



AEIOU Assessment Proposal

Submission to the National Disability Insurance Agency

This submission proposes National Disability Insurance Scheme (NDIS) funding of good practice (Prior & Roberts, 2012) early intervention for children with autism spectrum disorders through support item "Specialised group early childhood interventions" with hours delivered and funded under full-time (20 hours per week) and part-time (10 hours per week) models based on child need. This submission outlines how child need will be defined.

The submission identifies ascertainment and follow-up assessments to be delivered by AEIOU (pre-program and 12-monthly assessment): Autism Diagnostic Observation Schedule (ADOS), Vineland Adaptive Behavioral Score (VABS), Mullen Scales of Early Learning Standard Score (MSEL), Preschool Language Scale (PLS), and the Developmental Behavior Checklist (DBC-P). Requirement for full-time placement includes ADOS severity score in the clinical range, and below average score on one or more of the VABS, MSEL, or PLS. Requirement for part-time placement includes ADOS in the clinical range, but may be average range on VABS, MSEL and PLS, but with behaviours or social impairments presenting significant barriers to mainstream participation. Children with all measures in the non-clinical range would be ineligible for this funding stream.

Dr Jessica Paynter, Research and Psychology Manager, AEIOU Foundation
27/03/2014

Contents

Rationale for Assessment	3
Rationale for Areas to Assess	3
Multidisciplinary Assessment	3
Proposed Assessments	4
Parent or Caregiver Completed Questionnaires	4
1. Adaptive behaviour: Vineland Adaptive Behaviour Scales.....	4
2. Challenging behaviour: Developmental Behaviour Checklist – Primary Carer Version	4
Child Assessment.....	4
1. Verification of diagnosis: Autism Diagnostic Observation Scale-Generic	4
2. Language and communication: Preschool Language Scale	4
3. Cognitive/Developmental: Mullen Scales of Early Learning.....	4
Threshold for Service and Eligibility	5
Full-time Program.....	5
Part-time Program	5
Ineligible	5
Monitoring of Progress.....	5
Transition/Program Completion	6
References	7

Rationale for Assessment

1. Need to evaluate child fit to program, intensity and outcomes
2. Good practice guidelines (Prior & Roberts, 2012) recommend that comprehensive assessment should be completed prior to any intervention program
3. Important to collect data to demonstrate we are meeting our program goals and features
4. Specific measures chosen based on best practice, previous intervention evaluations, minimising burden on children and families, and match to our program goals/features

Rationale for Areas to Assess

Multidisciplinary Assessment

Multidisciplinary assessment is a key area of good practice in early intervention in autism spectrum disorders (Prior & Roberts, 2012) and would include interviews with parents and caregivers, questionnaire assessment with parents, and standardised assessment of children. Assessment will cover verification of diagnosis and ASD features and core program features (see below), and would be completed before (pre-test), during (12 months), and at the end of the program (at transition). The assessment process would include Speech Pathology, Psychology and Occupational Therapy assessments as described overleaf.

Summary of Program Features

1. Social interaction and play skills
2. Cognitive development
3. Self-help tasks of everyday life
4. Communication
5. Fine and gross motor skills
6. Reduction of challenging behaviours

Proposed Assessments Areas and Links to Program Features

Assessment	Program Feature
<i>Parent Interview</i>	
Structured intake interview	All areas
<i>Parent Questionnaires</i>	
1. Adaptive behaviour	1. Social interaction and play skills 3. Self-help tasks of everyday life 4. Communication 5. Fine and gross motor skills
2. Challenging Behaviour	6. Reduction of challenging behaviours
<i>Child Assessment (2 hours)</i>	
1. Verification of diagnosis	1. Social interaction and play skills 4. Communication
2. Language and communication assessment	4. Communication
3. Cognitive/Developmental Assessment	2. Cognitive development 4. Communication 6. Fine and gross motor skills

Proposed Assessments

Parent or Caregiver Completed Questionnaires

Parents would be asked to complete a set of questionnaires following their initial referral that would function as a screen for eligibility. These questionnaires would include the Vineland Adaptive Behaviour Scales (VABS) and the Developmental Behaviour Checklist.

1. Adaptive behaviour: Vineland Adaptive Behaviour Scales. (VABS: Sparrow, Dominic, Cicchetti, & Balla, 2005). This measure assesses communication, social interaction, daily living skills, and motor skills. It has been shown to have strong psychometric properties in terms of validity and reliability with a wide range of populations, including children with ASD (Sparrow, et al., 2005). Its survey form can be completed by parents at home, and has been widely used in early intervention settings and schools. Its wide age range (2-18 years) means it is a useful assessment to measure changes over time and it yields valuable information to inform schooling options. It is also commonly used to assess for intellectual impairments (in conjunction with a cognitive assessment) and will thus support a child's transition to a special school if required.

