visit to the Emergency Room (ER) can be a challenging experience for any individual. Now, imagine entering the ER as an individual with autism. In addition to the stress commonly associated with ERs, individuals with autism face further challenges. These challenges are largely due to differential sensory processing in individuals with autism versus “typical” individuals (Leekam et al. 2007). Moreover, individuals with autism have unique needs in terms of their reasons for visiting the ER (Kalb et. al. 2012).

As such, it is imperative that special ER’s be designed to suit the characteristics, challenges, and needs of individuals with autism. Due to the variability of factors that come into play for children and adults with autism, this paper will be limited to the discussion of pediatric ER’s.

This aim of this paper is to present the case for the creation of specialized pediatric ER’s for children (ages 0-18) with autism. This literature review will be broken down into the following sections (1) reason and fiscal comparison, (2) sensory stimulation in children with autism, (3) spatial and design features beneficial to children with autism, (4) current developments, (5) future, needed progress and research.

1. Financial and reason for visit comparisons

Due to increased utilization, children with autism have higher total emergency room related costs as compared to children without autism. One possible explanation for this is that children with autism do not receive proper care when they initially visit the ER, thus prompting future visits. It may also be the case that some children with autism require more ER visits due to differential challenges and characteristics as compared to children without autism.

Among a sample of children, aged 2-18, continuously enrolled in the Kaiser Permanente Medical Care Program the number of ER visits for children with autism versus children without autism was, on average, 30% greater. This percentage jumped to 70% among the 15-18 year old age group. These increases in ER visits are tied to a 30% increase in ER related costs for children with autism (Croen et. al. 2006). However, the overall percentage of children who required ER visits was stable among children with and without autism.

In a cross-sectional study, utilizing data from the 2008 National Emergency Department Sample, it was found that children with autism are 11% more likely than children without autism to require ER visits that are psychiatric related (Kalb et. al. 2012). This suggests that children with autism require a different type of medical attention than children without autism.

The above research based evidence and related rationales support the need for the creation of specialized, autism-friendly pediatric ER’s. The development of such ER’s would serve to improve the quality of care for children, offering potential medical cost savings to the population at large.

2. Sensory stimulation among children with autism

Heightened sensory abnormalities have been found to be more prevalent in children with autism, as compared to children without autism. To this end, Leekman, et. al. utilized the Diagnostic Interview for Social and Communication Disorders (DISCO) as a tool among children ages 34-140 months to gauge differences in sensory abnormalities between children with autism and typical children. Over 90% of children with autism presented with sensory abnormalities, as compared to just 65% in the clinical control group. Moreover, of the children in both groups presenting with sensory abnormalities, the ones in the autism group were drastically more likely to present across
multiple domains. Among children with autism, sensory symptoms remained constant with age and IQ in the domains of touch and smell, taste, and auditory. However, sensory symptoms yielded significant differences with age and IQ among the visual domain (Leekam et al., 2007).

To lend itself to contribute to the establishment of pediatric, autism-friendly ER’s the research on autism and sensory abnormalities must be understood in terms of how these abnormalities are presented. In a retrospective review of clinical data caregivers of children with and without autism, ages 3-6 (n=281), were asked to fill out Short Sensory Profiles (SSP’s). Most relevant to this literature review is the finding that children with autism were significantly more under-responsive/sensory seeking than children without autism. This was exhibited in children with autism by their tendency to tune out language, especially in the presence of background noise (Tomcheck & Dunn 2007). This finding may prove to be problematic in ER’s where background noise is particularly manifest. In order to provide effective care patients must be highly attentive to medical care providers. However, the findings of this study suggest that the ER noise environment triggers a response in patients with autism that is counter-productive to the provision of high quality care.

The differential effects of auditory stimuli on children and adolescents with autism (n=11) as compared to those without autism (n=11) were also prevalent in a study based on the results of psychoacoustic testing. These tests confirmed the researchers’ hypothesis that those with autism have an enhanced perception of, and reduced tolerance for, loudness. In effect, this means that sounds deemed moderate by individuals without autism are deemed to be loud by children with autism. The authors related this finding to heightened annoyance levels, resulting in irritation (Khalfa et al. 2004).

The findings produced by Khalfa et al have vast implications for ER design for individuals with autism. The typical, current ER environment tends to be considered loud by typical individuals. It could thus be reasoned that the enhanced loudness effect and resulting irritation felt by children with autism could have a drastic, negative impact on their ER experience and the quality of care they receive. Purposed design and care adjustments for pediatric ER’s may include alternative methods to decrease the volume of sound from machines and overhead speakers, as well as the construction of rooms with sound proof walls such that patients can quickly be placed away from the noise typical of waiting rooms.

According to a questionnaire assessing hyper and hypo sensitivities in children, ages 4-14, with autism (n=30) as compared to a control group of normally developing peers (n=30), children with autism differed from the control group across all domains, including auditory, tactile, visual, gustatory, and vestibular (Talay-Ongan, A. & Wood K., 2000). Most pertinent to this literature review are the authors’ discussion regarding the auditory and tactile domains.

Children with autism displayed both hyper- and hypo-acuity. Hyper-acuity presented as children with autism hearing loud sounds prior to their typically developing peers. Hypo-acuity was evidenced by children with autism through their lack of responsiveness to certain sounds, namely the human voice (Talay-Ongan, A. & Wood K., 2000). This finding of hypo-acuity, also termed as selective hearing, may better lend itself to solutions outside the realm of environmental design. Such suggestions may include the training of health professionals on best practices in treating children with autism. Without proper training medical care providers may mistake the lack of responsiveness by children with autism as being mal-intended, thus producing undue frustration and detracting from the quality of care provided.

In terms of tactile domain sensitivities, children with autism had adverse reactions, such as crying, to seemingly harmless experiences, including getting wet, wearing certain clothing, brushing teeth, and touching sticky materials. Children with autism displayed “tactile defensiveness” and distress upon being touched by individuals unknown to them. This response, however, tended to be at least partially mitigated when the child with autism initiated and controlled the touch. Lastly, children with autism, more so than children in the control group, displayed a dulled reaction to pain sensations (Talay-Ongan, A. & Wood K., 2000).

It is also worthy to note that the authors’ findings regarding the age effects among children with autism countered their hypothesis. The study results revealed that sensitivities among children with autism increased with age. The authors are not sure whether this finding indicates an actual increase in sensitivity with age, or whether children with autism become more able to express sensitivity as they age.

It is important to elaborate upon research findings that highlight auditory sensitivities among individuals with autism. This understanding is bolstered by a literature review that discusses assessment methods, interventions, and cases related to hyperacusis in individuals with autism. Hyperacusis is defined as an increased sensitivity to certain frequencies and volumes of sound. Individuals with autism experiencing hyperacusis tend to engage in compensatory behaviors such as covering their ears, crying, having tantrums, fleeing the area, humming, trembling, hyperventilating, and self-injury (Steigler & Davis 2010). These behaviors may be mistaken by hospital employees and health care providers as acting out or non-compliance by the patient. As a result hospital employees and health care providers can become frustrated and/or may not know how to properly react. This can cause individuals with special needs to receive less than optimal medical care. One potential drawback of this literature review in the scope of this paper is that it includes research on individuals of all ages, such that it is not limited to the pediatric patient population.

3. Spatial and design features beneficial to children with autism
It is important to account for differential sensory processing in children with autism when providing care to them in an ER setting. This can be in part achieved through environmental adaptions. It is suggested that individuals with autism be afforded an ER environment free from excess stimulation; this includes decreased lighting and noise levels. In terms of reducing noise levels it is suggested that phones, pagers, and intercoms be shut off. Additionally, it is recommended that the number of care providers and staff be as minimal as possible. (McGonigle et al 2014) This latter suggestion reduces the unwanted behavioral effects of crowding and encounters with strangers, both of which can be difficult for children with autism.

Negin Irani and colleagues employed a two-part model to help guide best practices for building spaces to suit the needs and propensities of children with autism. First a questionnaire was distributed based on a qualitative study of 19 parents’ observations of their children with ASD. Next an observational field study was conducted, using the same sample population, in clinical and educational settings. Although the focus of this study was building therapeutic centers its findings can still be useful in informing architectural and design features for autism friendly, pediatric ER’s. The findings from the study suggest that using light colors, avoiding colors that heighten stimulation and decrease concentration, and using certain colors or a dark room to enhance children’s concentration and decrease stress can positively impact the behavior and stress levels of children with autism (Irani et al, 2014).

4. Current Developments

The existence of pediatric ER’s that provide specialized, autism-friendly environments continues to be severely lacking. However, in fall 2014 Capital Health Medical Center—Hopewell located in the Hopewell Township in Pennington, New Jersey announced the launch of its autism-friendly program in its Pediatric ER. The staff in the pediatric emergency department in the Hopewell ER underwent training specific to caring for patients with autism. Additionally, pediatric ER nurses are equipped with iPads that allow them to more effectively communicate with patients and obtain the following information:

- Reason(s) for visit
- Pain and discomfort level
- Communication preferences

The Hopewell pediatric ER incorporates a variety of environmental features and adaptions to make it more suitable for children with autism. To account for differences in visual sensory processing the florescent lighting is dimmed and an overhead light is shined in the corner. To provide for soothing touch-stimulation toys, blankets and objects of a variety of textures, including soft, squishy, hard, noisy, and shiny will be on hand behind the nurses’ station; they will be distributed according to patient preferences. Additionally, it was found that children with autism find having their arms being brushed to be a pleasant experience. This prompted the creation of brush kits, which will be available for use and take-home by patients’ family members and caregivers. The autism-friendly additions to the Hopewell pediatric ER can be largely attributed to the Scott Serbin of Emergency Medical Associates. Serbin has past experience in working with hospitals to set up programs similar to Hopewell’s. Hopewell, however, is unique in their use of a parent focus group to guide its development and improvement (Mulvaney 2014).

5. Future, needed progress and research

The initiative taken by Capital Health-Hopewell and other healthcare systems to provide autism-friendly ER’s is mark of progress. However, autism readiness within ER settings is still far from where it needs to be in order for quality care to be accessible to all patients with autism. Autism-friendly ER’s are still few and far between. A nurse at Hopewell recalled a mother who traveled over an hour to take her son with autism to an ER where he could receive specialized care. (Mulvaney 2014).

There is still much need and opportunity for further research on how to make ER’s more autism friendly. One possible avenue of investigation relates to adapting hospital sound systems to be more sensory friendly for patients with autism. This pertains to a range of factors, including overhead sound systems and machine alerts and alarms.

References


