

## Chapter 10: Neurodevelopmental disorders

### Introduction

The neurodevelopmental disorders (NDDs) are a group of conditions with onset in the developmental period. The disorders typically manifest early in development, often before the child enters school, and are characterized by developmental deficits or differences in brain processes that produce impairments of personal, social, academic, or occupational functioning (DSM 5).

Affected children often have more than one NDD and have impairment in personal, social, academic, or occupational functioning. They are at increased risk of neglect, and abuse and may be unable to live an independent life even in adulthood.

Accessing appropriate medical care is often challenging because children with NDDs struggle to express their symptoms and therefore clinicians may miss a diagnosis and attribute the symptoms to another condition (diagnostic overshadowing). A good understanding of how such children present, their symptoms and effective communication with their guardians who know the child's baseline can improve clinical assessment.

Management of NDDs requires a multidisciplinary team involving teachers, social workers, occupational therapists, speech therapists, and health professionals with the child and their family at the centre of care.

These guidelines provide an overview of common NDDs and how they can be managed. Clinicians or any discipline of the profession must bear in mind that the management of children with NDDs is challenging and must always work with other professionals. Consultations with specialist centres will also help those working in primary and secondary levels of care to feel supported and avoid over-prescription of drugs which can be detrimental to the development of the affected child.

## **Attention Deficit Hyperactive Disorder (ADHD)**

### **Definition**

Attention deficit hyperactivity disorder (ADHD) is a disorder that manifests in childhood with symptoms of hyperactivity, impulsivity, and/or inattention. The symptoms affect cognitive, academic, behavioural, emotional, and social functioning

### **Risk factors**

- Prenatal and perinatal factors: Low birth weight/prematurity, In-utero exposure to maternal stress, maternal obesity, hypertension, cigarette smoking, alcohol, drugs e.g. acetaminophen, valproate, and illicit substances, infections (cerebral malaria and encephalitis)
- Environmental toxins (in-utero or during early childhood): Lead, organophosphate pesticides, and polychlorinated biphenyls
- Nutritional deficiencies: Zinc, magnesium, iron, omega-3 polyunsaturated fatty acids.
- Psychosocial factors: Low income, family adversity, harsh or hostile parenting
- Genetic and physiological factors

### **Prevention/promotion**

- Addressing some of the above risk factors may reduce the risk of developing ADHD.
- Increase awareness of the clinical condition to educators and health professionals

### **Diagnosis**

A diagnosis of ADHD should only be made by a specialist psychiatrist, paediatrician, developmental paediatrician or another appropriately qualified healthcare professional with training and expertise in the diagnosis of ADHD.

If a diagnosis of ADHD is suspected, the child should be screened using the SNAP V tool [SNAP ADHD Rating Scale.pdf \(ohsu.edu\)](#) (developed by Swanson, Nolan, and Pelham) or The NICHQ Vanderbilt Assessment Scale (<https://nichq.org/resource/nichq-vanderbilt-assessment-scales>)

The results should be forwarded to a person who can schedule the child for a review and full assessment and initiation of care.

A full clinical and psychosocial assessment should be carried out and should include:

- An understanding of behaviour and symptoms in different domains and settings of the child's everyday life

- A full developmental history
- A full psychiatric history
- Observer reports e.g. report from school describing the child's behaviour in class, academic performances etc.
- Clinical assessment of the person's mental state
- Assessment of any medical conditions that might relate to the condition e.g. previous encephalitis, cerebral malaria, prematurity and ensuring no cardiac conditions or reasons for raised blood pressure exist
- Assessment for co-morbidities e.g. Autism Spectrum Disorder (ASD) and specific learning disorders

**According to DSM-5, Diagnostic Criteria for ADHD is as outlined in the table below**

Symptoms and/or behaviours that have persisted  $\geq$  6 months in  $\geq$  2 settings (e.g. school, home, church). Symptoms have negatively impacted academic, social, and/or occupational functioning. In patients aged  $<$  17 years,  $\geq$  6 symptoms are necessary; in those aged  $\geq$  17 years,  $\geq$  5 symptoms are necessary.