2. Challenging behaviour: Developmental Behaviour Checklist – Primary Carer Version (DBC-P: Einfeld & Tonge, 2002). The DBC-P is a parent questionnaire which assesses the presence of behaviour problems and emotional disturbances in children with an intellectual or developmental disability in five areas (disruptive/anti-social behaviour, self-absorbed, communication disturbance, anxiety and social relating). It also yields a total behaviour problem score. This measure has good psychometric properties, was developed in Australia and is sensitive to the behaviours common in children with ASD. This measure will be helpful in highlighting additional behavioural needs of children, common in children with ASD, which may form barriers to their participation in mainstream settings. In addition, repeated administration of the DBC-P will provide an effective means of following changes in children's behaviour over time.

Child Assessment

1. Verification of diagnosis: Autism Diagnostic Observation Scale-Generic (Lord, Rutter, DiLavore, & Risi, 2001). The Autism Diagnostic Observation Schedule - Generic (ADOS), is a semi-structured standardised observation (examiner and child) that measures autism symptoms in social relatedness, communication, play, and repetitive behaviours. It takes approximately 30 to 45 minutes to administer with children. It is widely accepted to be the "gold standard" for diagnosis of ASD. It also provides a direct observational measure of children's social and communicative behaviour which can then be compared over time to assess improvements in ASD-specific symptoms. A revised scoring algorithm that generates a severity score from 1 to 10 with scores greater than 3 indicating the presence of an ASD (Gotham, Pickles, & Lord, 2009) will be used to monitor progress and to inform eligibility.

2. Language and communication: Preschool Language Scale (Zimmerman, Steiner, & Pond, 2003). The Preschool Language Scale, Fourth Edition (PLS) is a diagnostic instrument designed to measure the language development of young children. The PLS can be used to assess children from 2 weeks up to age 6:11 as such it will capture the full spectrum of abilities children are likely to present with to AEIOU. It has been widely used in early intervention studies with children with ASDs as a measure of treatment outcome (e.g. Dawson et al., 2010; Green et al., 2010). It would usefully inform speech and language goals during the program, and would also provide a key indicator of improvement over time.

3. Cognitive/Developmental: Mullen Scales of Early Learning (Mullen, 1995). The Mullen Scales of Early Learning (MSEL) is a standardised assessment of language, motor and perceptual abilities of children

aged from birth to 68 months. T-scores, percentile ranks, and age equivalent scores can be calculated for scales in gross motor, visual perception, fine motor, expressive and receptive language together with an early learning composite. The Mullen has proved a useful instrument for assessing a range of skills in children with ASD in previous research (Akshoomoff, 2006).

Threshold for Service and Eligibility

Full-time Program

Previous research has used the above measures as measures of outcome in early intervention and these have been found to be robust, sensitive to change over time, and have good psychometric properties (e.g., Green, et al., 2010; Paynter, Scott, Beamish, Duhig, & Heussler, 2012; Vivanti, Barbaro, Hudry, Dissanayake, & Prior, 2013; Vivanti, Dissanayake, Zierhut, & Rogers, 2013). In particular the Vineland Adaptive Behaviour Scale (VABS: adaptive behaviour), Preschool Language Scale (PLS: language development), and the Mullen Scales of Early Learning (MSEL: cognition) have been key outcome measures showing these skills are amenable to change in intensive early intervention programs of 20 hours or more per week following programs similar to our own (Paynter et al., 2012 is an evaluation of our own program). Thus, we propose that eligibility criteria for the intensive full-time program should include below average scores on one or more of these measures combined with an ASD diagnosis that has been verified using the Autism Diagnostic Observation Scale (ADOS; i.e. in clinical range on these measures using accepted scoring criteria). See Table 1 overleaf for an overview of score cut-offs.

Part-time Program

For the part-time program (10 hours per week) we would propose that children attain scores in the average range on the PLS, VABS or MSEL, but have a verified ASD diagnosis as above, and identified needs in other areas of functioning such as social skills (e.g., as measured on the ADOS) or challenging behaviour (e.g., as measured on a standardised measure such as the Developmental Behaviour Checklist) which present significant barriers to participation in mainstream less-intensive settings. Our recent evaluation (currently in preparation for publication) found that social skills and behaviour also improve in our program. Children's individual programs and goals would be based on these identified needs.

Ineligible

Where measures failed to identify clinically-significant needs, children would be deemed ineligible for a full-time or part-time program. No clinically-significant needs would be defined as scoring within the average (MSEL, VABS, PLS) or non-clinical range (ADOS) across all measures. Similarly, if at follow-up assessment a child no longer showed significant needs this would signal program completion.

Monitoring of Progress

Each child will have an individual plan (IP) developed following their initial assessment which will be monitored regularly with a review when a child has met their goals, after 6 months, or on parent-request (whichever occurs first). Daily monitoring in learning centres will also occur to monitor each child's progress on individual goals (e.g., toilet training, writing, etc). In addition, children will complete yearly assessments to look at overall progress.

