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DEPARTMENT OF HEALTH

Applied Behavioral Analysis for Autism Spectrum Disorder Guidelines

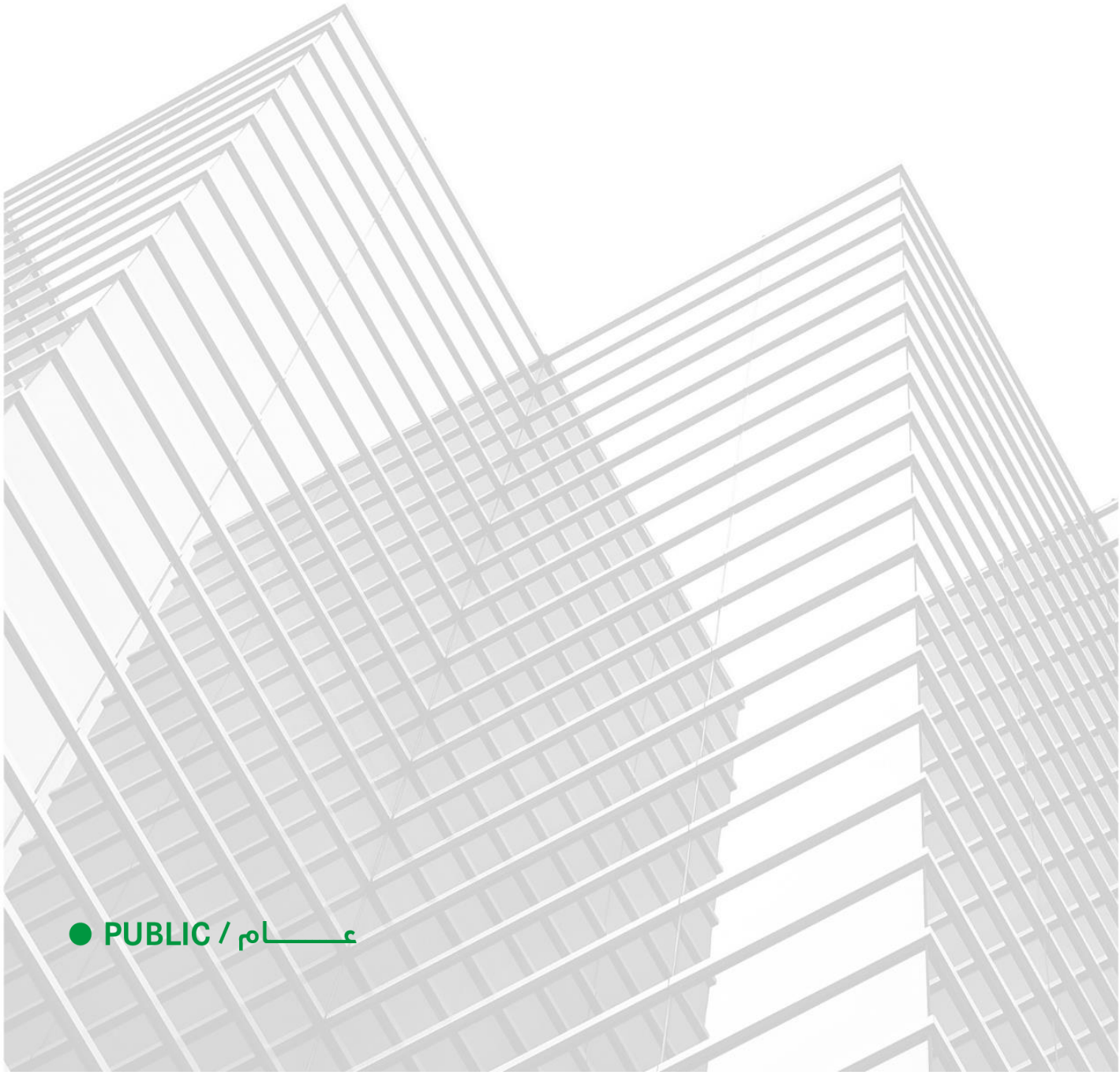

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Table of Content

1. Guideline Purpose and Brief

1.1. These guidelines aim to assist healthcare professionals in making informed decisions regarding the use of principles and techniques derived from the science of Applied Behavior Analysis (ABA) for patients with autism spectrum disorder (ASD) to develop, maintain, and restore behavioral functions using an evidence-based approach.

1.2. The guidelines are evidence based and in alignment with international best practices, and subject matter expert recommendations regarding the use of ABA-based interventions as a behavioral health treatment for patients diagnosed with ASD.

1.3. These guidelines are not exhaustive and should not override healthcare professionals' responsibility toward their patients.

1.4. While ABA interventions have been proven to be effective in many disorders and conditions other than ASD[a] the current guidelines are specific to the use of ABA-based interventions for patients with ASD as guided by scientific evidence. (1)

1.5. Evidence-based practice has demonstrated ABA's effectiveness in successfully remediating core behavioral deficits in ASD, resulting in ABA becoming a validated behavioral treatment and an international standard of care offered to individuals diagnosed with ASD. (1)

1.6. Application of these guidelines should be individualized to each patient. Individualized treatment is a defining feature of ABA and one of the reasons for its success in treating ASD.

1.7. While the guidelines are intended for ABA intervention provided by healthcare professionals for patients of all ages diagnosed with ASD, the document provides a special focus on children with ASD.

1.7.1. The document categorizes individuals with ASD as follows:

1.7.1.1. Pre-School Children

1.7.1.2. School-Age Children

1.7.1.3. Adults

1.7.2. In alignment with Abu Dhabi's People of Determination strategy, this document refrains from portraying children with ASD as individuals with any form of defect or malfunction. Instead, it adopts the term 'patients' for individuals with ASD in reference to the DoH's definition as individuals who seek or receive interventions from a healthcare professional.

1.7.3. This document emphasizes the significance of integrating a social model of care with the healthcare model. It acknowledges the contribution of educational services, among others, in achieving optimal results for children with ASD. This is particularly important given that existing literature has not conclusively shown positive long-term outcomes when relying solely on ABA.

[a] Neurobehavioral disorders that may benefit from ABA such as severe destructive behavior, substance abuse, dementia, pediatric feeding disorders, and traumatic brain injury, among other behavioral disorders.

1.8. The guidelines recommend evidence-based practice following the GRADE method (Grading of Recommendations, Assessment, Development, and Evaluation): [2]

1.8.1. **MUST:** In this document, "Must" (or "Must Not") refers to recommendations based on legislative obligations or recommendations where, if not followed, the possible consequences could range from extremely serious to potentially life-threatening.

1.8.2. **SHOULD:** In this document, "Should" (or "Should Not") refers to recommendations that are based on evidence with a reasonable degree of confidence that, for most patients, the benefits outweigh the harms and are cost-effective.

