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Update

Drowned Child Cases: Investigation and Criminal Prosecution

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In the United States, drowning is the second leading cause of death documented as "unintentional injury" in children from 1-19 years old.[1] Drowning deaths provide challenging issues for law enforcement officials and prosecutors. Even if the cause of death can be established, often no obvious indications of manner of death (accident or homicide) exist and there are usually no witnesses.[2] It is often difficult to prove the caregiver's motive or intent to inflict harm or death. However, a thorough investigation of child drowning cases by cooperative medical professionals, forensic scientists, child protection professionals and law enforcement officers may provide a fuller body of evidence from which to draw a determined conclusion. This article will assist prosecutors, law enforcement officers, medical professionals, and other allied professionals who handle drowning death cases to identify important evidence and to determine whether a case should be criminally prosecuted.

Cause of Death

First, a pathologist must determine that the death of the child was caused by drowning (and not by other means prior to submersion). A person can remain conscious for approximately three minutes under water. A drowning person will hold his breath as a reaction to being immersed[3] until a combination of high carbon dioxide levels and low oxygen concentrations force him to breathe. The person involuntarily inhales water. Either the person will inhale large volumes of water into the lungs, which is most common, or a small amount of water will enter the larynx or trachea and cause a laryngeal spasm, producing thick mucous or frothy foam to plug the airway and prevent water from entering the lungs ("dry drowning"). Some of the water will be swallowed and remain in the stomach. The involuntary gasping for air will continue under water for several minutes. The person may also vomit and aspirate stomach contents and finally respiration will cease. Cerebral hypoxia[4] will develop until irreversible and death will occur.[5]

At autopsy, the lungs of a person who inhaled volumes of water are large and bulky with a brick red appearance and usually have edema fluid flowing from cut surfaces. White or hemorrhagic foam is commonly found in the trachea and bronchi, water is in the lumen of the stomach, the right ventricle of the heart may be dilated and the brain is swollen.[6] Differences in concentrations of plasma electrolytes (sodium, potassium, chloride and magnesium) or plasma specific gravities on both sides of the heart should be taken into consideration with all other bodily evidence of drowning.[7] Several other non-specific findings in drowning victims are also found in people who died of drug overdose, heart disease or other conditions.[8]

The diagnosis of drowning is based on the circumstances of death and a variety of nonspecific anatomical findings—there are no pathognomic[9] findings. Chemical tests are unreliable. Many lethal events, environmental or internal, could precipitate the submersion of a body in water. Because drowning is a diagnosis of exclusion, a complete autopsy must be performed with a complete toxicology screen to eliminate any other probable causes of death.[10] The scene and autopsy findings involving bodies found in water offer fewer clues to manner of death than in other unnatural deaths.[11]

Water temperature is an important factor in a drowning case. In warm water, children and adults reach irreversible cerebral anoxia[12] somewhere between three and ten minutes after submersion. In extremely cold water, children may be submersed for up to 66 minutes and survive with intact neurological functioning. The immature brains of children are more resistant to anoxia and vasoconstriction[13] in the vascular beds (except for the heart and brain). The "diving reflex"[14] in children shunts blood to the brain and heart and bradycardia[15] triggered by immersion of the face in icy cold water. Children's bodies rapidly develop hypothermia due to the large surface area and lack of adequate insulation and due to the aspiration of cold water with absorption in to the circulation, which also causes children to be more resistant to anoxia.[16]

Statistics show a strong correlation between the age of a drowned child and the type of drowning site. More than one half of all infant drownings in the United States occur in bathtubs.[17] Because bathtubs are generally filled with tepid to warm water, children generally only survive for a maximum of ten minutes under water. Bathtub drownings may be the result of negligent supervision or intentional homicide. If a child is pulled underwater by the feet or ankles while in a bathtub, there may be an involuntary inhalation of water as it rushes into the nasopharynx. Even in developed young children, the child's shock and the environment of a smooth-walled, slippery tub may result in an inability to struggle or pull up, causing rapid loss of consciousness and death. Often no injuries would be seen at autopsy.[18]

After children become ambulatory, they are more likely to drown in artificial pools or natural bodies of water than in bathtubs.[19] Pathologists can test for diatoms, microscopic unicellular algae that are found everywhere in all types of natural water, in the child's organ tissue and compare samples to diatoms found in area bodies of water. These tests may assist law enforcement in matching diatoms from the body to an accident or crime scene—which could be particularly helpful if the location of the drowning is unknown.

