

**CME Article**

# Academy of Medicine Singapore-Ministry of Health Clinical Practice Guidelines: Autism Spectrum Disorders in Pre-School Children

Academy of Medicine Singapore-Ministry of Health Clinical Practice Guidelines Workgroup on Autism Spectrum Disorders

**ABSTRACT**

The Academy of Medicine Singapore (AMS) and the Ministry of Health (MOH) publish clinical practice guidelines to provide doctors and patients in Singapore with evidence-based guidance on managing important medical conditions. This article reproduces the introduction and executive summary (with recommendations from the guidelines) from the AMS-MOH clinical practice guidelines on Autism Spectrum Disorders (ASD), for the information of readers of the Singapore Medical Journal. Chapters and page numbers mentioned in the reproduced extract refer to the full text of the guidelines, which are available from the Ministry of Health website (<http://www.moh.gov.sg/mohcorp/publications.aspx?id=24048>). The recommendations should be used with reference to the full text of the guidelines. Following this article are multiple choice questions based on the full text of the guidelines.

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**INTRODUCTION****1.1 Background information**

Autism Spectrum Disorders (ASD) are developmental disorders increasingly recognised as being more common than previously considered. The present worldwide prevalence ranges from 50–60 per 10,000 school-aged children compared to 2–4 per 10,000 children in the 1980s. Whilst prevalence rates are unavailable in Singapore, there are at least 400 new cases diagnosed annually at the Department of Child Development, KK Hospital (KKH) and Child Development Unit, National University Hospital (NUH).

Professionals involved are well aware of the importance of accurate diagnosis and early intervention. Increased public awareness, coupled with higher expectations for services in the area of early identification and intervention, has provided impetus for the formulation of this clinical practice guideline (CPG).

**1.2 Objectives and scope of guidelines**

Accurate diagnosis of ASD can be difficult. Multi-disciplinary and multi-agency involvement contributes to the complexity of diagnosis and management. The purpose of this CPG is to “localise” guidelines for usage within the Singapore context. This is because existing guidelines produced by other countries are not always applicable locally. These guidelines are formulated to assist practitioners who are involved in any of the following: surveillance, screening and early identification, referral for assessment, diagnosis and intervention of children with ASD.

The uncertainty in screening and diagnostic processes, controversy over pharmacological treatment, early intervention and efficacy of complementary alternative therapy are addressed in this CPG. This CPG was prepared for use as a guideline (not protocol), and intervention for any particular child with ASD must be individualised.

**1.3 Target group**

Most children in Singapore attend primary schools beginning the year that they turn seven. This CPG is prepared for all professionals who are in contact with pre-school children up to the age of eight years. It is applicable to those who may have started pre-school late or been retained at pre-school. Professionals should exercise due caution when extrapolating the guidelines to other populations beyond pre-school, e.g. school-going children or adults. The guidelines would benefit healthcare professionals (primary care doctors, paediatricians, psychiatrists, nurses, psychologists, therapists, dietitians), social workers, early childhood educators, parents and community groups supporting children with ASD.

**1.4 Guideline development**

These guidelines were produced by a multi-disciplinary workgroup appointed by the Academy of Medicine, Singapore. The workgroup committee comprised developmental paediatricians, primary care doctors,

Autism Resource Centre (Singapore)  
College of Family Physicians,  
Singapore  
Duke NUS Graduate Medical School  
Healthway Medical Group  
Institute of Mental Health Singapore  
KK Women's and Children's Hospital  
Ministry of Education  
Nanyang Technological University  
National University of Singapore  
Rainbow Centre  
Margaret Drive School  
Singapore General Hospital  
SingHealth Polyclinics  
Yakkety Yak  
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(Institutions listed in alphabetical order)

Academy of Medicine  
Singapore-Ministry of Health  
Clinical Practice Guidelines  
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psychiatrists, psychologists, occupational therapists, speech and language therapists, dieticians and special educators from restructured hospitals, private sector, Ministry of Education and the Early Intervention Programmes under the purview of the National Council of Social Services.