1.8.3. **COULD**: In this document, "Could" (or "Could Not") refers to recommendations made by subject matter experts based on best practices where no evidence is available. Recommendations are to be followed based on the healthcare professional's clinical evaluation, judgment, and patient's (or surrogate consent giver's) preference.

2. Definitions and Abbreviations

No.	Term & Abbreviation		Definition
2.1.	Adults		In this document, individuals who are 18 years of age or older.
2.2.	Applied Behavior Analysis	ABA	A scientific approach under psychology that focuses on understanding and improving socially significant behaviors in which tactics derived from the principles of behavior are applied to improve socially significant behavior and where experimentation is used to identify the variables responsible for the improvement in behavior.[3] In this document, ABA is referred to as the science that focuses on treating the core deficits associated with ASD and the development of abilities. [4]
2.3.	Autism Spectrum Disorder	ASD	A spectrum of developmental disability characterized by early-onset impairments in social communication and interaction, as well as restricted, repetitive interests and behaviors that result in clinically significant impairment in social, occupational, or other important areas of current functioning, not accounted for by general developmental delay. [5]
2.4.	ABA Intensity		In this document, this term refers to the intensity of ABA, measured in terms of the number of hours per week dedicated to direct ABA interventions [1]
2.5.	Challenging Behavior		Behaviors displayed by individuals with ASD that can negatively impact them, their parents and caregivers, or the community around them. Such behaviors may include self-injury, physically harmful acts, self-harming acts, and property destruction, among others.

2.6.	Diagnostic and Statistical Manual of Mental	DSM	An international reference used by health care professionals as the authoritative guide to the diagnosis of mental disorders.
2.7.	Early Intensive Behavioral Intervention	EIBI	An intervention based on the principles of ABA, considered a valuable treatment intervention for young children with ASD. [6]
2.8.	Education Professional		In this document, this term includes certified professionals working in education, such as teachers, teaching assistants, inclusion assistants, and heads of inclusions.
2.9.	Functional Assessment		In this document, this term refers to the comprehensive process of identifying and evaluating the environmental variables that may contribute to the development and persistence of problem behavior (such as indirect assessment, descriptive assessment, and functional analysis).
2.10.	Healthcare Professionals		Individuals who hold a current and valid license issued by DoH and are qualified by education, training, certification, and licensure to provide clinical services. [7]
2.11.	International Classification of Diseases	ICD	An international medical classification maintained by the World Health Organization to classify diseases, injuries, and causes of death globally.
2.12.	ABA Professional		In this document, this term refers to certified Applied Behavioral Analysts and Behavior Therapy Technicians who hold a current and valid license issued by DoH and are working in a licensed healthcare facility. [8]
2.13.	Multidisciplinary Team	MDT	In this document, MDT refers to the collaboration between specialized professionals providing various specialized services in the care provided to individuals with ASD to improve intervention efficiency, quality of life, and the care provided.
2.14.	Patient		Any individual who seeks or is receiving treatment or intervention from a Healthcare Professional. [7]
2.15.	Pre-school Age		In this document, pre-school age refers to neonates, infants, and young children under the age of 6 years on or before the 31st of August in any given year.
2.16.	Problem Behavior		A pattern of disruptive behavior that does not fall within social norms and could seriously impair a person's functioning and impact their (or their family's) quality of life.

2.17.	Risk Assessment	In this document, this term refers to assessing individuals with ASD for any challenging behavior that could risk harm to the individual or others around them, including parents, caregivers, and the professionals providing care.
2.18.	School-Age	In this document, school age refers to young children over 6 years of age as of the 31st of August in any given year who are eligible to enroll in school in Abu Dhabi, as well as older children, younger adolescents, and older adolescents.
2.19.	Skill-Based Assessment	In this document, this term refers to skills-based assessments conducted during ABA intervention, including observing and recording specific behaviors in the natural environment or clinical setting.
2.20.	Spectrum	The term "spectrum" in ASD refers to the heterogeneity of ASD, including its clinical presentation, severity of symptoms, and level of intellectual ability. [4]
2.21.	Standardized Assessments	In this document, this term refers to evidence-based and reliable standardized assessment instruments carefully selected for each patient to provide valuable information about the strengths and needs of individuals diagnosed with ASD. Many standardized assessment instruments (tests, scales, inventories) have been developed in accordance with the Standards for Educational and Psychological Testing, published by the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education. Some are published and sold by the developers, but many are sold by commercial publishers. Examples include instruments that evaluate individual performances or functioning levels in domains often addressed by ABA interventions, such as intellectual, communication, social, self-care, and other adaptive skills, as well as challenging behaviors.

3. Guideline Content

3.1. **Autism Spectrum Disorder (ASD) Presentation:**

3.1.1. ASD is characterized by patterns of social communication skills deficiency and repetitive restricted behavior, interests, or activities that affect learning, social interactions, and daily life functioning.[4][5][9]

3.1.2. ASD has a wide range of signs; its manifestations range from subtle problems of understanding and impaired social functioning to severe disabilities. However, ASD's variability results in diverse manifestations among patients. [1]

3.1.3. ASD is a lifelong condition with a profound impact on individuals, their families, and the community.

3.1.4. ASD typically emerges during early development. However, Individuals with ASD may present for clinical care at any point during development. [9] [10]

3.1.5. ASD symptoms might not become fully apparent until social demands exceed an individual's limit or may be masked by strategies learned later in life. Some individuals may not present to a healthcare professional until the later stages of life, if at all [5] [4] ASD may also commonly co-occur with other conditions such as epilepsy, attention-deficit hyperactivity disorder (ADHD), intellectual disability, and other developmental disabilities. [4]

3.2. **Approach to ASD:**

3.2.1. The multiple developmental and behavioral problems associated with ASD necessitate a Multidisciplinary Team (MDT) care approach, coordination of services, and advocacy for individuals and their families with early sustained intervention and the use of multiple intervention modalities where indicated. [10]

3.2.1.1. **MDT Approach**: Assessment and diagnosis of ASD should be approached by an MDT of professionals, all with formal professional training and experience in child development and neurodevelopmental and behavioral disorders, including those associated with ASD, as well as the common co-occurring conditions and their differential diagnosis.[11] This MDT may include but is not limited to the professionals listed in **Table 1.**

Physician*	Psychologist^	Licensed ABA Professional
Nurse	Occupational Therapist	Pediatric Geneticist
Social Worker	Education professionals#	Speech Language Pathologist
* In addition to **Development and Behavioral Pediatricians**, other physicians with additional formal training and experience in child development and neurodevelopmental and behavioral disorders may include those specializing in Family Medicine, Neurodevelopment Disability, Pediatrics, Pediatric Neurology, Psychiatry, and Child and Adolescent Psychiatry. ^ Psychologists with training and experience in **clinical psychology or neuropsychology.** # Mainly for School-Age Children.		

Table 1: ASD Assessment MDT members.

