

AUTISM SPECTRUM DISORDER IN CHILDREN: THE CRITICAL NEED FOR AN INTERDISCIPLINARY APPROACH

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Abstract

Autism Spectrum Disorder (ASD) is a complex, heterogeneous neurodevelopmental condition characterized by persistent deficits in social communication and interaction, alongside restricted, repetitive patterns of behavior, interests, or activities. Its prevalence has risen dramatically worldwide, posing a significant public health challenge. The etiology of ASD is multifactorial, involving a strong genetic predisposition intertwined with environmental, immunological, and metabolic factors. This complexity necessitates a move beyond a singular disciplinary perspective. This comprehensive review elucidates the clinical manifestations, diagnostic criteria according to the ICD-11, and the intricate etiological landscape of ASD. We provide a detailed analysis of contemporary management strategies, encompassing psychopharmacology for co-occurring conditions, innovative biological treatments under investigation, and evidence-based behavioral interventions. A central thesis of this article is that optimal outcomes for children with ASD are achieved only through a cohesive, patient-centered, interdisciplinary approach that integrates medical, therapeutic, educational, and family-based support systems.

Keywords: Autism Spectrum Disorder (ASD), Neurodevelopmental Disorder, ICD-11 Classification, Social Communication Deficits, Restricted, Repetitive, Behaviors (RRBs), Sensory Processing Differences, Heterogeneity.

Introduction

1. Introduction: Beyond the Stereotypes

Autism Spectrum Disorder is not a single disease but a spectrum of conditions with a wide range of symptom severity and functional impairment. The historical description of children being "in a frame" or "detached from reality" is now understood through the lens of neurodiversity. These





behaviors often represent differences in sensory processing, communication styles, and neural connectivity. Core challenges include:

- **Social Communication and Interaction Difficulties:** Ranging from a complete lack of spoken language to difficulties with the pragmatic use of language, understanding non-verbal cues, and developing age-appropriate peer relationships.
- **Restricted and Repetitive Behaviors (RRBs):** This includes motor stereotypies (e.g., hand-flapping, rocking), insistence on sameness, inflexible adherence to routines, highly restricted interests, and hyper- or hypo-reactivity to sensory input.

Furthermore, ASD is frequently accompanied by co-morbid medical and psychiatric conditions, such as intellectual disability, epilepsy, anxiety, depression, gastrointestinal disorders (constipation, diarrhea), and sleep disturbances, underscoring its whole-body impact.

2. Clinical Classification and Diagnostic Nuances (ICD-11)

The World Health Organization's ICD-11 (2018) provides a refined framework for diagnosing ASD (code 6A02). It moves beyond older subcategories like Asperger's syndrome, focusing instead on a dimensional approach that specifies key functional parameters. This allows for a more personalized clinical description:

- ✓ **The Core Diagnosis:** 6A02 Autism Spectrum Disorder.
- ✓ **Intellectual Development:** The diagnostician must specify if the disorder is accompanied by a "disorder of intellectual development" or "without a disorder of intellectual development." This is crucial for educational and support planning.
- ✓ **Functional Language:** A separate specification is made for language impairment, ranging from "mild or no impairment" to "impaired functional language" to "absence of functional language."
- ✓ **Associated Medical Conditions:** The classification requires noting the presence of known medical or genetic conditions (e.g., Fragile X syndrome, Rett syndrome).

This detailed specification, as seen in codes like 6A02.3 (ASD with intellectual disability and with impaired functional language), creates a more accurate and actionable clinical profile than a simple "autism" label.

3. Epidemiology and the Rising Prevalence

The global increase in ASD prevalence is well-documented. Current data from the CDC in the United States indicates approximately 1 in 36 children are identified with ASD. This rise is attributed to a confluence of factors:

- ✓ **Broadened Diagnostic Criteria:** Increased awareness and the inclusion of milder forms of the spectrum.
- ✓ **Improved Surveillance and Screening:** Enhanced early childhood screening programs.
- ✓ **Greater Public and Professional Awareness:** Parents and healthcare providers are more knowledgeable about the early signs.
- ✓ **Potential Environmental Factors:** While not fully understood, research is exploring the role of parental age, prenatal exposure to certain medications or toxins, and complications during pregnancy or birth.



The consistent 4:1 male-to-female ratio suggests a potential protective effect in females or a different phenotypic expression, making diagnosis in girls sometimes more challenging.

4. Etiology: A Complex Interplay of Genes and Environment

The quest to understand the causes of ASD has revealed immense complexity. It is now clear that there is no single cause, but rather a multifactorial origin:

- ✓ **Genetic Factors:** Heritability is estimated to be between 70-90%. Hundreds of genes have been implicated, many involved in synaptic function, neuronal communication, and brain development. These include rare mutations with large effects (e.g., in genes like *SHANK3*, **NLGN3/4X**) and common genetic variations that each contribute a small risk.
- ✓ **Prenatal and Perinatal Factors:** Advanced parental age (both maternal and paternal), maternal illness during pregnancy (e.g., rubella), certain prenatal exposures (e.g., valproate), and complications during birth (e.g., oxygen deprivation) are associated with an increased risk.
- ✓ **Neurological and Biological Mechanisms:** Differences in brain structure, connectivity, and neurochemistry are well-documented. Theories include an imbalance between excitatory (glutamate) and inhibitory (GABA) neurotransmission, synaptic pruning abnormalities, and neuroinflammation.

