Evidence Based Speech Pathology Practice for Individuals with Autism Spectrum Disorder

Author

Trembath, David, Kendall, Christine, O'Mahony, Fiona, Pye, Katherine, Rose, Veronica, Staios, Gloria, Sutherland, Rebecca, Westerveld, Marleen, Whitehouse, Andrew, Winchester, Ellen

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Acknowledgements

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Summary

- It is the position of Speech Pathology Australia that (a) assessment and diagnosis of Autism Spectrum Disorder (ASD) as a member of a multidisciplinary diagnostic team, (b) intervention for individuals with ASD and their families, and (c) providing consultation to others on these matters is within speech pathologists' scope of practice.

- The Association affirms that speech pathologists are the only professionals with the skills and knowledge required to comprehensively address the core communication speech, language, and social-pragmatic impairments associated with ASD.

- The Association recognises that it is essential that speech pathologists work collaboratively with clients and other professionals in the provision of assessment, diagnosis, and intervention services to individuals with ASD and their families.

- The Association affirms the right and need for individuals with ASD and their families to be respected and valued as partners in their receipt of speech pathology services.

- The Association strongly supports the use of evidence-based practice in the provision of speech pathology services to individuals with ASD and their families.

- It is the position of the Association that speech pathologists working with individuals with ASD must engage in continuing professional development and maintain appropriate professional supervision and support.

1. Origins of the paper

This clinical guideline has been developed to guide and support speech pathologists in their delivery of evidence-based assessment and intervention to individuals with Autism Spectrum Disorder (ASD) and their families. The specific aims of the guideline are to define (a) the speech pathologists' scope of practice in working with clients with ASD and their families, (b) the principles of best practice based on the current research evidence, and (c) the knowledge and skills that speech pathologists require to screen, assess, diagnose, provide intervention to, and consult with clients with ASD and their families.

Speech Pathology Australia recognises that social-communication impairments are fundamental to ASD and that speech pathologists play an essential role in assessing and addressing these needs. The Association acknowledges the complex nature of ASD and recognises that speech pathologists require continuing professional development and appropriate supervision and support to work effectively in this area of practice. In addition, the Association acknowledges the crucial role that speech pathologists play in supporting individuals with ASD and their families, and recognises that the increased demand for speech pathology services is likely to continue to grow, due to greater recognition of ASD, growing public awareness of the importance of early speech pathology intervention, and the partial removal of financial barriers to individuals with ASD and their families accessing services following recent Government initiatives.

This clinical guideline was originally published as a position paper in 2009. It has been revised on the basis of the current best available evidence.

2. Definitions

Autism Spectrum Disorder
Autism Spectrum Disorder (ASD) refers to a group of neurodevelopmental disorders characterised by social-communication impairment and restricted, repetitive and/or sensory behaviours. The diagnostic criteria for ASD most commonly used in Australia (American Psychiatric Association, 2013) are presented in Appendix 1.

Augmentative and Alternative Communication
Augmentative and alternative communication (AAC) is an area of clinical practice that attempts to compensate, either temporarily or permanently, for the impairment and disability patterns of individuals with severe receptive and expressive communication disorders. Augmentative and alternative communication incorporates the individual's full communication abilities and may include any existing speech or vocalisations, gestures, manual signs, and aided communication (Beukelman & Mirenda, 2005)

Evidence Based Practice
Evidence based practice in this guideline is defined as the "conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients" (Sackett, Rosenberg, Gray, Haynes & Richardson, 1996; p. 7). Implicit in the notion of evidence-based practice is the integration of the clinician's clinical expertise with the preferences of each individual client and the best available evidence from systematic research (Sacket, et al., 1996).

Intervention
In this guideline, the term 'intervention' is used to refer to services provided by speech pathologists in an attempt to achieve mutually agreeable goals. A non-exhaustive list of intervention examples includes (a) attempting to teach an individual one or more new skills; (b) working with an individual with ASD and/or others to arrange the environment to facilitate participation; and (c) providing information, resources, and counselling to individuals with ASD, significant others, and members of the professional and wider community.

3. Autism Spectrum Disorder (ASD)

Autism Spectrum Disorder refers to a group of pervasive neurodevelopmental disorders with onset in the early developmental period and characterised by qualitative impairments in social-communication development combined with restricted, repetitive, and/or sensory behaviours (American Psychiatric Association, 2013). ASD is a heritable disorder in many cases, but with substantial genetic heterogeneity (Yu et al., 2013). There is currently no cure for ASD, but evidence-based interventions aimed at addressing the core symptoms of ASD and increasing adaptive behaviour (including social-communication skills) are available.

Autism Spectrum Disorder is characterised as a mental health disorder under the Diagnostic and Statistical Manual (DSM) 5th Edition of the American Psychiatric Association (2013). Earlier DSM editions classified ASD in different ways, including the 4th edition that defined ASD as a spectrum disorder, encompassing *Autistic disorder*, *Asperger's disorder*, *Retts disorder*, *Childhood Integrative Disorder*, and *Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS)*. Under DSM-5, individuals must present with difficulties in (a) persistent "deficits in social communication and social interaction" and (b) "restricted, repetitive patterns of behavior, interests, or activities" which can now include hyper- or hypo-sensitive response to sensory stimulation (APA, 2013). The term 'spectrum' is used in both the previous and current diagnostic criteria to account for the fact that each individual with ASD presents with a unique profile of strengths and difficulties, including the presence or absence of comorbid conditions including intellectual disability. It is estimated that approximately 70% - 80% of individuals classified as having 'Autistic disorder' under DSM-IV have an intellectual disability (Fombonne, 2003; Kabot, Masi & Segal, 2003).

4. Incidence and Prevalence

The incidence of a disorder refers to how many *new* cases are identified in a specific population over a specific time, while prevalence refers to the *total* number of cases in a specified age range and geographical area (Roberts & Prior, 2006). Estimates of the prevalence of ASD have varied widely due to factors including (a) differences in diagnostic practices, (b) the use of different sampling populations and methodologies in different studies, and (c) the diagnostic criteria according to which diagnoses were made (Wing & Potter, 2002). MacDermott, Williams, Ridley, Glasson and Wray (2006), following a review of the literature relating to Australian children, reported that approximately 62.5 per 10,000 children aged 6-12 years (approximately 1 in 160 children in this age range) had a diagnosis of ASD. The 2012 Australian Bureau of Statistics' Survey of Disability, Ageing and Carers revealed that 115,400 Australians (0.5%) had a diagnosis of ASD, representing a 79% increase on the previous estimate of 64,600 people in 2009 (Australian Bureau of Statistics, 2012). In the United States, the most recent report from the Center for Disease Control and Prevention (2014) cited a prevalence rate of 1 in 68 children across 11 sites evaluated. Across studies, ASD has consistently been diagnosed more commonly in males than in females in a ratio of approximately 4:1 (Australian Bureau of Statistics, 2012). There is debate in the literature as to whether the lower rate of diagnosis in females reflects a true lower prevalence of the disorder or is due to diagnostic processes being less sensitive to detecting ASD in females (Dworzynski, Ronald, Bolton, & Happé, 2012).

5. Scope of Practice

It is the position of Speech Pathology Australia that assessment, diagnosis, and intervention for individuals with ASD, as well as consultancy on these matters, is within speech pathologists' scope of practice. Speech pathologists at entry level have the competency required to provide these services. However, the Association acknowledges that this is a complex area of practice. Accordingly, the Association strongly recommends that speech pathologists working with individuals with ASD and their families should engage in a combination of additional training and professional mentoring in order to manage complex cases. It is the position of the Association that all speech pathologists engage in continuing professional development, including those working with individuals with ASD.

