

(51.6%), resided in the South (44.0%) and the Midwest (31.9%), and drowned in natural water (37.4%), bathtubs (25.3%), and swimming pools (24.2%). These results differ from the demographic and geographic characteristics in the overall population of children who drown. Among all children who drown, the highest proportions were aged 1-4 years (41.7%), resided in the South (48.9%) and West (22.6%), and drowned in swimming pools (33.2%) and natural water (32.9%).

**Conclusions:** Children 5 to 9 years of age accounted for over half of the drowning deaths with ASD listed as a contributing cause among children and adolescents. Diagnosis of ASD generally occurs after the age of 4 years which may explain a greater percentage of drowning deaths occurring after the age of 4 among children and adolescents with ASD listed as a contributing cause of death. Further research on the demographic and/or behavioral characteristics may elucidate the relationship between drowning risk and ASD. Due to limitations in death certificate data, the number of children and adolescents with ASD who fatally drowned is likely underestimated in this analysis.

#### Objectives:

1. Identify differences in drowning deaths among children with ASD as a contributing cause of death compared to drowning deaths in the overall population.
2. Describe demographic characteristics of children who drowned and had ASD listed as a contributing cause of death.
3. Recognize opportunities for improved data collection, to better understand the risk of drowning among children with ASD.

## Using Syndromic Surveillance for Unintentional and Undetermined Intent Drowning Surveillance in a Large Metropolitan Area



**Rohit P. Shenoi, MD**  
Department of Pediatrics  
Division of Emergency Medicine  
Baylor College of Medicine  
Houston, Texas

**Authors:** Rohit P. Shenoi, MD; Nicholas Peoples, MSc; Jennifer L. Jones, MS; Ned Levine, PhD

**Background:** The CDC adapted a drowning syndromic surveillance definition for use in National Syndromic Surveillance Program (NSSP) data. However, the accuracy of the syndrome in capturing emergency department (ED) and urgent care (UCC) visits [collectively termed Syndromic Surveillance (SS) visits], and its use in drowning surveillance is unknown. We aimed to determine the percentages of true-positive unintentional and undetermined intent drowning (UID) cases for all ages in a large metropolitan area based on all cases captured by this definition. A secondary aim was to describe the burden and injury trends of UID syndromic surveillance visits.

**Methods:** We applied the CDC definition for drowning to data available in NSSP for the 8-county metropolitan Houston area for the years 2018-2022. Data were analyzed after querying the dataset for ICD-10-CM codes for UID cases and manually reviewing the text describing the chief complaint and discharge diagnosis for UID SS visits. To calculate the percentage of true positives, we divided the number of UID cases by the total visits captured by the syndromic definition for drowning. UID

drowning rates per 100,000 SS visits were calculated as the number of SS visits for UID divided by the total number of SS visits and multiplied by 100,000.

**Results:** There were 24,742,818 (ED: 23,870,676; UCC: 872,142) SS visits captured by the NSSP for metropolitan Houston between 2018 to 2022. During the same period, there were 2,759 SS visits for UID (Mean rate: 11.15 UID SS visits/100,000 SS visits). There were 2,019 cases (72.5%) with ICD-10-CM drowning codes; 2,015 (99.8%) were classified as UID. Of the remaining 740 cases with no ICD-10-CM codes, 690 (93.2%) cases had a chief complaint or discharge diagnosis text indicating "drowning" or "submersion" or "underwater" or "inhaled water" or "swallowed water" in relation to contact with a body of water and/or specific misspellings. Among all 2,759 visits classified as drowning based on the syndromic surveillance definition for drowning, there were 2,705 (98.0%) cases classified as Yes (true-positive) UID and 54 (2.0%) classified as "No". UID SS visits were lowest during 2020 (9.6/100,000 SS visits). Males and minority groups constituted 48% and 38% of SS visits for UID respectively. Children aged 0-17 years comprised 79.3% of SS visits for UID. UID SS rates for minority groups (11.75/100,000 SS visits) and non-minority groups (11.81/100,000 SS visits) were similar. UID SS rates for males (13.7/100,000 SS visits) were higher than females (8.5/100,000 SS visits); and higher for non-Hispanics (12.3/100,000 SS visits) compared to Hispanic persons (10.4/100,000 SS visits).

**Conclusions:** Syndromic surveillance data are a novel source for conducting drowning surveillance in a large metropolitan region. The CDC's syndromic surveillance definition for drowning accurately captures nearly all SS visits of drowning victims who present to the ED or UCC. It can be used to evaluate racial and ethnic disparities in non-fatal drowning rates.

#### Objectives:

1. Understand the accuracy of syndromic surveillance in non-fatal drowning surveillance.
2. Learn the utility of syndromic surveillance in monitoring drowning injury burden and trends.
3. Recognize the usefulness of syndromic surveillance in evaluating racial and ethnic disparities in non-fatal drowning rates.

## The Continued Trauma of Unsafe Sleep: A Retrospective Review of Sudden Unexpected Infant Deaths at a Large Tertiary Care Center



**Michelle Pintea, MD, MPH**  
Pediatric Emergency Medicine Fellow  
Division of Pediatric Emergency  
Medicine, St. Louis Children's Hospital  
Washington University in St. Louis  
School of Medicine  
pintea@wustl.edu

**Authors:** Michelle Pintea, MD, MPH; Kathryn Sectorsky, MD; Lindsay D. Clukies, MD, FAAP

**Background:** Deaths from unsafe sleep environments, which include sudden unexpected infant deaths (SUID), accidental suffocation, and strangulation, continue to account for roughly 3,400 child fatalities annually in the United States. While several seminal national educational campaigns, such as Back to Sleep in 1994, decreased the national SUID death rate, Missouri continues to see high rates of sleep-related deaths, with over