# **What Is ADHD?**

Psychological disorder present at birth. However, the noticeable ADHD symptoms occur early in childhood. Before the age of 5, ADHD symptoms may be difficult to diagnose, because most young children are highly energetic, easily distractible, and impulsive.

# **A neurodevelopmental condition characterized by AGE INAPPROPRIATE BEHAVIOURS in areas of:**

INNATENTION, HYPERACTIVITY AND IMULSIVITY

ADHD symptoms can be grouped into this classic triad of inattention, hyperactivity and impulsivity. When we are assessing symptoms we are looking for age inappropriate behaviours in these areas. Children & young people with ADHD often present as more immature than their peers.

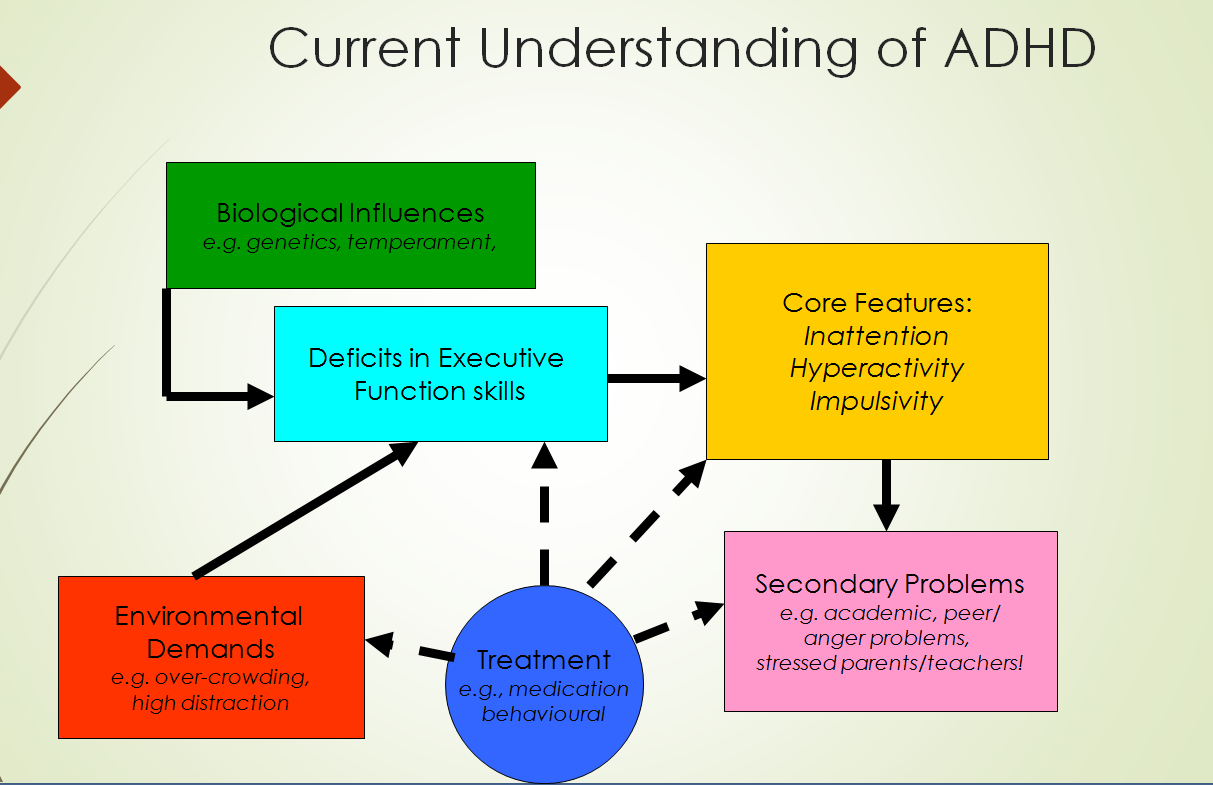
True, many forms of inattention and impulsivity are normal in early childhood.

