occur in the small percentage of homes (7%) that lack any detectors at all. Although most American homes have at least one smoke alarm in the home, the detectors may not contain good batteries or be in working order. The National Fire Protection Association (NFPA) recommends monthly testing, yearly battery replacement and replacing entire alarms after 10 years. Detectors with lithium batteries that last 10 years, hard-wired smoke alarm systems and residential sprinklers can dramatically reduce the risk of dying in a fire.

Learning the basics of home fire escape is another proven way to reduce fire fatality risk. Research shows that children, including preschoolers, are capable of learning life-saving means of home fire escape. In August of 2001,

the NFPA was awarded a federal grant to train fire service representatives from 200 communities throughout the U.S. in the implementation of Risk Watch, NFPA's successful child injury prevention curriculum, in local schools. A large part of this curriculum deals with fire safety, including age-appropriate lessons on home fire escape for preschool children through age eight.

Major Risk Factors

- ***Children's easy access to incendiary devices and candles.***
- ***Homes without working smoke detectors.***
- ***Children under age five.***
- ***Black and American Indian males.***
- ***Children from low income families.***

MICHIGAN CHILDREN WHO DIED IN 2000

April:

A four-year-old boy was living in a trailer without electricity or water. The family had recently received an eviction notice. The back door of the trailer had been nailed shut the previous winter, in order to keep the home warmer. A fire started in the kitchen. When the first responders arrived, a third of the trailer was engulfed in flames and they could not enter. This child was known to frequently play with lighters. The one smoke alarm in the home had been disconnected for some time.

October:

Three children, two, four and seven years of age, died in a fire that probably started on the stove, but no final ruling could be made. During the fire, someone opened a window, causing large amounts of black smoke to fill the home, making it nearly impossible to see or breathe. There were smoke detectors in the home, but none had working batteries in them at the time of the fire.

Child Death Review Team Findings

The deaths of 19 children who died in fires were reviewed by local teams in Michigan during 2000. A total of 114 child fire deaths have been reviewed from 1995-2000. Of these, the manner of death was determined to be:

Table 40
Number of Child Fire Deaths Reviewed by Manner

Manner	2000	1995-2000
Accident	16	94
Homicide (Arson)	3	14
Undetermined	0	6
Total	19	114

Most of the findings of the local teams adhere closely to national statistics. Roughly half of the victims were less than five years old and 64% were male.

Table 41
Number of Fire Deaths Reviewed by Age and Sex

	2000			1995-2000		
Age	Male	Female	Total	Male	Female	Total
Under One	0	0	0	5	1	6
1-4	8	3	11	34	20	54
5-9	3	2	5	20	13	33
10-14	1	2	3	8	7	15
15-18	0	0	0	6	0	6
Total	12	7	19	73	41	114

From 1995-2000, 55% of the victims were white, 40% were black and five percent were American Indian.

From 1995-2000, when reported, 77% of the children who died in fires were low income. In 2000, 87% were low income. Also for 2000 reviews, poverty seems to increase the risk of multiple injuries or deaths: 13 of the cases reviewed involved multiple injuries or deaths; of these, 11 were noted as being from low income families. The vast majority of dwellings involved were wood frame construction (12 of 19 in 2000, 87 of 114 overall).

Often, the source of the fire is unknown and no official cause of the fire is ever recorded. But for 1995-2000 reviews, team findings followed national trends, with lighters, matches, cigarettes and candles being the top four sources. Children playing with lighters caused 14 deaths and children playing with matches caused nine deaths.

In cases where the information was available, none of the homes where children died in fires in 2000 had working smoke detectors.

Table 42
Number of Child Fire Deaths Reviewed by Fire Source

Source of Fire	2000	1995-2000
Lighter	1	15
Cigarettes	0	14
Matches	1	13
Candle	2	10
Appliances	0	8
Gasoline/Kerosene	3	8
Faulty Wiring	2	5
Space Heater	0	3
Other	1	4
No Answer	9	34
Total	19	114

In the cases where the information was available to the teams, none of the homes in which children died in fires in 2000 had working smoke detectors, and in only seventeen of 114 cases from 1995-2000.

Only one child in 2000, and only five for 1995-2000, were noted as having been taught home fire escape.

Actions Taken to Prevent Other Deaths

Based on the findings and the risk factors identified during the review process, the local teams proposed a total of 11 prevention initiatives in 2000 and 117 from 1995-2000. The teams took action to implement six of these in 2000 and 65 from 1995-2000. Examples of the prevention initiatives implemented by teams include:

- Due to a high number of child deaths in house fires, Kent County supported an initiative that worked to pass an ordinance requiring smoke detectors in all housing in Grand Rapids.
- Berrien County brought together a number of different agencies to discuss the county-wide implementation of a model housing inspection/ smoke detector distribution program in place in one village in the county.

Recommendations for State Policy Makers

- ***Encourage public education on the increasing number of candle-related fire deaths and develop campaigns to promote safe candle use in homes.***
- ***Encourage local efforts to increase the number of lithium powered or hard-wired smoke detectors and sprinkler systems in residential dwellings.***
- ***Encourage school districts and daycare organizations to offer fire safety education such as Risk Watch, especially in preschools and daycare settings.***

Recommendations for Parents

- ***Install smoke detectors outside every sleeping area and on every floor of your home; test them monthly, clean them periodically and keep fresh batteries in them if they are not hard-wired or equipped with 10-year lithium batteries.***
- ***Keep matches, lighters and candles well out of the reach of children and teach your family how to escape from your home in case of a fire.***

Drownings

Background

Thirty-six children drowned in Michigan in 2000. Males are at a much higher risk of drowning than girls: one study found that on average, three-quarters of all drowning victims are male. Toddlers, especially boys under age four, are at highest risk of drowning. Toddlers, though curious near water, are not able to comprehend the potential dangers. It is also believed that toddlers drown silently; not splashing or calling for help when they get into trouble in water. Children living in rural areas are also at higher risk because of their proximity to open bodies of water. Most child drownings occur when a supervising adult is distracted.