Detailed information regarding speech pathologists' scope of practice in working with individuals with ASD and their families is outlined below. The outline also includes a summary of the knowledge and skills required in order to provide comprehensive communication assessment and intervention to individuals with ASD and their families. The lists of skills and knowledge provided below have been compiled with reference to the American Speech-Language and Hearing Association (ASHA, 2006) *"Guidelines for Speech-Language Pathologists in Diagnosis, Assessment, and Intervention of Autism Spectrum Disorders Across the Life Span."* The list below complements and extends upon the Speech Pathology Australia Competency Based Occupational Standards for Speech Pathologists (CBOS; Speech Pathology Australia, 2011) which form the basis of accreditation and qualification requirements for speech pathologists in Australia.

6. Screening

6.1   Statement of role of speech pathologist

Speech pathologists have the expertise required to screen individuals for ASD. Early signs of ASD include delays or differences in the development of fundamental communication and social skills such as joint attention, coordinated eye gaze, and the use of gestures (Mitchell et al., 2006). Speech pathologists are often among the first professionals consulted when parents are concerned about their children's development and the most utilised service among young children with a diagnosis of ASD (Roberts et al., 2007; Thomas, Morrissey, & McLaurin, 2007). Given the high prevalence of ASD (MacDermott et al., 2006), the ease of administering screening tools, and the benefits of early identification (Robins, 2008), it is appropriate that speech pathologists are involved in the screening of children who show signs of ASD.

There is strong agreement in the research literature regarding the potential benefits of identifying ASD in children at the earliest age possible (ASHA, 2006a; Wetherby, Brosnan-Maddox, Peace, & Newton, 2008). Early detection and diagnosis in Australia allows children with ASD to access interventions and family supports at an early age, maximising outcomes for the child and family (Roberts & Prior, 2006; Wetherby et al., 2008). Speech pathologists have an important role in screening for ASD to ensure that children who meet criteria receive an early accurate diagnosis, thus helping to ensure that appropriate services and support can be provided to children and their families.

Screening may take one of two forms: level 1 (population level) in which all children are screened for a disorder regardless of risk factors, or level 2 screening in which children identified as having some risk factors for a disorder are screened using a tool specific to the disorder (Robins, 2008). At this point in time, there are no policies or programs in Australian regarding national screening for ASD at a population level (MacDermott et al., 2006). However, efforts are underway to assess the feasibility, sensitivity, and specificity of training health professionals in the community to implement screening programs (e.g., Barbaro & Dissanayake, 2010). Speech pathologists may contribute to such efforts, and remain ideally placed to contribute to screening for ASD among children with signs of developmental delay or disorder (level 2 screening).

Appendix 2 provides a list of the early signs or 'red flags' of ASD (Wetherby et al., 2004). Young children with ASD are likely to show some of these signs in the first 18 months, but no single indicator means a child necessarily has or will go on to meet criteria for a diagnosis of ASD. In addition, some of the signs are also seen in children with other types of development disability and medical conditions (Wetherby et al., 2004). Speech pathologists should have an understanding of these early signs and use this information, in addition to the possible use of a screening tool, to inform their decisions regarding the need for further assessment. In cases where young children (e.g., below 24 months) are identified to be at risk for ASD, but assessment and diagnosis utilising formal diagnostic criteria (see section on assessment below) is not possible due to the child's age, then ongoing surveillance (in addition to any intervention provided) and formal assessment at the earliest possible appropriate time is recommended.

6.2   Examples of screening tools

The following is a list of screening tools identified by the Clinical Guideline Working Group as being commonly used in Australia. This list is not intended to act as a list of recommendations. It is important to note that screening tools do not provide sufficient information to form a diagnosis of ASD. Instead, screening tools are designed to identify individuals who are displaying behavioural characteristics of ASD and for whom referral for further assessment is indicated.

Developmental Surveillance

- Ages and Stages Questionnaires (ASQ; 2015) are a set of norm-referenced parent-completed screening assessments designed for use with children aged 1-66 months. The questionnaires

take approximately 15 minutes to complete and several minutes to score, and assess children's social, communication, motor, and problem solving skills.

- Parents' Evaluation of Developmental Status (PEDS; The Royal Children's Hospital Melbourne, 2015) is a 10-item parent completed questionnaire assessing communication and other developmental milestones that is scored by a clinician and is suitable from birth to 7;11.

- Communication and Symbolic Behavior Scales Developmental Profile™ (CSBS DP™) (Wetherby & Prizant, 2003) is a norm referenced screening and evaluation tool designed to assess the communication abilities of very young children (6 months – 24 months functional communication age). Parents are asked 24 multiple choice questions regarding their child's development. The questions relate to seven areas of skills that are known to predict language development: emotion and eye gaze, communication, gestures, sounds, words, understanding, and object use.The checklist is copyrighted but can be freely downloaded from the internet and reproduced (see reference list: Wetherby & Prizant, 2003).

ASD Specific Screening Tools

- *Childhood Autism Rating Scales - CARS (*Schopler, Reichler & Renner, 1988) is a structured interview and observation tool that is suitable for use with children aged 24 months and older (ASHA, 2006a, 2006b). The CARS is appropriate for screening, but may also be used in forming a diagnosis when used in conjunction with other assessment tools.

- *Modified Checklist for Autism in Toddlers- M-CHAT (*Robins et al., 2001) is designed for toddlers between 16 and 30 months and consists of a brief questionnaire and a longer parent interview which is used if the child reaches the prescribed threshold on the screening questionnaire. It is designed to yield a high rate of positive findings, in order to identify as many children as possible, however this will inevitably lead to some 'false positive' results (First Signs website, 2009). The *M-CHAT* has better validity when used as recommended in conjunction with the follow-up questions (Wetherby et al., 2008) and is better at predicting a diagnosis of ASD in children already identified as at risk than in those with no risk factors (Pandey, 2008).

- *Social Communication Questionnaire - SCQ (*Rutter, Bailey & Lord, 2003) is a screening tool validated for children 4 years and over and adults, although has been shown to also have high sensitivity for younger children from 2 years (Allen, Silove, Williams & Hutchins, 2007).

- *Social Responsiveness Scale - 2nd edition SRS-2* (Constantino, 2011) is a 65-item screening tool suitable from 30 months to adulthood, presented as four separate forms (preschool, school-age, adult, and adult self-report). Two subscales (social communication and interaction; restricted interests and repetitive behavior) are designed to parallel the DSM-5 criteria for ASD.

The American Academy of Pediatrics has published a freely available article (see Johnson, Myers, & Disabilities, 2007) which includes a comprehensive list of screening tools including psychometric properties, as well as a surveillance and screening flow-chart and algorithm designed for use by paediatricians but which is also useful reference material for speech pathologists and other health and education professionals.

6.3 Specific knowledge and skills required

- well-developed understanding of typical social and communication development in children;

- strong understanding of the diagnostic criteria for ASD (see Appendix 1);

- strong understanding of the early signs of ASD in children;

- understanding of the rationale for, and benefits of, early identification;

- thorough knowledge of the range of atypical communication skills displayed by individuals with ASD;

- ability to administer appropriate screening tools;

- knowledge of the referral pathways for further assessment and diagnosis;

- the ability to make appropriate referrals for further assessment, diagnosis and, if appropriate, intervention;

- the ability to communicate clearly and empathetically with family members regarding the concerns for the individual, the purpose of screening, and results of the screening tools;

- understanding of culturally appropriate variations in verbal and nonverbal communication characteristics including differences in eye gaze, directness, and sense of humour that may be mistaken for, or potentially mask, characteristics of ASD.