The key difference is that kids with ADHD display these behaviours much more frequently than their peers at the same developmental stage. The general rule of thumb is that kids with ADHD display these behaviours at **three times the frequency** of their peers.

As we discussed, every child with ADHD is different. But there are three different subtypes:

* Predominantly inattentive type (formerly called ADD)
* Predominantly hyperactive/impulsive type
* Combined type, exhibiting a combination of all three areas. This is the most common type of ADHD.

**Current Understanding of ADHD**



# **ADHD - Assessment**

## Taking a full history.

## - A developmental assessment (to explore & eliminate other factors)

## - Completion of parent & school questionnaires (eg. Conners Questionnaires) plus additional school report

## Classroom observation (school age children)

# **DSM-IV ADHD Diagnostic Criteria**

## List of symptoms must be present for past 6 months

## Must have six (or more) symptoms of inattention **and/or** hyperactivity–impulsivity

## Some symptoms present before 7 years of age

## Some impairment from symptoms must be present in two or more settings (e.g. school and home)

## Significant impairment: social, academic or occupational

## Exclude other mental disorders

# **Symptom Groups**

**Inattention:** does not attend, fails to finish tasks, can’t organise, avoids sustained effort, loses things, ‘forgetful’, easily distracted

**Hyperactivity:** fidgets, leaves seat in class, runs/climbs excessively, **c**annot play/work quietly**, a**lways ‘on the go’**, t**alks excessively

**Impulsivity:** blurts out answers, cannot await turn, interrupts others, intrudes on others

A diagnosis of ADHD by the DSM-IV requires the presence of six or more symptoms from at least one symptom group (inattention or hyperactivity–impulsivity).

**Structural abnormalities**

In individuals with ADHD, structural magnetic resonance imaging (MRI) analyses have identified reductions in the volume of various regions of the brain.

**Functional abnormalities**

Functional MRI studies have identified reduced levels of activity in various frontal regions of the brain of ADHD patients.

**Physiological abnormalities**

Abnormal patterns of brain activity may serve as a basis for differentiating ADHD from other psychiatric disorders and initiating more effective treatment.

Researchers have found that individuals with ADHD may be distinguished from those without ADHD using quantitative electroencephalography (EEG).

**Chemical abnormalities**

ADHD is associated with abnormalities in the neural systems that govern release of neurotransmitters such as dopamine (DA) and noradrenaline (NA).

# **ADHD and the Human Brain**

## Portions of brain’s frontal lobe are responsible for “Executive” functions:

## These skills allow us to “organize our behavior over time and override immediate demands in favor of longer-term goals”