On average, three-quarters of all drowning victims are male. Toddler boys under age four are at the highest risk of drowning.

A recent study in the Journal of Pediatrics reported on the relationship between the child's age and place of drowning. This study found that babies most often drown in bathtubs when left unattended, even for a few minutes. Toddler drowning most often occurs in swimming pools or backyard ponds.

Most children who drown in pools were last seen inside the home or just outside of the home (not necessarily near the water) and had been out of sight of the caretaker for less than five minutes. Older children more often drown in open bodies of water (lakes, rivers, oceans, gravel pits).

Personal flotation devices (PFDs or life jackets) are very effective at preventing drowning for all ages, especially for children playing in or near pools and open bodies of water, regardless of whether the child is a good swimmer.

Major Risk Factors

- ***Lapse in adult supervision.***
- ***Children under age four and males.***
- ***Unlocked gates and inadequate fencing of pools and ponds.***
- ***Easy, unsupervised access to open bodies of water.***
- ***Children not wearing personal flotation devices.***

MICHIGAN CHILDREN WHO DIED IN 2000

July:

A 16-year-old male was visiting a lake with friends. He could not swim, but waded out into the water to talk to his best friend, who was hanging out on a sandbar with some other teens. After speaking with his buddy, he waded around the perimeter of the sandbar. The other teens saw him suddenly slip down the side of the sandbar where there was a deep drop-off. At first they thought he was clowning around, but by the time they realized he was in real trouble, they could not help him. None of the teens present were good swimmers, and there were no lifeguards on duty at the lake.

September:

A two-year-old boy was playing in the yard at his daycare provider's home. The yard was fenced and had a gate. The house next door had a built-in swimming pool, was fenced in and also had a gate. The provider went into her house to answer the phone. While gone, the child left her yard through one gate, and entered the neighbor's pool through another gate. The toddler was found approximately five minutes later, drowned in the neighbor's swimming pool. Both of the gates are believed to have been unlocked at the time.

Child Death Review Team Findings

Local teams in Michigan reviewed 34 child drownings during 2000 and 105 since 1995. Of these, the manner of death was:

Table 43
Number of Child Drowning Deaths Reviewed by Manner

Manner	2000	1995-2000
Accident	31	100
Homicide*	2	4
Undetermined	1	1
Total	34	105

The local findings on age and gender mirror the national findings. In 2000 reviews, over half of the victims were under age five and 76% were male; 32% were males between the ages of one and four. From 1995-2000, 67% were male, and 27% were males between ages one and four.

Table 44
Number of Drowning Deaths Reviewed by Age and Sex

	2000			1995-2000		
Age	Male	Female	Total	Male	Female	Total
Under One	2	1	3	5	8	13
1-4	11	5	16	28	19	47
5-9	6	0	6	16	2	18
10-14	3	0	3	12	2	14
15-18	4	2	6	10	3	13
Total	26	8	34	71	34	105

From 1995-2000, 73% of the victims were white, 24% were black and three percent were either Asian or American Indian children. When reported, 55% of the victims were middle income and 45% were low income.

Location of Drowning

For 2000, all the infants drowned in bathtubs and from 1995-2000, 10 of 13 infants drowned in bathtubs. In 2000, teams found that an equal number of toddlers drowned in pools as in open bodies of water (six each), but from 1995-2000, more children aged 1-4 died in swimming pools (24) than in open bodies of water (16). Most children age five and over drowned in open bodies of water in 2000 (66%) and in 1995-2000 (75%).

* Both of the homicide drownings reviewed in 2000 are also described in the child abuse and neglect section.

Table 45
Number of Drowning Deaths Reviewed by Age and Location, 2000

Location	Under 1	1-4	5-9	10-14	15-18	Total
Lake, River or Pond	0	6	4	2	4	16
Swimming Pool	0	6	1	0	1	8
Bathtub	3	2	1	1	0	7
Other	0	2	0	0	1	3
Total	3	16	6	3	6	34

Table 46
Number of Drowning Deaths Reviewed by Age and Location, 1995-2000

Location	Under 1	1-4	5-9	10-14	15-18	Total
Lake, River or Pond	1	16	13	11	10	51
Swimming Pool	1	24	4	2	1	32
Bathtub	10	3	1	1	1	16
Other	1	4	0	0	1	6
Total	13	47	18	14	13	105

Supervision

In almost 60% of all drowning deaths reviewed, the teams believed that supervision was inadequate at the time of the drowning. It is widely believed that alcohol use by caregivers limits their ability to adequately supervise children near water. Yet alcohol use did not appear to be a significant risk factor in these drownings. Of deaths reviewed from 1995-2000, teams reported four deaths in which alcohol use by supervising adults was a factor. None of the teen drowning deaths appeared to be alcohol-related.

Pool Fencing

Children entering pools that lacked appropriate fencing or did not have locked gates was a significant risk factor in the drowning deaths reviewed. Of the 32 pool-related drowning deaths reviewed from 1995-2000, teams reported that 22 of these children entered a pool through a gate while unattended; in 17 deaths the gate was known to have been unlocked.

In 12 deaths, the teams reported that their community did not have an ordinance regarding pool enclosures. Local review teams noted a lack of consistency across their counties with respect to both the existence of building code enforcement ordinances for swimming pool fencing and whether or not actual enforcement was taking place. As of July 31, 2001, the Michigan Construction Codes now require enforcement at the local level, even in the absence of local enforcement ordinances.

Of the 32 pool drownings reviewed from 1995-2000, twenty-two of the children entered a pool through a gate unattended.

Actions Taken to Prevent Other Deaths

Based on the findings and the risk factors identified during the review

process, the local teams proposed a total of 23 drowning prevention initiatives in 2000 and 71 from 1995-2000. The teams took action to implement three of these in 2000 and 24 from 1995-2000. Examples of the prevention initiatives implemented by teams include:

- Livingston County sent letters to townships requesting that they survey their communities for home pools with unrestricted access and that they educate all residents, but especially pool owners and neighbors, regarding the law to help prevent further drownings.