Manner of Death

Once a pathologist has determined that drowning is the cause of death, the complete body of evidence must be considered in determining whether the drowning death was intentional. Since infants and young children can be fatally injured without leaving any signs of physical abuse, the drowning death of a child requires a meticulous investigation into the circumstantial as well as anatomical evidence. Because the body of the drowned victim may contain evidence, it is ideal for law enforcement to be present at the autopsy. Deliberate drownings are often unrecognized by first responders and medical professionals and are "likely highly underreported."[20]

In addition to reviewing all material evidence, the caregiver should be closely investigated. A guilty caregiver often presents an abusive sociopathic profile and may have a history of abusing the child. The caregiver's prior record for arrests, prior incident reports and any records or files maintained by family services should be reviewed. The caregiver may also have a history of substance abuse and may have been intoxicated during the drowning. If the caregiver appears to be intoxicated at the scene, the drowning site area should be searched for drug paraphernalia or empty alcohol containers and any of those items found should be photographed and collected into evidence. The drowning incident may have followed a crisis, such as a domestic dispute or other stressful event.[21] A thorough background investigation is necessary to establish the relationships, stres-

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sors and potential triggers to an abusive drowning. Physical evidence of a domestic assault should be described in the report. Interview and lock in statements of any and all fact witnesses as early as possible. Neighbors may have timeline information regarding whether the child was seen outside or when people came or left the location that day. Conflicts in the caregiver's story are critical and should be documented and explored. A key issue in a drowning incident is the capacity of the child. It is important to note whether the child was ambulatory, capable of getting into a bathtub, turning on the water, lifting himself up or climbing out of a bathtub. Seizure disorder should always be ruled out in cases of drowning and particularly in cases involving older toddlers or children who might not be considered at risk in the water. The temperature of the water coming out of the faucet and how fast the faucet water fills the bathtub are also important factors to document. Investigators may need to run demonstrations to corroborate events.

The scene of the drowning should be well-documented, photographed and diagrammed. If the scene has been disturbed, the wet or dry state and positioning of the child's body will provide valuable clues. Law enforcement should collect a sample of the water from the apparent scene of the drowning for later comparison to water found in the child's body. At autopsy, any foreign material found in the child's lungs should also be compared to any foreign material present in the submersion site water that is collected. The condition of any clothing (wet, dry, etc) on the drowned child should be noted and that clothing should be collected as evidence. The presence of any blood on the scene and its location should be photographed, noted and collected. The child's body should be closely examined on scene and photographed, documenting livor mortis, rigor mortis, temperature, the presence of "goose flesh," the presence and extent of wrinkled "washerwoman" hands and feet, edema at the nose and mouth and any other visible injuries or conditions.[22]

In autopsy, the drowned child may exhibit old or recent injuries from other incidents of abuse, so it is imperative that old bone fractures, bruises or scars are noted. The child's medical record should be reviewed for past incidents of apparent abuse.

The Charging Decision

Non-accidental drowning deaths of children are most successfully prosecuted by scrutinizing a complete and very thorough body of evidence. "Although drowning as a method of homicide is exceedingly rare in adults, it is quite common in children, and because children are so easily overpowered, they may show no external evidence of trauma. Any childhood drowning death that is not actually witnessed, no matter where it occurs, should be considered a suspicious case."[23] In Brisbane, Australia, a case study of 111 fresh water immersions of children up to 16 years of age was conducted over a five-year period from 1971 to 1976. The case study determined that of the cases of founded deliberate immersion deaths studied, all of them occurred in bathtubs within families possessing "gross social disorders."[25]

A mother who murders her child by drowning is often married or living with her partner, older and employed with an average economic status. The killing is often "premeditated, committed with the direct use of hands and sometimes very violent." These murderous mothers may have been under the stress of lack of social marital support, economic difficulties, family stress, domestic disputes or unrealistic expectations of motherhood.[26] A psychiatric evaluation of the caregiver may shed light on a motivation to kill.

