



# Autism Spectrum Disorder (ASD)

# What is autism spectrum disorder?

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Autism or autism spectrum disorder (ASD) is a lifelong neuro-developmental condition. It is characterised by:

- Persistent impairment in reciprocal social communication and social interaction
- Restricted, repetitive patterns of behaviour, interests, or activities
- Symptoms of ASD from early childhood and limitations or impairment in day-to-day functioning

The worldwide prevalence of ASD is estimated to be about 1%. The local prevalence rates are not known exactly but there are at least 400 new cases diagnosed annually in Singapore.

The risk of a sibling having ASD is up to about 20%.

# What are the causes of ASD?

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There is no one cause of autism. Most cases of autism appear to be caused by a combination of genetic and environmental factors influencing early brain development.

Autism is not caused by a child's upbringing and social circumstances. It is not due to the fault of the individual with autism.

So far, research has not demonstrated a link between vaccination and autism.

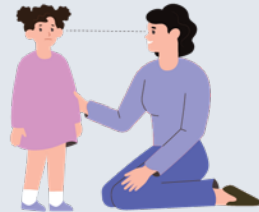
There are some who believe that oral supplements or special diets can help reduce behaviours associated with autism but this has not yet been proven with well conducted trials and we cannot comment on its safety and usefulness currently.

# What are the symptoms of ASD?

A child with ASD will have some of the following difficulties:

- **Social communication and interaction**

A child with ASD may have trouble communicating or initiating social interactions with others and may not respond to others in an expected way. He or she may prefer to play alone and may have difficulties playing interactively with others and difficulties using non-verbal communication (e.g. gestures, pointing, eye contact).



- **Repetitive behaviours or restricted interests**

A child with ASD may have unusually intense interests (e.g. interest in car logos) or exhibit unusual repetitive hand or body movements such as hand flapping or spinning body. He or she may have limitations with imaginative or pretend play, and may engage in repetitive play or play with toys in an unusual manner (e.g. more interested in lining up objects or spinning wheels of a toy cars than rolling or moving the car). He or she has fixed routines and rituals and can be resistant to changes or transitions.



- **Unusual interest or sensitivity to sensory input**

The child may show under- or over- sensitivity to sensory aspects in their surroundings (e.g. the way things look, smell, taste, feel, or sound like).



- **Delays in social or language developmental milestones**

- ◇ Not responding to his/her name when called
- ◇ Not looking at what caregivers look or point at
- ◇ Not smiling back at others who smile at him/her
- ◇ Not pointing or other gestures (e.g. nodding, shaking head, clapping, waving by 12 months)
- ◇ Not using single words meaningfully by 18 months
- ◇ Any loss of language or social skills at any age

ASD is a spectrum and symptoms may vary from child to child depending on various reasons such as age, developmental level, and severity.

If you have any concerns about your child's communication, behaviour or social and play skills, or if your child has one or more of the above clinical features, you should inform a healthcare professional(s) as soon as possible, as early diagnosis and intervention are very important.

## How is autism assessed?

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A full evaluation should be done by a multidisciplinary team of healthcare professionals, which may include a paediatrician specialising in behavioural and developmental paediatrics, a child psychiatrist or psychologist, and a speech or occupational therapist. Doctors may also call for a hearing test to be performed by an audiologist to ensure that hearing loss is not the primary underlying reason for the lack of social communication and interaction.



There are several assessment tools that are available for diagnostic purposes, including the most commonly used Autism Diagnostic Observation Schedule (ADOS) and Autism Diagnostic Interview-Revised (ADI-R). These are conducted by psychologists who are trained to use them. Measures of the child's speech and language skills and intellectual ability also help professionals plan intervention.

Having a formal diagnosis is useful because it helps people with autism and their families or school understand their difficulties and what can be done about them. It also allows people to access services and support.

## What are the treatment options?

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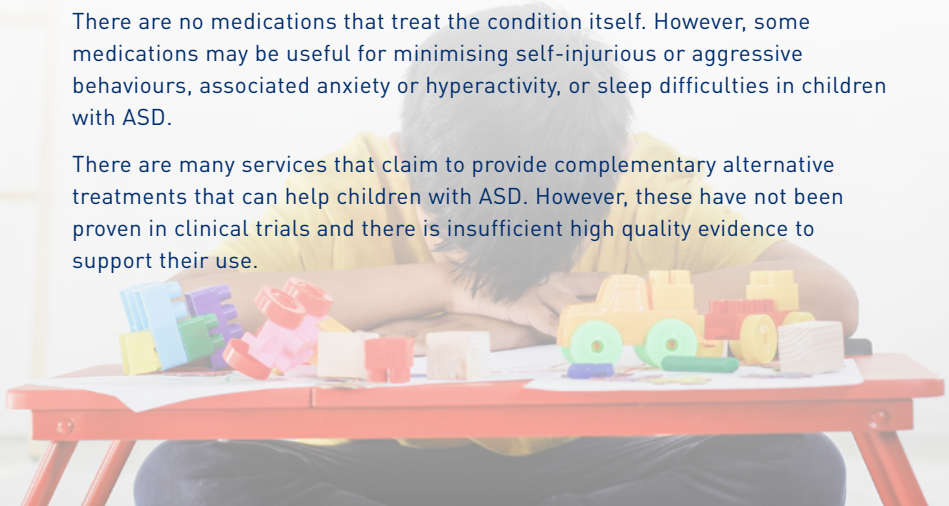
Early intervention can make a big difference to many children with ASD by improving their skills and quality of life and helping them to be more independent. There are many treatment options for ASD which help improve outcomes for children.