- St. Clair County conducted an assessment of the ordinances in each township and city to identify and encourage compliance with state regulations on pool fencing.

- Iosco County worked with a local power company to have signage placed at dangerous swimming areas along a riverbank on company property.

- In Lapeer County, the team discussed their findings on pool safety with the local fire department, which then helped to get the prevention message out.

- The Monroe County team worked to have pool and swimming safety materials distributed to area campgrounds.

- The St. Joseph County CDR team launched a media campaign to inform parents about water safety. As a result of the campaign, the Sheriff's Department increased their patrol of the lakes and the Parks and Recreation Department posted signs at each lake. A local civic group supported the project by funding swimming lessons and educational materials about water safety.

Recommendations for State Policy Makers

- ***Ensure local enforcement of the recent changes in the Michigan Construction Codes that require local units of government to adopt and enforce pool fencing regulations.***
- ***Review current daycare licensing guidelines on access to pools, hot tubs or open bodies of water at regulated daycare homes.***

Recommendation for Parents

- ***When you are near any pool or body of water, always designate one adult to keep sight of all the children, at all times.***

Taking Action to Prevent Drownings in Mackinac County

Water Safety Review Team

Mackinac County was one of the original pilot sites of Child Death Review in Michigan. In April of 1997, the team reviewed the deaths of two children who drowned while playing in Lake Michigan. During this meeting, the team discussed water safety issues and possible solutions to prevent drownings along the popular stretch of Lake Michigan shoreline off of US-2. Team members discussed the possibility of placing signage along this stretch that would warn of the dangers of rip currents. They decided to hold a separate follow-up meeting of the CDR team, legislators and other relevant agencies to determine what types of actions could be taken.

This follow-up meeting led to the creation of the Mackinac County Water Safety Review Team. The team's objectives were to examine recent drownings and near drownings in the area, identify common hazards, study the water conditions to determine if there were any dangerous swimming conditions present and, if so, find ways to warn the public. Local students designed a logo for the team.

Because of their efforts, eight safety stations were built that contain emergency safety equipment, which include life rings, body boards and life jackets along a seven-mile stretch of shoreline. CellularOne donated four solar-powered cellular phones programmed to dial 911 that would automatically dispatch emergency personnel to the site of the call. These were placed between each safety station. Cautionary signs were placed along the beaches warning swimmers of possible rip currents. Two trainings were held to increase public awareness and understanding on how to respond to emergency situations at the Lake Michigan shoreline.

A water safety brochure was created and placed at Michigan Welcome Centers, Chamber of Commerce Offices, Hiawatha National Forest Service Offices, Michigan DNR Stations and other public information centers throughout Michigan's Upper Peninsula.

This large undertaking of water safety awareness and education was accomplished through the work of volunteers, donations and a commitment to save lives. Many local businesses and agencies provided funding for the project. Because of the success of the Mackinac County Water Safety Review Team, other counties have requested their help in planning their own campaigns.

Child Abuse and Neglect

The actual number of abuse and neglect deaths is estimated to be much higher than that reported by vital statistics data.

Background

Information obtained from death certificates identified 17 deaths due to child abuse and neglect in 2000. Fatal child abuse or neglect is the fatal physical injury or negligent treatment of a child by a person who is responsible for the child's welfare. It is reported that more than 2,000 children in the U.S. die of child abuse and neglect each year, and the actual number of abuse and neglect deaths is estimated to be much higher than that reported by vital statistics data. For example, in Michigan in 1998, 16 maltreatment deaths were reported in vital statistics data, while the Michigan Family Independence Agency reported 48 abuse and neglect deaths to the National Child Abuse and Neglect Data System.

Michigan is one of three states recently awarded a three-year grant by the Centers for Disease Control to develop a surveillance system that will improve our ability to accurately count the numbers of children who die each year from abuse and neglect. This project is a collaboration between FIA, the Michigan Department of Community Health, the Michigan State Police and the Michigan Public Health Institute.

Most child maltreatment deaths result from physical abuse, especially children receiving injuries to their heads. Known as abusive head trauma, these injuries occur when a child's head is slammed against a surface, is severely struck or when a child is violently shaken. There have been major improvements in the ability to diagnose abusive head trauma and in investigators' abilities to recognize when a caregiver's explanation for injuries do not match the severity of the injuries. For example, it is now widely accepted that falls from short heights or a child being accidentally dropped rarely cause extensive and severe head injuries.

The next most common cause of physical abuse deaths is punches or kicks to the abdomen, leading to internal bleeding. Other forms of fatal physical abuse include immersion into hot water, drowning and smothering. Many children who die from physical abuse have been abused over time, but a one-time event often causes a death.

The most common reason given by caretakers who fatally injure their children is that they lost patience when the child would not stop crying. Other common reasons given by the abusers include bedwetting, fussy eating and disobedient behavior.

Fatalities from neglect include a number of different ways in which caregivers fail to adequately provide for or supervise their children. Caregivers may fail to provide food and nurturing to their child, leading to malnutrition, failure to thrive, starvation or dehydration. Caregivers may fail to seek medical care when their child is ill, leading to more serious illness and death. Neglect cases can also result from intentional or grossly negligent

failure to adequately supervise a child, resulting in bathtub drownings, suffocations, poisonings and other types of fatal incidents.

Young children are the most vulnerable victims. National statistics show that children under six years of age account for 86% of all maltreatment deaths and infants account for 43% of these deaths.

Fathers and mothers' boyfriends are most often the perpetrators in the abuse deaths; mothers are more often at fault in the neglect fatalities. Fatal abuse is interrelated with poverty, domestic violence and substance abuse.

National studies report that it is difficult to predict a fatal abuse event. In the U.S., studies find that the majority of child victims and their perpetrators had no prior contact with Child Protective Services (CPS) at the time of the death, yet many children had previous injuries that were not reported to CPS systems.

