What is Attention-Deficit/Hyperactivity Disorder?

The core symptoms of Attention-Deficit/Hyperactivity Disorder (AD/HD) are, as the name implies, inattentiveness, hyperactivity and impulsivity. These symptoms cause difficulties in learning and interpersonal relationships which may lead to emotional problems or low self-esteem, resulting in significant functional problems.

How does Attention-Deficit/Hyperactivity Disorder affect children?

Inattention:

Children with AD/HD will find it difficult to sustain attention or to remain engaged in an activity as expected of children of similar age. They are easily distracted by the environment. They are inattentive and do not seem to listen. They have difficulty in following
through on instructions. Completing tasks and organizing activities are difficult for them. They are forgetful and often lose or forget to bring their personal belongings.

**Hyperactivity / Impulsivity:**

Children with AD/HD are more active compared with children of the same age. They are often moving about and become fidgety when they are expected to stay still for extended time. It is difficult for them to stay seated when required, and will often leave or squirm in their seats. They talk excessively and have difficulty engaging in activities quietly. They tend to be impatient and impulsive, having difficulty queuing or waiting for their turn. They also tend to interrupt or blurt out answers before the questions are completed or cannot wait for their turn.
Clinical features of AD/HD evolve with the children’s age:

**Infancy and preschool age:**

The core feature of children with AD/HD during this period is hyperactivity. They are energetic and are often running about or climbing. Some children may cry and lose temper easily. They may have greater emotional response to events and become excited or angry easily. Some may have sleeping problems as well.

**School age:**

During this period, problems related to inattention will become increasingly obvious. Children may have difficulties in learning. Their inattention in class may affect their classroom and academic performance. They are impulsive, weak in self-control and non-compliant, leading to problems in social relationships and conflict with peers. Some children may also show oppositional, risk-taking and/or dangerous behaviours.
Late childhood and early adolescence:
Upon reaching the stage of late childhood and early adolescence, although the severity of hyperactivity may decline, features of inattention and impulsivity often remain. New areas of potential problems may emerge, including frequent engagement in interpersonal conflict, fighting or substance use.

Adulthood:
Inattention and impulsivity are the core symptoms of AD/HD in adulthood. Adults with AD/HD may have difficulty concentrating at work. Symptoms of distractibility, disorganization, inefficiency, impatience and impulsivity may persist.

How common is Attention-Deficit/ Hyperactivity Disorder?
Epidemiological data suggests that AD/HD affects about 5% of children, with a male preponderance of around 2 boys to 1 girl being affected. For adults with AD/HD, the prevalence is around 2.5%.
The prevalence of AD/HD in Hong Kong is similar to that in other countries. According to the recent statistics from Child Assessment Service of the Department of Health, among children newly diagnosed with AD/HD in 2016, the gender ratio was around 3 boys to 1 girl. The exact prevalence of AD/HD in Hong Kong may require further investigation.

**What causes Attention-Deficit/Hyperactivity Disorder?**

Research has demonstrated that several important areas of the brain are differently activated in children with AD/HD. These include the pre-frontal regions, the basal ganglia and the cerebellum. Since areas of the brain responsible for executive function are affected, children’s working memory, attention, control of behaviour and emotions, and organization skills will be affected, resulting in manifestation of AD/HD symptoms.
The exact cause of AD/HD has yet to be elucidated. Research has demonstrated evidence to support its hereditary nature. Maternal smoking and alcohol intake during pregnancy, prematurity, low birth weight, history of encephalitis, lead poisoning, abnormalities in metabolism, epilepsy and brain injury have been shown to be risk factors for AD/HD.

Although biological factors play an important role in the manifestation of the condition, psychosocial and environmental factors (including family support, school accommodations and societal acceptance) are crucial in affecting its severity and its impact on daily functioning.

**What conditions may co-exist in children with AD/HD?**

Children with AD/HD may also have other developmental disorders, such as learning disorders, developmental coordination disorder, oppositional defiant disorder or other behavioural and emotional problems.
What is the mainstay of treatment for children with AD/HD?

