Drowning Prevention

Drowning is a leading cause of injury-related death in children. In 2006, fatal drowning claimed the lives of approximately 1100 US children younger than 20 years. A number of strategies are available to prevent these tragedies.

1. Never – even for a moment – leave small children alone or in the care of another young child while in bathtubs, pools, spas or wading pools, or near irrigation ditches or standing water. Bath seats cannot substitute for adult supervision. Empty water from buckets and other containers immediately after use. To prevent drowning in toilets, young children should not be left alone in the bathroom.
2. Closely supervise children in and around water. With infants, toddlers and weak swimmers, an adult should be within an arm's length. With older children and better swimmers, an adult should be focused on the child and not distracted by other activities.
3. If children are in out-of-home child care, ask about exposure to water and the ratio of adults to children.
4. If you have a pool, install a four-sided fence that is at least 4 feet high to limit access to the pool. The fence should be hard to climb (not chain-link) and have a self-latching, self-closing gate. Families may consider pool alarms and rigid pool covers as additional layers of protection, but neither can take the place of a fence.
5. Children need to learn to swim. AAP supports swimming lessons for most children 4 years and older. Classes may reduce the risk of drowning in younger children as well, but because children develop at different rates, not all children will be ready to swim at the same age.
6. Parents, caregivers and pool owners should learn CPR.
7. Do not use air-filled swimming aids (such as inflatable arm bands) in place of life jackets. They can deflate and are not designed to keep swimmers safe.
8. All children should wear a life jacket when riding in a boat. Small children and non-swimmers should also wear one at water's edge, such as on a river bank or pier.
9. Parents should know the depth of the water and any underwater hazards before allowing children to jump in. The first time you enter the water, jump feet first; don't dive.
10. When choosing an open body of water for children to swim in, select a site with lifeguards. Swimmers should know what to do in case of rip currents (swim parallel to the shore until out of the current, then swim back to the shore).
11. Counsel teenagers about the increased risk of drowning when alcohol is involved.

Background

From 2000 to 2006, drowning was the second leading cause of unintentional injury death among US children between 1 and 19 years of age. In 2006, drowning claimed the lives of approximately 1100 US children. Fortunately, childhood unintentional drowning fatality rates have decreased steadily from 2.68 per 100 000 in 1985 to 1.32 per 100 000 in 2006.

Rates of drowning death vary with age, gender, and race. Age groups at greatest risk are toddlers and male adolescents. After 1 year of age, male children are at greater risk than are female children.

Black and American Indian/Alaska Native children have higher drowning fatality rates than do white and Asian American children. From 2000 to 2006, the highest death rates were seen in white boys 0 to 4 years of age (3.53 per 100 000) and black male adolescents 15 to 19 years of age (4.46 per 100 000). In 2008, approximately 3800 children younger than 20 years visited a hospital emergency department for a nonfatal drowning event, and more than 60% of those children were hospitalized.

Most victims of nonfatal drowning do well, but severe long-term neurologic deficits are seen with extended submersion times, prolonged resuscitation efforts, and lack of early bystander-initiated cardiopulmonary resuscitation (CPR).

The American Academy of Pediatrics (AAP) has decided to revise this policy statement because of new information and research regarding (1) the World Health Organization's classification of drowning, (2) drain-entrapment and hair-entanglement injuries, (3) dangers of inflatable and portable pools, and (4) the possible benefit of swimming lessons for young children.

Drain Entrapment and Hair Entanglement

From 1990 to 2004, 74 cases (13 deaths) of body entrapment in a pool or spa drain were reported to the Consumer Product Safety Commission (CPSC). In a separate report, 24 additional cases (2 deaths) were reported in the 3 years from 2005 to 2007. The situation often involves a child playing with an open drain, inserting a hand or foot into the pipe, and then becoming trapped by increasing suction that causes tissue swelling. In the same time period (1990 –2004), 43 incidents (12 deaths) of hair entanglement were reported. These incidents typically involve females who are underwater with their long hair near a suction outlet. The water flow into the drain sweeps the hair into and around the drain cover, where it becomes tangled in the holes and protrusions of the cover.

Entrapment and entanglement can be prevented by the use of special drain covers, safety vacuum-release systems (SVRSs), filter pumps with multiple drains, and a variety of other pressure-venting filter-construction techniques. In 2007, Congress passed the Virginia Graeme Baker Pool and Spa Safety Act (effective December 2008), which requires special drain covers, unblockable drains, and SVRSs for all public pools and spas in the United States.

Inflatable, Portable Pools

Recently there was an increase in sales of large, inexpensive, inflatable or portable above-ground pools, which come in various sizes, shapes, and water depths. The pools are 18 to 48 inches deep and can hold less than 200 to more than 5000 gallons of water. Some models even require filtration equipment. Prices range from $50 to $750.

From 2004 to 2006, the CPSC reported 47 deaths of children related to inflatable pools. Unfortunately, many parents do not consider fencing for an inflatable or portable pool, and such pools often fall outside of local building codes that require pool barriers. Because they contain such large amounts of water, these pools are often left filled for weeks at a time, which presents a continuous danger. The soft sides of some models allow children to lean over them and easily fall into the pool headfirst.

Swimming Lessons for Young Children

The position of the AAP has been that children are not developmentally ready for swimming lessons until after their fourth birthday. This position was based on (1) lack of data needed to determine if infant and toddler aquatic programs increase or decrease the likelihood of drowning, (2) concerns that such programs would cause parents to develop a false sense of security and lead them to

provide inadequate supervision around water, and (3) evidence that starting swimming lessons at a very young age does not result in earlier development of proficient swimming skills. In addition, there was concern that swimming programs might reduce a child's fear of water and unwittingly encourage the child to enter the water without supervision.

A recently published case-control study report from the Eunice Kennedy Shriver National Institute of Child Health and Human Development concluded that swimming lessons do not increase the risk of drowning in 1- to 4-year-olds and may actually provide a reduction in drowning risk in this age group. Drowning victims were less likely than matched controls (3% vs 26%, respectively) to have had formal swimming instruction. A Chinese study of swim instruction revealed similar drowning-protection statistics.

In light of this new research, it is reasonable for the AAP to relax its policy regarding the age at which children should start learning water-survival skills. The evidence no longer supports an advisory against early aquatic experience and swimming lessons for children of any specific age. However, the current evidence is insufficient to support a recommendation that all 1- to 4-year-old children receive swimming lessons.

It must be stressed that even advanced swimming skills will not always prevent drowning and that swimming lessons must be considered only within the context of multilayered protection with effective pool barriers and constant, capable supervision. In addition, the possible benefit of early swimming instruction must be weighed against the potential risks (eg, hypothermia, hyponatremia, infectious illness, and lung damage from pool chemicals).

In recent years, water-survival skills programs designed for infants younger than 12 months have become popular both in the United States and internationally. Many movies of tiny infants who have been taught to swim underwater, float fully clothed on their backs, and even cry out for help have emerged on the Internet. Although there are anecdotal reports of infants who have "saved themselves," no scientific study has clearly demonstrated the safety and efficacy of training programs for such young infants.