Major Risk Factors

- ***Younger children, especially under the age of five.***
- ***Parents or caregivers who are under the age of 30.***
- ***Low income, single-parent families experiencing major stresses.***
- ***Children left with male caregivers who lack emotional attachment to the child.***
- ***Children with emotional and health problems.***
- ***Lack of suitable childcare.***

MICHIGAN CHILDREN WHO DIED IN 2000

March:

A one-year-old child was being cared for by his mother's boyfriend while she was working a 10-hour shift. The boyfriend lost his temper when the baby would not stay in bed. He kicked the little boy and shook him violently. He then placed him back in bed. The next morning, the mother found her son vomiting and listless. He died en route to the hospital. The cause of death was ruled "natural" until an autopsy revealed head and abdominal injuries and evidence of shaking. The boyfriend was convicted of third degree child abuse.

July:

A 3-year-old female died after being brought to the hospital with pneumonia. Her body was covered with extensive bruising and scratches and there was a sizable open wound on her buttocks. The father claimed that she had behavior problems and it was often necessary to "teach her right from wrong" by using a paddle or belt. He cited her refusal to wear her slippers on the correct feet as an example of the need to discipline her. The father was found guilty of first-degree child abuse.

Child Death Review Team Findings

CDR teams reviewed 33 deaths due to child abuse or neglect in 2000, and a total of 93 since 1995. The manner of the abuse and neglect deaths reviewed by the teams was:*

Table 47
Number of Child Abuse and Neglect Deaths Reviewed by Manner

Manner	2000	1995-2000
Homicide	30	81
Undetermined	2	5
Accident	1	5
Natural	0	2
Total	33	93

The causes of the injuries or neglect leading to the death included:

Table 48
Number of Child Abuse and Neglect Deaths Reviewed by Cause

Type	2000	1995-2000
Abusive Head Trauma/Shaken Baby	12	32
Beating or Battering	8	24
Inadequate Supervision	0	9
Suffocation/Strangulation	6	6
Abandonment	3	5
Fires	2	2
Neglect/Failure to Thrive	0	2
Scalding	0	2
Firearms/Weapons	1	1
Drowning	1	1
Medical Neglect	0	1
Not Described	0	8
Total	33	93

Summary of Findings

In 2000, 16 of the victims whose deaths were reviewed were under the age of one, and a total of 26 victims were under the age of three. Seventeen victims were boys and 16 were girls.

* Although the teams determined that these deaths were due to abuse and neglect, the official manner of death as listed on the death certificate may have been different. For example, a child may have died of pneumonia after the parents refused to seek health care. The cause of death may have been listed as natural, but the team determined the death to be due to medical neglect.

In 2000, 16 of the children in the maltreatment cases reviewed were under the age of one, and a total of 26 victims were under the age of three.

Table 49
Number of Child Abuse and Neglect Deaths Reviewed by Sex

Sex	2000	1995-2000
Male	17	48
Female	16	45
Total	33	93

Table 50
Number of Child Abuse and Neglect Deaths Reviewed by Age

Age	2000	1995-2000
Under One	16	42
1	5	19
2	5	14
3	1	7
4	1	5
5	0	1
Over Five	4	4
No Answer	1	1
Total	33	93

For maltreatment deaths reviewed in 2000, 60% were white, 33% were black, and there were one American Indian and one Asian victim. From 1995-2000, 53% were white and 44% were black. There were one American Indian and two Asian victims. When reported, teams found that 90% of the victims in 2000 and 89% from 1995-2000 were low income.

In 2000 reviews, 24 of the children died in their own homes; the remaining nine deaths occurred in other homes (2), hospital (2), highway (1), dumpster (1) and a river (1). The location was not indicated in two of the cases. From 1995-2000, 63 of the children died in their own homes. Eleven of the remaining deaths occurred in the hospital, seven in other homes and two on the highway. The location was not indicated in four of the cases.

In 17 of the 33 cases reviewed in 2000, the perpetrator was either the father (9) or the mother's boyfriend (8). The mother was the perpetrator in nine cases. Four of the perpetrators had received some type of services, such as food stamps or WIC, but none had been participants in FIA's Family Preservation Services. From 1995-2000, the perpetrator was the mother's boyfriend in 26 of the 93 cases, the father in 23 and the mother in 17 cases. Thirteen of the perpetrators in 2000 were arrested for murder or manslaughter.

A family history of domestic violence or substance abuse increases the risk

for fatal abuse and neglect. Of the cases reviewed in 2000, 21% of the perpetrators had prior records for or histories as batterers. Drugs and alcohol were listed as factors in only six percent of the deaths.

In 2000, eight of the child victims had current or previous cases open with CPS. There was also a CPS history with at least one family member in 13 of the cases reviewed in 2000. This compares with a total of 25,374 cases of substantiated child abuse or neglect in Michigan in 2000.

In 2000, in the cases in which it was known, seven children had evidence of prior abusive injuries, but these had not been reported to CPS. Between 1995-2000, there were at least 10 children with unreported prior injuries.

Abusive Head Trauma

In the deaths reviewed in 2000, the 12 children who died from severe injuries to their heads were violently shaken (6), slammed against a surface (3) or struck on their head (1). In two cases, the acts causing the injuries were unknown.

Four children were only one month old when injured, which includes one child who died two years later from the injuries. Three other infants were two, five and seven months old; one child was one year old and four children were two years old. Five children were killed by their fathers, three by mother's boyfriend and one by a teenage boy who was babysitting. In all these cases, the mother was not home at the time. Two children were killed by their mothers and one child by her foster father.

All of the families in these 12 cases were low income. Four of the children were found to have prior serious injuries, probably caused by abuse, but not reported. In two cases, there was evidence of sexual abuse. In one case, the child's mother's rights had been terminated but the father left the baby with her despite court orders to the contrary. In one case, the foster father beat the child, and the foster mother is being charged with "failure to protect the baby." Two children had prior involvement with CPS. In three cases, child death review teams reported that other children were being removed from the home. Teams reported that arrests were made for murder in 11 cases.