The workgroup on ASD covered the following:

- Definition and Diagnostic Classification
- Surveillance, Screening, Assessment and Prognosis
- Aetiology and Investigations
- Early Intervention
- Family and Caregiver Support
- Pharmacological Treatment
- Complementary Alternative Therapies

### 1.5 Review of guidelines

Evidence-based clinical practice guidelines are only as current as the evidence that supports them. Users must keep in mind that new evidence could supersede recommendations in these guidelines. The workgroup advises that these guidelines be scheduled for review five years after publication, or earlier if new evidence appears that requires substantive changes to the recommendations.

## EXECUTIVE SUMMARY OF RECOMMENDATIONS

Details of recommendations can be found in the full text of the guidelines at the pages indicated. Details of the system of levels of evidence and grades of recommendations are also in the full text of the guidelines.

### Definition and diagnostic classification

- C** All professionals involved in diagnosing ASD in children should consider using either the ICD-10 or DSM-IV-TR systems of classification (pg 20).

**Grade C, Level 2+**

### Surveillance

- D** Professionals should aim to identify ASD early. Early identification provides opportunity for early referral and intervention, so that the child with ASD may have improved functioning in later life (pg 21).

**Grade D, Level 3**

- GPP** Parents' or caregivers' attention should be drawn to the parental checklist(s) in the Health Booklet (provided to parents at the child's birth) that describes normal development in children. Parents should be encouraged to inform their healthcare professional if they suspect delay or abnormality in their child's development or behaviour (pg 21).

**GPP**

- C** Parental or caregiver concerns about communication, interaction and play skills as well as behaviour should be elicited in a general developmental surveillance programme. Healthcare professionals should be aware that parental or caregiver concerns regarding delayed or deviant development are as important as clinically abnormal or atypical features (pg 21).

**Grade C, Level 2+**

- D** All professionals who deal with pre-school children, whether in health care services or early childhood education centres, should receive training on the "key signs" that suggest a diagnosis of ASD (pg 22).

**Grade D, Level 4**

- D** Active surveillance by healthcare professionals is recommended at 18 months and again at 24–36 months for key signs of ASD (pg 22).

**Grade D, Level 3**

- D** Children with one or more of the following clinical features must be referred promptly for comprehensive developmental evaluation:

- 1) No babble, pointing or other gestures by 12 months.
- 2) No single words by 18 months.
- 3) No spontaneous (non-echoed) 2-word phrases by 24 months.
- 4) Any loss of language or social skills at any age (pg 23).

**Grade D, Level 4**

### Screening

- C** In the general population, screening for ASD is not recommended (pg 24).

**Grade C, Level 2++**

- C** In a high-risk population, screening for ASD is highly recommended (pg 25).

**Grade C, Level 2+**

### Assessment

- D** Diagnostic evaluation of a child suspected to have ASD should be carried out by a multi-disciplinary team or professional who is trained and experienced with diagnosis of ASD. Evaluation includes:

- a) An ASD-specific developmental history
- b) Direct observations
- c) Obtaining wider contextual and functional information

In addition, the pre-school child with ASD should undergo thorough clinical and neurological examination to exclude associated medical conditions (pg 27).

**Grade D, Level 4**

**C** ASD-specific instruments should be considered when taking a developmental history as it increases the reliability of an ASD diagnosis (pg 27).

**Grade C, Level 2+**

**D** Professionals should conduct direct observations of the child's social and communication skills as well as behaviours (pg 28).

**Grade D, Level 4**

**GPP** Information about a child's functioning in relevant community and educational settings should be routinely obtained either through direct observations or interviews with relevant persons (pg 28).

**GPP**

**C** ASD-specific observational instruments should be used to increase the reliability of diagnosis (pg 28).

**Grade C, Level 2+**

#### Prognosis

**GPP** In children diagnosed with ASD before three years old, parents should be advised that it is difficult to reliably predict prognosis, because individual outcomes are extremely variable and depend on many factors (pg 29).

