

**Title:**

*Implementing Use of American Sign Language (ASL) Signs Into Neurodevelopmental Care to Enhance Outcomes in Pediatric Cardiology* by Maya Hunter

**Background:**

Children with critical congenital heart disease (CHD) are at increased risk for neurodevelopmental (ND) delays secondary to prolonged hospitalization, sedation, and medical complexity. These factors restrict parent-infant interaction and limit speech and social communication, which are crucial for early cognitive, linguistic, and emotional development. Prior developmental studies show that gesture and sign use can accelerate language comprehension in hearing infants and mitigate frustration associated with limited verbal expression. Building on this evidence, the Cardiac Inpatient Neurodevelopmental Care Optimization (CINCO) program at Children's Hospital Colorado sought to test the feasibility of implementing American Sign Language (ASL) signs within inpatient ND care as a low-cost, non-invasive developmental intervention.

This work contributes to growing national interest in early neurodevelopmental support for medically complex children and reflects the Anschutz campus priority of translating developmental and behavioral science into hospital-based clinical practice. It also demonstrates a model for student-driven innovation that bridges pediatrics, rehabilitation, and family-centered care.

**Methods:**

Twelve high-impact ASL signs (e.g., *MORE*, *ALL-DONE*, *PLAY*, *MUSIC*, *SLEEP*) were selected in consultation with developmental therapists and child-life specialists. CINCO volunteers completed a live virtual training and received laminated cue cards for bedside use. After each shift, volunteers logged use of ASL signs, patient responsiveness, and contextual factors via an electronic survey. Descriptive data summarized implementation frequency and qualitative engagement indicators.

**Results:**

Over three months, ASL signs were used in 12% of 94 volunteer-patient interactions. Among those sessions, 92% demonstrated observable patient engagement, such as visual tracking, gesture imitation, or calm attention. The most frequently used signs were *MORE*, *ALL-DONE*, and *PLAY*. Two patients produced reciprocal signs, suggesting early communicative reciprocity. Volunteer feedback described use of ASL signs as intuitive and rewarding, indicating feasibility for continued use.

**Conclusions and Future Work:**

The use of strategic ASL signs proved feasible within a structured volunteer program and was associated with strong patient responsiveness. As a scalable, family-friendly developmental intervention, ASL sign use may enhance early communication as well as linguistic and cognitive development, and support ND goals for children with CHD. Ongoing research will quantify developmental and emotional outcomes, incorporate caregiver feedback, and evaluate integration of ASL signs training into volunteer and staff onboarding across additional inpatient units. Feasibility of extending this model to other children's hospitals is currently being explored, along with opportunities for interprofessional education and long-term developmental follow-up.