The explanations for the children's injuries as given by the perpetrators included:

- The baby fell out of his swing.
- The baby's cousin hit her on the head.
- I dropped her.
- I knocked him down while running to check on his sister.
- I was mad because he wet on me while I was changing his diaper.
- He had a seizure so I put him to bed.
- I didn't mean to shake her that hard,

All 12 of the children who died from abusive head trauma in 2000 were two years old or younger.

but she wouldn't stop crying.

- His 13-year-old brother hurt him.
- He wouldn't stop crying.
- The baby just began seizing at home.

Other Beatings and Battering

In 2000, eight children died from extensive injuries from beatings, mostly to their abdomens, chests and heads. Two children died from chest compressions. Four of the children were infants, ages two, three, seven and eight months. Three of the children were toddlers. A nine-year old girl was also beaten to death. Four children were killed by their fathers, two by mothers' boyfriends and two by their mothers.

Teams reported family income level as low for four deaths, middle for one and unreported for the other three. Six of the eight children had evidence of other serious injuries, including bruises, rib fractures, burns and spiral fractures, yet only three of these children had prior contact with CPS. CPS was removing other children from the home in four cases. Arrests for murder had been made in all eight deaths.

In one case, the mother was experiencing a psychotic episode at the time of the murder. In six cases, the perpetrator gave an explanation for the injuries, including:

- He was a special needs child that was difficult to care for.
- An older sibling pushed her down.
- She fell out of her crib.
- She fell down 16 steps.
- I fell asleep with her on my chest and when I woke up she wasn't breathing.

Six of the eight children whose beating deaths were reviewed in 2000 had evidence of prior serious injuries, yet only three of them had prior contact with CPS.

Other Deaths Reviewed in 2000

Six strangulation and smothering deaths reviewed in 2000 occurred when:

- An infant and her mother were both strangled by the infant's father.
- A four-year-old girl was raped and strangled by her mother's boyfriend. He subsequently stabbed the child and set the house on fire.
- Immediately following her birth, a newborn baby was smothered by her teen mother and placed in a box.
- A one-year-old girl was held under water, then suffocated by her mother's boyfriend when she would not stop crying.
- One infant died due to overlay while sleeping with her intoxicated parents.
- One infant died when her mother's boyfriend smothered her because she would not stop crying.

Three babies were abandoned as newborns, including two left in trash bins with the parents remaining unknown. Two children died in a house fire set by their mother, and one drowning occurred when a mother threw her three-year-old into a river.

Actions Taken to Prevent Other Deaths

Based on the findings and the risk factors identified during the review process, the local teams proposed a total of nine child abuse and neglect prevention initiatives in 2000 and 39 from 1995-2000. Although no prevention initiatives were recorded as implemented in 2000, the team took action on 16 recommendations from 1995-1999. Examples of these include:

- Members of the Wayne County team, including homicide detectives and prosecutors, provided training to hospital emergency room staff to improve their ability to identify child abuse fatalities and improve reporting to the appropriate agencies.
- Mecosta County developed an advisory on the duties of mandated reporting of child abuse and neglect that was distributed to local human service agencies, hospitals and all physicians in the county.
- Clinton and Monroe Counties, using the materials developed by Mecosta County, updated human service agencies, physicians and other health care providers in their community regarding the responsibilities of mandatory reporters.
- Following the murder of an infant by a mother suffering postpartum psychosis, Oakland County worked to ensure that protocols were in place at area hospitals to educate new mothers on postpartum depression, and to ensure that interpreters would be available to teach non-English speaking parents.

Recommendations for State Policy Makers

- ***Increase and improve the resources available to educate and support the medical community, other mandated reporters and the general public in understanding, identifying and reporting child abuse and/or neglect.***
- ***Expand opportunities for high-risk families to receive intensive and effective home visiting services which offer instruction and support regarding prenatal care, parenting skills, household management and coping with environmental dangers.***
- ***Enhance the Family Independence Agency's Child Protective Services caseworkers' ability to recognize potential indicators of abuse and neglect in high-risk environments.***

Recommendations for Parents

- ***Make sure that your choice of a caretaker or babysitter is a patient person, who is experienced in caring for children, has positive feelings for your child and is not prone to violent behavior, drug abuse or alcoholism.***
- ***If you are feeling overwhelmed or frustrated by your child, call someone you trust and find a way to calm yourself. Never strike, shake or throw your child.***

Taking Action to Prevent Child Abuse Deaths in Mecosta County

Update for Professionals

Mecosta County's Child Death Review Team began meeting in 1997. This team has an active committed and cohesive membership, including the Chief Clinical Officer of the local hospital, an ER nurse, Strong Families/Safe Children Coordinator, EMS/Medical Examiner Investigator, the State Police Post Commander, the Sheriff and the Director of Public Safety, in addition to core members from local agencies.

When this team began meeting, they struggled, as many new teams do, with confidentiality issues, time/schedule constraints and wondering whether the meetings would actually result in anything. Early on though, the team reviewed the death of a toddler who had been neglected over a period of time, who eventually died of starvation and dehydration. With the various agencies around the table, each telling what they knew of the case and the family, the picture became all too clear. There had been warning signs, and multiple opportunities for any number of individuals and agencies to step in and do something that may have saved this child's life. For many reasons, those interventions never occurred. The tragedy of this case made the team reassess their priorities as agency representatives and as CDRT members. Agencies did their own internal reviews of policies to ensure there were no gaps that needed to be filled. Beyond that, the team felt strongly that they could work together to make some small amount of good come out of this terrible tragedy.

Over time and with input from all CDRT members, their supervisors and child protective services, the team developed a two-sided, one-page flier. The flier describes the role of a "mandated reporter" of suspected child abuse and neglect according to Michigan's Child Protection Law. The responsibilities of mandated reporters and examples of what would constitute child abuse or neglect were included. A reminder of what the legal and ethical consequences could be if a report is not made when a child is perceived to be in danger were highlighted. The flier includes frequently asked questions pertaining to issues of reporting child abuse and neglect, and the main message of the piece: "Remember, the standard is suspected child abuse or neglect. When in doubt, report!"

