

STRONG CHILDREN'S RESEARCH CENTER

Summer 2018 Research Scholar

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ABSTRACT

Title: *Using the M-CHAT-R and ASQ to Assess Development in High-Risk Infants*

Background: This analysis of the UPMC NICU Combined Follow-Up Database characterizes the development of high-risk patients. Infants hospitalized within the NICU due to premature birth or health complications are at a greater risk for developmental delays and disabilities, such as Autism Spectrum Disorder (ASD). Therefore, the Infant-Toddler Development Program (ITDP) follows these infants throughout their early childhood in order to monitor their developmental progress. The ITDP utilizes parent-completed measures such as the Modified Checklist for Autism in Toddlers- Revised (M-CHAT-R) and the Ages & Stages Questionnaires, Third Edition (ASQ) in order to screen for developmental delays in several areas. The M-CHAT-R specifically screens for ASD risk in toddlers, however the ASQ is more general and evaluates a child in five domains: Communication, Gross Motor, Fine Motor, Personal-Social, and Problem-Solving skills.

Objective: This analysis evaluates the impact of a patient's gestational age on their development, as measured by the ASQ and M-CHAT-R. This analysis then assesses the association between patients' M-CHAT-R outcomes and their ASQ Communication, Problem-Solving, and Personal-Social scores. This examines the utility of the M-CHAT-R as a predictor of ASQ scores in these three domains and assesses the consistency between various parent-completed measures of development.

Results: Throughout all five domains of the ASQ, there were significantly more "On Schedule" scores in the 29-32 Weeks group in comparison to the ≤ 28 Weeks group ($p < 0.05$). There were also significantly more "Below Cutoff" scores in the 37+ Weeks group and in the 33-36 Weeks group, in comparison to the 29-32 Weeks group ($p < 0.05$). When examining M-CHAT-R outcomes, there were significantly more "Low Risk" outcomes in the ≤ 28 Weeks group in comparison to the 29-32 Weeks group ($p < 0.05$). There were also significantly more "High Risk" outcomes in the 33-36 Weeks group and the 37+ Weeks group in comparison to the 29-32 Weeks group ($p < 0.05$). Additionally, M-CHAT-R outcomes were found to correlate with ASQ scores in all five ASQ domains ($p < 0.05$).

Conclusion: In both the M-CHAT-R and ASQ analyses, infants with a gestational age of 29-32 weeks had more positive developmental outcomes than infants born at ≤ 28 weeks, suggesting severely premature infants are at greater risk for developmental delays than those born less prematurely. However, in both analyses infants born at 33+ weeks had worse developmental outcomes than those born between 29-32 weeks. This finding does not indicate that birth at 29-32 weeks is superior to birth at 33+ weeks, but instead reflects a shift in ITDP referral patterns for NICU infants with gestational ages at or above 33 weeks. Additionally, the strong correlation between M-CHAT-R and ASQ outcomes indicates consistency between these two measures in terms of evaluating development.