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## **Kansas State Child Death Review Board**

### **Child Autopsy Guidelines and Recommendations**

The purpose of child fatality review is to identify effective prevention and intervention processes to decrease preventable child deaths through systematic evaluation of individual child deaths and the personal, family, and community conditions, policies, and behaviors that contribute to preventable deaths. Thorough and complete investigations and autopsies are essential for proper death certification and eventual review and analysis of the circumstances of infant, child and adolescent deaths. The Kansas State Child Death Review Board recommends the following protocols as a guideline for a comprehensive investigation and pediatric autopsy.

A forensic pathologist should investigate all:

- Known or suspected non-natural deaths, including those due to violence, trauma, drugs or associated with police action;
- Unexpected or unexplained deaths of infants and children, including those with underlying or chronic illness;
- Deaths occurring under unusual or suspicious circumstances;
- Deaths of children or youth in custody;
- Deaths known or suspected to involve diseases constituting a threat to public health;
- Deaths of persons not under the care of a physician.

A forensic pathologist should perform the autopsy when the:

- Death is known or suspected to have been caused by violence, trauma, drugs or associated with police action;
- Death occurs in custody of a local, state, or federal institution;
- Death is unexpected and unexplained in an infant or child;
- Death is due to acute workplace injury;
- Death is the result of a motor vehicle crash. Clinical judgment is recommended in the case of delayed deaths;
- Death is caused by or involves apparent injury, including, but not limited to electrocution, fire, chemical exposure, intoxication by alcohol, drugs, or poison, unwitnessed or suspected drowning or fall;
- Body is unidentified and the autopsy may aid in identification.

## Investigation related to child and adolescent deaths

### Investigation Records and Materials:

Ideally, all records that are available should be reviewed and further records that are necessary for guiding an opinion should be ordered. Information not available from records can be obtained through interviews. These records and materials include:

- Investigative law enforcement reports
- Department for Children and Family records
- Paramedic and Emergency Department records
- Previous medical records, especially those documenting prior injuries, imaging reports, laboratory examinations, previous illnesses, medical treatments, and developmental status
- Family medical history
- Family social history
- Scene investigation by law enforcement and the pathologist/investigator; we encourage the use of a child specific death scene check list

Sudden infant death syndrome (SIDS) is a cause assigned to infant deaths that cannot be explained after a thorough case investigation that includes a scene investigation, autopsy, and review of the clinical history. Sudden unexpected infant death (SUID), also known as sudden unexpected death in infancy (SUDI), is a term used to describe any sudden and unexpected death, whether explained or unexplained (including SIDS), that occurs during infancy. After case investigation, SUIDs can be attributed to suffocation, asphyxia, entrapment, infection, ingestions, metabolic diseases, and trauma (accidental or nonaccidental). The distinction between SIDS and other SUIDs, particularly those that occur during an observed or unobserved sleep period (sleep-related infant deaths), such as accidental suffocation, is challenging and cannot be determined by autopsy alone. Scene investigation and review of the clinical history are also required. Scene investigation should follow the guidelines established by the CDC.<sup>3</sup>

Circumstances of particular cases may dictate that the above standards are not appropriate or relevant; for instance, cases of children with prolonged hospitalization in which lab and imaging studies clearly document a cause and manner of death and in which there are no suspicious or potential criminal concerns. In those cases, clinical judgment regarding external examination and records review may be indicated.

Adolescent deaths often present a unique set of circumstances that warrant careful consideration of a more thorough investigation and autopsy. Autopsies should be performed in all sudden unexpected adolescent deaths, including those that are sports related, suicides, possible cardiac related and motor vehicle crashes. The investigation should include the thorough review of medical, mental health, social media and school records.

### **Minimum expectations for autopsies on children ages birth to 18 years**

In addition to a thorough investigation, the standards for an autopsy as it relates to an unexplained child death should include at a minimum, the following as appropriate for the age and circumstances of the child at death:

- Photographs of the child and of all external and pertinent internal injuries.
- Examination of all clothing and items accompanying the body, preserving all materials for later examination by a crime lab.
- Evidence of therapy and resuscitation.
- Radiographs for a complete survey of the skeletal structures, especially in children less than 2 years of age; films should be reviewed by a radiologist or physician experienced in child trauma whenever possible.
- Blood, urine and vitreous should be collected for possible use as an adjunct to toxicology or if metabolic or hydration status is an issue.
- Toxicological studies should include ethanol and common drugs of abuse, including cold medications, if being used; prescription drugs should be tested for based on history and scene investigation.
- The external examination should give consideration to and document the general appearance, cleanliness, nutrition (heights and weights compared to standard growth charts), dehydration, failure to thrive, congenital anomalies, evidence of abuse or neglect, evidence of sexual abuse; if not found, these should be recorded as essential negative findings.
- An autopsy should be performed on an unembalmed body and include in-situ examination of the brain, neck structures, thoraco-abdominal and pelvic organs with removal and dissection. Weights of organs should be documented. In suspected injury cases, lengthwise incisions through skin and subcutaneous tissues should document the depth of the hemorrhage. If there is no gross cause of death, microscopic examination should be conducted on the brain, heart, lungs, liver, kidneys and other organs as indicated. Stock tissue and paraffin blocks should be retained.
- DNA should be archived for genetic testing, if indicated.
- Metabolic screening results should be determined from the medical birth record. In cases where a metabolic condition is considered (e.g. preceding viral illness, period of starvation, nocturnal death, positive findings such as fatty liver), particularly in children under 2 years of age, further tissues should be preserved. A blood spot card should be prepared and retained in case autopsy findings suggest a metabolic disorder.

Most pathologists routinely include microscopy of all major organs, some combination of bacterial cultures and viral studies as indicated by the history, vitreous electrolytes and screening studies for metabolic disorders.

In situations where radiographic imaging is not available, local hospitals can be contacted for assistance.

References:

1. American Academy of Pediatrics *Policy Statement*, "Child Fatality Review" September 2010
2. American Academy of Pediatrics *Clinical Report*, "Distinguishing Sudden Infant Death Syndrome From Child Abuse Fatalities," July 2006
3. Centers for Disease Control and Prevention, "Sudden unexplained infant death investigation reporting form," (SUIDIRF), U.S. Department of Health and Human Services, Division of Reproductive Health, Maternal and Infant Health Branch, Atlanta, GA, 30333
4. National Association of Medical Examiners, "A Functional Approach to Sudden Unexplained Infant Deaths," October 2005
5. National Association of Medical Examiners, "Forensic Autopsy Performance Standards," approved October 2010; amended August 2011