7. Assessment

Speech pathologists are trained to assess all aspects of an individual's speech, language, pragmatic, feeding literacy, and social skills, and play a crucial role in the assessment of individuals with ASD. Assessment may take a number of forms, depending on the purpose/s for which it is intended, including to (a) contribute to the diagnostic process, (b) determine eligibility for services and supports, (c) inform selection of intervention goals and approaches, and (d) measure intervention outcomes.

7.1 Statement of the role of the speech pathologist in diagnostic assessment

Speech pathologists play an essential role in contributing to the diagnostic process for individuals with ASD, by conducting a thorough assessment of social-communication skills and behaviour, and by communicating results, findings and clinical impressions to individuals, significant others, and other members of the team (Jordan, 2001). Speech pathologists should interpret and report the findings of diagnostic assessments with specific reference to the most current version of the diagnostic criteria for ASD, published in the Diagnostic and Statistical Manual of the American Psychological Association – 5th Edition (American Psychiatric Association, 2013).

A thorough diagnostic process must examine all aspects of development and functioning and should involve a collaborative multidisciplinary team including at minimum a medical practitioner, speech pathologist, and clinical psychologist. An occupational therapist may be included to assess sensory behaviours, and other professionals (e.g., teachers, employment support personnel) may also contribute to the process. The components of a thorough diagnostic assessment include (a) collecting all relevant information including previous assessment reports; (b) ascertaining the needs, preferences, and priorities of all those involved; (c)

obtaining a thorough developmental and medical history; (d) completing a medical assessment to ascertain possible underlying or alternative causes; (e) direct assessment of the core social, communication, and other behaviour relevant to a diagnosis of ASD; (f) direct assessment of cognitive ability, mental health, and adaptive behaviour; (e) structured observation of behaviours across multiple settings; and (f) liaising with other relevant professionals to elicit and share relevant information; and (g) the accurate, sensitive, and timely sharing of outcomes with clients, families, and significant others (Filipek et al., 1999; NIASA, 2003; Ozonoff, Goodlin-Jones, & Solomon, 2005; Trembath & Iacono, in press). Speech pathologists have the knowledge, skills and experience necessary to contribute to multiple facets of the diagnostic process. Speech pathologists need to be aware of policies stipulating what diagnostic process individuals with ASD must complete in order to access services, as these may differ across states, and monitor these policies for changes over time.

7.2 Statement of the role of the speech pathologist in assessment for intervention planning and evaluation

A thorough assessment of social-communication skills and behaviour is central to the diagnostic process, but also forms the basis for intervention planning and evaluation. Speech pathologists may draw on a range of assessment tools to ascertain each individual's unique profile of communication strengths and needs across multiple contexts. This can include utilising information collected by other professionals as part of the assessment process (e.g., cognitive and adaptive behaviour measures collected by a psychologist, academic assessment prepared by a teacher, audiological assessment) and the use of formal and informal assessment tools.

Speech pathologists play an essential role in the differential diagnosis of ASD and other communication-related disorders (e.g., specific language impairment, social- communication disorder). This requires a thorough understanding of the diagnostic criteria for the range of communication and associated disorders presented in the DSM-5 (see Appendix 1) as well as consultation with other health and education professionals.

Examples of DSM-5 diagnoses that may be considered instead of, or in addition to, a diagnosis of ASD include:

- Language Disorder

- Speech Sound Disorder (previously Phonological Disorder)

- Childhood-Onset Fluency Disorder (Stuttering)

- Social (Pragmatic) Communication Disorder

- Unspecified Communication Disorder

- Intellectual Disability (Intellectual Developmental Disorder)

- Global Developmental Delay

- Unspecified Intellectual Disability (Intellectual Developmental Disorder)

- Specific Learning Disorder (reading, writing)

7.3 Assessment Tools

A range of diagnostic assessment tools have been developed to assist in the differential diagnosis of individuals with ASD, which speech pathologists can be trained to administer. In Australia, two of the most commonly used tools are the Autism Diagnostic Observation Schedule – 2nd Edition (ADOS-2; Lord et al., 2012) and the Autism Diagnostic Interview – Revised (Lord, Rutter, & Le Couteur, 1994). The ADOS-2 is a clinician delivered interaction-based assessment of social-communication skills and behaviour which takes 30-60 minutes to administer and contains a scoring algorithm for ASD symptoms. The ADOS-2 is suitable for all ages and caters for both verbal and minimally verbal children, but not minimally verbal adults. The ADI-R is an interview-based assessment focusing on the core symptoms of ASD that takes approximately 2-3 hours to administer. The ADI-R includes a scoring algorithm to assist in the differential diagnosis of ASD. Both tools contribute to the diagnostic process but do not alone represent a complete diagnostic assessment. Hence, scores obtained from these assessment tools must be considered with reference to the complete set of information obtained through the comprehensive multidisciplinary assessment.

In addition to diagnostic tools, speech pathologists may use the full range of assessments tools available for use in speech pathology practice. The following is a list of assessment tools that the Clinical Guideline Working Group identified are commonly used to assess communication development in individuals with ASD, organised according to descriptors set out by the American Speech-Language and Hearing Association (2015). Note that this list is not intended to act as a list of recommendations and many assessment tools fit across multiple categories outlined below.

Assessment Tool	Example
Standardised assessment for evaluating the structure and form of language	• Clinical Evaluation of Language Fundamentals • The Preschool Language Scales • Peabody Picture Vocabulary Test • Test of Language Development
Self-report/other-report measures to obtain a comprehensive profile of skills and needs across contexts	• Pragmatic Profile of Everyday Communication Skills in Children (Dewart & Summers, 1995) • Macarthur-Bates Communicative Development Inventories (Fenson et al., 1991) • Children's Communication Checklist - Second Edition (Bishop, 2006) • Communication Checklist – Adult (Whitehouse & Bishop, 2009)
Ethnographic interviewing to ascertain the perceptions, views, desires and expectations of individuals with ASD and their families	• Comprehensive case history • Ethnographic interviewing (see Westby, Burda, & Mehta, 2003; open access)
Analog tasks in which real-world scenarios are simulated	• Communication and Symbolic behavior scales (Wetherby & Prizant, 2001) • Early Social Communication Scales (Mundy et al., 2003) • Social Language Development Test (Bowers, Huisingh, & LoGiudice, 2008)
Naturalistic observation	• Language Sampling and Analysis • The Triple C - Checklist of Communication Competencies (Bloomberg & West, 1999)
Dynamic assessment aimed at assessing learning potential rather than achievement at a particular point in time	• Social Thinking Dynamic Assessment Protocol® (Garcia Winner, 2007)

Regardless of the tools used, the assessment must account for the individual's skills and difficulties, and fluctuations and differences in these skills and difficulties across a range of contexts and with a variety of communication partners. In addition, the assessment must consider the activity limitations, participation restrictions, and the personal and environmental factors which impact on the individuals functioning (Australian Institute of Health and Welfare, 2003; Filipek, 1999; National Research Council, 2001).