**GPP**

#### Aetiology

**C** Parents of children with ASD may require genetic counselling regarding the risk of recurrence of ASD in the next pregnancy (pg 32).

**Grade C, Level 2+**

**B** Parents should be educated to proceed with their child's vaccination schedule, including the MMR vaccine (pg 34).

**Grade B, Level 2+**

**B** Parents should be reassured that ASD is not associated with thimerosal-containing vaccines (pg 34).

**Grade B, Level 2+**

#### Investigations

**D** The pre-school child with ASD may require specific medical investigations based on history and clinical

examination (pg 35).

**Grade D, Level 4**

**C** Children with ASD should have a complete audiologic assessment to obtain comprehensive information on their hearing status including middle ear function (pg 35).

**Grade C, Level 2+**

**C** Where the hearing status of a child cannot be determined by age-appropriate behavioural audiometry, electro-physiological tests such as oto-acoustic emissions, auditory brain-stem response or auditory steady-state response is recommended to at least provide good estimates of hearing thresholds (pg 36).

**Grade C, Level 2+**

**D** Children with ASD with the following features should have a genetic evaluation:

- a) Microcephaly or macrocephaly
- b) A positive family history (of a genetic syndrome)
- c) Dysmorphic features (pg 36)

**Grade D, Level 3**

**D** Children with ASD may be offered high-resolution chromosomal studies and DNA analysis to look for an associated medical condition following diagnosis (pg 37).

**Grade D, Level 3**

**C** Children with ASD may be offered selective metabolic testing when an inborn error of metabolism is suspected (pg 37).

**Grade C, Level 2+**

**C** Brain imaging is not routinely recommended in children with ASD (pg 37).

**Grade C, Level 2+**

**C** Electro-encephalography (EEG) is not routinely recommended in children with ASD but should be considered if any of the following are present:

- a) Clinical seizures
- b) Symptoms suggestive of sub-clinical seizures such as staring spells
- c) A history of developmental regression (pg 38)

**Grade C, Level 2+**

**D** Serum lead screening is not routinely indicated in children with ASD but may be considered where there is clinical suspicion of pica (pg 38).

**Grade D, Level 4**

**C** Food allergy tests are not recommended in the routine assessment of children with ASD (pg 38).

**Grade C, Level 2+**

**C** Hair mineral analysis is not recommended in the evaluation of children with ASD (pg 39).

**Grade C, Level 2+**

**C** Immunologic investigation is not routinely indicated in children with ASD (pg 39).

**Grade C, Level 2+**

**C** Assay of vitamin B6 and magnesium levels is not recommended in children with ASD (pg 39).

**Grade C, Level 2+**

**C** Investigations to identify yeast over-growth in the gastro-intestinal tract are not recommended in children with ASD (pg 39).

**Grade C, Level 2+**

#### **Management: Intervention**

**D** Every pre-school child diagnosed with ASD should have an individualised intervention plan that sets out the goals, type(s), frequency and intensity of intervention, in order to address particular developmental and educational needs (pg 41).

**Grade D, Level 4**

**D** An individualised intervention plan should consist of a variety of quality programmes and activities. This includes attendance in comprehensive early intervention programmes, programmes targeting specific needs and also positive engagement with parents and/or caregivers (pg 41).

**Grade D, Level 4**

**C** All pre-school children with ASD should undergo early intervention as soon as significant developmental need is recognised by a trained professional because outcomes improve with early intervention (pg 41).

**Grade C, Level 2++**

**D** The intensity of intervention should be continually monitored and varied according to the child's changing need (pg 42).

**Grade D, Level 4**

**D** Interventions for impaired communication should address the development of pivotal skills such as spontaneity, initiation, motivation and self-regulation

(pg 43).

**Grade D, Level 4**

**A** Interventions for impaired communication should aim to increase joint attention and symbolic play in order to improve expressive language development (pg 43).