The treatment strategies for children with AD/HD vary according to age. As shown from numerous international studies, medical therapy and behavioural therapy are proven to be effective strategies. For preschool children under six years of age, behavioural therapy is recommended as the initial treatment. If the child’s condition does not improve with behavioural therapy, medical therapy may be needed. For school-age children age six years or above and for adolescents with more severe symptoms, medical therapy is the first-line treatment. Medical therapy is very effective in controlling the core symptoms of AD/HD, improving attention and reducing hyperactive behaviour, while behavioural therapy and educational support will improve learning and reduce behavioural problems.
**Medical therapy:**

Medication is the first line of treatment for school-age children and adolescents with more severe AD/HD symptoms. Among the medications, central stimulants are the first choice. It works by increasing the neurotransmitter dopamine in the central nervous system, thereby improving attention. The most commonly prescribed medication is methylphenidate (e.g. Ritalin and Concerta). Research has shown that 75% of the patients showed significant improvement in attention after medication. Hyperactivity and impulsive behaviour were largely reduced as well.

Common side effects include appetite suppression, weight loss, mild sleep disturbance, abdominal pain and irritability. These side effects are usually mild, short-lived and responsive to dosing and timing adjustment, and most children are able to adapt to the medication. Second line medications may sometimes be considered including anti-depressants and selective norepinephrine reuptake inhibitors such as atomoxetine (e.g. Strattera).
**Behavioural therapy:**

Behavioural therapy can effectively help children with AD/HD on their behavioural and emotional problems as well as learning and social difficulties. Behavioural therapy is based on learning theories and grounded on the belief that behaviour is formed by experiential learning and modeling. Thus, children’s condition can be improved by a systematic way of discipline. Behavioural therapy involves: (1) defining the behavioural problem by observation and recording of the behaviour, including the time, place and frequency of occurrence, parental reaction etc.; (2) analyzing the antecedents and consequences of the behaviour; and (3) through changing these antecedents and consequences by facilitative environment and proper use of reinforcement/punishment etc., enable the child to learn and increase appropriate behaviours and decrease inappropriate behaviours. Since a child has different needs at different stages, review of the child’s condition and change of strategies may be needed.
Good parent-child relationships are keys to success. Teaching the child on proper ways to handle emotions, effective problem solving skills, and establishment of good living habits are also beneficial and important.

**Educational support:**
Classroom management and academic accommodations such as regular breaks between learning tasks, clear verbal and written instructions, breaking tasks into smaller steps, visual aids and a facilitative environment (such as reducing noise levels, special seat arrangement) may enhance the child’s ability to learn and focus.

**What services are available in Hong Kong to help children with AD/HD?**
The Child Assessment Service of the Department of Health offers behavioural and developmental assessment for the child, as well as interim support for the family including parent workshops and parenting skill training groups. Under the Hospital Authority, Child and Adolescent Mental Health Services and Departments of Paediatrics and Adolescent Medicine
provide medical and behavioural treatment for children with AD/HD.

In additional, psychiatrists, paediatricians and general practitioners in private practice may prescribe medication for children with AD/HD. In schools, support is provided to teachers and children by school social workers and educational psychologists. Many community centres and non-government organizations also offer training programs and activities for children with AD/HD and their families.

Can children with AD/HD grow up normally?

Research has demonstrated that the symptoms of AD/HD persist to adolescence in 80% of children, and to adulthood in 65%. However, the extent to which an individual can cope or make adjustments in daily life and in choice of occupation depends on many other factors, including the severity and type of symptoms exhibited, the severity and number of associated conditions, the individual’s intelligence, the family situation and treatments received.
Relevant Websites:

- Special Education Resource Centre, Education Bureau: http://www.edb.gov.hk/serc
- Kwai Chung Hospital ADHD resources: http://www.ha.org.hk/kch/adhd
- Hong Kong Association For AD/HD: http://www.adhd.org.hk
- Attention Deficit Disorder Association: http://www.add.org
- Children and Adults with Attention Deficit / Hyperactivity Disorder: http://www.chadd.org

References:

