Forward Thinking About Autism and Congenital Heart Disease
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In a recently released issue of *Pediatrics* (10.1542/peds.2018-4114), Dr. Eric Sigmon and colleagues examine the question of whether autism spectrum disorder (ASD) is associated with congenital heart disease (CHD), and if so with what types of CHD. While prior literature suggests that there is an association, the authors explain clearly the limitations of past work on this topic, which include insufficiently powered samples, use of parent-reported diagnoses only, and both a failure to distinguish sub-types of CHD and a focus on single types of CHD only. To address these limitations, the authors used the Military Health System administrative database, which is a large multi-state database that offers longitudinal information regarding diagnosis, billing and care, and performed a secondary analysis of a nested case control study that examined perinatal risk for ASD. Each child with ASD in their study was matched for age, sex, date of birth and enrollment time frame with 3 control children; all had to have at least 2 years of follow up within the system. Types and sub-types of CHD were noted.

The study included a total of 8,760 children with ASD and 26,280 controls, of whom 401 (4.6%) and 662 (2.5%) respectively had CHD. Certainly statistics are important to confirm impressions, but one can likely hold up a thumb to "eyeball the data", and strongly suspect that CHD is more frequent among those with ASD than those in the control group. Indeed this association is statistically significant. The most interesting parts of this study, though, await you in the text and in the accompanying commentary! My assumption before reading this study was that ASD was just one of the many neurodevelopmental conditions afflicting very ill children with severe cyanotic congenital heart disease. My bias was that the trials and tribulations of repeated extended hospitalizations, likely including multiple episodes of anesthesia all experienced by very young children were cause enough for the observed association between CHD and ASD. I was quite wrong, and I also learned that it's not that simple or straightforward at all.

Both the study by Dr. Sigmon and colleagues, and the accompanying commentary by Dr. Johanna Calderon and colleagues (10.1542/peds.2019-2752), give a lot of pause and food for thought on this topic. Accepting that the association between ASD and specific sub-types of CHD (read for details!) has been reasonably established, the real questions remain. As both Dr. Sigmon et al and Dr. Calderon et al suggest, there are multiple possible etiologies for this association and for the apparent increased risk of ASD among CHD survivors. Consider what etiologies you suspect, and then read these articles to see what is suggested. All of us who care for children with any sub-type of CHD should be aware of the associations with ASD as noted in this study and commentary so that by actively screening these children and diagnosing them as early as possible, these children have the best chance of success at home and at school.