**Grade A, Level 1+**

**D** There is no single language or communication intervention method that is appropriate for all children with ASD. The optimal communication intervention for an individual child with ASD depends on the needs of that particular child (pg 44).

**Grade D, Level 4**

**A** Alternative-augmentative communication systems may be recommended for pre-school children with ASD because they expand (spoken or written) communication, may stimulate speech acquisition in non-verbal children and enhance expression in verbal children (pg 44).

**Grade A, Level 1+**

**A** Visual strategies are useful interventions for children with ASD because they offer visual support to communication, increase spontaneous imitation and socially communicative behaviour (pg 45).

**Grade A, Level 1+**

**D** Parent/caregivers should be educated that the use of alternative-augmentative communication systems or visual strategies neither inhibits speech nor replaces the development of expressive spoken language skills (pg 45).

**Grade D, Level 4**

**D** Social skills are best taught explicitly through modeling and feedback (pg 45).

**Grade D, Level 3**

**D** Social skills programmes depend on the functioning level of the preschool child with ASD and may include:

- Assessment and teaching of social skills interaction in natural settings.
- Provision of structure, visual cues and predictability.
- Making abstract concepts more "concrete".
- Activities that enable purposeful and appropriate interaction with typically developing peers.
- Goals focusing on fostering self-appreciation and

self esteem (pg 47).

**Grade D, Level 4**

- B** Interventions for children with ASD with challenging behaviours based on functional behavioural assessment are recommended (pg 47).

**Grade B, Level 1+**

- B** Children with ASD who present with perceptual distortions, fine and gross motor co-ordination difficulties, impaired play skills and impaired self-care and adaptability may benefit from consultation with appropriate specialists such as occupational therapists and/or physiotherapists (pg 48).

**Grade B, Level 2+**

- GPP** In the assessment and management of feeding difficulties in children with ASD, the healthcare professional needs to consider challenges in executive functioning, fears, sensory processing, social and language skills (pg 49).

**GPP**

- D** Management of gastro-intestinal disorders and feeding difficulties in children with ASD may require collaboration between healthcare professionals such as primary care doctors, paediatricians, gastroenterologists, dietitians and therapists (pg 49).

**Grade D, Level 4**

- D** Environment, tasks and timing of activities of children with ASD should be adapted to minimise negative sensory reactions and meet their sensory needs (pg 50).

**Grade D, Level 4**

- D** "Sensory integration" intervention is not recommended as standard therapy in management of children with ASD but may be considered where the child has sensory difficulties that affect daily functioning (pg 50).

**Grade D, Level 3**

- A** Early Intensive Behaviour Intervention (EIBI) can be recommended as an intervention option for children with ASD (pg 51).

**Grade A, Level 1++**

- C** Structured Teaching can be recommended as an intervention option for children with ASD (pg 51).

**Grade C, Level 2+**

- D** The Hanen "More Than Words<sup>®</sup>" programme may be

considered as an intervention option for children with ASD (pg 52).

**Grade D, Level 3**

- D** Developmental models, such as Developmental, Individual-difference, Relationship-based (DIR)/Floortime and Relationship Development Intervention (RDI) models, may be considered as intervention options for children with ASD (pg 52).

**Grade D, Level 3**

**Management: Family and caregiver support**

- D** Parents and caregivers should be encouraged to discuss the need for practical emotional support. This enables information to be provided, referrals made and support services made available (pg 53).

**Grade D, Level 3**

- A** Parents and caregivers of pre-school children with ASD are recommended to attend parent education programmes (pg 54).

**Grade A, Level 1+**

- GPP** Parents and caregivers are recommended to consult appropriate professionals when considering educational placement for their child with ASD, e.g. child and educational psychologists who are informed of the special educational provisions in Singapore (pg 55).

**GPP**

- D** Parents and caregivers are recommended to actively collaborate with professionals and teachers in preparing the child with ASD for the new educational setting, as well as modifying the new setting to accommodate the needs of the child (pg 55).