This flier was distributed to appropriate entities in the county, mainly through the local collaborative body (Mecosta County Children's Council) and at events that professionals affected would attend. At least two other CDR teams have adapted this flier for use in their own communities. Mecosta County turned a painful situation that could have deteriorated into finger pointing and further communication breakdown, into a catalyst for positive change to prevent future tragedies.

Other and Undetermined Deaths

Background

This section includes all other deaths reviewed by teams, which were not included in the causes described in the previous sections. This includes other injury deaths such as poisonings, falls, electrocutions, sport and agricultural injuries and other manners of death in which the cause was unclear to the teams or the medical examiners. There were 31 child deaths of other or undetermined causes in 2000.

Poisoning deaths are most often due to the inattention of parents or other caregivers. Over-the-counter or prescription medications are the primary source of poisonous substances, and more than 90% of poisonings in the U.S. occur in the home. Other sources of poisoning for children include vitamins with high iron content, household cleaning products and carbon monoxide. Adolescents are at a higher risk for alcohol poisoning. In a study published by the Journal of American College Health, over 40% of students surveyed engage in binge drinking, which is defined as having five or more drinks during one occasion.

While falls are the leading cause of non-fatal unintentional injuries and emergency department visits for children under 14 years of age, they are rarely fatal. Each year in the U.S., falls among this age group account for an estimated 2.5 million emergency department visits. But on a national level, only 90 children ages 14 and under die as the result of falls in the home annually. Of these children, nearly 75% are ages four and under. The number of reported falls is decreasing as physicians are better distinguishing fall injuries from child abuse injuries.

While falls are the leading cause of non-fatal emergency department visits for children under 14 years of age, they are rarely fatal.

Electrocutions occur from two primary sources, within the home and outdoors. Indoors, children are at risk for electrocutions from exposed outlets, faulty appliances and incidents in the bathtub. Downed power lines and lightning strikes most often cause outdoor electrocutions.

Major Risk Factors

- ***For all categories, a lack of adequate supervision from caregivers.***
- ***Homes that are not child proofed.***
- ***Unsafe consumer products including toys and baby products.***

MICHIGAN CHILDREN WHO DIED IN 2000

May:
A nine-year-old boy was climbing a tree in his grandparent's backyard. His hood string caught on a tree limb; he lost his balance and fell 22 feet to the ground. The boy died of severe head and spine injuries.

December:
An 11-year-old girl was home after school with a friend while her parents were at work. The girl's grandfather was living with the family while undergoing treatment for terminal cancer. The girl took a bottle of morphine from the bedside table and took some tablets with her friend. Her parents found the two girls when they came home from work. Both were unconscious on the floor. The friend lived, but their daughter had died of a morphine overdose.

Child Death Review Team Findings

Teams reviewed 33 deaths due to other causes in 2000 and 101 such deaths from 1995-2000. These deaths included poisonings, falls and other deaths of undetermined cause or manner, especially to infants.

These deaths included poisonings, falls and other deaths of undetermined cause or manner, especially to infants.

Table 52
Number of Other Child Deaths Reviewed by Manner*

Manner	2000	1995-2000
Undetermined	20	39
Accident (Unintentional)	8	38
Homicide	1	8
Suicide	3	8
Natural	1	8
Total	33	101

Table 53
Number of Other Child Deaths Reviewed by Cause

Cause	2000	1995-2000
Poisonings	4	21
Falls	4	6
Electrocutions	0	2
Other/Undetermined	25	72
Total	33	101

Consistent with national data, teams found that boys were more likely (almost 61%) to die from other unintentional injuries. Children under four years of age represent the largest group of children who die from other unintentional injuries.

Table 54
Number of Other Child Deaths Reviewed by Age

Age	2000	1995-2000
Under One	15	35
1-4	5	23
5-9	5	10
10-14	2	11
15-19	6	22
Total	33	101

*The homicide in 2000 is also described in the section on child abuse and neglect, and suicides due to poisoning and falls are described in the suicide section.

From 1995-2000, 62% of the children were white, 30% were black and four percent were American Indian. When known, from 1995-2000, 60% of the children were low income, 35% middle income and five percent were high income.

Teams reported that inadequate supervision by adults was a factor in over 40% of the deaths.

Three of the four poisoning deaths in 2000 were due to over-the-counter or prescription medication overdose. Children were unattended at the time. One case was a carbon monoxide poisoning, where the team was unsure if the incident was a suicide or unintentional. Falls to children from 1995-2000 occurred in several different locations: out a six-story window, off a piece of furniture, off a bridge, out of a tree and two children fell down the stairs.

Actions Taken to Prevent Other Deaths

Based on the findings and the risk factors identified during the review process, the local teams proposed a total of 10 prevention initiatives in 2000 and 49 from 1995-2000 related to this category of death. The teams took action to implement two of these in 2000 and 18 from 1995-2000. Examples of the prevention initiatives implemented by teams include:

- Many county CDR teams work with their local SAFE KIDS chapters to spearhead local unintentional injury prevention initiatives. Two new SAFE KIDS chapters came about as a direct result of Child Death Review: Mason/Lake/Oceana Counties now have a regional SAFE KIDS chapter and Mecosta County has recently convened a chapter.

- In Livingston County, the team coordinator created a comprehensive list of all the resources in the county so that agencies know whom they can contact in the event of a death or serious injury.

- Many teams share their reviews findings with their interagency human service collaborative bodies. Luce County invited the state CDR coordinator to their HSCB meeting to describe the program and discuss how findings can drive local prevention efforts.