3.2.1.2. **Coordination of Services:** Collaborative efforts should be made to maximize the efficient use of resources to achieve optimal outcomes for the individual with ASD and their family.

3.2.1.2.1 The ASD MDT should consult with other professionals, including medical, allied health, disability, educational professionals, and the patient's family (or caregivers) to obtain further information about the individual being assessed. This collaboration supports a comprehensive needs assessment and diagnostic evaluation.

3.2.1.2.2 While other professionals may not be part of the assessment team, their input may be helpful in obtaining a more complete clinical picture of the individual's presentation in their everyday environment. Additionally, they can provide specialist guidance to explore alternative explanations for presenting signs and symptoms. [12]

3.2.1.2.3 Healthcare professionals should recognize that individuals with ASD may also have additional developmental disorders, medical comorbidities, mental health conditions, or emotional dysregulation[b]. Such patients should have access to the same range of therapeutic interventions as any other patient while ensuring all necessary precautions and actions are taken to accommodate the needs and safety of these patients. [13]

3.2.1.3. **Advocacy**: The MDT should always ensure a clear communication pathway with the patient's family (or caregiver) and advocate for the patient's best interest.

3.3. Referral for ASD Assessment

3.3.1. The referral for ASD assessment should be considered at any age when indicated, regardless of earlier assessments' findings. [13]

3.3.1.1. Children under three years of age with regression in language or social skills should be referred for ASD assessment. [13]

3.3.1.2. Children older than three years with regression in language or pediatric patients of any age with regression in motor skills should be referred to a pediatrician or pediatric neurologist prior to referral for ASD assessment. [14]

3.3.2. ASD should be part of the differential diagnosis for pre-school age children displaying an absence of age-appropriate developmental features, as typical ASD behaviors may not be evident in this age group.[13]

3.3.3. ASD screening tools alone should not rule in or rule out the need for ASD assessment.

3.3.4. A referral for ASD assessment should be initiated by at least a primary healthcare provider identifying the clinical signs of ASD, especially red flags that help identify children at high risk for developmental delay and ASD (Refer to **Appendix 1** for a detailed list of red flag signs for ASD) (SHC, 2022; DHA, 2021).

3.3.4.1. The ASD clinical signs should be tracked as an integral part of routine health and developmental surveillance procedures.[4]

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[b] Conditions include but are not limited to: ADHD; psychiatric & psychological disorders; seizure disorders; intellectual disability; sensory impairments; feeding disorders; sleep disorder; mobility difficulties; chromosomal abnormalities; elimination disorders; challenging behaviors; and other conditions requiring additional medical or behavioral treatments. [1]

3.4. **ASD Assessment and Diagnosis**

3.4.1. Clinical assessment should incorporate a high level of attention to features suggestive of ASD in social interaction and play, speech, language and communication difficulties, and behavior. The assessment should evaluate the aspects listed in **Table 2** [11][13] ASD assessment should also address the impact of other important considerations such as cognition, communication capacity, cultural, linguistic, and socio-economic diverse backgrounds, regional or remote location, and complex psychosocial factors [11] [12] **Table 2:** ASD Assessment Domains

Language and Communication	**Social Interaction**	**Play**	**Restricted & Repetitive Behaviors**	**Response to Sensory Stimuli#**
verbal and non-verbal communication	Reciprocity Social initiation Social responsiveness	Imagination and creativity	Repetitive use of objects Stereotyped behaviors$^{\Delta}$ Restricted interest in specific topics or activities.	Sensory seeking Sensory avoiding behaviors.
$^{\Delta}$ Hand flapping, body rocking, or other repetitive movements. # Tactile, Auditory, Visual, Olfactory, Gustatory (food texture), Proprioceptive & Vestibular.				

3.4.2. During ASD assessment, consider any potential risk of harm to and from the child or young person, and take appropriate precautions and action. [14]

3.4.3. ASD is a clinical diagnosis, like all other neurodevelopmental disorders. The available ASD screening tools should not be used to diagnose or rule out ASD. These tools have limitations and should be used to gather information about ASD risk as the basis for referral for ASD assessment, supplementing clinical assessment, and referral for specialized diagnostic assessment. Refer to **Appendix 2** for a summarized table. [13]

3.4.4. ASD diagnosis should encompass the following: [14]

3.4.4.1. Developmental history focusing on developmental and behavioral features consistent with the most updated version of the International Classification of Diseases (ICD) or Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria.

3.4.4.2. Details of the parents', caregiver's, or, if appropriate, the patient's concerns, and details of the patient's experiences at home, in education, and in social care.

3.4.4.3. A detailed medical and family history, along with a thorough physical examination. The assessment should include a systematic assessment for conditions that may coexist with ASD (3.2.1.2.3) in addition to signs of skin stigmata of neurofibromatosis or tuberous sclerosis, signs of injury such as self-harm or child maltreatment, and congenital anomalies and dysmorphic features such as macrocephaly or microcephaly.

3.4.4.4. An assessment of mental and emotional health and nutritional status.

3.4.5. All healthcare professionals involved in diagnosing ASD should use the current adopted versions of either the ICD or DSM diagnostic manuals when diagnosing patients with ASD.[13]

3.4.6. If there is uncertainty in the ASD diagnosis post-assessment, the patient should be kept under routine review by the MDT (add a note about the time frame), while considering any

new information. Uncertainty about ASD diagnosis may particularly occur in the following cases: [14]

3.4.6.1. Children younger than 24 months of age.

3.4.6.2. Children or young people with a developmental age of less than 18 months.

3.4.6.3. Children or young people for whom there is a lack of available information about their early life (for example, some looked-after or adopted children).

3.4.6.4. Older teenagers or young people with a complex coexisting mental health disorder (such as ADHD, conduct disorder, or attachment disorder), sensory impairment (such as severe hearing or visual impairment), or a motor disorder such as cerebral palsy.

3.4.7. In cases where a child or young patient has features of certain behaviors observed in ASD but does not fully meet the specific ICD or DSM diagnostic criteria for a definitive diagnosis, there should be a referral to further specialized services as appropriate: [14]

3.5. **Classification of ASD:**

3.5.1. According to the Disability Classification Manual for Abu Dhabi, 3rd edition, patients with autism must be classified as follows: [15]

3.5.1.1. **ASD Level 1 - Requiring Support**: Patients with ASD have certain behavioral patterns that require some support to function in social situations. Level 1 ASD patients resist changes to behavioral patterns and have difficulty shifting focus from their highly preferred interests or objects.

3.5.1.2. **ASD Level 2 - Requiring Substantial Support:** Patients with ASD at this level have prominent repetitive behavioral patterns or prominent excessive preoccupation that significantly affect different areas, causing considerable difficulty with communication, social interaction, and behavior. These patients experience significant distress if their activities and behavioral patterns are changed and resist shifting from their highly preferred interests or objects.