**Grade D, Level 4**

- GPP** Parents and caregivers should be encouraged to give consent for information about special educational needs to be shared with school personnel for better planning of intervention and support (pg 55).

**GPP**

**Management: Pharmacological treatment**

- D** Pre-school children with ASD are best managed by a multi-modal approach (pg 56).

**Grade D, Level 4**

- D** Pharmacological treatment does not cure ASD.

It may be considered when specific indications are present, such as aggressive and self-injurious behaviour, anxiety, depression, tics, obsessive-compulsive behaviours, hyperactivity and sleep disturbances (pg 56).

**Grade D, Level 4**

- D** Pharmacological treatment should be given by doctors with appropriate training in mental health (pg 56).

**Grade D, Level 4**

- B** Clomipramine may be considered for reducing irritability and stereotypical behaviour in children with ASD. Monitoring for tolerance and side-effects to clomipramine is recommended (pg 58).

**Grade B, Level 1+**

- D** Fluvoxamine may be considered for repetitive thought and maladaptive behaviour but should be used with caution in children with ASD because of limited efficacy and poor tolerance (pg 59).

**Grade D, Level 3**

- B** Fluoxetine may be considered for the reduction of repetitive behaviours in children and adolescents with ASD. Monitoring for the side effects of fluoxetine is recommended (pg 59).

**Grade B, Level 1+**

- B** Haloperidol may be considered in the management of temper tantrums, aggression, hyperactivity, withdrawal and stereotypical behaviour in children with ASD, but careful monitoring of side effects is required (pg 60).

**Grade B, Level 1+**

- A** Atypical (second-generation) anti-psychotic medications are associated with potentially adverse metabolic effects, such as weight gain, insulin resistance, dyslipidaemia and hyperglycaemia. Taking a thorough medical history and monitoring of body weight and blood sugar levels is recommended when atypical anti-psychotic medications are administered (pg 60).

**Grade A, Level 1++**

- A** Risperidone is recommended for the management of irritability, hyperactivity and stereotypic behaviour when used as short term treatment for children with ASD (pg 61).

**Grade A, Level 1++**

- D** Olanzapine may be considered in the management of motor restlessness, self-injurious behaviour, aggression and irritability in children with ASD (pg 61).

**Grade D, Level 3**

- A** Olanzapine administered to children with ASD may result in significant weight gain and healthcare professionals should monitor the child's weight closely (pg 61).

**Grade A, Level 1+**

- A** Methylphenidate may be considered for treating hyperactivity in children with ASD, although the magnitude of response is often less than that seen in typically developing children with attention deficit hyperactivity disorder (pg 62).

**Grade A, Level 1++**

- GPP** Pre-school children with ASD receiving methylphenidate should be monitored for adverse effects (pg 63).

**GPP**

- D** Atomoxetine may be considered for managing attention deficit hyperactivity disorder-like symptoms in children with ASD (pg 64).

**Grade D, Level 3**

- B** Melatonin may be considered in the management of the disturbed sleep patterns of children with ASD (pg 64).

**Grade B, Level 1+**

#### **Management: Complementary alternative therapies**

- GPP** Parents and caregivers should not replace mainstream interventions for pre-school children with ASD with complementary and alternative therapies (pg 65).

**GPP**

- GPP** Healthcare professionals caring for pre-school children with ASD should advise and counsel parents and caregivers about relevant, safe and effective health services and therapies regardless of whether the therapies are mainstream or complementary alternative therapies (pg 66).

**GPP**

The following complementary alternative therapies are **not recommended** for pre-school children with ASD because of insufficient, conflicting or inconclusive evidence:

- Amino acid supplementation

- Animal-assisted therapy
- Behavioural optometry
- Expressive psychotherapy
- Gluten-free and/or casein-free diet
- Sound therapies (Samonas Sound Therapy and the Listening Programme)
- Massage and other sensory-based interventions
- Music therapy
- Omega-3 fatty acid (O3FA) supplementation

**D** High dose amino acid supplementation is not recommended in the routine management of children with ASD because of insufficient evidence for efficacy (pg 67).