The fact that a specific cause is identified in only about 40% of cases highlights the vast amount of research still required.

5. The Interdisciplinary Management Framework

Effective management of ASD requires a team of professionals working in concert. This interdisciplinary team may include:

- ✓ **Developmental Pediatricians/Child Neurologists:** For medical diagnosis and management of co-occurring conditions like epilepsy.
- ✓ **Child Psychiatrists:** For managing complex behavioral challenges and co-morbid psychiatric conditions.
- ✓ **Psychologists:** For diagnostic assessment and implementing behavioral therapies (e.g., ABA).
- ✓ **Speech-Language Therapists:** To address communication challenges, both verbal and non-verbal.
- ✓ **Occupational Therapists:** To help with sensory integration, motor skills, and activities of daily living.
- ✓ **Special Education Teachers:** To create and implement individualized educational plans (IEPs).

6. Pharmacotherapy: Targeting Co-occurring Symptoms

Medication does not treat the core symptoms of ASD but can be highly effective for managing debilitating co-occurring conditions.





a) **Atypical Antipsychotics:**

a. **Risperidone & Aripiprazole:** These are the only two FDA-approved medications for irritability associated with ASD in children. They can significantly reduce aggression, self-injury, and severe tantrums. Monitoring for side effects like weight gain and metabolic changes is essential.

b) **Selective Serotonin Reuptake Inhibitors (SSRIs):**

a. Used for anxiety, depression, and obsessive-compulsive behaviors. The evidence is mixed, particularly for repetitive behaviors, and requires careful, individualized titration.

c) **Stimulants and Non-Stimulants for ADHD:**

a. **Methylphenidate and Atomoxetine:** Can reduce hyperactivity and inattention in children with ASD, though they may be less effective and have more side effects than in children with ADHD alone.

d) **Anticonvulsants and Alpha-2 Agonists:**

a. **Valproate, Lamotrigine:** Used for mood instability and aggression, especially if there is a co-morbid seizure disorder.

b. **Clonidine, Guanfacine:** Effective for reducing hyperactivity, impulsivity, and emotional outbursts.

e) **7. Novel and Emerging Therapeutic Approaches**

f) Research is focusing on correcting underlying neurobiological abnormalities.

g) **Oxytocin:** Studies investigating intranasal oxytocin have shown some promise in improving social cognition and reducing anxiety, but results are inconsistent, and it is not yet a standard treatment.

h) **Glutamate and GABA Modulators:**

a. **mGluR5 Antagonists:** Showed significant promise in preclinical models of Fragile X Syndrome, but clinical trials have been disappointing, highlighting the translational challenge.

b. **Arbaclofen:** A GABAB agonist tested to improve social function and reduce irritability, with mixed clinical trial results.

i) **Growth Factors and Biological Agents:**

a. **Insulin-like Growth Factor-1 (IGF-1):** Early trials in Phelan-McDermid syndrome (SHANK3 deficiency) have shown potential benefits for social impairment and apathy.

b. **mTOR Inhibitors (e.g., Rapamycin):** Being studied in genetic syndromes like Tuberous Sclerosis Complex to target the underlying molecular pathway.

8. Non-Pharmacological and Adjunctive Interventions

Behavioral Interventions: Applied Behavior Analysis (ABA) is a well-established, evidence-based approach for teaching skills and reducing problematic behaviors.

Developmental Therapies: Floortime (DIR/Floortime) and the Early Start Denver Model (ESDM) focus on emotional and relational development through play-based interactions.

Complementary and Alternative Medicine (CAM):

o **Melatonin:** Highly effective and commonly used for treating sleep disorders in ASD.





- **Omega-3 Fatty Acids:** Evidence for core symptom improvement is limited, but they may support general brain health.
- **Probiotics:** Given the high rate of GI issues, probiotics may help regulate gut flora and improve abdominal discomfort.
- **It is critical to note that many CAM therapies (e.g., chelation, hyperbaric oxygen) are unproven and potentially dangerous.**

9. Conclusion and Future Directions

Autism Spectrum Disorder is a lifelong neurodevelopmental condition of immense heterogeneity. Its management cannot be reduced to a single pill or therapy. The path forward lies in:

1. **Personalized Medicine:** Leveraging genetic and biomarker research to tailor treatments to an individual's specific biological profile.
2. **Early and Intensive Intervention:** Promoting universal screening and access to evidence-based interventions during critical neurodevelopmental windows.
3. **Strengthening the Interdisciplinary Model:** Ensuring seamless collaboration between healthcare providers, educators, and families to create a comprehensive and consistent support system.
4. **Focus on Lifespan and Transition:** Developing services that support individuals with ASD as they transition to adolescence and adulthood, addressing needs in employment, independent living, and mental health.

The "interdisciplinary approach" is not merely a recommendation but a fundamental prerequisite for unlocking the potential of every child with autism.

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