For further information regarding assessment tools, readers are directed to the following comprehensive reviews that are freely available online:

- McConachie H, Parr JR, Glod M, Hanratty J, Livingstone N, Oono IP, et al. (2015) Systematic review of tools to measure outcomes for young children with autism spectrum disorder. *Health Technology Assessment*;19(41) http://www.ncbi.nlm.nih.gov/books/NBK299302/

- Kasari, C., Brady, N., Lord, C., & Tager-Flusberg, H. (2013). Assessing the minimally verbal school-aged child with Autism Spectrum Disorder. *Autism Research*, 6(6), 479–493. doi:10.1002/aur.1334

7.4 Specific knowledge and skills required

Speech pathologists require the following skills to contribute to assessment, differential diagnosis, intervention planning and evaluation for individuals with ASD:

- understanding of the roles and responsibilities of the speech pathologist in the diagnostic process;

- knowledge of the diagnostic criteria for ASD and associated disorders (see Appendix 1);

- the ability to obtain accurate information regarding an individual's background, developmental, and medical history;

- understanding of the roles of other members of the diagnostic team, including medical practitioners, psychologists and occupational therapists;

- the ability to form collaborative relationships with team members and to communicate clearly and effectively with them;

- knowledge of the range, purposes, validity, and reliability of assessment tools available;

- the ability to undertake appropriate formal and informal assessments of the full range of communication skills including, but not limited to:

  o joint attention and other early social communication skills

  o receptive and expressive language across spoken and written modalities

  o understanding and using non-verbal communication

  o the functional use of communication in a range of contexts (pragmatics)

  o the capacity to use augmentative and alternative communication (AAC) strategies;

- well-developed understanding of, and ability to assess, the role of communication in challenging behaviour;

- the ability to integrate information from a range of sources including observation, parent/carer interviews and formal assessment;

- the ability to communicate clearly and empathetically with individuals and family members regarding the diagnosis;

- knowledge of referral pathways for other services;

- knowledge of service and support options available to individuals with ASD and their families.

8. Intervention

8.1 Statement of role of speech pathologist

Speech pathologists are the only professionals with the skills and knowledge required to comprehensively address the speech, language, and pragmatic impairments (and associated disability) experienced by individuals with ASD. Speech pathologists play a crucial role as members of collaborative multidisciplinary teams in the provision of intervention services to individuals with ASD and their families. The use of appropriate empirically supported interventions results in substantial benefits for individuals with ASD and their families across the lifespan (ASHA, 2006a, 2006b).

A wide range of interventions is currently available to individuals with ASD and their families. While many of these interventions are empirically supported, it is not uncommon for interventions with no empirical support to be promoted to individuals with ASD and their families. At present, no single approach has been shown to be most effective for all individuals with ASD (National Autism Center, 2015) and there is limited information regarding which individuals are most likely to respond best to each intervention, or the reasons for these individual differences in response (Rogers & Vismara, 2008). Therefore, it is crucial that speech pathologists base their clinical decisions on information gained during assessments, the best available research evidence, their professional expertise, ongoing systematic and rigorous measurement of treatment progress, and the preferences and priorities of fully informed clients and caregivers, consistent with an EBP framework (Dolloghan, 2007). Furthermore, speech pathologists have a responsibility to use only those interventions that are supported by evidence and to clearly and openly make known the nature and empirical basis of all interventions they provide to individuals with ASD and their families.

Consistent with the ASHA clinical guidelines (ASHA, 2006b), the Association acknowledges that speech pathologists have a primary role in establishing and addressing intervention goals related to the following core impairments in individuals with ASD:

- joint attention, including social orienting and establishing shared attention;
- social reciprocity, including initiating interactions, taking turns and providing contingent responses;
- language and cognitive skills, including understanding and using non-verbal and verbal communication, symbolic play and executive functioning;
- behaviour and emotional regulation, including using communication to maintain social engagement and to appropriately request breaks and assistance.

The Association acknowledges that speech pathologists may be responsible for establishing and addressing other salient intervention goals (e.g., literacy, workplace-based training for adults with ASD), particularly in consultation with other professionals when working in multidisciplinary and transdisciplinary teams.

Individuals with ASD and their families often access a number of different services concurrently (Ruble & McGrew, 2007) and it is important for speech pathologists to understand the philosophies, goals, and teaching methods associated with the different interventions their clients are accessing. Based on the best available evidence, the delivery of these interventions in settings and in ways designed to promote generalisation to natural everyday environments including homes, schools, workplaces, and community settings is currently indicated as best practice. Where possible, interventions should be delivered in these settings. In addition, speech pathologists should take into account the individual's age, history, developmental stage, as well as the individual's personal goals and the family's preferences, in developing and delivering intervention programs.

Speech pathologists should either lead, or be consulted regarding, the provision of augmentative and alternative communication (AAC) systems, should they be recommended for a particular individual following a comprehensive assessment and consideration of all available evidence-based intervention

options. These systems include the use of visual supports; the Picture Exchange Communication System; phone-based, tablet-based and dedicated speech output devices; non-electronic communication aids, and manual signing. The use of AAC goes beyond simply providing a device and includes appropriate vocabulary selection; ensuring opportunities for communication; client, caregiver, and communication partner training and support; and ongoing review (Romski, Sevcik, Robinson, & Bakeman, 1994). Speech pathologists should refer to the Speech Pathology Australia (2013) Clinical Guideline on the use of AAC. Given that ASD impacts on multiple aspects of development and functioning, AAC systems should be used as part of comprehensive intervention programs and supports rather than in isolation.

The Association acknowledges that speech pathologists may choose to undertake training to deliver specific interventions and programs to individuals with ASD and their families that require certification through the program providers. It is important to note that the evidence base for these programs varies considerably, with several commonly used programs categorised as 'unestablished' in the recent National Standards Report (National Autism Center, 2015; see over page and Appendix 3). It is the position of the Association that, in addition to speech pathologists' responsibility to use only interventions that are supported by research evidence, in situations where speech pathologists elect to deliver programs that are (a) in part or wholly outside the traditional scope of speech pathology practice and/or (b) provided in a way that excludes the use of other empirically supported interventions, the speech pathologist must make full disclosure of these facts to their clients with ASD and their clients' families. This position aims to ensure that clients and families have a clear understanding of the nature of the services being provided and that they are aware of any practice constraints imposed on the speech pathologist by the use of such programs. Furthermore, this position aims to ensure that clients and families are made aware of the range of interventions available to them and that they are not unknowingly provided with one program without due consideration being given to the full range of evidence-based interventions available.

8.2   Overview of intervention approaches

Given the range of interventions available to individuals with ASD and their families, several systems for describing and classifying interventions have been presented, each focusing on different intervention qualities and characteristics:

- Focusing on the different philosophies and teaching strategies used across interventions, Prizant, Wetherby, and Rydell (2003) described a continuum of interventions ranging from highly structured, adult-directed discrete trial training programs delivered in clinical settings (e.g., Lovaas, 1987) through to child focused, relationship based interventions delivered in naturalistic settings (e.g., Gutstein, Burgess & Montfort, 2007; Prizant, Wetherby& Rydell, 2003; Weider & Greenspan, 2003). The middle ground is comprised of interventions such as contemporary applied behaviour analysis (ABA) approaches and developmentally based interventions (e.g., Dawson et al., 2010).

- Focusing on the scope of interventions, Odom, Collet-Klingenberg, Rogers, and Hatton (2010) suggested that interventions can be classified as 'comprehensive treatment models' (CTMs) or 'focused intervention practices' (FIPs). Comprehensive treatment models comprise a set of practices designed to address the core deficits of ASD across multiple developmental domains, often delivered through a manualised program (e.g., Early Start Denver Model; Dawson et al., 2010). Focused intervention practices, include a set of targeted strategies designed to change a specific behaviour or to achieve a specific developmental outcome (e.g., The Picture Exchange Communication System; Bondy & Frost, 2001).

- Focusing on the research evidence to support interventions, the National Standards Report (National Autism Center, 2015) published a list of 14 established, 18 emerging, and 13 unestablished interventions with the ratings based on the quality, quantity, and consistency of research evidence (see Appendix 3). The Association recommends that speech pathologists working with individuals with ASD should consider the evidence ratings provided in the National

Standards Report when selecting interventions in collaborative discussion with clients and caregivers. The Association does not support the use of unestablished practices presented in the National Standards Report.

Each of the three systems for categorising interventions serves a different and complementary purpose, enabling speech pathologists and other health and education professionals to succinctly define and describe the interventions they use to clients, caregivers, and other professionals.

8.3   Evaluating the Evidence for Interventions

Currently, the state of intervention research in the field of ASD is that (a) there are many interventions available with different levels of evidence including some unsupported practices; (b) amongst interventions that demonstrate positive intervention outcomes at the group level in well-controlled studies, there is still substantial individual variability; (c) there is currently no best intervention for all individuals with ASD; and (d) intervention research has predominantly focused on young children with less attention to supporting adolescents and adults with ASD. There is evidence that children with ASD may benefit from early, intensive, family-based intervention programs, regardless of the theoretical perspective adopted, as long as the intervention is appropriate to the child's strengths and needs and take the family circumstances into account (Roberts & Prior, 2006).

Speech pathologists must critically appraise the research evidence when selecting interventions, and consider other factors (e.g., clinical insights and experience, contextual factors, and client and caregiver preferences and priorities) within the EBP framework for clinical decision making (Dollaghan, 2007). The Association recommends that speech pathologist make use of the range of research resources currently available to support evidence-based decision making, including primary sources of research evidence (i.e., individual journal articles), research reviews (e.g., National Autism Center, 2015), EBP resources (e.g., ASHA Evidence Maps), and searchable repositories of critically appraised research (e.g., speechBITE). Given that speech pathologists will rarely be able to replicate interventions described in research exactly, due to contextual factors and heterogeneity within the spectrum of individuals with ASD, it is imperative that they engage in systematic, rigorous evaluation of intervention progress and outcomes for each client, irrespective of the interventions they use, as the basis for evidence-based clinical decision making.

8.4   Common elements in effective interventions

Researchers have for a long time recognised that effective interventions, irrespective of the type, have a number of core elements that are crucial for supporting communication development for individuals with ASD. Roberts and Prior (2006), for example, reported that effective interventions for young children with ASD have the following features in common:

- appropriate, ASD specific curriculum content, focusing on attention, compliance, imitation, language, and social skills;
- highly supportive teaching environments with a focus on generalisation and transition support;
- predictability and routine;
- a functional, communication based approach to challenging behaviours;
- family involvementas part of collaborate partnerships with professionals;
- use of visual supports and augmentative and alternative communication (AAC).

More recently, Schreibman et al (2015) published a seminal article describing the emergence of a number of empirically supported interventions for children with ASD which all combine the principles of applied behaviour analysis with developmental science. Defined as Naturalistic Developmental Behavioral Interventions (NDBIs), these include incidental teaching, pivotal response training, enhanced milieu teaching, the Early Start Denver Model, and Social Communication/Emotional Regulation/Transactional Support (SCERTS). Note that some NDBIs require certification to deliver

(e.g., Early Start Denver Model) and all require additional training in order to deliver the interventions with fidelity. The common features of NDBIs are:

- The use of the three part contingency (antecedent-response-consequence) based on the evidence-based principles of applied behaviour analysis

- The detailed description of procedures in intervention manuals, thus supporting intervention fidelity

- The inclusion of fidelity assessments to ensure the intervention is being delivered as per the manual

- Individualised intervention goals

- Ongoing measurement of progress

- Child-initiated teaching episodes

- Environmental arrangement

- Natural reinforcement and related method for enhancing children's motivation

- Use of prompting and prompt fading

- Turn taking within object and social play routines

- Modeling

- Adult imitation of the children's language, play, or movements

- Strategies to broaden the children's focus of attention

The article by Schreibman et al (2015) is freely available online (see resource list).

In addition to the features outlined, many interventions now espouse the principles of Functional Communication Training. This approach involves teaching individuals with ASD and other developmental disabilities to use effective and appropriate communication strategies in order to reduce challenging behaviours (Hagopian, Fisher, Sullivan, Acquisto, & LeBlanc, 1998). According to Mirenda (1997), based on a systematic review, Functional Communication Training has the potential to result in an immediate, significant and maintained reduction in challenging behaviour among individuals with ASD. The use of Functional Communication Training is currently considered best practice in addressing challenging behaviour in individuals with ASD.

Many of the intervention approaches speech pathologists commonly use with individuals with ASD, as well as individuals with other communication disorders, are consistent with the principles and features of NDBIs presented by Schreibman et al (2015). NDBIs represent a comprehensive, theoretically driven, rigorous but flexible, suite of evidence-based approaches that speech pathologists have the knowledge, skills and experience to develop and deliver to children with ASD. Although designed for children, the principles and approaches are consistent with the Good Practice Guidelines described in section 5 and likely to be relevant to the development and implementation of comprehensive interventions for adolescents and adults with ASD.

8.5   Specific knowledge and skills required of speech pathologists

Speech pathologists require the following knowledge and skills to provide effective interventions to individuals with ASD:

- knowledge of the critical components of effective, evidence-based practice for individuals with ASD;

- understanding of the learning and processing styles of individuals with ASD and appropriate strategies to accommodate these characteristics;

- the ability to develop and implement intervention programs that are tailored to the unique strengths, needs, and preferences of each individual and his or her family;

- the ability to develop intervention programs that support the interactions through addressing the skills and needs of both the individuals with ASD andtheir communication partners and through changes to the communicative environment;

- the ability to evaluate the effectiveness of interventions and modify goals and strategies appropriately;

- knowledge of the role of communication in challenging behaviours and positive behaviour support strategies;

- knowledge of and ability to implement a range of AAC strategies.

9. Mealtime difficulties in individuals with ASD

Eating and drinking disorders are commonly observed in individuals with ASD (Twatchman-Reailly, Amaaral & Zebrowski, 2008). Speech Pathologists should act in accordance with the Speech Pathology Australia Dysphagia Clinical Guideline (Speech Pathology Australia, 2012) in their assessment and management of mealtime difficulties for individuals with ASD, giving full consideration to the range of possible causes for these difficulties and the range of evidence-based approaches to intervention available. For some individuals, difficulties observed may be related to the characteristics of ASD including sensory sensitivities and restricted and/or repetitive interests and behaviours (Goldman, 2007). If confirmed, collaboration with and/or referral to a psychologist for behavioural support, a dietitian for nutritional support, a paediatrician or medical specialist for overall management, and/or an occupational therapist with expertise in working with individuals with ASD for support regarding sensory issues and motor skill development is often appropriate. Similarly, speech pathologists with expertise in working with individuals with ASD should be called upon by other professionals to support the implementation of measures to address eating and drinking disorders.

10. Consultation

10.1 Statement of role of speech pathologist

Speech pathologists should play a lead role in providing collaborative, consultative services to families, other professionals, teachers, and support personnel. Given their expertise in addressing the underlying social, communication, and cognitive impairments experienced by individuals with ASD, speech pathologists are in an ideal position to contribute to all areas of communication intervention including assessment and intervention and to provide professional development and training to families, carers, and those working with individuals with ASD. Speech pathologists with additional training and experience in managing complex cases may also consult to, and mentor, fellow speech pathologists providing services to individuals with ASD and their families.

