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Autism: Benefits and Outcomes of Early Diagnosis and Intervention
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Abstract
• The purpose of this review was to determine the importance of early diagnosis and intervention during infancy, leading to significant outcomes which include improvements in communication skills, receptive language and social interaction in children with ASD.
• Naas et al. (2016) described ASD as a “heterogeneous group of biologically based, neurodevelopmental disorders charaterized by disabilities in reciprocal social communication and interactions and restricted and repetitive patterns of behavior, interests, and activities.
• Early diagnosis and referral to intervention makes a significant impact on children with ASD showing improvements in many areas of delay including receptive communication, adaptive behavior, social interactions, social approach, joint attention, and IQ.
• The findings indicated that most providers incorporate screening tools in their practice referring to early intervention centers and the children are starting interventions at an earlier age.
• The findings showed that most children are being diagnosed at appropriate ages ranging from 30-120 months.

Introduction
• Taylor et al. (2016) suggested that the key practitioners are ones in family practice settings who are assessing and referring at risk children to be evaluated by a multidisciplinary team.
• Primary care practitioners should follow best practice guidelines and include one standardized objective assessment tool such as the M-CHAT screening tool.
• American Academy of Pediatric recommends screening for ASD during all well-child visits between the ages of 18-48 months for all children.
• Early diagnosis and intervention is not only beneficial to the child’s developmental growth, but also beneficial for the whole family.
• Taylor et al. (2016) said perfectly, “It is well established that early intervention improves outcomes for children with ASD and that children who start intervention at a younger age make more improvements than children who start at an older age.”

Statement of the Problem
• According to the CDC, the prevalence of ASD in 2016 is estimated to be 1 in 64, an increase from 2007 which was 1 in 150. (CDC 2016)
• This increase in prevalence is due to the evolving diagnostic criteria prior to the publication of the Diagnostic and Statistical Manual for Mental Disorders, 5th Edition.
• The major areas that show improvement with early intervention includes; receptive communication, adaptive behavior, social interactions, social approach, joint attention, and IQ.
• Without early intervention the outcome can be quite devastating and as adults he or they may not learn basic life skills to function in society.
• Buescher et al. (2014) stated that the estimated US lifelong cost of treating an individual with autism is around 2.4 million dollars.

Literature Review
Early Identification of Autism in Children
• Daniels et al. (2014) found that the optimal screening age for autism is at 9, 18, and 30 months during well-child visits. Screening is improved by using repeated missed opportunities to receive early diagnosis and intervention to improve developmental delays.
• Daniels et al. (2016) found during their peer review literature search that the mean age of formal diagnosis for ASD is 4 months old.
• Zwaigenbaum et al. (2013) looked at both retrospective and prospective studies focusing on social communication, language, repetitive interaction behaviours, and social competence, and cognitive development. Among the research, they found two patterns: early onset in which symptoms started at early childhood and regression onset. Home screening delays in body movements including head lag as early as 6 months and abnormal postural asymmetry in infants in a lying position as early as 3 months in the early onset group. Therefore, the finding suggests that following a period of typical development and then loss of skills in one or more areas were reported in 20-47% among the ages 19-21 months.
• Lemcke et al. (2013) found that if at 6 months the child had little or no interest in grabbing at things or throwing toys to the floor, this increased the likelihood of developing ASD. The high percentage of ASD at 18 months was found that children did not try to make marks with color pencils, cannot drink from a cup without help, and cannot climb stairs without support. Developmental delays visible as early as 6 months and even more signs exuded at 18 months, supporting the AAP recommendation to screen for ASD starting at 18 months.
• Daniels et al. (2015) stated that the majority of providers that included screening tools into their practice had >80% referral rates. Additionally, not all screening had been done during well-child visits. When they looked at all the data in their diagnostic screening tool, they found that there was a lack of provider awareness about screening tools.
• Montero et al., (2016) found that 89% of children were receiving some form of early intervention and/or private therapies before the official diagnosis and 66% were more likely to receive a diagnosis of ASD. Those who were already receiving services by the time of evaluation were more likely to receive an ASD diagnosis (78%) than those who were not (44%; p<0.001). This is reassuring as there is usually a long wait time for autism diagnosis clinics.

ASD red flags by age 2
• Repetitive movements with objects
• Children that were receiving therapy through the ESDM and the COM module maintained all their gains without regression in areas including intellectual ability, adaptive behavior, autistic symptoms, and challenging behaviors at the two year follow up. PCIT is effective in reducing behavior problems and improving compliance task and did not show any regression in skills at the follow-up time.
• PCIT is effective in reducing behavior and improving compliance task and did not show any regression in skills at the follow-up time. Early intervention programs have shown to improve the child’s IQ as much as 21% when using ABA therapy.

Long-term outcomes after early interventions have been applied.
• Estes et al. (2015) found that children using the Early Start Denver Model (ESDM) and Community Bases Treatment (COM) gained the many in gains in IQ, social skills, autistic symptoms, and challenging behaviors two years later and did not develop regression or loss of skills. A total of the children in the ESDM groups no longer met the criteria (OP) for ASD by the two year follow up. Both groups showed increased standardized intellectual ability scores at age 6, with the COM group showing more significant gains even higher in the ESDM group (mean IQ 81.76 to 91.29 p<0.001).
• Masse et al. (2016) found that PCTC showed a reduction in behavior problems by still following the essential intervention in all three participants when compared to CDE. One of the participants mean score at baseline was 25.67 and when applying CDI improved to 36, however when applying PDT had a marked improvement outcome of 62.29, and VABS improved by 97.66 (47.93) at intake and at year 1 the mean was 63.34 SD 17.54 (90.89-90.01 p<0.001). Both the MELS and VABS showed little significance from year 1 to year 2, on the bright side both showed little no regression in the MELS mean score at year 1 was 93 SD 18.01 (40.12±0.p<0.001) and VABS mean score 59.90 SD 14.65 (30-120±0.02 at year two).
• Landa et al. (2012) concluded more pronounced results between the start of the ASD diagnosis and follow up figures available as of May 2014 when the 6 month follow up showed a significant improvement of a mean 60% to 68% (95% CI 4.2 12.8) although there was no significant improvement after 24 months with a mean IQ of 60% (95% CI 0.67 13.6). The overall mean improvement throughout the study in regards IQ was 24% (95% CI 14.7 to 25 0.01 p<0.001).

Discussion
• The current recommendations for screening set forth by the American Academy of Pediatrics and recognized as the gold standard for ASD is between 18-24 months during well-child visits.
• Symptoms or red flags will vary from child to child and may develop or change within the first 3 years of life.
• Not one study demonstrated the same signs and symptoms for a particular age showing that each child will manifest symptoms at different times. This further stresses the need for early detection during routine screening of these symptoms to give greater hope and therefore better outcomes when early intervention is started prior to a definitive diagnosis of autism.
• Providers who incorporate some type of screening tool into their practice have shown to have >80% referral rate to early intervention.

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