**Grade D, Level 3**

**D** Animal-assisted therapy is not recommended in the routine management of children with ASD because of insufficient evidence for efficacy (pg 67).

**Grade D, Level 3**

**D** Behavioural optometry is not recommended in the routine management of children with ASD because of conflicting evidence (pg 68).

**Grade D, Level 3**

**D** Expressive psychotherapy is not recommended in the routine management of children with ASD because of insufficient evidence for efficacy (pg 68).

**Grade D, Level 3**

**D** Gluten-free casein-free diets are not recommended in the routine management of children with ASD because of conflicting evidence (pg 69).

**Grade D, Level 3**

**D** Sound therapies (either as Samonas or the Listening Programme®) are not recommended in the routine management of children with ASD because of insufficient evidence for efficacy (pg 70).

**Grade D, Level 3**

**D** Massage and other sensory-based interventions are not recommended in the routine management of children with ASD because of insufficient evidence for efficacy (pg 70).

**Grade D, Level 3**

**D** Music therapy is not recommended in the routine management of children with ASD because of inconclusive evidence (pp 71).

**Grade D, Level 3**

**D** High dose omega-3 fatty acid supplementation is not recommended in the routine management of children with ASD because of inconclusive evidence for efficacy (pg 71).

**Grade D, Level 3**

The following complementary alternative therapies are **not recommended** in the routine management of children with ASD because of evidence that they are ineffective:

- Dimethylglycine supplementation
- Patterning therapy without masking

**D** Dimethylglycine supplementation is not recommended for pre-school children with ASD because it is ineffective (pg 72).

**Grade D, Level 3**

**D** Patterning without masking is not recommended for pre-school children with ASD because it is ineffective (pg 73).

**Grade D, Level 4**

The following complementary alternative therapies are **not recommended** in pre-school children with ASD because of potential for harm or adverse effects:

- Acupuncture
- Antibiotics and Anti-yeast medication
- Ascorbic acid (vitamin C) supplementation
- Auditory Integration Therapy
- Chelation therapy
- Chiropractic
- Cranio-sacral therapy
- Digestive enzymes
- Facilitated Communication
- Folate supplementation
- Holding Therapy
- Hyperbaric Oxygen Therapy
- Intravenous Immunoglobulin therapy
- Patterning with masking
- Secretin therapy
- Vitamin B6-Magnesium supplementation
- Weighted vests
- Zinc supplementation

**D** Acupuncture is not recommended for children with ASD because of insufficient evidence for efficacy\* and the potential for harm† (pg 74).