3.5.1.3. **ASD Level 3 - Requiring Very Substantial Support**: Patients with ASD at this level have prominent repetitive behavioral patterns or excessive preoccupations that significantly affect all functional abilities, leading to severe difficulties with communication, social interaction, and behavior. Common symptoms include the absence or limited use of speech. Other symptoms include self-injurious behaviors, repetitive movements, and restricted interests that exclude other activities. Level 3 ASD patients demonstrate significant dissatisfaction when any change is made to their daily routine and resist shifting from their highly preferred interests or objects.

3.6. **Treatment Interventions for patients with ASD:**

3.6.1. Early detection and treatment of ASD allow favorable outcomes. [1]

3.6.2. ASD intervention plans should be individualized, evidence-based, and delivered by qualified healthcare professionals who regularly interact with the patient. [1]

3.6.3. Interventional approaches for patients with or who exhibit traits of ASD should be comprehensive, addressing behavioral needs, educational supports, psychosocial

approaches, communication, environmental and cultural factors, and systemic issues, while also considering the appropriateness of pharmacological intervention. [16]

3.6.4. Before initiating any treatment intervention for patients with ASD, the MDT should conduct a thorough pre-intervention assessment that includes evaluating behavioral, emotional, and mental health difficulties; screening for medical conditions; addressing the differential diagnoses; and addressing cultural and environmental issues. [16]

3.6.5. The assessment should also include multiple factors that may increase the risk of challenging behaviors in children with ASD that include: [14]

3.6.5.1. Impairments in communication that may result in difficulty understanding situations or in expressing needs and wishes. [14]

3.6.5.2. Coexisting physical disorders, such as pain or gastrointestinal disorders, and coexisting mental health problems (3.2.1.2.3).

3.6.5.3. The physical environment, such as being loud, disorganized, or unpredictable.

3.6.5.4. The social environment, including home, school, and leisure activities.

3.6.5.5. Changes to routines or personal circumstances.

3.6.5.6. Developmental change, including puberty.

3.6.5.7. Exploitation, neglect or abuse by others.

3.6.5.8. Involuntary reinforcement of challenging behaviors.

3.6.5.9. The absence of predictability and structure.

3.6.5.10. Unmet emotional or attachment needs.

3.6.6. ASD Intervention should have the following overall objectives: [16]

3.6.6.1. Encouraging functional development.

3.6.6.2. Teaching skills for independent living.

3.6.6.3. Minimizing stress for the individual with ASD, their family, and their caregivers.

3.6.7. Specific social-communication intervention strategies for the core features of ASD could be considered for children with ASD, such as play-based strategies with parents, caregivers, and teachers to increase joint attention, engagement, and reciprocal communication. [14] Such strategies should:

3.6.7.1. Be adjusted to the patient's developmental level and abilities.

3.6.7.2. Aim to increase the parents', caregivers', teachers', or peers' understanding of, and sensitivity and responsiveness to, the child or young person's patterns of communication and interaction.

3.6.7.3. Include evidence-based strategies such as providing feedback through therapist modeling and video modeling.

3.6.7.4. Include techniques to expand the patient's communication skills, interactive play, and responsiveness to social established routines, along with parent and caregiver training and education programs.

3.6.8. Treatment interventions for patients diagnosed with ASD should be led by an MDT of qualified and trained healthcare professionals (**Table 1** under sub-clause 3.2.1.2.1).

3.6.8.1. Depending on the level of ASD, parent-mediated intervention programs should be considered for pre-school children and young patients with ASD, as these may help families interact with their child, promote development, and increase parental satisfaction, empowerment, and mental health.[13] Caregiver or teacher mediation could also be considered for pre-school children, while peer mediation could be considered for school-aged children. [14]

3.6.8.2. Healthcare professionals specialized in early intervention could provide education and support to families of ASD patients and early childhood teachers on how to provide structure and support for children in non-healthcare settings that are considered as the child's natural setting; such may include the patient's home, early childhood facilities, and community settings.[16]

3.6.9. An individualized care plan should be developed with the child or young individual and their families or caregivers. The care plan should outline the steps needed to address the factors that may provoke challenging behaviors, including:[14]

3.6.9.1. Coexisting physical, mental health, and behavioral problems

3.6.9.2. Support for families and caregivers.

3.6.9.3. Necessary environmental adjustments to minimize unpredictability in behavior.

3.6.9.4. Address communicative needs.

3.6.9.5. Address challenging behavior related to diverted attention.

3.6.10. Behavioral interventions are indicated to address a wide range of specific behaviors, including challenging behaviors in individuals with ASD, regardless of age.

3.6.10.1. These behavioral strategies should aim to reduce symptom frequency and severity while promoting the development of socially significant behaviors, such as functional and adaptive skills.[13]

3.6.10.2. Early Intensive Behavioral Intervention (EIBI) should be considered a valuable intervention for children with ASD to improve their cognitive ability, language skills, and adaptive behavior.[16]

3.6.11. Healthcare professionals should be aware that some challenging behaviors may be due to an underlying lack of skill development for coping with the severity of their difficulties and circumstances.[13]

3.6.11.1. Healthcare professionals should be aware that factors in the social and physical environment may contribute to both positive and challenging behaviors.[13]

3.6.12. If an individual's behavior becomes challenging throughout the intervention, a reassessment of the relevant factors identified in the care plan is warranted, along with any new environmental variable or factor that could provoke the challenging behavior. [1]

3.6.13. Patients diagnosed with ASD who are experiencing serious mental health disorders should be supported by mental health services appropriate to their age, situation, and culture.[16]

3.6.14. If there are no coexisting mental health, behavioral, or physical disorders or environmental problems identified as triggering or causing the challenging behavior, individuals with ASD should be offered a psychosocial intervention as a first-line intervention.[1]

3.6.14.1. Psychosocial intervention should be informed by a Functional Assessment of Behavior.

3.6.15. Strategies based on the principles of applied behavior analysis should be considered for children with ASD who have the verbal and cognitive ability to engage in behavioral therapy. [14] [16]

3.7. **Applied Behavioral Analysis therapy for patients with ASD:**

3.7.1. ABA is an international standard of care for individuals diagnosed with ASD and should only be delivered by licensed ABA professionals after determining patient needs based on professional standards of care. [1]

3.7.2. The ABA should be individualized and based on clinical assessment, patient needs, and other variables, such as the intensity of behavioral targets and the patient's response to intervention. Research has not established an age limit beyond which ABA is ineffective, and therefore, ABA may be effective across the lifespan. [1]

3.7.3. It is recommended to start ABA as early as developmental delays are identified for better long-term outcomes. [17]

3.7.4. ABA interventions are not limited to challenging behaviors and may apply to skill acquisition and skill maintenance.

3.7.5. The ABA intervention plan should incorporate several types of assessments (functional, skills-based, standardized, and risk assessment) and reinforcement techniques (including generalization and maintenance procedures) when setting the intervention goals.

