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Aquatic Safety for Individuals With Autism Spectrum Disorders

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Individuals with autism syndrome disorder (ASD) may exhibit a variety of characteristics that put them at increased risk for severe injury or death by drowning in an aquatic setting. Awareness of these characteristics is the first step in providing appropriate safety measures. This article describes these characteristics and details what makes the aquatic environment a particularly enticing and dangerous venue for individuals with ASD. Specific recommendations are made for mitigating dangers as well as providing safe and appropriate situations to enable individuals with autism to enjoy and benefit from safe engagement in aquatics.

Keywords: autism, safety, drowning, adapted aquatics

Individuals with an autism spectrum disorder (ASD) present complex challenges for parents and caregivers as well as for aquatic professionals. Drowning is a leading cause of injury-related death in children (Brenner, 2003). Evidence from studies indicates children with ASDs are at an even higher risk of drowning than those in the general population (Weiss, 2010). A variety of characteristics of individuals with ASD can contribute to this circumstance.

Characteristics of Individuals With an Autism Spectrum Disorder

DSM-V, the defining publication for autistic-like behavior, characterizes an individual with an ASD as having impaired social interaction and communication (now regarded as one comorbid condition) and having restricted behavior (American Psychiatric Association, 2013). This differs from the ASD definition found in *DSM-IV-TR* (American Psychiatric Association, 2000) that listed the three criteria of impairment of social interaction, impairment of social communication, and impairment of social imagination. While definitive wording may change, individuals having ASDs, no matter where they fall along the spectrum, may be at risk in aquatic environments.

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Specific ASD Population Defining Characteristics

Social interaction impairment. Impairment in social interaction means the individual may not have experienced the same life experiences as age peers. Engagement in appropriate developmental activities may be lacking. As a result, the ability to obtain information and integrate that information with past experiences may be impaired to a greater or lesser degree. In terms of aquatics, the child with autism may not have had the same interactions with water—from bath water and/or sink water play to actual lake or pool water swimming. This inexperience can easily extend to a lack of opportunity and/or capacity to acquire appropriate safety conscious behaviors and/or personal self-rescue skills.

Social communication impairment. Impairment in social communication means the individual may not be able to express him or herself, ask questions, and/or respond to expressive communication from others in a manner similar to age peers. Warnings may go unrecognized and/or unheeded. Verbal directions may have no actual meaning. Signage may be unnoticed or unread. In terms of aquatics, developing safe behaviors as well as knowledge of safe practices comes through communication. From being able to recognize danger to learning specific skills, knowledge acquisition requires communication. Lacking adequate age appropriate communication skills, expressive as well as receptive, means the individual may also lack the knowledge and/or capacity to keep him or herself safe.

Social imagination impairment. Impairment in social imagination is the decreased capacity to think about and predict the consequences of actions for oneself and for other people. According to Wing, Gould, and Gillberg (2011), social imagination in typical development does not develop until after 3 years of age. Impairment of this capacity is perhaps the most important and disabling of all the consequences of having an autism spectrum condition of any kind. Wing, Gould, and Gillberg (2011) also believe social imagination should not have been ignored by the designers of the *DSM-IV* or the *DSM-V*. The *DSM* instead introduces repetitive behavior patterns, not the impaired social imagination, as the third and last leg of the diagnostic criteria.

Lacking social imagination means an individual may not understand consequences of inappropriate behavior around water. The individual may not be able to make meaningful "if I do . . . , then . . . may happen" connections. For example, not understanding that if one goes into water over one's head without knowing how to swim, one could drown (and die) represents impaired social imagination.

Specific Autism Characteristics Affecting Safety in Aquatics

Each individual with autism or autistic-like behaviors is unique. Autism has no defining characteristic common to all individuals. Behavior is so varied that a universal defining characteristic is almost impossible to identify. Individuals with autism who are high functioning, for example, can have very high intelligence and yet exhibit problems in social interactions. At the opposite end of the spectrum, an individual with autism can also have very low intelligence, severely impaired communication, along with impairment in social imagination. In between these two extremes is a wide range of possibilities. There are several specific factors related to ASD that can have a further effect on safety in aquatics.

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Studies report higher mortality rates among individuals with autism than among the general population (Pickett, Xiu, Tuchman, Dawson, & Lajonchere, 2011). Mouridsen, Bronnum-Hansen, Rich, & Isager (2008) report the mortality risk among those with ASDs is nearly twice that of the general population. More specific to aquatics, drowning is a leading cause of injury-related death in children (Brenner, 2003). Several studies report children with ASD may be at increased risk of drowning (Sibert, Lyons, Smith, Cornall, Sumner, Craven, & Kemp, 2002; Shavelle, Strauss, & Pickett, 2001). Interpretation of these statistics is further complicated by the previously referred to changes in the clinical definitions of ASD as well as the prevalence of autistic-like behaviors in individuals not otherwise diagnosed. Consideration of the specific contributing factors can help clarify the issues related to safety in aquatics.