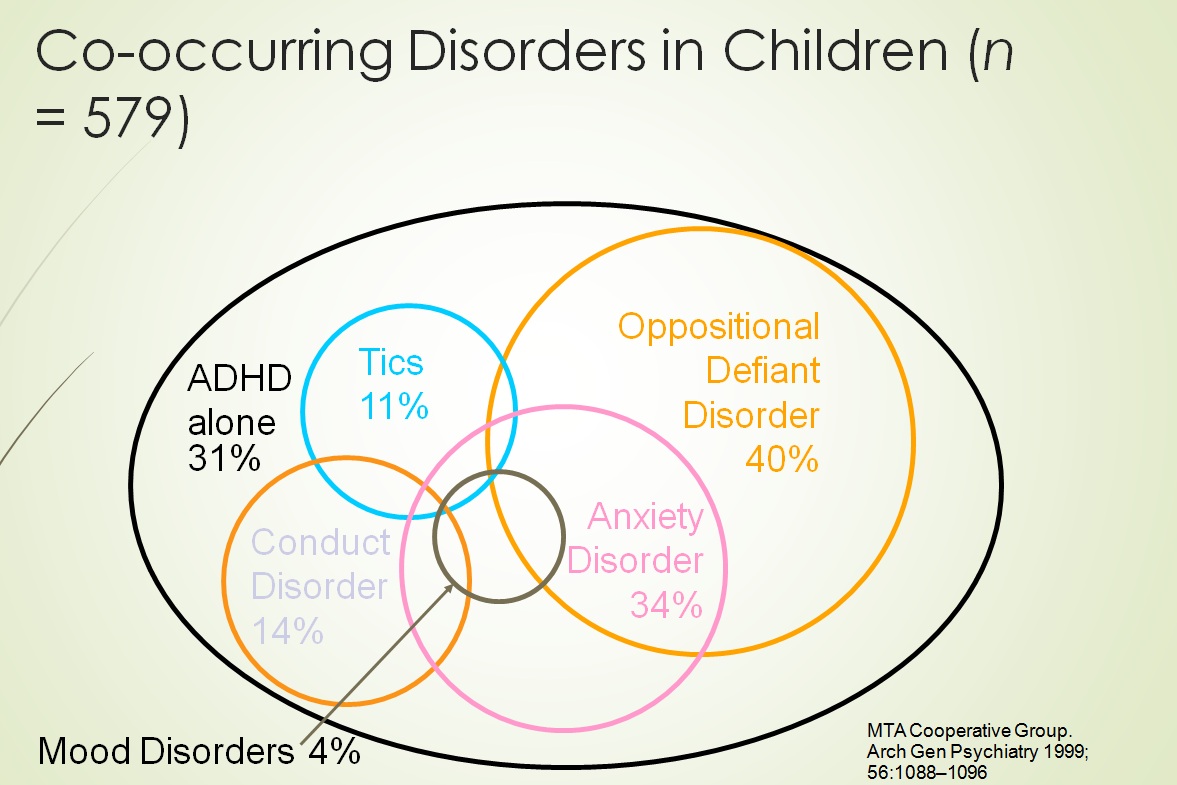
## They also allow for the management of emotions and effective thought monitoring.

# **ADHD and the Brain**

## Research suggests that in children with ADHD, these “executive” areas of the brain are under-active

## Increasing the activity level in these areas of the ADHD brain have been shown to decrease behavioral symptoms. This is the logic behind using Stimulant medications as a first line treatment for the disorder.

# **Co-occurring Disorders in Children**



# **Gender Differences and ADHD**

## Boys are diagnosed with ADHD approx 4:1 compared with girls

## The stereotype of someone with ADHD is a hyperactive little boy. The reality? ADHD also affects girls and even adult women.

## Girls with ADHD tend to be more inattentive than hyperactive.

## Parents and teachers often overlook ADHD in girls because their symptoms differ from the stereotype.

## According to researchers, girls with untreated ADHD are at risk for low self-esteem, undesrachievement, depression, and anxiety and more likely to engage in risky behaviors like smoking and unprotected sex while in middle or high school.

## 

# **Aetiology (causes) of the Disorder** Interplay of genetic & environmental factors

## **Genetic**

### ADHD runs in families & manifests with different degree of severity across generations

## **Environmental**

### Maternal smoking, alcohol consumption or heroin use

### Very low birth weight

### Fetal hypoxia

### Brain injury

### Exposure to toxins e.g. lead

### Zinc deficiency

**Parent-child relationship** cancontribute to or maintain ADHD behavior if parents give more commands and have more negative interactions. Family factors interact with genetic and neurobiological factors but do *not* cause them

# **What is the prognosis?**

## There is no cure for ADHD, BUT

## Diagnosing & treating ADHD at a young age tends to improve prognosis

## In most cases, ADHD can be effectively managed

## Symptoms in most children will improve over time, although some symptoms may persist into adulthood

# **Interventions**

## Treatment of ADHD should be multimodal & may include

### Medication

### Educating parent/child about ADHD

### Behavioural management

### Education support services

## ADHD is often under-diagnosed, over-diagnosed, misdiagnosed