3.7.5.1. If a patient is known to engage in challenging behavior following assessment, there should be a function-based intervention with ongoing monitoring to ascertain the effectiveness of the intervention. It may be necessary to make intervention changes as per the needs of the individual should the behavior worsen or remain unchanged.

3.7.5.2. ABA professionals should consider the following when conducting risk assessments for an individual with ASD who exhibits challenging behavior:

3.7.5.2.1 Physical harm to the patient, parents, caregivers, or the environment
3.7.5.2.2 Wandering or other behavior that necessitates interaction with first responders.
3.7.5.2.3 Emergency room visits.
3.7.5.2.4 Destruction of property.
3.7.5.2.5 Negative impact on development of prosocial, communication, and adaptive skills.
3.7.5.2.6 Ability to function independently.
3.7.5.2.7 Significant emotional distress for the patient or their parents and caregivers.

3.7.6. ABA interventions should be consistent and evidence-based with the following core characteristics [1] [17]

3.7.6.1. Objective assessment and analysis through observing how the environment affects an individual's behavior.

3.7.6.2. Understanding the context of the behavior and the behavior's value to the patient, the patient's family, and the community.

3.7.6.3. Promotion of the individual's dignity.

3.7.6.4. Utilize ABA principles and procedures to improve the patient's health, skills, independence, quality of life, and autonomy.

3.7.6.5. Informed clinical decision-making through consistent, continuous, and objective assessment and data analysis.

3.7.7. In addition to all ABA core characteristics, the intervention plan should incorporate the following practice features: [1]

3.7.7.1. A comprehensive assessment describing specific levels of behaviors throughout the intervention, with subsequent establishment of the intervention goals.

3.7.7.2. Understanding the value and social importance of behaviors targeted in the overall goals.

3.7.7.3. Efforts made throughout the intervention towards collaboration in developing the intervention goals with the patient, their parents and caregivers, if applicable, and other professionals delivering care to the patient.

3.7.7.4. A focus on establishing small increments of behaviors that build toward more significant changes in abilities related to improved health, safety, skill acquisition, and levels of independence and autonomy.

3.7.7.5. Acquiring and analyzing direct observational data on behavioral targets during the intervention and follow-up to maximize and maintain progress toward intervention goals.

3.7.7.6. Design and manage the social and learning environments incorporated in the ABA intervention to minimize challenging behaviors and maximize the rate of progress toward all goals.

3.7.7.7. Linking the functions and reasons for challenging behaviors with the planned intervention strategies.

3.7.7.8. Using a thoroughly constructed, individualized, and detailed behavior-analytic intervention plan that utilizes reinforcement and other behavioral principles, excluding non-evidence-based modalities.

3.7.7.9. Using individually designed intervention protocols implemented repeatedly, frequently, and consistently across environments until discharge criteria are met (further details in **Table 3** – sub-clause **3.13.5**).

3.7.7.10. Providing direct support and training for family members and involved professionals to promote optimal functioning and ensure the generalization and maintenance of behavioral skills.

3.7.7.11. Establishing a comprehensive infrastructure for supervision of all assessment and intervention.

3.7.8. ABA hours vary depending on the level of an individual's ASD and their pre-intervention assessment. ABA hours may subsequently increase or decrease based on the patient's response to intervention and needs to reach intervention goals.

3.7.8.1. Young children may start with a few hours of therapy per day with the goal of increasing the intensity of therapy as their ability to tolerate and participate improves.

3.7.8.2. Hours of ABA therapy may decrease over a pre-determined amount of time when the patient has met most of the intervention goals and is moving toward discharge from ABA service.

3.7.9. Effective ABA intervention is not determined by a fixed number of hours or sessions (17) (18)

3.7.10. Where appropriate, it is recommended to integrate ABA hours into a child's hours of education interventions.

3.7.11. It is recommended to unnecessary avoid gaps in intervention, when possible, as such delays may result in increased costs and greater dependence on more intensive services.

3.7.12. Intervention duration is effectively managed by evaluating the patient's response to intervention and achieving planned goals through objective data measures and visual analysis.

3.7.12.1. Other factors that affect duration may include the level of ASD, severity of disability, and compliance with therapy (including financial reasons).

3.7.13. Some patients will continue demonstrating medical necessity and require continued intervention across multiple periods.

3.8. **Intervention Models in ABA**

3.8.1. ABA models differ from one another in their complexity, specificity, and the extent to which they were designed primarily for use with patients diagnosed with ASD.

3.8.2. If one or more ABA procedures do not produce the desired outcomes, a different procedure may be systematically implemented and evaluated for its effectiveness through frequent and continuous evaluations.

3.8.3. In the process of identifying the required ABA intervention model, ABA professionals should conduct an appropriate assessment to determine the needed ABA model.

3.8.4. ABA intervention models are categorized as **Focused** and **Comprehensive,** each determined by the required ABA intensity. (1)

3.8.4.1. **Focused ABA** refers to intervention provided directly to the patient for a specific or limited number of behavioral and skill development targets. It is not restricted by age, cognitive level, or co-occurring conditions. Intervention intensity may range between 10-25 hours per week. (1)

3.8.4.2. **Comprehensive ABA** refers to intervention across the multiple affected developmental domains, such as cognitive, communicative, social, emotional, adaptive functioning, and maladaptive behaviors[c]. Intensity levels **may be divided between those provided in a**

[c] Maladaptive behaviors such as noncompliance, tantrums, and stereotypy.

clinical setting and non-healthcare facility setting[d]. This intensity **may be** necessary to achieve meaningful improvements in many treatment targets [(1)].

3.8.4.3. It is important to note that ABA services are bound to the DOH insurance coverage for reimbursement in clinical settings.

3.8.5. Focused ABA [(1)]

3.8.5.1. Focused ABA intervention may involve increasing socially appropriate behavior or reducing problem behavior as the primary target. It is also suitable for patients who need to acquire skills such as communication, tolerance of change in environments and activities, self-help, and social skills. [(1)]

3.8.5.2. It is critical to target increases in appropriate alternative behavior even when reduction of problem behavior is the primary goal. The absence of appropriate behavior is often the precursor to serious behavior disorders. [(1)]

3.8.5.2.1 When prioritizing multiple intervention targets, professionals should consider:

3.8.5.2.1.1. Behaviors that threaten the health or safety of the patient or others, or that constitute a barrier to quality of life (e.g., severe aggression, self-injury, property destruction, or noncompliance). [(1)]

3.8.5.2.1.2. The absence of developmentally appropriate adaptive, social, or functional skills that are fundamental to maintaining health, social inclusion, and increased independence (e.g., toileting, dressing, feeding, and compliance with medical procedures). [(1)]

3.8.5.2.2 Structuring the intervention for the generalization of skills outside of highly structured and controlled teaching sessions is critical.

3.8.5.3. Focused ABA plans are suitable for individuals who require behavioral intervention for a limited number of key functional skills or who require prioritized intervention for acute problem behavior.