<b>Inattentive Type Diagnosis Criteria</b>	<ul style="list-style-type: none"> <li>• Displays poor listening skills</li> <li>• Loses and/or misplaces items needed to complete activities or tasks</li> <li>• Sidetracked by external or unimportant stimuli</li> <li>• Forgets daily activities</li> <li>• Diminished attention span</li> <li>• Lacks ability to complete schoolwork and other assignments or to follow instructions</li> <li>• Avoids or is disinclined to begin homework or activities requiring concentration</li> <li>• Fails to focus on details and/or makes thoughtless mistakes in schoolwork or assignments</li> </ul>
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<b>Hyperactive/ Impulsive Type Diagnosis Criteria</b>	<p><u>Hyperactive Symptoms:</u></p> <ul style="list-style-type: none"> <li>● Squirms when seated or fidgets with feet/hands</li> <li>● Marked restlessness that is difficult to control</li> <li>● Appears to be driven by "a motor" or is often "on the go"</li> <li>● Lacks ability to play and engage in leisure activities in a quiet manner</li> <li>● Incapable of staying seated in class</li> <li>● Overly talkative</li> </ul> <p><u>Impulsive Symptoms:</u></p> <ul style="list-style-type: none"> <li>● Difficulty waiting turn</li> <li>● Interrupts or intrudes into conversations and activities of others</li> <li>● Impulsively blurts out answers before questions completed</li> </ul>
<b>Additional Requirements for Diagnosis</b>	<ul style="list-style-type: none"> <li>● Symptoms present prior to age 12 years</li> <li>● Symptoms not better accounted for by a different psychiatric disorder (e.g. mood disorder, anxiety disorder) and do</li> <li>● not occur exclusively during a psychotic disorder (e.g. schizophrenia)</li> <li>● Symptoms not exclusively a manifestation of oppositional behaviour</li> </ul>
<b>Classification</b>	<p><u>Combined Type:</u></p> <ul style="list-style-type: none"> <li>● Patient meets both inattentive and hyperactive/impulsive criteria, for the past 6 months</li> </ul> <p><u>Predominantly Inattentive Type:</u></p> <ul style="list-style-type: none"> <li>● Patient meets inattentive criterion, but not hyperactive/impulse criterion, for the past 6 months</li> </ul> <p><u>Predominantly Hyperactive/ Impulsive Type:</u></p> <ul style="list-style-type: none"> <li>● Patient meets hyperactive/impulse criterion, but not inattentive criterion, for the past 6 months</li> <li>● Symptoms may be classified as mild, moderate or severe based on symptom severity</li> </ul>

Source- DSM-5 Diagnostic and Statistical Manual of Mental Disorders, 5th edition;  
ADHD: attention deficit hyperactivity disorder

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### Investigations

ADHD is a clinical diagnosis

### Differential diagnosis/Comorbidity

Comorbid psychiatric disorders are common in children with ADHD and below are the most common ones:

- Oppositional Defiant Disorder (ODD)
- Conduct Disorder (CD)
- Intellectual Disability
- Learning Disorders
- Language Disorders
- Sleep Disorders
- Enuresis
- Developmental Motor Coordination Disorders
- Depressive and Anxiety Disorders
- Tic Disorders, and Autism Spectrum Disorders

### Management

- Recognition of ADHD and other neurodevelopmental disorders should ideally be done by parents and teachers.

#### Primary level

- Healthcare facilities should refer children with suspected ADHD to the secondary level of care.

#### Secondary level

- Facilities should screen suspected children and conduct a full assessment.
- If the clinical picture is suggestive of ADHD, secondary-level services should liaise with tertiary care services or specialist centres for assessment and confirmation of diagnosis.
- Once diagnosis has been made at tertiary level, ongoing care and follow up can be provided at secondary level.

**Tertiary Level**

- Medication should be started at tertiary level.
- Tertiary care services should provide diagnostic services and support more complex children and young people.
- Assess, diagnose and manage ADHD patients and support facilities in ongoing care of affected patients.

**Psychoeducation**

- Psychoeducation is the foundation of treatment because ADHD is a chronic condition.
- Clinicians should give information in a way that families can understand, using language, comparisons, and metaphors at the patient educational level and in a culturally sensitive manner.
- Diagnoses and treatment approaches should be outlined so that informed decisions can be made.
- The child requires support at all levels so with permission from parents, teachers should be informed so they can accommodate the child's needs.

**Behavioural and Psychosocial Treatment**

- In settings like Malawi where the availability of drugs is limited, behavioural and psychological treatments can help a lot of children with ADHD.
- Some psychological approaches used for treating ADHD include behaviour classroom interventions, social and organizational skills training, meditation-based therapy, and cognitive therapy which can be administered by appropriately skilled personnel.

**Medication**

- Medication for ADHD should only be initiated by a healthcare professional with training and expertise in diagnosing and managing ADHD.
- Healthcare professionals initiating medication for ADHD should:
  - be familiar with the pharmacokinetic profiles of all the short- and long-acting preparations available for ADHD
  - ensure that treatment is tailored effectively to the individual needs of the child, young person, or adult
  - take account of variations in bioavailability or pharmacokinetic profiles of different preparations to avoid reduced effect or excessive adverse effects

**Baseline assessment before initiation of medication**

Before starting medication for ADHD, people with ADHD should have a full clinical assessment, which should include:

- a review to confirm they continue to meet the criteria for ADHD and need treatment

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- a review of mental health and social circumstances, including:
  - presence of coexisting mental health and neurodevelopmental conditions
  - current educational or employment circumstances
  - risk assessment for substance misuse and drug diversion
  - guardians need and support
- a review of physical health, including:
  - a medical history, considering conditions that may be contraindicated for specific medicines
  - current medication (always cross-check for drug-to-drug interaction)
  - height and weight (measured and recorded against the normal range for age and sex)  
(stimulants cause growth retardation)
  - baseline pulse and blood pressure (measured with an appropriately sized cuff and compared with the normal range for age) (stimulants cause hypertension) a cardiovascular risk assessment
  - an electrocardiogram (ECG) is required in those with cardiovascular risk factors or problems before starting medications for ADHD
- Refer for a cardiology opinion before starting medication for ADHD if any of the following apply:
  - history of congenital heart disease or previous cardiac surgery history of sudden death in a first-degree relative under 40 years suggesting a cardiac disease
  - shortness of breath on exertion compared with peers
  - fainting on exertion or in response to fright or noise
  - palpitations that are rapid, regular, start and stop suddenly (fleeting occasional bumps are usually ectopic and do not need investigation)
  - chest pain suggesting a cardiac origin
  - signs of heart failure
  - a murmur was heard on cardiac examination