Seizures. Epilepsy is more common in people with ASD than in the general population (Danielsson, Gillberg, Billstedt, Gillberg, & Olsson, 2005; Tuchman & Rapin, 2002; Gillberg, 1991), and autism and autistic-like conditions are more common in people with epilepsy than in those without (Steffenburg, Gillberg, & Steffenburg, 1996). The Steffenburg studies did not include individuals with high functioning autism or Asperger syndrome. Therefore their results should not be generalized to apply to all individuals with autism spectrum disorder. Hasibeder (2003) reports additional risk factors associated with drowning and near-drowning accidents are both present in a seizure disorder, and in those with ASD.

The possibility of increased prevalence of seizures in individuals with autism means that the aquatic professional must be diligent in obtaining medical information from any individual with ASD. While lifeguards certified by most national organizations are trained to respond to emergent situations involving individuals having a seizure, behavioral issues associated with the characteristics of ASD may complicate aftercare. More importantly, recognition of symptoms of an impending seizure may help prevent an individual from being in a dangerous position when the seizure onset occurs. Ongoing supervision of an individual who has ASD is key to this recognition and preemptive response since they may not recognize nor communicate these symptoms.

Wandering/elopement. Wandering away from where the individual is supposed to be, also termed elopement, is a major issue for individuals with ASD. According to a study of over 800 parents, roughly 50% of children with ASD between the ages 4–10 wander at some point (Arky, 2011). Anecdotal reports suggest that elopement behavior in children with ASD concomitantly increases risk of injury or death (Anderson, Law, Daniels, Rice, Mandell, Hagopian, & Law, 2012). Their study, with a participant base of over 1,200 children with ASD, reported that over half of these children had eloped at least once after age 4 and of this group, 24% were in danger of drowning as a result of the elopement.

The possibility of increased potential for wandering/elopement means aquatic professionals must be diligent in their supervision and surveillance of individuals with ASD so that wandering/elopement cannot occur. In this case, wandering can result in leaving an immediate aquatic setting in a variety of ways, including, but not limited to the following:

- Leaving a group activity and moving to a different area of the pool, perhaps wandering from shallow water to deep water.

- Leaving the pool and eloping to a locker room (either gender), poolside bathroom, or poolside storage area.
- Leaving the pool, exiting to the outside of the building (where a pool has direct outside access doors), and leaving the property itself.

Wandering can also result in approaching an aquatic setting when it is inappropriate and/or unsafe to do so. For example:

- Wandering from caregivers and entering an aquatic area unattended.
- Approaching/entering an open water area after wandering from caregivers.
- Approaching/entering an unfenced outdoor pool.
- Leaving a classroom and wandering into a locker room and then into an indoor pool.

Wandering/elopement can take place very quickly, as parents of most young children are aware. Arky (2011) reports, from the anecdotal record of a parent, that a parent's child began "escaping" around age 2, with the speed of "greased lightning." As communication skills along with social imagination are often impaired for the individual with ASD, it can be almost impossible to warn such an individual, provide effective precautionary information, and even recall an individual once wandering is initiated.

Water is attractive. It glistens, sparkles, and is engaging to touch. Pleasant experiences in water may reinforce repetitive contact, luring the individual. Perceiving no danger or even unpleasantness, an individual with ASD may not hesitate to engage in dangerous aquatic interactions when wandering.

Behavioral self-modification. Because appropriate social interaction is a challenge for individuals with ASD, the ability to initiate, maintain, and modify appropriate behavior can be very difficult. This means the individual with ASD may not be able to modify his or her behavior, even if the appropriate behavior is known, during times of stress. While wandering can be one typical response to stress, behavioral outbursts and noncompliant behavior also can be other responses. For the aquatic professional, this means providing a quiet place for an individual having behavioral problems to go and calm him or herself. An aquatic setting can be very stimulating and stressful in and of itself. A time-out area may be an important and necessary part of the facility when it is frequently used by individuals with ASD.

Safety Recommendations

An individual with ASD should be able to participate in aquatics and do so safely. There are additional precautions that can and should be taken to establish and maintain that safety.

Precautions Within an Established Aquatic Program

Professionals in aquatics are legally responsible for everyone allowed to participate in their programs. On first glance, it may not be possible to even observe that an individual is autistic. Some individuals may exhibit no outward signs of ASD upon

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program entry. It is important to remember impairment in social behavior is one characteristic. Therefore, it is important to prepare ahead of time for any eventuality.