3.8.5.4. The Key functional skills may include:

- Establishing responses to verbal instructions and following them
- Social communication skills
- Compliance with medical and dental procedures
- Sleep hygiene
- Self-care skills
- Safety skills
- Independent leisure skills

3.8.5.5. Severe problem behaviors that require a focused intervention include:

[d] Education and academic institutes, early intervention centers, home setting and other public places in the community.

- Self-injury
- Aggression
- Pica
- Elopement
- Feeding disorders
- Repetitive behaviors
- Property destruction or environmental damage
- Noncompliance and disruptive behavior
- Dysfunctional social behavior

3.8.6. When the focus of an intervention involves reducing severe problem behavior, it is important to determine which situations are most likely to precipitate the problem behavior and identify its function for the individual.

3.8.6.1. Identifying the problem behavior's function enables the development of an intervention plan that alters the environment to reduce the cause of the problem behavior or replace it with a more appropriate behavior that serves the same function for the individual.

3.8.6.2. A functional analysis procedure may be required to empirically demonstrate the function of the problem behavior to develop the most effective intervention protocol.

3.8.7. Severe destructive behavior may require specialized programs with focused ABA therapy that exceeds 25 hours per week (such as severe self-injurious behavior).

3.8.7.1. It is recommended that these programs be linked to a detailed psychological assessment to understand the function of severe destructive behavior.

3.8.7.2. The programs should also assess the need to be implemented alongside other therapies, such as occupational and speech and language therapies.

3.8.7.3. Patients with ASD who display co-occurring severe destructive behavior disorders that are given separate diagnoses (such as Stereotypic Movement Disorder with severe self-injurious behavior) require ABA programs with higher professional-to-patient ratios and close on-site supervision. Such intervention programs should have specialized intervention environments.

3.8.8. Focused ABA intervention may be delivered in an individual or small group setting, depending on the intervention and goals.

3.8.8.1. ABA in a small group may typically involve developing peers or individuals with similar diagnoses and may include rehearsing and practicing behavioral targets with each other.

3.8.9. Comprehensive ABA [(1)]

3.8.9.1. Initially, this intervention model typically involves one-to-one staffing and gradually includes small-group formats as appropriate.

3.8.9.2. Comprehensive ABA provided to young children may significantly narrow the development gaps at risk of rapid progression between a young, newly diagnosed child with autism and same-age peers.

3.8.9.2.1 This narrowing in gaps has been demonstrated to protect individuals with ASD against the future development of irreversible, lifelong disabling conditions.

3.8.9.3. Comprehensive intervention could also be appropriate for older patients diagnosed with ASD, particularly if they engage in severe or harmful behaviors across environments.

3.8.9.4. Initially, intervention is typically provided in structured therapy sessions, which are subsequently integrated with more naturalistic methods as appropriate.

3.8.9.5. Training family members, caregivers, and other professionals (such as education professionals) who interact with ASD patients to manage problem behavior and to interact with the patient in a therapeutic manner is a critical component.

3.8.9.6. Comprehensive ABA components may be drawn from the following areas:

- Adaptive and self-care skills
- Attending and social referencing
- Cognitive functioning
- Community participation
- Coping and tolerance skills
- Emotional development
- Family relationships
- Play and leisure skills
- Pre-academic skills
- Safety skills
- Reduction of interfering or inappropriate behaviors
- Self-advocacy and independence
- Self-management
- Social relationships
- Language and communication
- Vocational skills

3.9. **ABA Intervention Plan** [(1)]

3.9.1. It is recommended to establish an Individualized ABA intervention plan that is based on ABA assessment.

3.9.1.1. The ABA assessment should identify strengths and weaknesses across different behavioral domains and potential barriers to the patient's progress.

3.9.1.2. ABA goals should be identified during the assessment process, with each goal defined in a specific, measurable way to allow frequent evaluation of progress.

3.9.1.3. The number and complexity of goals should be consistent with the intensity and setting of service provision.[(1)]

3.9.1.4. ABA goals should be prioritized based on their implications for the patient's health and well-being, the impact on the patient, family, and community safety, and their contribution to functional independence.[(1)]

3.9.1.5. The appropriateness of existing and new goals should be considered periodically.

3.9.1.6. ABA intervention assessment may also include:

3.9.1.6.1 Patient's recorders review.

3.9.1.6.2 Interviews and rating scales (such as adaptive-behavior assessments and functional assessments).

3.9.1.6.3 Direct assessment and observation that serve as the primary basis for identifying preintervention levels of functioning, developing and adapting intervention protocols on an ongoing basis, and evaluating responses to intervention and progress toward goals.[1]

3.9.1.6.4 Assessments from other professionals periodically to help guide the assessment or intervention. Such assessments may include general intellectual functioning, medical status, academic performance, among others.

3.9.2. There should be a measurement system for tracking intervention progress, and the results should be shared with the MDT.

3.9.2.1. The system should be individualized to the patient, the intervention context, the critical features of the behavior, and the available resources of the intervention environment.

3.9.2.2. Specific, observable, and quantifiable measures should be collected for each goal and should be sensitive to capture meaningful behavior change relative to the ultimate intervention goals.[1]

3.9.3. For school-aged children, the ABA intervention may include goals that are incorporated into the individual's education plan in collaboration with education professionals.

3.9.4. **Functional Assessment** is warranted when a patient exhibits problem behavior at a level that is disruptive to the environment or harmful to the patient or others.

3.9.4.1. Functional assessment should be designed to identify where, when, and why a problem behavior occurs and should be incorporated into the problem behavior intervention plan in the form of a function-based intervention.

3.9.4.2. The functional assessment process typically includes multiple sources of information, similar to the ABA intervention assessment.

3.9.4.3. Direct observation may take the form of an assessment of ongoing interactions in the natural environment or the form of a functional analysis.

3.9.4.4. Functional analyses can be complex and may require higher staffing ratios and more direction by the supervising behavior analyst.

3.9.4.5. ABA care should transition from a healthcare setting to educational settings when patients transition from pre-school age to school age.

3.10. **Multi-Disciplinary Care and Continuity of Care**

3.10.1. In general, any care for patients with ASD should be conducted through an MDT of different healthcare and non-healthcare professionals based on the patient and intervention needs (refer to **Table 1** under 3.2.1.1).

3.10.2. The MDT should be led by the physician with formal training in child development and neurodevelopmental and behavioral disorders and should be coordinated by a coordinator who would maintain all relevant records and coordinates the MDT's activities.

3.10.3. ABA Intervention should be provided by a licensed ABA professional[e] while both are working within the scope of their training, practice, and competence.

3.10.4. It is recommended that the ABA intervention assessment, plan, and outcome be shared with the MDT Lead looking after the patient, the patient's psychologist, and the other MDT team members.

3.10.5. The MDT should establish referral mechanisms and coordinate the patient's care and transition between different intervention settings and through various age groups.