### Medication choice

- Offer methylphenidate (either short or long-acting as the first-line pharmacological treatment for children aged 5 years and over and young people with ADHD).
- Consider switching to lisdexamfetamine for children aged 5 years and over and young people who have had a 6-week trial of methylphenidate at an adequate dose and have not derived enough benefit in terms of reduced ADHD symptoms and associated impairment.
- Consider dexamfetamine for children aged 5 years and over and young people whose ADHD symptoms are responding to lisdexamfetamine but who cannot tolerate the longer effect profile.
- Offer atomoxetine or guanfacine to children aged 5 years and over and young

people if they cannot tolerate methylphenidate or lisdexamfetamine or their symptoms have not responded to separate 6-week trials of lisdexamfetamine and methylphenidate, having considered alternative preparations and adequate doses.

Note: There is no evidence of risperidone in the treatment of ADHD. Prescription of risperidone should only be done if the benefits outweigh the risk and there should be an established comorbid behavioural difficulty of which psychological and behavioural interventions have failed

### Follow up

- Follow up patients in general clinic/neurodevelopmental clinic at tertiary level or secondary level PEN-Plus clinic that have availability of multidisciplinary team

## Autism Spectrum Disorder

### Definition

Autism Spectrum Disorder (ASD) is a biologically based neurodevelopmental disorder characterized by persistent deficits in social communication and social interaction, and restricted, repetitive patterns of behaviour, interests and activities.

- People with ASD have problems with establishing and maintaining meaningful interpersonal relationships.
- Symptoms start in early development but may be difficult to recognize until a child is older and the social demands exceed their capacity to function in normal society.

### Risk factors/causes

- The aetiology is unclear, but risk factors include:
  - Genetics e.g. Down syndrome
  - Having a sibling with ASD
  - Advanced parental age
  - Sodium valproate exposure during the prenatal period and other environmental toxins.

### Prevention/promotion

- Early detection and support can improve functionality
- Recognition of ASD should be done by parents and teachers who should then refer the child for assessment

### Clinical features

- ASD symptoms can be identified as early as 18 months of age.
- Signs and symptoms present early in childhood and red flags are outlined in the image below:

## Red Flags of Autism Spectrum Disorders and Developmental Delays in the Second Year of Life

<b>ASD Red Flags</b>	<ul style="list-style-type: none"> <li>● Lack of showing</li> <li>● Lack of coordination of nonverbal communication</li> <li>● Lack of sharing interest or enjoyment</li> <li>● Repetitive movements with objects</li> <li>● Lack of appropriate gaze</li> <li>● Lack of response to name</li> <li>● Lack of warm, joyful expressions</li> <li>● Unusual prosody</li> <li>● Repetitive movements or posturing of body</li> </ul>
<b>ASD &amp; DD Red Flags</b>	<ul style="list-style-type: none"> <li>● Lack of pointing</li> <li>● Lack of playing with a variety of toys</li> <li>● Lack of response to contextual cues</li> <li>● Lack of communicative vocalizations with consonants</li> </ul>

Fuentes J, Bakare M, Munir K, Aguayo P, Gaddour N, Öner Ö. Autism spectrum disorder. In Rey JM (ed), IACAPAP e-Textbook of Child and Adolescent Mental Health. Geneva: International Association for Child and Adolescent Psychiatry and Allied Professions 2014.

### Diagnosis

- According to the DSM, Fifth Edition Text Revision (DSM-5-TR) criteria, a diagnosis of ASD requires all of the following:

**Persistent deficits in social communication and social interaction in multiple settings; demonstrated by deficits in all three of the following (either currently or by history):**

- Social-emotional reciprocity (e.g. failure to produce mutually enjoyable and agreeable conversations or interactions because of a lack of mutual sharing of interests, lack of awareness or understanding of the thoughts or feelings of others)
- Nonverbal communicative behaviours used for social interaction (e.g. difficulty coordinating verbal communication with its nonverbal aspects [eye contact, facial expressions, gestures, body language, and/or prosody/tone of voice])
- Developing, maintaining and understanding relationships (e.g. difficulty adjusting behaviour to social setting, lack of ability to show expected social behaviours, lack of interest in socializing, difficulty making friends even when interested in having friendships)

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### **Restricted, repetitive patterns of behaviour, interests, or activities; demonstrated by ≥2 of the following (either currently or by history):**

- Stereotyped or repetitive movements, use of objects, or speech (e.g. stereotypies such as rocking, flapping, or spinning; echolalia [repeating parts of speech]; repeating scripts from movies or prior conversations; ordering toys into a line)
- Insistence on sameness, unwavering adherence to routines, or ritualized patterns of verbal or nonverbal behaviour (e.g. difficulty with transitions, greeting rituals, need to eat the same food every day)
- Highly restricted, fixated interests that are abnormal in strength or focus (e.g. preoccupation with certain objects [trains, vacuum cleaners, or parts of trains or vacuum cleaners]); perseverative interests (e.g. excessive focus on a topic such as dinosaurs or natural disasters)
- Increased or decreased response to sensory input or unusual interest in sensory aspects of the environment (e.g. adverse response to particular sounds; apparent indifference to temperature; excessive touching/smelling of objects)
- The symptoms must impair function (e.g. social, academic, completing daily routines)
- The symptoms must be present in the early developmental period. However, they may become apparent only after social demands exceed limited capacity; in later life, symptoms may be masked by learned strategies
- The symptoms are not better explained by intellectual disability or global developmental delay

### **Investigations**

- Every child with suspected ASD must have hearing and vision assessment as these may be the cause or be contributing to their symptoms
- Screening and diagnostic tools can be used to assess and identify children with suspected ASD such as the Childhood Autism Spectrum Test (CAST) (Childhood Autism Spectrum Test (CAST) (<https://psychology-tools.com/>)) or
- Modified Check for Autism in Toddlers (M-CHAT)  
(<https://www.mchatscreen.com/>) and Autism Diagnostic Observation Schedule (ADOS)
- A full assessment should include the child's behaviours in different context and settings e.g. home, school etc

## Comorbidities

Like most NNDs, children and adolescents with autism spectrum disorder have a lot of comorbidities. Some of the common comorbidities include:

- Sleep disorders/disturbance
- ADHD
- Gastrointestinal disorders
- Feeding/eating challenges
- Obesity
- Bipolar disorder
- Intellectual disability
- Language disorders
- Sleep Disorders, enuresis,
- Depressive and anxiety disorders,
- Epilepsy and epilepsy syndromes

## Differential diagnosis

- Sensory deficit - such as hearing or visual impairment
- Intellectual disability
- Language and speech disorders
- Other neurodevelopmental disorders such as Rett's syndrome
- Selective mutism
- Severe psychosocial deprivation
- Tic Disorder
- Language disorder

## Management

- Identify and treat any comorbid disorders.
- There are no drugs for autism spectrum disorder.
- The treatment and management of ASD is complex and requires multidisciplinary approach with the child and family at the centre of care.
- Referral to rehabilitation services (occupational therapy/speech therapy)
- The treatment approach should include parent and teacher training and support.
- Education support groups as early as possible, with special attention to social, communication, academic and behavioural development, are provided in the least restrictive environment by staff who have knowledge and understanding of both autism and the individual student.
- Accessible community support, in terms of appropriate, well-informed, multi-agency services that will help each individual to realize their potential and lifetime goals (either chosen by the individuals themselves or those who know, love, and

legally represent them).

- Access to the full range of psychological and medical treatments (adapted as necessary to meet the needs of individuals with ASD) that are available to the general population.
- Access to social welfare services when available

#### **Primary level**

- Healthcare facilities should refer children with suspected ASD to the secondary level of care.

#### **Secondary level**

- Facilities should screen suspected children and conduct a full assessment
- If the clinical picture is suggestive of ASD, secondary-level services should liaise with tertiary care services or specialist centres for assessment and management
- Once diagnosis has been made at tertiary level, ongoing care and follow up can be provided at Secondary level.

#### **Tertiary level**

- Assess, diagnose and manage ASD patients and support facilities in ongoing care of affected patients

### **Follow up**

- Follow up patients in general clinic/neurodevelopmental clinic at tertiary level or secondary level PEN-Plus clinic that have availability of multidisciplinary team

## Intellectual Disability (ID)

### Definition

Intellectual disability (ID) is a neurodevelopmental disorder that begins in childhood and is characterised by limitations in both intelligence and adaptive skills, affecting at least one of three adaptive domains (conceptual, social, and practical), with varying severity. The extent of adaptive impairment is key to defining ID and its severity.

### Risk factors

- Causes for ID are heterogeneous
- **Mild ID:** No specific cause in 40% of cases
  - Genetic causes, injury, infections, poor nutrition
- **Marked ID:** Specific causes are found more often
  - Genetic: Trisomy 21, Fragile X, single gene disorder
  - Prenatal: Foetal alcohol syndrome, maternal infection like HIV
  - Perinatal: Placental dysfunction, birth trauma, septicaemia, jaundice
  - Postnatal: Brain infection, head injury

### Prevention/promotion

- Antenatal screening and good obstetric care can prevent ID due to preventable etiological factors
- Early identification, and management of childhood illness can prevent ID e.g. hypothyroidism, inborn errors of metabolism
- Screening in children with predisposing factors for ID should be done routinely to facilitate early detection of ID
- Children can also be identified through schools and Early Child Development Centres
- Training teachers, parents, and medical professionals to identify those with learning difficulties will help early detection to improve functionality and outcome
- Prevention can be done at all levels of care:
  - Primary (preventing the occurrence of ID):
    - Prenatal: (toxins, infections incl. HIV)
    - Peri-natal: (delivery, neonatal screening)
    - Post-natal: (immunization, treatment for infections, safe and enriching environment)

#### Secondary (halting disease progression):

- Identify ID early, and provide stimulation for optimal development

#### Tertiary (maximizing function):

- Support for families
- Stimulation, training, vocational opportunities (special schools)

### **Signs and symptoms**

- Core symptoms
  - Low intellectual functioning IQ <70 (e.g. 2 SD below mean)
  - Impaired adaptive behaviour
- The severity of intellectual disability can be categorised from mild to profound according to the level of adaptive impairment and the level of support needed, as summarized in the table below.