Depending on the child's presenting difficulties, different therapists (e.g. speech therapist, occupational therapist, psychologist) may support the development of the child's skills in specific areas of need such as communication, social interaction, activities of daily living, and play skills.

Some children may need more intensive intervention. In Singapore, these may be in the form of early intervention programmes provided by government funded organisations or private centres.

There are no medications that treat the condition itself. However, some medications may be useful for minimising self-injurious or aggressive behaviours, associated anxiety or hyperactivity, or sleep difficulties in children with ASD.

There are many services that claim to provide complementary alternative treatments that can help children with ASD. However, these have not been proven in clinical trials and there is insufficient high quality evidence to support their use.



## Additional resources on ASD

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- Autism Resource Centre (Singapore)  
[www.autism.org.sg](http://www.autism.org.sg)
- National Autism Center  
[www.nationalautismcenter.org/resources/for-families](http://www.nationalautismcenter.org/resources/for-families)
- The Australian Parenting Website  
[www.raisingchildren.net.au/autism](http://www.raisingchildren.net.au/autism)

## NUH Child Development Unit

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NUH Child Development Unit is part of the Khoo Teck Puat – National University Children’s Medical Institute at National University Hospital. The clinic provides multidisciplinary assessments, therapy and holistic management of children with developmental & behavioural disorders from birth to 7 years old. Please make an appointment if you would like to see our paediatricians.



For health information and resources relating to child development, visit:

<https://www.nuh.com.sg/cdu-resources>

<https://www.nuh.com.sg/cdu>

## About the National University Centre for Women and Children

National University Centre for Women and Children (NUWoC) is a national university specialist centre that aims to empower women, children and their families to lead healthier lives. We provide comprehensive medical and surgical services ranging from pre-conception to child and maternal health.

NUWoC comprises the Department of Obstetrics & Gynaecology (O&G) and Khoo Teck Puat – National University Children’s Medical Institute (KTP-NUCMI) of National University Hospital. It focuses on the right-siting of appropriate services in the community and builds complementary services in National University Health System’s (NUHS) centres of excellence – Ng Teng Fong General Hospital and Alexandra Hospital.

Through a generous gift from the Estate of Khoo Teck Puat, KTP-NUCMI established an integrated outpatient facility with medical, diagnostic and rehabilitation services for children. We are also the only public specialist centre in Singapore that offers paediatric kidney and liver transplant programmes.

For more information about us, visit [www.nuh.com.sg/NUWoC](http://www.nuh.com.sg/NUWoC)

### Children’s Emergency (24-hr)

Location NUH Main Building, Zone F, Level 1  
Contact +65 6772 5000

### KTP-NUCMI

Location NUH Main Building, Zone E, Level 2  
(Accessible via Kent Ridge Wing, Zone C, Level 2, Lift Lobby C)  
Operating Hours 8.30am – 5.30pm (Mon to Fri), 8.30am – 12.30pm (Sat)  
General Enquiry +65 6772 5736  
Appointment Line +65 6908 2222  
Email [ktpnucmi\\_appt@nuhs.edu.sg](mailto:ktpnucmi_appt@nuhs.edu.sg)

### 9a Viva-University Children’s Cancer Centre

Location NUH Medical Centre, Zone B, Level 9  
Operating Hours 8am – 5.30pm (Mon to Fri)  
Appointment Line +65 6772 5030  
Email [cbccappt@nuhs.edu.sg](mailto:cbccappt@nuhs.edu.sg)

### NUH Children’s Urgent Care Clinic @ Bukit Panjang

Location Junction 10, #01-22  
Operating Hours 9am – 11pm daily (including public holidays)  
General Enquiry +65 6219 1538  
Email [childreनुcc@nuhs.edu.sg](mailto:childreनुcc@nuhs.edu.sg)

### NUH Child Development Unit @ JMC

Location Jurong Medical Centre, Level 2  
Operating Hours 8.30am – 5.30pm (Mon to Fri)  
Appointment Line +65 6665 2530 / 2531  
Email [cdu@nuhs.edu.sg](mailto:cdu@nuhs.edu.sg)

### NUH Child Development Unit @ Keat Hong

Location Keat Hong Community Club, #03-01  
Operating Hours 8.30am – 5.30pm (Mon to Fri)  
Appointment Line +65 6769 4537/4637  
Email [cdu@nuhs.edu.sg](mailto:cdu@nuhs.edu.sg)

### Clinic A22 NUWoC Children’s Clinic @ NTFGH

Location Ng Teng Fong General Hospital  
Tower A – NTFGH Clinics, Level 2  
Operating Hours 8.30am – 5.30pm (Mon to Fri)  
Appointment Line +65 6908 2222  
Email [appointment@nuhs.edu.sg](mailto:appointment@nuhs.edu.sg)

## Our Patient Care Institutions

National University Hospital

Ng Teng Fong General Hospital &  
Jurong Community Hospital

Alexandra Hospital

National University Polyclinics

Jurong Medical Centre

National University Cancer Institute, Singapore

National University Heart Centre, Singapore

National University Centre for Oral Health, Singapore

NUHS Diagnostics

NUHS Pharmacy



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OneNUHS Hotline: (65) 6908 2222

OneNUHS General Enquiries: [contactus@nuhs.edu.sg](mailto:contactus@nuhs.edu.sg)

OneNUHS Appointments: [appointment@nuhs.edu.sg](mailto:appointment@nuhs.edu.sg)

[www.nuhs.edu.sg](http://www.nuhs.edu.sg)

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