A deceased child's lifelong medical records at all local medical facilities should be investigated for past abusive injuries. Hospital admissions for pneumonia and acute respiratory symptoms of children with a history of abuse should be noted because such diagnoses might be consistent with prior incidents of inflicted immersion.[27] Also, medical documentation of severe hypothermia may be an indicator of abuse or neglect, especially if no historical circumstances are offered to explain the severity of the hypothermia presented.[28] A history of medically documented abuse or neglect can be very powerful evidence of criminal culpability.

In cases of accidental drowning, it may be appropriate to charge the caregiver with gross criminal negligence. A caregiver's illicit activities while responsible for the child, gross failure to monitor the child for long periods of time or a delay in seeking medical aid may establish criminal negligence. If the caregiver sought assistance from another person instead of calling 911, it could indicate that the caregiver was more concerned about getting into trouble than saving the child's life. Any other children remaining in the home may be in danger, in which case they should be removed.

In cases of criminal negligence, the caretaker may claim the child was only left unattended for a very short period of time when in reality the child was left unattended for an exceedingly long time. The given story timeline of how long the child's body was left in water might be contradicted if the child's body had a wrinkly or "washerwoman" appearance on the hands and feet when removed from the water. Generally, skin on the fingertips will begin to wrinkle after 20-30 minutes of submersion, the whole finger will exhibit the wrinkles after about 50-60 minutes and the entire hand will wrinkle after submersion for more than an hour. This will occur whether the body is dead or alive.[29] Therefore, comparing the caregiver's timeline to other fact witnesses' timelines and to the body's appearance is critically important.

Drowning death investigations require the utmost detail and care. In a drowning death case, a team will ideally include a social worker and public health nurse who evaluate whether neglect was a contributing factor to the death of the child.[30] When viewing the full body of evidence in a drowning case, every obvious and subtle element will be compared for contradictions and consistencies to develop the most comprehensive picture of the case. In determining whether the caregiver should be charged with homicide, involuntary manslaughter by culpable negligence or neglect, the prosecutor charges the case according to the weight of this detailed evidence.

Many communities in the United States have implemented prevention programs aimed at reducing childhood near-drowning and drowning deaths.[31] Education and parental supervision are two of the most important components to preventing drowning injuries to children. If it is not appropriate to charge the caregiver with a crime, it may be prudent to include the caregiver in local prevention initiatives.

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1 Ruth Brenner, Ann Trumble, Gordon Smith, Eileen Kessler, Mary Overpeck, Where Children Drown, United States, 108 PEDIATRICS, 85, (July 2001).

2 Philippe Lunetta, Gordon Smith, Antti Penttila, Antti Sajantila, Undetermined Drowning, 43 MED., SCI. & THE LAW, 207 (2003).

3 "Immersion" is defined: The placing of a body under water or other liquid. STEDMAN'S MEDICAL DICTIONARY page 852 (26th ed. 1995).

4 "Hypoxia" is defined: Decrease below normal levels of oxygen in inspired gases, arterial blood, or tissue, short of anoxia. STEDMAN'S MEDICAL DICTIONARY page 841 (26th ed. 1995).

5 DOMINICK DI MAIO & VINCENT DI MAIO, FORENSIC PATHOLOGY 357-58 (1993).

6 Id. at 360-61.

7 LESTER ADELSON, THE PATHOLOGY OF HOMICIDE 569 (1974).

8 DI MAIO & DI MAIO, supra n. 5 at, 360-61

9 "Pathognomic" is defined: Characteristic or indicative of disease; denoting especially one or more typical symptoms, findings, or pattern of abnormalities specific for a given disease and not found in any other condition. STEDMAN'S MEDICAL DICTIONARY page 1312 (26th ed. 1995).