\*†**Grade D, Level 3**

**D** Antibiotic and anti-yeast therapy is not recommended for

- children with ASD because of insufficient evidence for efficacy\* and the potential for adverse effects† (pg 75).  
\*†Grade D, Level 3
- D** High dose ascorbic acid supplementation is not recommended for ASD because of insufficient evidence for efficacy\* and the potential for adverse effects† (pg 75).  
\*Grade D, Level 3  
†Grade D, Level 4
- A&D** Auditory Integration Therapy is not recommended for children with ASD because of insufficient evidence for efficacy\* and the potential for damage to hearing† (pg 76).  
\*Grade A, Level 1++  
†Grade D, Level 3
- D** Chelation therapy is not recommended for children with ASD because of insufficient evidence of efficacy\* and the potential for harm including death† (pg 76).  
\*†Grade D, Level 3
- D** Chiropractic is not recommended for children with ASD because of conflicting evidence of efficacy\* and the potential for harm† (pg 77).  
\*†Grade D, Level 3
- D** Cranio-sacral therapy is not recommended for children with ASD because of insufficient evidence for efficacy\* and the potential for harm† (pg 77).  
\*Grade D, Level 3  
†Grade D, Level 4
- D** Digestive enzyme therapy is not recommended for children with ASD because of insufficient evidence of efficacy\* and the potential for adverse effects† (pg 78).  
\*Grade D, Level 3  
†Grade D, Level 4
- A&D** Facilitated communication is not recommended for children with ASD because of lack of efficacy\* and the potential for abuse† (pg 78).  
\*Grade A, Level 1+  
†Grade D, Level 3
- D** High dose folate supplementation is not recommended for children with ASD because of insufficient evidence of efficacy\* and the potential for adverse effects† (pg 79).  
\*Grade D, Level 3  
†Grade D, Level 4
- D** Holding therapy is not recommended for children with ASD because of lack of efficacy\* and the potential for harm, including death† (pg 79).  
\*†Grade D, Level 3
- D** Hyperbaric oxygen therapy is not recommended for children with ASD because of insufficient evidence of efficacy\* and the potential for harm† (pg 80).  
\*Grade D, Level 3  
†Grade D, Level 4
- D** Immunoglobulin therapy is not recommended for children with ASD because it is ineffective\* and there is potential for adverse effects† (pg 80).  
\*†Grade D, Level 3
- D** Patterning with Masking is not recommended for children with ASD because it is ineffective\* and there is potential for harm to the child's developing brain† (pg 81).  
\*†Grade D, Level 4
- A&D** Intravenous secretin is not recommended for children with ASD because it is ineffective\* and there is potential for serious adverse effects† (pg 81).  
\*Grade A, Level 1++  
†Grade D, Level 4
- D** High dose vitamin B6-magnesium supplementation is not recommended for children with ASD because of conflicting evidence\* and the potential for adverse effects† (pg 82).  
\*Grade D, Level 3  
†Grade D, Level 4
- D** Wearing of weighted vests is not recommended for children with ASD because of insufficient evidence of efficacy\* and potentially adverse effects on the developing spine† (pg 82).  
\*Grade D, Level 3  
†Grade D, Level 4
- D** Zinc supplementation is not recommended for children with ASD because of insufficient evidence for efficacy\* and potential for adverse effects† (pg 82).  
\*†Grade D, Level 4



**AMS-MOH Clinical Practice Guidelines Workgroup**

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**SINGAPORE MEDICAL COUNCIL CATEGORY 3B CME PROGRAMME \***  
**Multiple Choice Questions (Code SMJ 201003C)**

These questions are based on the full text of the guidelines which may be found at <http://www.moh.gov.sg/mohcorp/publications.aspx?id=24048>