10.2 Specific knowledge and skills required

Speech pathologists require the following knowledge and skills to provide effective consultation services to individuals with ASD, their families, and other service providers:

- knowledge of the roles, responsibilities, and skills of other professionals working with the individual with ASD;

- the ability to communicate clearly and effectively with families and other professionals in order to provide accurate and appropriate information about prescribed interventions ;

- the ability to provide appropriate training and professional development as required, commensurate with the speech pathologists' knowledge and skills.

11. Principles of Practice

The following principles of practice, as documented in the research literature, relate to all areas of practice involving individuals with ASD and their families, and should be adopted by speech pathologists.

11.1 Evidence based practice

Speech Pathology Australia supports the use of evidence-based practice in the provision of speech pathology services to individuals with ASD and their families, and recognises that speech pathologists have a responsibility to use only those interventions that are supported by evidence. The Association recognises that speech pathologists have a significant role to play in assisting individuals with ASD and their families to evaluate the evidence regarding intervention (ASHA, 2006b, 2006c), and therefore need to themselves be skilled in critically appraising the research literature.

Evidence plays an important role in informing speech pathologists' understanding of the causes and features of ASD and provides critical guidance in deciding on how to use resources, including time and money, to ensure the best possible outcome for an individual with ASD. Furthermore, evaluating the evidence base is important in helping families avoid unnecessary or even dangerous interventions (Australian Autism Education & Training Consortium, 2009). Speech pathologists must critically appraise research evidence and communicate their findings objectively in order to support clients and families to make informed decisions. Perry & Condillac (2003) suggest that it is irresponsible for service providers to simply make information on different options available to families without helping them consider the potential benefits and limitations of each approach. It is the position of the Association that speech pathologists must clearly and openly make known the nature and empirical basis of all interventions they provide to individuals with ASD and their families.

11.2 Collaborative multidisciplinary and transdisciplinary practice

Autism Spectrum Disorder (ASD), by definition, is a group of pervasive developmental disorders impacting on a range of developmental areas and life skills. Accordingly, Speech Pathology Australia recognises that it is essential that speech pathologists work collaboratively with other health and education professionals in the provision of assessment, diagnosis, and intervention services to individuals with ASD. A multidisciplinary model requires the "…recognition of different but equal contribution of each member of the team" (Jordan, 2001, p.10) and generally includes parents, peers, other professionals including occupational therapists, psychologists, teachers, teaching assistants and the person with ASD (Roberts & Prior, 2006). Multidisciplinary practice provides an important way of understanding ASD, making valid diagnoses, and helping determine appropriate intervention strategies (Jordan, 2001).

11.3 Use of appropriate models of service delivery

Speech pathologists provide services to individuals with ASD in a range of clinical settings, including clinics, preschools, schools, workplaces, and family homes. There is no conclusive evidence regarding the relative effectiveness of different models of service delivery, thus requiring speech pathologists to make decisions within the EBP framework. Ecologically driven interventions in home, school, or community settings provide opportunities for learning in meaningful everyday contexts, and help to address the challenges individuals with ASD may face in generalising skills. In addition, the use of ecologically based interventions enables speech pathologists to work with caregivers, other professionals, and members of the community in the development, delivery, and evaluation of intervention programs aimed at achieving functional goals (ASHA, 2006b, 2006c). Therefore, the Association supports the use of ecologically based interventions delivered in homes, schools, and community settings, given the existing research evidence.

A clinic setting using 1:1 or small group interventions remains an important and widely used model of service delivery, and may play an important role in teaching some new skills in a concentrated and

repeated way (Diehl, 2003). However, it is important to recognise the inherent limitations of this model when working with individuals with ASD. This model creates an artificial context and limits opportunities for generalisation (Diehl, 2003), while more naturalistic methods may increase generalisation and successful acquisition of communication (Delprato, 2001; Rogers & Vismara, 2008). Individual interventions in clinics or other settings that are not part of the individual's everyday routine need to have consistent connections made to these real-life contexts in order to support true communication development (Diehl, 2003).

11.4 Culturally appropriate practice

Speech pathologists have a responsibility to ensure that their approaches are culturally appropriate and that they address the unique needs of each child and family (Speech Pathology Australia, 2001; 2008; 2009). Unfortunately, there is limited research into the impact of cultural and linguistic diversity on the outcomes of interventions used to support children with ASD and their families. There is preliminary evidence to indicate that culture may play an important role in determining the extent to which communication interventions involving the use of AAC are successful (Bridges, 2004). In addition, it has been suggested that culturally bound differences in child rearing practices may influence the roles parents are willing to take on in supporting their children's learning, as well as their expectations regarding the roles of professionals working with their children (Hwa-Froelich & Vigil, 2004; Rodriguez & Olswang, 2003).

There is small but growing body of research examining language development in bilingual children with ASD. Drysdale, van der Meer, Kagohara (2015), based on a systematic review of 8 studies, reported that bilingualism did not have a negative impact on the language development in children with ASD. The authors called for further research, but recommended that clinicians advise parents of the current state of the research evidence, and at all times take into account the individual circumstances of each client and his or her family. Speech Pathologists should proceed according to the principles of family focused practice, in working with families to identify and implement appropriate intervention strategies.

11.5 Family focused practice

Family focused (or family centred) practice is a philosophy of service delivery that puts the person with disability and their family at the centre of service provision (MacKean, Thurston & Scott, 2005). This philosophy offers a foundation for effective family-professional collaboration in assessment, diagnosis and intervention for individuals with ASD (ASHA, 2006a, 2006c) and is consistent with the use of dynamic and individualised interventions. Speech Pathology Australia recognises the importance of adopting a family focused model of practice and recognises that working with an individual's family maximises effective communication in meaningful social contexts (Speech Pathology Australia, 2008) and provides a natural and functional approach to communication intervention.

Speech pathologists are frequently the first service the family of a child with ASD comes into contact with and the profession is among the most frequently consulted by families (Roberts et al., 2007; Thomas, Morrissey, & McLaurin, 2007). It is important for speech pathologists to recognise the substantial, and well documented, stress that having a family member with ASD often places on families (Hastings et al., 2005; NRC, 2001). Family involvement in intervention with children with ASD has the potential to reduce this stress and to improve family functioning (Dawson & Osterling, 1997; National Research Council, 2001). In addition, problem focused coping strategies that can be adopted through appropriate support from a speech pathologist, such as taking action to help the situation, are associated with better mental health and coping (Hastings et al. 2005).

The key elements of effective family centred practice include acknowledging the uniqueness of each family and the expertise of parents, enhancing parental competencies and true collaboration between parents and professionals, and involving families in programming decision making (MacKean et al., 2005; Prelock, Beatson, Bitner, Broder & Ducker, 2003; Prizant, Wetherby & Laurent, 2003). The risk involved with family centred practice is that families are simply expected to shoulder more

responsibility and work than they are able to effectively deal with rather than experiencing a true collaboration with service providers (MacKean et al., 2005). It is important that roles in case management and intervention to be jointly determined between the parents and speech pathologists (and other professionals) when utilising a family focused approach.

11.6 Education and training

It is recognised that working with individuals with ASD is a complex area of practice and those providing services in this area should recognise the need for ongoing professional development and the regular updating of their skills and knowledge in this area. Options for continuing professional education in the field of ASD include seeking additional clinical experience, attending workshops and conferences, completing postgraduate study, engaging in critical evaluation of the literature, and developing and maintaining strong and supportive professional networks (Speech Pathology Australia, 2004). It is the position of the Association that speech pathologists working with individuals with ASD must engage in ongoing professional development and maintain appropriate professional supervision and support networks.