### **Typical adaptive needs and supports according to severity of intellectual disability**

<b>Severity level</b>		<b>Adaptive skill domains</b>		
<b>DSM-5 categories</b>	<b>AAIDD categories</b>	<b>Conceptual</b>	<b>Social</b>	<b>Practical</b>
Mild	Intermittent	Children require academic supports to learn skills expected for age. Adults may have difficulties with functional academic skills such as planning, reading, and money management.	Social skills and personal judgement are immature for age. The individual is at risk of being manipulated by others (gullibility).	Most individuals achieve independence in daily living and personal care activities; most are employable in jobs requiring simple skills and are often able to live independently. They typically need support for making decisions in health care, nutrition, shopping, finances, and raising a family.

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Moderate	Limited	<p>For children, conceptual and academic skills lag well behind those of peers. For adults, academic skills are typically attainable at an elementary level. Complex tasks such as money management need substantial support.</p>	<p>Successful friendships with family/friends are possible using simple spoken language, but the individual is limited by deficits in social and communicative skills.</p> <p>Social cues, social judgement, and social and life decisions regularly need support.</p>	<p>Most individuals are capable of personal care activities with sufficient teaching and support, and achieve independent self-care with moderate supports, such as is available in a group home. Adults may be employable in a supported environment.</p>
Severe	Extensive	<p>Individuals have little understanding of written language, or number, time, and money concepts.</p> <p>Caretakers provide extensive supports for problem-solving.</p>	<p>Individuals benefit from healthy supportive interactions with family/ family people and may use very basic single words, phrases, or gestures pertinent to their direct experience.</p>	<p>Individuals are trainable in some basic activities of daily living with significant ongoing support and supervision.</p>
Profound	Pervasive	<p>Individuals may use objects in a goal-directed fashion for self-care and recreation.</p>	<p>Although understanding of symbolic communication is very limited, individuals may understand some gestures and emotional cues, and can express themselves nonverbally.</p>	<p>Individuals are typically dependent upon support for all activities of everyday living. Co- occurring sensory or physical limitations are common.</p>

This table provides examples of typical adaptive needs and supports according to the severity of ID. The severity of ID is defined by the level of adaptive impairment and the level of support needed. The American Psychiatric Association's DSM-5 categorizes adaptive impairment from mild to profound<sup>1</sup>. The AAIDD uses categories of intermittent, limited, extensive, and pervasive<sup>2</sup>. Supports are wild-

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ranging and aim to optimize the functioning, participation, and independence of the child in everyday environment setting, including home, school, community. Profoundly impaired children usually require pervasive support.

ID: intellectual disability; DSM-5: Diagnostic and Statistical Manual, 5<sup>th</sup> Edition; AAIDD: American Association on Intellectual and Developmental Disabilities

1. American Psychiatric Association. Intellectual Disability (Intellectual Developmental Disorder). In: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, American Psychiatric Association.
2. American Association of Intellectual and Developmental Disabilities (AAIDD). Definition of Intellectual Disability. Available at: <http://aaidd.org/intellectual-disability/definition> (Accessed on July 17, 2018)

Adapted from the following sources:

- In the absence of these specific tools or expertise to do proper psychometric assessments for IQ, a rough estimate of the child's IQ can be done using the following formula:

$$\text{(Developmental age/chronological age)} \times 100 = \text{IQ}$$

- For example, a child who is 5 years of age (chronological age) is found to have the developmental abilities of a 2-year-old child (developmental age):

$$\text{IQ} = 2/5 \times 100 = 40$$

<b>Severity</b>	<b>Mild</b>	<b>Moderate</b>	<b>Severe</b>	<b>Profound</b>
<b>IQ score</b>	50-69	35-49	20-34	0-20

### Investigations

- To diagnose ID the following are required:
  - IQ below 70
  - Impairment in adaptive functioning
  - Onset before age 18 years of age
- The following tools can be used to make the diagnosis:
  - Interview: family medical history, pregnancy, development, the home environment.
  - Physical examination
  - Developmental assessment tools e.g. MDAT <https://mdat.org.uk/>
  - Psychometric tests e.g. Kaufmann ABC if available
  - Adaptive behaviour: clinical judgment and scales
  - Laboratory tests and genetic testing e.g. Thyroid function tests, iron levels, and lead levels where possible

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### Comorbidities

- Psychiatric co-morbidities are common (~50%)
  - Anxiety, ODD, autism
  - ADHD, depression, conduct problems
- Medical co-morbidity is also common
  - Epilepsy, cerebral palsy, and sensory issues most common but are often undetected and under-treated
  - Genetic conditions e.g. Down Syndrome (trisomy 21), Fragile X, Phenylketonuria (PKU), Congenital hypothyroidism, Foetal alcohol spectrum of disorders

### Differential diagnosis

- Exclude sensory (deafness, poor eyesight) problem
- Perform a comprehensive clinical assessment to identify and manage underlying causes of ID, especially those that are reversible:
  - Infections (e.g. cerebral malaria)
  - Neurological disorders (e.g. epilepsy)
  - Endocrine disorders (e.g. hypothyroidism)
  - Severe under stimulation/abuse/neglect
  - Specific developmental disorders (e.g. specific learning disorders)
  - Autism (with or without ID)

**Note:** Any sudden developmental regression (loss of skills that were once mastered) should be treated as a medical emergency and investigated.