- |   | True                     | False                    |
|---|--------------------------|--------------------------|
| <b>Question 1.</b> At present, the world wide prevalence of ASD ranges from:  |                          |                          |
| (a) 20–30 per 10,000 school-aged children.  | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) 30–40 per 10,000 school-aged children.  | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) 40–50 per 10,000 school-aged children.  | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) 50–60 per 10,000 school-aged children.  | <input type="checkbox"/> | <input type="checkbox"/> |
| <br>  |                          |                          |
| <b>Question 2.</b> Children with one or more of the following clinical features must be referred promptly for comprehensive developmental evaluation:   |                          |                          |
| (a) Any loss of language or social skills at any age.   | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) No babble, pointing or other gesture by 12 months.  | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) No single words by 12 months.   | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) No spontaneous (non-echoed) 2-word phrases by 24 months.  | <input type="checkbox"/> | <input type="checkbox"/> |
| <br>  |                          |                          |
| <b>Question 3.</b> The following statements are TRUE regarding ASD:   |                          |                          |
| (a) The aetiology of ASD is multifactorial.   | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) Early regression of language skills in ASD children before three years of age is associated with poor prognosis.  | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) There is insufficient evidence for a causal relationship between exposure to thimerosal and neuro-developmental disorders.  | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) Active surveillance by primary healthcare professionals at 18 months and again at 24–36 months for warning signs of ASD is recommended.   | <input type="checkbox"/> | <input type="checkbox"/> |
| <br>  |                          |                          |
| <b>Question 4.</b> The following statements are TRUE regarding screening for ASD:   |                          |                          |
| (a) Screening for ASD in the general population is recommended.   | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) No single ASD-specific screening instrument has been identified as ideal for primary screening of a general population of children.   | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) Screening for ASD in a high-risk population is not recommended.   | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) Current evidence suggests that the CHecklist for Autism in Toddlers (CHAT) at 18 months and Modified CHecklist for Autism in Toddlers (M-CHAT) at 18–24 months are useful for primary screening of ASD. | <input type="checkbox"/> | <input type="checkbox"/> |
| <br>  |                          |                          |
| <b>Question 5.</b> Which of the following conditions is/are associated with ASD:  |                          |                          |
| (a) Fragile X syndrome  | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) Down syndrome   | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) Prader-Willi syndrome   | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) Tuberous sclerosis  | <input type="checkbox"/> | <input type="checkbox"/> |
| <br>  |                          |                          |
| <b>Question 6.</b> Which of the following statements is FALSE regarding investigations for ASD?   |                          |                          |
| (a) Serum lead screening is routinely indicated in children with ASD.   | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) Immunologic investigation is not routinely indicated in children with ASD.  | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) Brain imaging is routinely recommended in children with ASD.  | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) Investigations to identify yeast over-growth in the gastro-intestinal tract are not recommended in children with ASD.   | <input type="checkbox"/> | <input type="checkbox"/> |

**Question 7.** The following statement/s is/are TRUE regarding Methylphenidate:

- (a) In Singapore, methylphenidate is the most commonly used stimulant medication for attention deficit hyperactivity disorder.
- (b) It is a potent peripheral nervous system stimulant derived from amphetamine.
- (c) It is thought to exert its effect by enhancing dopaminergic transmission in the brain.
- (d) Methylphenidate may be considered for treating hyperactivity in children with ASD.

**Question 8.** Typical antipsychotics such as Haloperidol are associated with the following significant side effects:

- (a) Excessive weight gain.
- (b) Excessive sedation.
- (c) Acute dystonic reactions.
- (d) Decreased irritability.

**Question 9.** Which of the following complementary alternative therapies are NOT recommended for pre-school children with ASD because of insufficient, conflicting or inconclusive evidence:

- (a) Amino acid supplementation.
- (b) Expressive psychotherapy.
- (c) Hyperbaric Oxygen Therapy.
- (d) Omega-3 fatty acid (O3FA) supplementation.

**Question 10.** The following complementary alternative therapies are NOT recommended in pre-school children with ASD because of potential for harm or adverse effects:

- (a) Chelation therapy.
- (b) Facilitated Communication.
- (c) Music therapy.
- (d) Auditory Integration Therapy.

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**Doctor's particulars:**

Name in full: \_\_\_\_\_

MCR number: \_\_\_\_\_ Specialty: \_\_\_\_\_

Email address: \_\_\_\_\_

**SUBMISSION INSTRUCTIONS:**

(1) Log on at the SMJ website: <http://www.sma.org.sg/eme/smj> and select the appropriate set of questions. (2) Select your answers and provide your name, email address and MCR number. Click on "Submit answers" to submit.

**RESULTS:**

(1) Answers will be published in the SMJ May 2010 issue. (2) Category 3B CME points: pending SMC approval. The MCR numbers of successful candidates will be posted online at [www.sma.org.sg/eme/smj](http://www.sma.org.sg/eme/smj) upon SMC approval of CME points. (3) All online submissions will receive an automatic email acknowledgement. (4) Passing mark is 60%. No mark will be deducted for incorrect answers. (5) The SMJ editorial office will submit the list of successful candidates to the Singapore Medical Council.

**Deadline for submission: (March 2010 SMJ 3B CME programme): 12 noon, 31 May 2010.**