Recommendation for State Policy Makers

- ***Promote educational programs for parents, childcare providers and children on the issues surrounding safe environments for children, especially the safe storage and dispensing of medication.***

Recommendation for Parents

- ***Be sure that all areas of the house are "child proofed" including stairs, electrical outlets, storage cabinets and medication bottles.***

Appendices

Appendix A: Number of Cases Reviewed and Reported by County
Appendix B: Local Child Death Review Team Coordinators
Appendix C: References

Appendix A

Number of Cases Reviewed and Reported by County

County Name	Total Number of Deaths in 2000*	Total Reviews Reported in 2000	Total Reviews Reported 1995-2000
Alcona	2	1	1
Alger	1	1	3
Allegan	17	5	24
Alpena	4	10	10
Antrim+	3	0	0
Arenac+	3	0	0
Baraga+	1	0	0
Barry	11	9	23
Bay	15	1	9
Benzie	1	0	0
Berrien	37	32	143
Branch	6	6	15
Calhoun	29	19	124
Cass	11	8	22
Charlevoix	4	2	2
Cheboygan	5	0	3
Chippewa	7	5	9
Clare	6	3	4
Clinton	10	7	16
Crawford	5	1	7
Delta	9	3	5
Dickinson+	2	0	0
Eaton	15	7	46
Emmet	6	3	3
Genesee**	117	5	41
Gladwin	2	3	13
Gogebic	2	0	0
Grand Traverse	11	0	1
Gratiot	6	3	13
Hillsdale	12	6	6
Houghton+	2	0	0
Huron	10	6	12
Ingham	50	14	15
Ionia	18	6	8
Iosco	2	0	4
Iron+	3	0	0
Isabella	7	16	16
Jackson	31	11	20
Kalamazoo	44	19	64
Kalkaska	3	2	4
Kent	125	43	181

*Source: 2000 Michigan Resident Death File, Division for Vital Records and Health Statistics, Office of the State Registrar, Michigan Department of Community Health.
+Teams not organized or meeting in 2000.
**Teams meeting monthly but all reports not submitted in time for analysis and publication.

Appendix A (Continued)

Number of Cases Reviewed and Reported by County

County Name	Total Number of Deaths in 2000*	Total Reviews Reported in 2000	Total Reviews Reported 1995-2000
Keweenaw+	0	0	0
Lake	3	3	9
Lapeer	14	11	33
Leelanau	4	0	2
Lenawee	15	7	20
Livingston	18	23	55
Luce	2	0	5
Mackinac	3	4	11
Macomb	104	27	71
Manistee	0	0	5
Marquette	3	4	7
Mason	7	1	11
Mecosta	8	13	37
Menominee	6	0	3
Midland	8	2	12
Missaukee	3	1	3
Monroe	16	9	9
Montcalm	12	18	51
Montmorency+	0	0	0
Muskegon	23	13	51
Newaygo	6	3	15
Oakland**	180	4	40
Oceana	7	7	19
Ogemaw	5	0	0
Ontonagon+	0	0	0
Osceola	7	5	12
Oscoda	5	0	0
Otsego	5	6	10
Ottawa	45	10	55
Presque Isle	5	1	2
Roscommon	2	2	7
Saginaw	43	24	79
St. Clair	26	23	137
St. Joseph	11	7	26
Sanilac	11	2	3
Schoolcraft	1	0	0
Shiawassee	8	4	29
Tuscola	15	6	20
Van Buren	13	11	34
Washtenaw	51	16	42
Wayne	536	181	301
Wexford	8	9	15
Total	**1,895**	**714**	**2,108**

Appendix B

Local Child Death Review Team Coordinators, 2000

County Name	Coodinator(s)	Agency
Alcona	Doug Ellinger, Sheriff	Alcona County Sheriff's Department
Alger	Patricia Webster, Nursing Administrator	LMAS District Health Department
Allegan	Cathy Weirick, Executive Director	Allegan County CA/N Council
Alpena	Vanessa Mills, Program Manager	Alpena County Family Independence Agency
Antrim	Bob Lewis, Services Supervisor	Antrim County Family Independence Agency
Arenac	David Smith, Family Independence Manager	Arenac County Family Independence Agency
Baraga-Houghton-Keweenaw	Dr. Gail Shebuski, Health Officer/Medical Director	Western Upper Peninsula District Health Department
Barry	Dr. Jeff Chapman	Barry County Medical Examiner
	Ann Wilson	Barry County Medical Examiner's Office
Bay	Dominic Wright, Victim's Advocate	Bay County Prosecutor's Office
	Margaret Lemming, Assistant Prosecutor	Bay County Prosecutor's Office
Benzie	Jenifer Murray, Personal Health Director	Benzie-Leelanau District Health Department
Berrien	Margaret Penninger, Assistant Prosecutor	Berrien County Courthouse
Branch	Vickie Nimmo, Children's Services Supervisor	Branch County Family Independence Agency
	F/Lt Rod Olney	Michigan State Police – Coldwater Post
Calhoun	Sara Cauffiel, CDR/FIMR Coordinator	Calhoun County Health Department
Cass	Ruth Andrews, Director	Woodlands Behavioral HC Network
Charlevoix-Emmet	Paula Shuler, Services Supervisor	Charlevoix-Emmet Family Independence Agency
Cheboygan	Dr. Howard Otto	Cheboygan County Medical Examiner
Chippewa	Vicki Schuurhuis, OB/Nursery Clinical Director	War Memorial Hospital
Clare	Kathy Kent, Nursing Supervisor	Central Michigan District Health Department
Clinton	Mary Pino, Chief Asst Prosecutor	Clinton County Prosecutor's Office
Crawford	Amelia Afsari, Epidemiologist	District #10 Health Department
Delta	Del Johnson, Tobacco Coordinator	Delta-Menominee District Health Department
	Tina Bart, Community Health Promotion Director	Delta-Menominee District Health Department
Dickinson-Iron	Carol Thornton, CDR Coordinator	Dickinson-Iron Family Independence Agency
Eaton	Linda Matwiejczyk, RN	Barry-Eaton District Health Department
Genesee	Dr. Gary Johnson, Medical Director	Genesee County Health Department
	Leslie Lathrop, RN	Genesee County Health Department
Gladwin	Robert Adams, Director	Gladwin County Family Independence Agency
Gogebic	Dr. Charles Iknayan, Medical Examiner	Grandview Hospital
Grand Traverse	Mary Merwin, Prevention Planning	Grand Traverse Human Svcs Coordinating Body
Gratiot-Montcalm	Jamie Lovelace, Children's Services Supervisor	Ionia-Montcalm Family Independence Agency
Hillsdale	Valerie White, Assistant Prosecutor	Hillsdale County Prosecutor's Office
Huron	Mark Gaertner, Prosecuting Attorney	Huron County Prosecutor's Office
	Elizabeth Weisenbach, Assistant Prosecutor	Huron County Prosecutor's Office
Ingham	Dr. Dean Sienko, Medical Director/Examiner	Ingham County Health Department
Ionia	Tim Click, Children's Services	Ionia-Montcalm Family Independence Agency
	Dennis Major, Director	Ionia-Montcalm Family Independence Agency
Iosco	Randy Sterling, Program Manager	Iosco County Family Independence Agency
Isabella	Mari Pat Terpening, Personal Health Services	Central Michigan District Health Department
Jackson	Dottie-Kay Bowersox, Deputy Health Officer	Jackson County Health Department
Kalamazoo	Heidi Oberlin, Prevention Services Director	Kalamazoo County Health Department
Kalkaska	Amelia Afsari, Epidemiologist	District #10 Health Department
Kent	Susan Heartwell, Director	Children's Assessment Center
	Carmen Perez	Kent County Health Department
Lake	Amelia Afsari, Epidemiologist	District #10 Health Department