### Management

Concerns regarding ID should ideally be raised by parents and teachers. Care for children with ID requires a multidisciplinary team to work with the child and guardians. The health professional should coordinate the care team which includes clinicians, nurses, teachers, social workers, occupational therapists, and speech therapists as they are usually the ones the family presents to.

### Aims of treatment

- Identify and treat reversible causes of ID
- Engage occupational therapist to promote functionality, activities of daily living
- Education – enrol in special school or engage with the teacher in main stream school for additional support and extra classes.
- Engagement in vocational schools
- Counselling of family to understand the diagnosis and provide support

## Management

### Primary level

- Healthcare facilities should refer children with suspected ID to the secondary level of care

### Secondary level

- Facilities should screen suspected children and start management.
- If there are any uncertainties or a lot of comorbidities, secondary-level services should liaise with tertiary care services or specialist centres for assessment and management.

### Tertiary level

- Assess, diagnose and manage ID patients and support facilities in ongoing care of affected patients

## Follow up

- Follow up patients in general clinic/neurodevelopmental clinic at tertiary level or secondary level that have availability of multidisciplinary team

## Specific Learning Disability/Disorders

### Definition

A specific learning disorder is a neurodevelopmental condition that is characterised by difficulties or delays in learning that are below what is expected for a child's cognitive ability.

- NB. These patients differ from those who have intellectual disability as they have normal IQ but struggle in a specific area of learning.

### Risk factors/causes

- Personal factors
  - Family history – it has been shown that there is a genetic predisposition
  - Communication difficulties – receptive and expressive language difficulties
  - Other neurodevelopmental disorders – autism and severe learning disability
  - Visual impairment
- Environmental factors
  - Abusive or restrictive environment
  - Those with too much or too little stimulation
  - Changes in environment
  - Environment that demands more than is appropriate for the child's age

### Promotion/prevention

- Early recognition can improve overall academic performance and requires collaboration between teachers and psychologists

### Signs and symptoms

- The DSM-5 describes three groups of specific learning disorders with their characteristics as below:

With impairment in reading characterised by difficulties in:

- Word reading accuracy
- Reading rate or fluency
- Reading comprehension
- Note: Dyslexia is an alternative term used to refer to a pattern of learning difficulties characterized by problems with accurate or fluent word recognition, poor decoding, and poor spelling abilities.
- If dyslexia are used to specify this particular pattern of difficulty, it is important also to specify any additional difficulties that are present, such as difficulties with reading comprehension or math reasoning

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With impairment in written expression (also called dysgraphia):

- Spelling accuracy
- Grammar and punctuation accuracy
- Clarity or organization of written expression

With impairment in mathematics (also called dyscalculia):

- Number sense
- Memorization of arithmetic facts
- Accurate or fluent calculation
- Accurate math reasoning
- Note: Dyscalculia is an alternative term used to refer to a pattern of difficulties characterized by problems processing numerical information, learning arithmetic facts, and performing accurate or fluent calculations. If dyscalculia is used to specify this particular pattern of mathematical difficulties, it is important also to specify any additional difficulties that are present, such as difficulties with math reasoning or word reasoning accuracy

### Investigations/Diagnosis

- A diagnosis requires an objective assessment using a child's history (developmental, medical, family, educational), school reports and psychological education assessment.
- DSM-5 gives the diagnostic criteria for specific learning disability as below;
- Difficulties learning and using academic skills, as indicated by the presence of at least one of the following symptoms that have persisted for at least 6 months, despite the provision of interventions that target those difficulties:
  1. Inaccurate or slow and effortful word reading (e.g. reads single words aloud incorrectly or slowly and hesitantly, frequently guesses words, has difficulty sounding out words)
  2. Difficulty understanding the meaning of what is read (e.g. may read text accurately but not understand the sequence, relationships, inferences, or deeper meanings of what is read).
  3. Difficulties with spelling (e.g. may add, omit, or substitute vowels or consonants).
  4. Difficulties with written expression (e.g. makes multiple grammatical or punctuation errors within sentences; employs poor paragraph organization; written expression of ideas lacks clarity)
  5. Difficulties mastering number sense, number facts, or calculation (e.g. has poor understanding of numbers, their magnitude, and relationships; counts on fingers to add single-digit numbers instead of recalling the math fact as peers do; gets lost in the midst of arithmetic

