



THE OFFICIAL NEWSMAGAZINE OF THE AMERICAN ACADEMY OF PEDIATRICS

# AAP News

## New information, research add to understanding of drowning risks, precautions

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Layers of protection to prevent drowning are essential to guard against this leading cause of injury-related death in children and adolescents. Now, a companion technical report to the 2019 AAP policy statement on drowning highlights new information and research for pediatricians and families on the following topics:

- pediatric populations at risk,
- racial and sociodemographic disparities in drowning rates,
- water competency and the need for constant attention to children,
- life jacket use,
- importance of physical barriers to prevent access to water, and
- the drowning chain of survival and importance of bystander CPR.

The technical report *Prevention of Drowning*, from the AAP Council on Injury, Violence and Poison Prevention, is available at <https://doi.org/10.1542/peds.2021-052227> and will be published in the August issue of *Pediatrics*.

### Demographics

In 2018, nearly 900 U.S. children younger than age 20 years drowned. More than 7,200 were taken to emergency departments.

Age, gender and race/ethnicity are all factors in drowning, with toddlers and male adolescents most at risk. About 75% of childhood drowning victims also are male.

Among 0- to 19-year-olds overall, drowning rates from 2014-'18 were highest among Black and American Indian/Alaska Native individuals. While most White children died in residential pools, Black youths were most



likely to die in a public pool, often at a motel or hotel.

As there are no physiological differences to explain the difference in drowning risk, race/ethnicity "is likely a proxy for social and cultural differences between the groups," the report stated.

## **Bathtubs, buckets and pools**

While most infants drown in bathtubs (62%-71%) and large buckets (16%), a majority of preschoolers drown in swimming pools. Older kids are more likely to drown in natural bodies of water.

A study found that while 56% of drownings of children 0-4 years of age took place in swimming pools, a sizable portion (26%) occurred in fresh bodies of water.

For pools, unexpected and unsupervised access is a recurring drowning scenario for young children. There are about 6,700 hospital emergency visits related to nonfatal injuries in pools or spas each year and 379 pool- or spa-related deaths in individuals under 15 years. Of these, 75% are in children younger than 5 years.

All pools - in-ground and above-ground - should have a barrier and optimally four-sided isolation fencing, according to the Consumer Product Safety Commission. An alternative is to mount a barrier on top of the pool structure.

One danger from inflatable or portable pools is that they may not be covered by local building codes that call for fencing. Their soft sides make it easy for children to fall in.

For younger children, the use of bathtub seats and rings and infant bathtubs are contributing factors, especially when supervision is not constant.

## **Entrapment**

Entrapment and hair entanglement also cause injury and drowning, but many parents and pool/spa owners are not aware of the risk. Precautions involve using special drain covers, safety vacuum release systems, filter pumps with multiple drains and other pressure-venting filter construction techniques.

## **Adult supervision**

Proximity, attention and continuity are the critical components of supervisory behavior needed to help prevent children from drowning. However, "...supervision cannot replace barriers, and barriers cannot eliminate the need for supervision..." the report emphasized.

A survey found that some parents have misperceptions about what drowning looks like. They mistakenly believe they will hear a child splashing or crying if their child is in trouble, yet drowning is silent and often occurs quickly. That is why young children, nonswimmers and beginners require "touch" supervision in a pool.

## **Other risk factors**

Besides toddlers and teens, boaters of all ages can be at risk, especially if they are not wearing a life jacket.

For teens, the presence of peers can promote risk-taking activities. Problems can occur when they overestimate their skills, engage in impulsive behaviors or use substances like alcohol.

The following medical conditions also have been associated with pediatric drownings: epilepsy, autism, attention-deficit/hyperactivity disorder and cardiac arrhythmias.



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## Prevention devices, measures

The report includes information on the following:

- **Pool and door alarms** - helpful as an adjunct to other layers of protection, but more research is needed to evaluate efficacy.
- **Lifeguards** - an important layer of protection, but they don't replace caregiver supervision.
- **Bystander CPR** - Immediate resuscitation is the most effective means to improve outcomes after a submersion incident. A study found CPR using both compression and ventilation was most advantageous.
- **Swim lessons/water competency** - All children should learn to swim but should be developmentally ready for formal lessons. Data do not support a recommendation for infant swim lessons. The report also discusses barriers to lessons and water competency related to cultural norms, economics and access.
- **Life jackets**- An approved life jacket decreases boat-related drowning, but requirements should be standardized.
- **Boating safety**- Good maintenance, safe and sober operators and passengers, and use of Coast Guard-approved life jackets are key.
- **Drowning chain of survival**- A series of steps help reduce mortality: prevent drowning, recognize distress, provide flotation, remove from water, provide care as needed.

## Resources

- [AAP policy statement "Prevention of Drowning"](#)
- [AAP drowning prevention toolkit](#)
- [AAP News article "Some kids have higher drowning risk: Swim lessons add layer of protection for all"](#)
- [Information for parents on pool dangers from HealthyChildren.org](#)