Appendix B (Continued)

Local Child Death Review Team Coordinators, 2000

County Name	Coodinator(s)	Agency
Lapeer	D/Sgt Nancy Stimson	Lapeer County Sheriff's Department
	Gerald Redman, CPS Supervisor	Lapeer County Family Independence Agency
Leelanau	Sara Brubaker, Prosecuting Attorney	Leelanau County Prosecutor's Office
	Laurie laCross, Victim's Advocate	Leelanau County Prosecutor's Office
Lenawee	Larry Stephens, Health Officer	Lenawee County Health Department
Livingston	Peggy Conrad, Personal & Prev Health Services	Livingston County Health Department
	Dr. Stan Reedy, Medical Director	Livingston County Health Department
Luce	Dr. James Terrian, Medical Director/Examiner	LMAS District Health Department
	Patricia Webster, Nursing Administrator	LMAS District Health Department
Mackinac	Timothy Matelski, Chief	St Ignace Police Department
	Fay West, RN	LMAS District Health Department
Macomb	Dr. Kevin Lokar, Medical Director	Macomb County Health Department
	Angelo Nicholas, Director	Macomb County Family Independence Agency
Manistee	Ford Stone, Prosecuting Attorney	Manistee County Prosecutor's Office
Marquette	Diane Curry, Health Educator	Marquette County Health Department
Mason	Richard Trier, Services Manager	Mason County Family Independence Agency
Mecosta	Amelia Afsari, Epidemiologist	District #10 Health Department
Menominee	Tammy Sikorski, Alcohol/Other Drug Services	Delta-Menominee District Health Department
	Tina Bart, Community Health Promotion Director	Delta-Menominee District Health Department
Midland	Dr. Dennis Wagner, Medical Examiner	Mid-Michigan Medical
Missaukee-	David VanHouten, Children's Services Supervisor	Missaukee-Wexford Family Independence Agcy
Wexford	Anne Young, Maternal/Child Health Manager	District #10 Health Department
Monroe	Sandie Pierce, HSCN Coordinator	Monroe Community Mental Health Authority
Montmorency	Jim Beach, Director	Montmorency-Oscoda Fam Independence Agcy
Muskegon	Dr. Joyce deJong	Muskegon County Medical Examiner
	Roberta Skinner, Records Office	Muskegon County Health Department
Newaygo	Dr. Richard Peters	Newaygo County Medical Examiner
Oakland	Ronald Covault, Deputy Prosecutor	Oakland County Prosecutor's Office
	James Halushka, Deputy Prosecutor	Oakland County Prosecutor's Office
Oceana	Amelia Afsari, Epidemiologist	District #10 Health Department
Ogemaw	Dr. James Hall	Ogemaw County Medical Examiner
Ontonagon	Jerry Kitzman, Sheriff	Ontonagon County Sheriff's Department
Osceola	Kaye Frederick, Probation Officer	Osceola County Probate Court
Oscoda	Jim Beach, Director	Montmorency-Oscoda Fam Independence Agcy
Otsego	Kevin Hesselink, Prosecuting Attorney	Otsego County Prosecutor's Office
Ottawa	Bill Lamain, Health Officer	Ottawa County Health Department
Presque Isle	Vanessa Mills, Program Manager	Presque Isle County Fam Independence Agency
Roscommon	Cynde Kochensparger, Nursing Supervisor	Central Michigan District Health Department
Saginaw	Dr. Kristan Outwater	Partners in Pediatrics
	Debbie Tubb, Medical Examiner Investigator	Saginaw County Health Department
St. Clair	Amy Smith, Planning Officer	St. Clair Community Mental Health
St. Joseph	Elizabeth O'Dell, Collaboration Coordinator	St. Joseph County Human Services Commission
Sanilac	Dr. Dennis Smallwood, Med Director/Examiner	Sanilac County Health Department
Schoolcraft	Patricia Webster, Nursing Administrator	LMAS District Health Department
Shiawassee	Rose Mary Asman, Health Services Director	Shiawassee County Health Department
	Joan Fox, Services Supervisor	Shiawassee County Family Independence Agency
Tuscola	Dr. Dennis Smallwood, Medical Examiner	Tuscola County Health Department
Van Buren	Becky Fatzinger, Coordinator	Van Buren County Human Services Collaborative
Washtenaw	Susan Cares, Nursing Director	Washtenaw County Human Services
Wayne	Pat Soares, Health Officer	Wayne County Health Department

Appendix C

References

Natural Infant Deaths

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