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- computation and may switch procedures)
6. Difficulties with mathematical reasoning (e.g. has severe difficulty applying mathematical concepts, facts, or procedures to solve quantitative problems)
- The affected academic skills are substantially and quantifiably below those expected for the individual's chronological age, and cause significant interference with academic or occupational performance, or with activities of daily living, as confirmed by individually administered standardised achievement measures and comprehensive clinical assessment
  - The learning difficulties begin during school-age years but may not become fully apparent until the demands for those affected academic skills exceed the individual's limited capacities (e.g. as in timed tests, reading or writing lengthy complex reports for a tight deadline, excessively heavy academic loads)
  - The learning difficulties are not better accounted for by intellectual disabilities, uncorrected visual or auditory acuity, other mental or neurological disorders, psychosocial adversity, lack of proficiency in the language of academic instruction, or inadequate educational instruction.
  - Important: Individuals demonstrate differences in degree of impairment and may not exhibit all the characteristics listed above.
  - When summarising the areas affected this should be outlined based on which area the patient experiences impairment, impairment in reading, impairment in writing, or impairment in mathematics

### **Management of specific learning disorders**

- Management will require a multidisciplinary team including an educational psychologist, a clinical psychologist, psychologist, psychiatrist, behavioural analysts, nurses, social care staff, speech and language therapists, educational staff, occupational therapist, educational staff, occupational therapist, physiotherapist, physicians, paediatricians and pharmacists.

#### **Primary level**

Children who are suspected to have specific learning disorders will need referral for an appropriate assessment.

#### **Secondary level**

Children who are suspected to have specific learning disorders will need referral for appropriate assessment.

### **Tertiary level**

These facilities will be critical in making the diagnosis, but they will need to coordinate with other cadres and liaise with personnel at primary and secondary level facilities to substantiate the diagnosis.

### **Follow up**

- Follow up patients in general clinic/neurodevelopmental clinic at tertiary level or secondary level PEN-Plus clinic that have availability of multidisciplinary team
- Engagement of special needs educators and psychologists is paramount in the follow up.

## Child and Adolescent Mental Health

### Anxiety disorders

#### Definition

Anxiety disorders refer to conditions that share features of fear and anxiety. Fear being an emotional response to a real or perceived imminent threat and anxiety being the anticipation of future threat. Symptoms meet the criteria for a clinical anxiety disorder when the concerns are unexpected given the child's developmental level, persistent in the face of reassurance and support, and thus considered excessive.

It is easy to miss a diagnosis or misdiagnose children and adolescents presenting to a health facility with stress, anxiety, and other emotional distress

#### Some of the reasons include the following:

- Presentation differs from the adult population (e.g. children and adolescents will present with irritability and multiple somatic symptoms when experiencing distress, and academic difficulties)
- Children and adolescents struggle to express themselves (i.e. Inability to name feelings and thoughts)
- Assessing children and adolescents with these disorders is time consuming and requires the involvement of different cadres (school teachers, social workers, etc.).

#### Approximate age of onset for various disorders may vary.

- Animal phobias – early childhood (around 6-7 years)
- Separation anxiety disorder – early to mid-childhood (around 7-8 years)
- Generalised anxiety disorder – late childhood (around 10-12 years)
- Social anxiety disorder – early adolescence (around 11-13 years)
- Obsessive-compulsive disorder – mid-adolescence (around 13-15 years)
- Panic disorder – early adulthood (around 22-24 years)

#### Risk factors/causes

- Genetics: Anxiety runs in families. First-degree relatives of people with anxiety disorders are at significantly increased risk of also having anxiety and mood disorders
- Parenting characteristics: more common in parents who are overprotective, are intrusive and demonstrate negativity towards their child
- Life events:
  - Increased negative life events

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- Bullying and teasing
- Neglect and rejection by peers
- Sexual abuse, physical abuse

### Diagnosis

- Pragmatic Approach To Assessing Children And Adolescents
- The most important tool is the clinical assessment and collateral history including from school and other places where the child spends his/her time
- Identify the presenting complaint (from the child, guardian and any other cadres including school)
- Try to identify the triggers (keeping in mind that with children and adolescents, it might take several sessions to identify the triggers and clinicians should focus on building rapport rather than trying to make a diagnosis during the first session)
- Identify the functional consequences (e.g. behavioural difficulties, academic difficulties)
- Most importantly, try to involve as many cadres as possible. The child's functioning and psychological well-being are highly dependent on the family and school setting in which he or she is in so the child cannot be assessed in isolation.

### Tools to aid in the assessment

The following tools are recommended in identifying specific anxieties in children:

- Screen for Child Anxiety Related Disorders (SCARED)  
<https://www.ohsu.edu/sites/default/files/2019-06/SCARED-form-Parent-and-Child-version.pdf>
- Feeling scale
- Play and art (describing feelings and emotions using diagrams. This needs the assessor to be the child's friend and not a clinician)
- Emotion diary
- The patient can be assessed using the Generalised Anxiety Disorder GAD-7 tool (<https://www.ementalhealth.ca/index.php?m=survey&ID=3>). If there are also concerns regarding depression
- Patient Health Questionnaire (PHQ-9)  
(<https://www.ementalhealth.ca/index.php?m=survey&ID=42>) If there are concerns about both depression and anxiety, PHQ-4 can be used as screening tool for both anxiety and depression

### Management

- Management of stress and related disorders in kids requires a multidisciplinary approach.