Table 1 Clinical Cut-Offs (Grey Shading) for VABS, PLS, MSEL, and ADOS

Score Range	Low	Moderately Low	Adequate	Moderately High	High
Standard Deviation (SD)	-3 SD	- 2 SD	±1 SD	+2 SD	+3 SD
Clinical cut-off	Below Average (Clinical Range)		Average	Above Average	
VABS SS	≤ 50 <70	70 <85	85 115	> 115	≥ 130
PLS SS	≤ 50 <70	70 < 85	85 115	>115	≥ 130
MSEL SS	≤ 20 <30	30 ≤40	40 60	> 60	≥70
ADOS SS	10 <6	6 > 3	3 1		

*VABS SS = Vineland Adaptive Behaviour Scales – II Standard Score; MSEL= Mullen Scales of Early Learning Standard Score (T Score); PLS SS= Preschool Language Scale 5 Standard Score, ADOS Calibrated Severity Score (Gotham, 2009): note higher scores indicate more ASD symptoms

Transition/Program Completion

Child assessments including monitoring will be used to ascertain a child’s progress towards their goals set at intake. If children have made substantial progress, as suggested by daily monitoring of IP goals, at their 6-month IP meeting, the assessment set may be completed at this point to ascertain whether a child should reduce to part-time or transition. For all children, the same standardised assessments will be used at 12-months to determine if a child continues to require the same level of support (e.g., 20 hours) or whether they have made sufficient progress to be able to reduce their level of support, for example beginning transition to school or mainstream settings. This would be based on the same criteria as for entry above, leading to one of three outcomes:

1. If a child enters the average or non-clinical range across measures then transition would occur.
2. If a child continues to show needs in one or more areas, but substantially improves in cognition, language or adaptive behaviour then a reduction in program intensity would be recommended.
3. If a child continues to show substantial needs across one or more core areas then continuation of the intensive program (where child age permits) would be recommended.

References

- Akshoomoff, N. (2006). Use of the Mullen Scales of Early Learning for the Assessment of Young Children with Autism Spectrum Disorders. *Child Neuropsychology*, 12(4), 269 - 277.
- Dawson, G., Rogers, S., Munson, J., Smith, M., Winter, J., Greenson, J., et al. (2010). Randomized, Controlled Trial of an Intervention for Toddlers With Autism: The Early Start Denver Model. *Pediatrics*, 125(1), e17-23. doi: 10.1542/peds.2009-0958
- Einfeld, S. L., & Tonge, B. J. (2002). *Manual for the Developmental Behaviour Checklist: Primary Carer Version (DBC-P) & Teacher Version (DBC-T) (2nd. ed.)*. Clayton, Melbourne: Monash University Centre for Developmental Psychiatry and Psychology.
- Gotham, K., Pickles, A., & Lord, C. (2009). Standardizing ADOS scores for a measure of severity in autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 39(5), 693-705. doi: 10.1007/s10803-008-0674-3 [doi]
- Green, J., Charman, T., McConachie, H., Aldred, C., Slonims, V., Howlin, P., et al. (2010). Parent-mediated communication-focused treatment in children with autism (PACT): a randomised controlled trial. *The Lancet*, 375(9732), 2152-2160. doi: Doi: 10.1016/s0140-6736(10)60587-9
- Lord, C., Rutter, M., DiLavore, P., & Risi, S. (2001). *Autism diagnostic observation schedule*. Los Angeles, CA: Western Psychological Services.
- Mullen, E. M. (1995). *Mullen Scales of Early Learning (AGS ed.)*. Circle Pines, MN: American Guidance Service Inc.
- Paynter, J., Scott, J., Beamish, W., Duhig, M., & Heussler, H. (2012). A pilot study of the effects of an Australian centre-based early intervention program for children with autism. *The Open Pediatric Medicine Journal*, 6, 7-14.
- Prior, M., & Roberts, J. (2012). Early Intervention for Children with Autism Spectrum Disorders: 'Guidelines for Good Practice'. Retrieved from http://www.fahcsia.gov.au/sites/default/files/documents/11_2012/early_intervention_practice_guidelines.pdf
- Sparrow, S., Dominic, V., Cicchetti, D. A., & Balla, D. A. (2005). *Vineland Adaptive Behavior Scales (2nd ed.)*. Circle Pines, MN: American Guidance Service.
- Vivanti, G., Barbaro, J., Hudry, K., Dissanayake, C., & Prior, M. (2013). Intellectual Development in Autism Spectrum Disorders: New Insights from Longitudinal Studies. [Original Research]. *Frontiers in Human Neuroscience*, 7. doi: 10.3389/fnhum.2013.00354
- Vivanti, G., Dissanayake, C., Zierhut, C., & Rogers, S. J. (2013). Brief report: Predictors of outcomes in the early start Denver model delivered in a group setting. *J Autism Dev Disord*, 43(7), 1717-1724. doi: 10.1007/s10803-012-1705-7 [doi]
- Zimmerman, I. L., Steiner, V. G., & Pond, R. E. (2003). *Preschool Language Scale (4th ed.)*. San Antonio, TX: PsychCorp.