10 DI MAIO & DI MAIO, supra n. 5 at, 359

11 Lunetta, Smith, Penttila, Sajantila, supra n. 2, at 211.

12 "Anoxia" is defined: Absence or almost complete absence of oxygen from inspired gases, arterial blood, or tissues; to be differentiated from hypoxia. STEDMAN'S MEDICAL DICTIONARY page 95 (26th ed. 1995).

13 "Vasoconstriction" is defined: Narrowing of the blood vessels. STEDMAN'S MEDICAL DICTIONARY page 1909 (26th ed. 1995).

14 The "diving reflex" slows the heartbeat and redirects the flow of blood from the hands, feet, and intestine to the heart and brain, helping to preserve these vital organs. The diving reflex is more pronounced in children than in adults; so children have a greater chance of surviving prolonged submersion in cold water than adults. The Merck Manuals Online Medical Library, at http://www.merck.com/mmhe/sec24/ch294/ch294a.html (last full review / revision Feb. 2003).

15 "Bradycardia" is defined: Slowness of the heartbeat, usually defined (by convention) as a rate under 60 beats per minute. STEDMAN'S MEDICAL DICTIONARY page 230 (26th ed. 1995).

16 DI MAIO & DI MAIO, supra n. 5, at 359.

17 Brenner, Trumble, Smith, Kessler, Overpeck, supra n. 1.

18 DI MAIO & DI MAIO, supra n. 5, at 364.

19 Brenner, Trumble, Smith, Kessler, Overpeck, supra n. 1.

20 Karen Griest & Ross Zumwalt, Child Abuse by Drowning, 83 PEDIATRICS. 41-46 (1989).

21 Id.

22 Griest & Zumwalt, supra n. 20.

23 Christopher Wiggins & James Luke, The Pathology, Diagnosis and Medical-Legal Aspects of Death by Drowning, 63 OSMA J. SCIENTIFIC 3 (1970).

24 John Pearn & James Nixon, Freshwater Drowning and Near-Drowning Accidents Involving Children—A Five-Year Total Population Study, 2 MED. J. AUSTL. 942 (1976).

25 James Nixon & John Pearn, Non-accidental Immersion in Bathwater: Another Aspect of Child Abuse, 29 BRITISH MED. J. 271 (1971).

26 Clotilde Rouge-Maillart, Nathalie Jousset, Arnaud Gaudin, Brigitte Bouju, Michel Penneau, Women Who Kill Their Children, 26 AM. J. FORENSIC MED. & PATHOLOGY 320 (2005).

27 Nixon & Pearl, supra n. 25.

28 Edward Gustavson, Carolyn Levitt, Physical Abuse With Severe Hypothermia, 150 PEDIATRICS & ADOLESCENT MED. 111 (1996).

29 DI MAIO & DI MAIO, supra n. 5, at 360.

30 MARY HELFER, RUTH KEMPE, RICHARD KRUGMAN, THE BATTERED CHILD 216 (5th ed. 1997).

31 For example, some states, counties and cities that have implemented programs: The Washington State Drowning Prevention Network has a Drowning Prevention and Water Safety Information Web site at http://www.drowning-prevention.org/; the Inter-Agency Council on Child Abuse and Neglect in the County of Los Angeles implemented a Comprehensive Countywide Drowning Prevention Program in 1995; the Florida Osceola County Health Department has started up a best practice to prevent drowning at http://www.doh.state.fl.us/HPI/BP-PDF/BestPractice_Drowning_Prevention.pdf; the City of Sierra Vista in Arizona has a drowning prevention program that can be accessed at http://www.ci.sierra-vista.az.us/cms1//index.php?option=com_content&task=view&id=827&Itemid=452.

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