3.10.6. ABA Care coordination should continue between clinical and education professionals when patients undergoing ABA intervention transition from pre-school to school age.

3.10.7. When possible, the MDT should integrate a holistic approach toward the overall care provided and include within the care home-based interventions along with other environments where the patient spends time and interacts with others.

3.10.8. It is essential to ensure ASD-appropriate services are accessible and reflect the flexibility required by the diversity of adults with ASD.

3.11. **Assessment from Other Professionals:**

3.11.1. Periodic assessments from other professionals may be helpful in guiding intervention or assessing progress. Examples might include assessment of general intellectual functioning, medical status, academic performance, among others. [1]

3.12. **ABA Intervention Setting** [1]

3.12.1. There are no specific practice settings for specific ABA intervention models.

3.12.2. ABA may be delivered in multiple settings to promote generalization and maintenance of therapeutic benefits and may include:

3.12.2.1. Healthcare Facilities

3.12.2.2. Specialized centers

3.12.2.3. Specialized clinics

3.12.2.4. Other non-healthcare facilities[f]

3.12.3. ABA intervention may be provided in any location where therapeutic benefits and intervention goals can be achieved.

3.12.4. Where indicated, it is recommended that ABA intervention be delivered in subsequent educational and therapeutic settings to successfully support and transition patients and ensure continuity of care.

3.13. **Discharge from ABA intervention**

3.13.1. The desired outcomes for discharge should be specified at the initiation of services and refined throughout the intervention process.

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[e] Licensed ABA professional refers to those who are licensed by DoH and work in a healthcare facility and those licensed by Department of Community Development and work in a non-healthcare facility. (MOHAP, DoH, DHA, & SHA, 2022)

[f] Education and academic institutes, early intervention centers, home setting and other public places in the community.

3.13.2. A description of the roles and responsibilities of all providers and effective dates for when behavioral targets must be achieved should be specified and coordinated with all providers, the patient, and the patient's family members.

3.13.3. The transition of care from a healthcare provider to a non-healthcare setting and discharge planning from an intervention program should include a written plan that specifies details of monitoring and follow-up as is appropriate for the individual and the family. The plan should fulfill the criteria described in **Table 3**.

3.13.4. The MDT should ensure an integrative model of care in the transition of ABA care provided to individuals with ASD between a healthcare provider and a non-healthcare setting.

3.13.5. A patient receiving a comprehensive intervention program may step down to a Focused intervention model to address remaining goals prior to transitioning out of intervention.

3.13.6. **Table 3:** Transition of Care and Discharge from ABA Criteria

Transition of Care and Discharge from ABA Criteria	
Goal Achievement	The individual has met the majority, or all the identified goals set at the beginning of the intervention. Goals should include improvements in communication, social skills, adaptive behavior, and reduction in challenging behaviors.
Skill Generalization	The individual can generalize learned skills across different settings, people, and situations. Skills are demonstrated consistently in natural environments, not just during therapy sessions.
Behavior Stability	There is a significant and sustained reduction in challenging behaviors. Positive behaviors and skills are stable over time without the need for intensive intervention.
Independence	The individual shows an increased level of independence in daily living skills. The individual can perform tasks and engage in activities with minimal or no support.
Maintenance Plan	A maintenance plan is in place to ensure continued progress and prevent regression. The patient's family, caregivers, and educators are trained to implement strategies to maintain skills
Transition to Less Intensive Services	The individual is ready to transition to less intensive services, such as school-based support or community programs. There is a plan for ongoing support and monitoring as needed.
Parental and Caregiver Involvement	Parents and caregivers are actively involved in the therapy process and are equipped to support the individual post-discharge. Parents and caregivers have received training and resources to manage behaviors and encourage skill development at home.

Social Integration	The individual successfully engages in social interactions and participates in community activities. Exhibits appropriate social behaviors and can form relationships
Quality of Life Improvement	There is an overall improvement in the individual's quality of life, including happiness, engagement, and fulfillment. The individual is participating in meaningful activities and achieving a higher level of functioning.

3.13.7. Indications for discharge evaluation and planning from ABA may include:

3.13.7.1. The patient achieved intervention goals.

3.13.7.2. The patient no longer meets the diagnostic criteria for ASD.

3.13.7.3. The patient does not demonstrate progress toward set goals.

3.13.7.4. The family is interested in discontinuing services.

3.13.7.5. The family and provider are unable to reconcile critical issues in intervention planning and delivery.

3.13.8. When there are questions about the appropriateness or efficacy of services in an individual case, the reviewing body should include a Behavior Analyst with experience in applied contexts implementing ABA strategies with patients with ASD.

4. Relevant References Documents

No.	Date	Reference Name	Relation Explanation / Coding / Publication Links
1	2020	CASP (2024). Applied Behavior Analysis Intervention of Autism Spectrum Disorder: Practice Guidelines for Healthcare Funders and Managers. Third Edition. Retrieved from The Council of Autism Service Providers.	https://www.casproviders.org/asd-guidelines/
2	2012	NICE. (2012). The guidelines manual NICE process and methods 9 Developing and wording guideline recommendations. From National Institute for Health and	https://www.nice.org.uk/process/pmg6/chapter/developing-and-wording-guideline-
3	2021	Cooper, J., Heron, T., & Heward, W. (2021). Applied Behavior Analysis. 3rd ed. Pearson.	https://www.pearson.com/en-us/subject-catalog/p/applied-behavior-
4	2021	DHA. (2021). Dubai Clinical Practice Guidelines for Autism Spectrum Disorder (ASD) in Children and Adolescents (from Birth to 18 Years of Age). Retrieved from Dubai Health Authoritv	https://dha.gov.ae/uploads/112021/f5d3aa75-37c3-4237-ba9a-d9e4fba52531.pdf
5	2024	CDC. (2024). Clinical Testing and Diagnosis for Autism Spectrum Disorder. Autism Spectrum Disorder (ASD). Retrieved from Center for Disease Control and Prevention	https://www.cdc.gov/autism/hcp/diagnosis/index.htm
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7	2017	DoH. (2017). Healthcare Professional Manual. Retrieved from Department of Health, Abu Dhabi	https://www.doh.gov.ae/en/resources/policies
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11	2022	SHC. (2022). Evidence-Based Clinical Practice Guideline for Management of Children with Autism Spectrum Disorder (ASD) First Edition. Retrieved from Saudi Health Council, National Center for Developmental Behavioral Disorders.	https://shc.gov.sa/Arabic/Documents/AUTISM.pdf
12	2018	Whitehouse, A. J., Evans, K., Eapen, V., & Wray, J. (2018). national guideline for the assessment and diagnosis of autism spectrum disorders in Australia. Australia: Brisbane: Cooperative Research Centre for Living with	https://www.autismcrc.com.au/best-practice/sites/default/files/resour
13	2016	SIGN. (2016). Assessment, diagnosis, and interventions for autism spectrum disorders. Retrieved from Scottish Intercollegiate Guidelines Network.	https://www.sign.ac.uk/our-guidelines/assessment-diagnosis-and-interventions-for-autism-spectrum-disorders/
14	2017	NICE. (2017). Autism spectrum disorder in under 19s: recognition, referral, and diagnosis. Retrieved from National Institute for Health and Care Excellence.	https://www.nice.org.uk/guidance/cg128
15	2020	DCD, & ZHO. (2020). Disability Classification Manual for the Emirate of Abu Dhabi 3rd edition. Retrieved from Official Gazette - Year 2021 First Edition, General Secretariat of the Executive Council, Abu Dhabi	https://www.abudhabi.gov.ae/-/media/sites/adgov/gazettes/2021/ar/1arabic2021.ashx
16	2022	Whaikaha and Ministry of Education New Zealand. (2022). Aotearoa New Zealand Autism Guideline: He Waka Huia Takiwātanga Rau: Third edition. Wellington: Whaikaha. Retrieved from Whaikaha – Ministry of Disabled People New Zealand.	https://www.whaikaha.govt.nz/assets/Autism-Guideline/Aotearoa-New-Zealand-Autism-Guideline-Third-Edition.pdf
17	2021	Fuentes, J., Hervás, A., & Howlin, P. (2021). ESCAP practice guidance for autism: a summary of evidence-based recommendations for diagnosis and intervention. 30(6), 961-984.	www.doi.org/10.1007/s00787-020-01587-4
18	2019	Barthélémy, C., Fuentes, J., Howlin, P., & van der Gaag, R. (2019). People with Autism Spectrum Disorder. Identification Understanding Intervention. Retrieved from Autism-Europe.	https://www.autismeurope.org/wp-content/uploads/2019/09/People-with-Autism-Spectrum-Disorder.-Identification-Understanding-Intervention_compressed.pdf
19	2022	Choi, K. R. et al. (2022). Patient outcomes after applied behavior analysis for autism spectrum disorder. Journal of Developmental & Behavioral Pediatrics, 43(1), 9-16.	**www.doi.org/**10.1097/DBP.0000000000000995

5. Appendix

Table of Content

5.1. **Appendix 1:** Red Flag Signs and Symptoms for ASD in 12–18-month-old Children^

Social communication	**Language**
▪ Reduced or atypical: ○ Eye gaze and shared or joint attention. ○ Sharing of emotion (less positive and more negative affect). ○ Social or reciprocal smiling. ○ Social interest and shared enjoyment. ○ Orienting when his or her name is called. ○ Coordination of different modes of communication (e.g., eye gaze, facial expression, gesture, vocalization) ▪ Regression or loss of social-emotional connectedness.	▪ Delayed or atypical: ○ Babbling, particularly back-and-forth social babbling. ○ Language comprehension and production (e.g., delayed, or odd first words or unusually repetitive). ▪ Unusual tone of voice (including crying). ▪ Development of gestures (e.g., pointing, waving). ▪ Regression or loss of communication skills (including words).
Play	**Visual or other sensory and motor skills**
▪ Reduced or atypical: ○ Imitation of actions. ○ Functional and imaginative play. ▪ Excessive or unusual manipulation or visual exploration of toys and other Objects. ▪ Repetitive actions with toys and other objects; often not in the way the toys or objects are intended.	▪ Atypical visual tracking, visual fixation (e.g., on lights, extreme lateral gaze) Under- or over-reaction to sounds or other forms of sensory stimulation. ▪ Delayed fine and gross motor skills, atypical motor control (e.g., reduced muscle tone, reduced postural control for age). ▪ Repetitive motor behaviors, atypical posturing of limbs or digits.

Most common clinical signs or "red flags" include delay in communication including:

a. Any child not using single words by 16 months of age or some two-word phrases by 2 years of age should be further evaluated.
b. Children who do not use gestures (such as pointing or waving) or who cannot follow nonverbal communication by 12 months should also be referred for evaluation.

Loss of skills at any age is a serious warning sign that warrants immediate referral to an appropriate diagnostic team.

Adopted from DHA 2021 citing Anagnostou et al. 2014.

^Dubai Health Authority, 2021. Dubai Clinical Practice Guidelines for Autism Spectrum Disorder (ASD) in Children and Adolescents (from Birth to 18 Years of Age) - Version 1, DHA/HRS/HPSD/CG-68
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Anagnostou et al. 2014. Autism spectrum disorder: advances in evidence-based practice. CMAJ. 15;186(7):509-19. doi: 10.1503/cmaj.121756. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3986314/

5.2. **Appendix 2:** Summary Table of available screening tools for Autism Spectrum Disorder[!]

Tool	Age Range	Method of Administration
Autism Behavior Checklist (ABC)	Young Children at 2 years of age to young adolescents up to 14 years of age.	Parent rated
Asperger Syndrome Diagnostic Interview (ASDI)	Children and Adolescent from 0-18 years of age and Adults	Interview and healthcare professional rated
Asperger Syndrome Diagnostic Scale (ASDS)	Young Children at 5 years of age to adolescents up to 18 years of age	Parent or Teacher rated
Autism Screening Questionnaire (ASQ)	Children and Adolescent from 0-18 years of age and Adults	Parent rated
Autism Quotient (AQ)	Children and Adolescent from 0-18 years of age and Adults	Self or Parent rated
Childhood Autism Rating Scale (CARS)*	young Children at 2 years of age to adolescents up to 18 years of age	Clinician rated
Childhood Autism Screening Test (CAST)	Young Children at 2 years of age to young adolescents up to 11 years of age	Parent rated
Communication and Symbolic Behavior Scales Developmental Profile Infant-Toddler Checklist (CSBS-DP-IT-Checklist)*	Infants at 6 month of age and up to young children at 24 months of age	Parent rated
Gilliam Asperger's Disorder Scale (GADS)	Young children at 3 years of age and up to adults at 22 years of age.	Parent or Teacher rated
Checklist for Autism in Toddlers (M-CHAT R/F)*	Young children at 16 month of age and up to 30-month age.	Parent rated
Social Responsiveness Scale (SRS)	Young children at 4 years of age to adolescents up to 18 years of age	Parent or Teacher rated

* Tool available in Arabic Language

Some studies have demonstrated the importance of recognizing gender-specific differences in ASD presentation through screening tools such as The Questionnaire for Autism Spectrum Conditions (QASC) that is designed to assess female-specific ASD-Level 1 traits. This approach, however, has not been adopted by international guidelines yet.[+]

[^] Adopted from Dubai Health Authority, 2021. Dubai Clinical Practice Guidelines for Autism Spectrum Disorder (ASD) in Children and Adolescents (from Birth to 18 Years of Age) - Version 1, DHA/HRS/HPSD/CG-68. Available at: https://dha.gov.ae/uploads/112021/f5d3aa75-37c3-4237-ba9a-d9e4fba52531.pdf

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