12. Legal Issues

12.1 Code of ethics

Speech pathologists should adhere to the Speech Pathology Australia *Code of Ethics (2000)* and to any codes, directions or principles applicable to the organisation employing the speech pathologists (e.g. The NSW Department of Ageing Disability and Home Care).

12.2 Duty of care

A speech pathologist owes a duty of care to another person where the speech pathologist ought reasonably to foresee that their conduct may be likely to cause loss or damage to a class of persons to which the other person belongs. On this basis, it is clear that speech pathologists owe a duty of care to their clients. Speech pathologists may also owe a duty of care to their employing body and/or service purchaser.

Where a speech pathologist owes another person a duty of care and the speech pathologist breaches the standard of care required, (either by a specified act, a failure to act or providing misleading information or advice), the speech pathologist may be liable for damages in a civil action brought by or on behalf of the person to whom the speech pathologist owed the duty of care.

12.3 Standard of care

The standard of care which must be exercised by a speech pathologist is the reasonable care and skill of the ordinary skilled speech pathologist exercising or professing to have this special skill. It is important to note that an inexperienced speech pathologist must meet the standard of a reasonably competent practitioner providing speech pathology services. Accordingly, a speech pathologist who is aware that they lack the required level of skill in a particular area must seek further advice and guidance immediately. Such further advice and guidance may involve requesting support from a more experienced speech pathologist, supervisor, the employing organisation or the service purchaser.

The courts will determine the standard of care required of a speech pathologist in each particular area. In the past courts have found medical practitioners to be negligent, i.e. to have breached the standard of care required, notwithstanding that the medical practitioner's intervention was in accordance with a practice accepted as proper by a reasonable body of medical opinion skilled in the relevant field. However, a court must have strong reasons for substituting its judgement for the clinical opinion of the medical practitioner where it has been properly arrived at and is supported by a responsible body of medical opinion. Accordingly, speech pathologists' advice and intervention should always be in accordance with practices accepted as proper by a reasonable body of opinion skilled in speech pathology, but speech pathologists should be aware that acting in such a manner will not automatically preclude a court from finding them negligent. Further, it is important that speech pathologists be aware of recent literature in their field, current best practice carried out by others in the field and the Speech Pathology Australia *Code of Ethics (2000).*

12.4 'Proxy' interventions

Where a speech pathologist does not carry out an intervention personally, and instead instructs and/or supervises another person carrying out the intervention, the speech pathologist may be liable for any negligence resulting from the intervention, irrespective of the fact that the speech pathologist was not carrying out the intervention personally. The law refers to this as 'vicarious liability' and it may render the speech pathologist liable where their agent or 'proxy' breaches the duty of care owed by the speech pathologist while the 'proxy' acts as a representative of the speech pathologist. Therefore, it is necessary for 'proxies' to exercise the same standard of care as that required of the speech pathologist instructing or supervising them, and for all documentation (i.e. Individual Education Plans, progress notes, negotiated contracts) regarding 'proxy' interventions to be maintained. In addition, the service plans must include adequate time and resources to train 'proxies' and monitor programs.

12.5 Consent for speech pathologist involvement

The speech pathologist must obtain the client's consent prior to providing the speech pathology services, including assessment to the client. The client must be informed in broad terms of the nature of the intervention to be provided prior to giving consent. Consent should be in writing and is invalid unless it is voluntary. A client under the age of 18 years can consent to the provision of speech pathology services, provided the student has sufficient intelligence and maturity to understand the nature and consequences of the particular intervention. Where the client lacks the capacity to provide consent, or their capacity to consent is in doubt, the consent of the client's parent or guardian must be obtained.

All processes employed by speech pathologists should adhere to privacy legislation and freedom of information legislation.

12.6 Indemnity cover and insurance

It is the responsibility of speech pathologists to ensure they have appropriate profession indemnity insurance cover. Professionals should be aware that there may be instances where the employing body will not necessarily indemnify them for their actions. It is recommended that all practicing Speech Pathology Australia members have professional indemnity insurance.

Speech pathologists should clarify the insurance situation for accidental loss, theft or damage to resources during transport with their insurer.

12.7 Service guidelines

It is recommended that the speech pathologist adhere to all approved guidelines of the employing body in terms of clinical and service management.

12.8 Summary of legal issues

In summary, a speech pathologists working with individuals with ASD and their families should:
- adhere to the Speech Pathology Australia *Code of Ethics (2000);*
- adhere to the code of conduct and all relevant policies/service guidelines of the employing body;
- not undertake intervention that is outside their experiences or expertise as a professional;
- not overstate their expertise;
- seek advice from senior speech pathologists and/or fellow professionals as appropriate;
- prior to intervention, obtain the student and/or parent/guardian's consent to intervention;
- keep the client and parent/guardian well informed of the intervention program;
- keep up-to-date with professional developments;
- ensure that proxies receive training;
- undertake all mandatory training;
- keep accurate records;
- ensure that all advice given to the client, parent/guardian, professionals or staff is documented;
- keep copies of all reports;
- adhere to the code of conduct and all relevant policies/service guidelines of the employing body;
- keep up-to-date with report writing;
- ensure that the client environment is safe;
- ensure that there is adequate professional indemnity insurance cover.

13. Conclusion

This clinical guideline has been developed by Speech Pathology Australia to guide and support speech pathologists in their delivery of speech pathology services to individuals with an ASD spectrum disorder (ASD) and their families. The guideline makes explicit Speech Pathology Australia's position regarding (a) the speech pathologists' scope of practice in working with clients with ASD and their families, (b) the principles of best practice based on the current research evidence, and (c) theknowledge and skills that speech pathologists require in order to screen, assess, diagnose, treat, and consult to clients with ASD and their families effectively. The Association acknowledges the importance of speech pathology services in supporting individuals with ASD and their families. Specifically, the Association affirms that speech pathologists are the only professionals with the skills and knowledge required to comprehensively address the impairments of speech, language, and pragmatic development experienced by individuals with ASD. The Association strongly supports the provision of services to individuals and families that (a) are evidence-based, (b) are family focused, (c) involve collaborative multidisciplinary practice, (d) utilise appropriate models of service delivery, (e) are culturally appropriate, and (f) are evidence-based. In addition, in acknowledging that working with individuals with ASD and their families is a complex area of practice, the Association affirms the need for speech pathologists working with individuals with ASD and their families must engage in ongoing professional development and maintain appropriate professional supervision and support networks.

Appendix 1: Diagnostic Criteria for ASD

The following is reproduced from the Autism Speaks (Autism Speaks, 2015) website featuring the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria for ASD (American Psychiatric Association, 2013)

Autism Spectrum Disorder 299.00 (F84.0)

Diagnostic Criteria

A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history (examples are illustrative, not exhaustive, see text):

1. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.

2. Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.

3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.

Specify current severity:

Severity is based on social communication impairments and restricted repetitive patterns of behaviour (see Table below).

B. Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text):

1. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).

2. Insistence on sameness, inflexible adherence to routines, or ritualized patterns or verbal nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat food every day).

3. Highly restricted, fixated interests that are abnormal in intensity or focus (e.g, strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interest).

4. Hyper- or hyporeactivity to sensory input or unusual interests in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

Specify current severity:

Severity is based on social communication impairments and restricted, repetitive patterns of behaviour (see Table below).

C. Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities, or may be masked by learned strategies in later life).

D. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

E. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make comorbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level.

Note: Individuals with a well-established DSM-IV diagnosis of autistic disorder, Asperger's disorder, or pervasive developmental disorder not otherwise specified should be given the diagnosis of autism spectrum disorder. Individuals who have marked deficits in social communication, but whose symptoms do not otherwise meet criteria for autism spectrum disorder, should be evaluated for social (pragmatic) communication disorder.

Specify if:

With or without accompanying intellectual impairment

With or without accompanying language impairment

Associated with a known medical or genetic condition or environmental factor
(**Coding note:** Use additional code to identify the associated medical or genetic condition.)

Associated with another neurodevelopmental, mental, or behavioural disorder
(**Coding note:** Use additional code[s] to identify the associated neurodevelopmental, mental, or behavioural disorder[s].)

With catatonia (refer to the criteria for catatonia associated with another mental disorder, pp. 119-120, for definition) (**Coding note:** Use additional code 293.89 [F06.1] catatonia associated with autism spectrum disorder to indicate the presence of the comorbid catatonia.

Severity levels for autism spectrum disorder.

Severity level	Social communication	Restricted, repetitive behaviours
Level 3 "Requiring very substantial support"	Severe deficits in verbal and nonverbal social communication skills cause severe impairments in functioning, very limited initiation of social interactions, and minimal response to social overtures from others. For example, a person with few words of intelligible speech who rarely initiates interaction and, when he or she does, makes unusual approaches to meet needs only and responds to only very direct social approaches	Inflexibility of behavior, extreme difficulty coping with change, or other restricted/repetitive behaviours markedly interfere with functioning in all spheres. Great distress/difficulty changing focus or action.
Level 2 "Requiring substantial support"	Marked deficits in verbal and nonverbal social communication skills; social impairments apparent even with supports in place; limited initiation of social interactions; and reduced or abnormal responses to social overtures from others. For example, a person who speaks simple sentences, whose interaction is limited to narrow special interests, and how has markedly odd nonverbal communication.	Inflexibility of behavior, difficulty coping with change, or other restricted/repetitive behaviours appear frequently enough to be obvious to the casual observer and interfere with functioning in a variety of contexts. Distress and/or difficulty changing focus or action.
Level 1 "Requiring support"	Without supports in place, deficits in social communication cause noticeable impairments. Difficulty initiating social interactions, and clear examples of atypical or unsuccessful response to social overtures of others. May appear to have decreased interest in social interactions. For example, a person who is able to speak in full sentences and engages in communication but whose to- and-fro conversation with others fails, and whose attempts to make friends are odd and typically unsuccessful.	Inflexibility of behavior causes significant interference with functioning in one or more contexts. Difficulty switching between activities. Problems of organization and planning hamper independence.

Social (Pragmatic) Communication Disorder 315.39 (F80.89)

Diagnostic Criteria

A. Persistent difficulties in the social use of verbal and nonverbal communication as manifested by all of the following:

1. Deficits in using communication for social purposes, such as greeting and sharing information, in a manner that is appropriate for the social context.

2. Impairment of the ability to change communication to match context or the needs of the listener, such as speaking differently in a classroom than on the playground, talking differently to a child than to an adult, and avoiding use of overly formal language.

3. Difficulties following rules for conversation and storytelling, such as taking turns in conversation, rephrasing when misunderstood, and knowing how to use verbal and nonverbal signals to regulate interaction.

4. Difficulties understanding what is not explicitly stated (e.g., making inferences) and nonliteral or ambiguous meanings of language (e.g., idioms, humor, metaphors, multiple meanings that depend on the context for interpretation).

B. The deficits result in functional limitations in effective communication, social participation, social relationships, academic achievement, or occupational performance, individually or in combination.

C. The onset of the symptoms is in the early developmental period (but deficits may not become fully manifest until social communication demands exceed limited capacities).

D. The symptoms are not attributable to another medical or neurological condition or to low abilities in the domains or word structure and grammar, and are not better explained by autism spectrum disorder, intellectual disability (intellectual developmental disorder), global developmental delay, or another mental disorder.

Appendix 2: Red flags for ASD

The following are considered 'red flags' or warning signs of ASD in very young children. Children showing a majority of these signs should be referred for further screening and assessment for ASD spectrum disorders (Wetherby et al., 2004). The 'red flags' include:

- lack of appropriate gaze
- lack of warm, joyful expressions with gaze
- lack of sharing enjoyment or interest
- lack of response to name
- lack of coordination of gaze, facial expression, gesture, and sound
- lack of showing
- unusual prosody
- repetitive movements or posturing of body, arms, hands, or fingers
- repetitive movements with objects
- lack of response to instructions, even with contextual cues
- lack of pointing
- lack of vocalisations with consonants
- delay in playing with a variety of toys conventionally

Note that there is no definitive list of 'red flags,' with other authors identifying additional 'flags' or describing those mentioned above in more descriptive terms. For instance, the Centres for Disease Control and Prevention (2015) in the United States present 40 examples of behaviours that can be considered red flags. The differences in the number and how they are described points to the importance of involving a speech pathologist in assessing for autism.

Appendix 3: National Standards Report Intervention Evidence Ratings

The following is a summary of the findings of the National Standards Project(National Autism Center, 2015) examining research evidence for interventions used with individuals with ASD. The review focuses on evidence for individuals under 22 years of age.

The National Standards Report is freely available online at
http://www.nationalautismcenter.org/090605-2/

The table contains text directly quoted from the original report.

Established Interventions for individuals under Age 22	Emerging Interventions for individuals under Age 22	Unestablished Interventions for individuals under Age 22
[Paraphrased: 14 Interventions were identified as established based on the quality, quantity, and consistency of research evidence.]	Emerging Interventions are those for which one or more studies suggest they may produce favorable outcomes. However, before we can be fully confident that the interventions are effective, additional high quality studies are needed that consistently show these interventions to be effective for individuals with ASD. Based on the available evidence, we are not yet in a position to rule out the possibility that Emerging Interventions are, in fact, not effective. A large number of studies fall into the Emerging level of evidence. We believe scientists should find fertile ground for further research in these areas.	Unestablished Interventions are those for which there is little or no evidence in the scientific literature that allows us to draw firm conclusions about their effectiveness with individuals with ASD. There is no reason to assume these interventions are effective. Further, there is no way to rule out the possibility these interventions are ineffective or harmful.
• Behavioral Interventions • Cognitive Behavioral Intervention Package • Comprehensive Behavioral Treatment for Young Children • Language Training (Production) • Modeling • Natural Teaching Strategies • Parent Training • Peer Training Package • Pivotal Response Training • Schedules • Scripting • Self-management • Social Skills Package • Story-based Intervention	• Augmentative and Alternative Communication Devices • Developmental Relationship-based Treatment • Exercise • Exposure Package • Functional Communication Training • Imitation-based Intervention • Initiation Training • Language Training (Production & Understanding) • Massage Therapy • Multi-component Package • Music Therapy • Picture Exchange Communication System • Reductive Package • Sign Instruction • Social Communication Intervention • Structured Teaching • Technology-based Intervention • Theory of Mind Training	• Animal-assisted Therapy • Auditory Integration Training • Concept Mapping • DIR/Floor Time • Facilitated Communication • Gluten-free/Casein-free diet • Movement-based Intervention • SENSE Theatre Intervention • Sensory Intervention Package • Shock Therapy • Social Behavioral Learning Strategy • Social Cognition Intervention • Social Thinking Intervention

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