- Childproof the pool. Equipment left on the deck can become objects to not only handle inappropriately, but to throw or damage. Fire alarms left open and within reach can be easily pulled inappropriately. Cover all alarms to prevent inadvertent or inappropriate access. Outside doors with crash bars can very easily become immediate exits for an individual who is a "runner" or even an individual "wandering." Doors to the outside ought to all be alarmed.
- Inquire regarding conditions that might affect safe participation. On every program application, ask whether an individual has a condition that could affect their safe participation in the particular aquatic program. Asking everyone is both legal and appropriate. It is not legal and/or appropriate to only ask that question of individuals you suspect may be affected, however. Epilepsy is a condition to watch for, which might also be an indicator that the individual, based on statistical frequency of occurrence, also may be autistic.
- Provide explanations of pool procedures and rules to every individual and request that each individual articulate or demonstrate examples. Have them available in several formats—auditory, visual, and printed. Be prepared to use a variety of communication systems, such as directive language, story books, and schedule cards, to facilitate on-going aquatic participation (Grosse, 2014).
- Be prepared to reinforce procedures and rules every time an individual with ASD or autism-like behavior comes to the pool. Treat every time as the first time.
- Provide facility entry guidance for the individual with ASD. Impairment in environmental interaction may mean the individual does not understand the difference between deep water and shallow water or the risks associated with each. He or she may not know how to safely enter the water. Maintain close physical proximity when the individual is on the deck and be prepared to provide immediate intervention should the individual's behavior become unsafe. Make this assistance available at all times. An individual with ASD may not recall or appropriately respond to procedures from one session to the next.
- Provide aquatic experiences designed to assist the individual with ASD to learn water safety knowledge and skills. Starting with learning not to go near water without permission, staying in one's assigned area, and following directions and then proceeding on to whatever level of swim skill is attainable.
- Teach aquatic skills. For an individual who has ASD, aquatic time needs to be more than free time play in the pool. Goal-oriented and structured learning is a particularly important component of aquatics for an individual with ASD because impairment in social behavior and imagination often means the individual will not "pick up" on the behaviors and cues of others nor will they necessarily learn skills by following a good example. Appropriate and safe behaviors, as well as skills, must be learned from scratch.
- Avoid changes in procedures, staffing, and activity implementation. Change is upsetting to an individual who has impairment in social behavior, communication, and social imagination. A change means new behaviors are needed in response. Inability to initiate adaptive behavior can result in confusion,

behavioral outbursts, elopement, and fear which the individual may not be able to resolve through normal communication. Sameness is good, predictable, and comforting.

- Be alert to entrance of individuals with autism who have wandered from some other place and/or activity. Someone who enters the pool dressed inappropriately, is moving very quickly, or who is being followed by someone else who is attempting to stop him or her may indicate a wanderer.
- Prepare a quiet place for an individual with ASD to go, or to be accompanied by a caregiver, to reduce stimuli and regain emotional control in times of stress.

Precautions With Family, Peers, and or Caregivers

When aquatic participation takes place outside of an established program or when generalized land activity is to take place on or near any water environment, it is the responsibility of the accompanying individuals to make sure the individual with ASD remains safe. If the individual with ASD is a competent adult, that individual may be assuming responsibility for him or herself, further complicating the situation. In this case, guidance from peers and other adults can have a positive effect. Professionals can play a large part in educating caregivers in how to establish safety outside of a structured aquatic program. Recommendations might include the following:

- An individual who has ASD should always swim and/or participate in aquatic activities in the presence of a lifeguard as well as another responsible individual.
- If aquatic participation is to occur at a private venue, the family lake home, or neighbor's pool, for example, an individual who is autistic must have direct and ongoing supervision at all times. Impairment in social behavior and in social imagination means that individual may not be able to assess danger and/or respond if a dangerous situation occurs. In water, that danger can come from something as simple as inadvertently swallowing and choking on water and suddenly panicking as a result.
- Install 4-sided fences around all swimming pools and spas to prevent easy access. These should be constructed of material a wandering individual cannot climb and high enough to prevent access by moving furniture or other items to assist in climbing over such a fence (Brenner, 2003).
- If any type of activity is to occur near water, such as at a park, campground, or even a neighborhood backyard that has a pool, an individual who has ASD must have direct and ongong supervision at all times. In this case, the supervisor must make note of and impede any attempt to wander. Wandering can lead to unplanned contact and engagement with water, which in turn can lead to injury or drowning.
- Do not make any assumptions about the probable behavior and/or skill level of an individual with ASD. What is not an attractive nuisance for one individual can be a highly attractive and dangerous situation for another individual. What is unappealing on one day can become a highly engaging element the next. Impairment in social behavior means actual behavior is highly unpredictable. Be prepared for the unexpected.

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Conclusion

Aquatic engagement for individuals with ASDs can be very beneficial, as it can be for anyone else. That very same beneficial engagement carries additional risk due to the possible presence of seizures, tendencies for wandering/elopement, lack of ability to self-modify behaviors, and reduced awareness of risks. Creating a safe aquatic environment, maintaining close supervision, and teaching appropriate safety knowledge and skills can make aquatics a safe and beneficial activity within which individuals with ASD can safely enjoy and benefit from the water.

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