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- The aim of the treatment is to address the functional consequences of the presenting complaint and ensure that the child can achieve academically, and socially and be able to live an independent life.

### Primary level

Assess the patient and refer all suspected cases to secondary level health facility.

### Secondary level

See the tertiary-level guidance below

### Tertiary level

- Treatment involves skills-based programs which is the mainstay and medical management.
- Skills-based programs include the following:
  - Psychoeducation
  - Relaxation
  - Exposure therapy
  - Parent training
  - Cognitive restructuring
  - Social skills and assertiveness training
  - School programs
- Use of drugs should be the last option unless symptoms are very severe. If deemed necessary drugs should be initiated in liaison with a clinician who is very familiar with the principles of prescription and psychopharmacology in children.

#### Treatment approach:

- Start with skills-based therapy and review the patient every 2-4 weeks
- If they improve you may see them every three months
- If there is no response, consider starting medication with skills-based therapy
- Treatment should continue to 12 months to prevent relapse and drugs weaned slowly whilst monitoring for relapse
- Note: Always assess for **suicide risk** and refer such patients urgently.
- Monitor all patients on treatment especially SSRIs closely for any worsening including suicidal ideation and any change in behaviour. Advise family and close caregivers to monitor for the same
- Refer such patients as required to a psychiatry unit/mental health practitioner for assessment and treatment.

### Follow up

- See management section for frequency of follow up.

## Depression

### Definition

Depression is a mood disorder that is characterised by a persistent feeling of sadness accompanied with a loss of interest in things they previously engaged in.

### Risk factors/causes

- Biological vulnerabilities include genetic factors, prenatal factors, familial factors
- Environmental influences include children's family relationships, cognitive style, stressful life events, school and neighbourhood characteristics

### Promotion/prevention

- Not all children who have risk factors for depression develop the disorder but there are some factors that have been shown to have a protective effect in adolescents at high risk for developing depression.
- Individual factors
  - Inherited resilience, high intelligence, emotional regulation capacity, coping mechanisms and thinking styles
- Familial factors
  - Good quality interpersonal relationships have been found to be protective and nurturing such relationship can be beneficial.
  - Children who have family relationships that are characterised by warmth, acceptance, low hostility and low parental control are protective in children who have a high risk for depression.
- Social factors
  - Strong peer support

### Signs and symptoms

- The approach to depression in children and adolescents is not very different from anxiety disorders and there will almost always be comorbidity of the other disorder when one is present.
- Young people tend to present initially with behavioural or physical complaints which may obscure the typical depressive symptoms seen in adults.
- The following complaints should alert clinicians to the possibility of depression in children and adolescents:
  - Irritability or cranky mood
  - Chronic boredom or loss of interest in previously enjoyed leisure activities (for example, dropping out of sporting activities, or dance and music lessons)
  - Social withdrawal or no longer wanting to "hang out" with friends

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- Avoiding school
- A decline in academic performance
- Change in sleep-wake pattern (for example, sleeping in and refusing to go to school)
- Frequent unexplained complaints of feeling sick, headaches, stomach-aches
- Development of behavioural problems (such as becoming more defiant, running away from home, bullying others)
- Abusing alcohol or other substances.
- Clinicians should ascertain if the current problems represent a change from the teenager's previous level of functioning or character. For example, depression may account for the recent academic failure of a 15-year-old girl who had previously topped her class.
- ICD-10 divides symptoms of depression into core and associated symptoms which are important for making the diagnosis.

### Core symptoms of depression

- Sadness, unhappiness or irritability, and anhedonia. Irritability is the most ambiguous because it can be present in a wide range of psychiatric conditions (e.g., oppositional defiant disorder, obsessive-compulsive disorder, bipolar illness).
- To substantiate the diagnosis these symptoms must have the following characteristics
  - Pervasiveness - symptoms must be present every day, most of the day)
  - Duration - must be present for at least two weeks)
  - The symptoms must cause impairment in functioning or significant subjective distress
  - The symptoms are not the manifestation of the effects of a substance or another medical condition

### Associated symptoms

- These include:
  - Significant weight or appetite change (when not dieting)
  - Insomnia or hypersomnia
  - Psychomotor agitation or retardation
  - Fatigue or loss of energy
  - Feelings of worthlessness or excessive or inappropriate guilt
  - Diminished ability to think or concentrate or indecisiveness, and
  - Recurrent thoughts of death or suicide.
- A key aspect in the assessment of any depressed youth is the evaluation of risk, particularly of suicide and homicide. The outcome of the risk assessment will have an important bearing on management, for example in deciding the best setting (e.g. inpatient, outpatient) in which to treat the patient

## Investigations/Diagnosis

### Screening for depression

- The Patient Health Questionnaire (PHQ)-2 is a simple questionnaire that is used as a screening tool for depression in adults and adolescents and has a high sensitivity and specificity for depression
- It can be used as an initial assessment before referral at the primary or secondary level. If the patient screens positive for the PHQ-2, that is a score of  $>/= 3$ , this is suggestive of depression and a full assessment is required to adequately diagnose depression using PHQ-9 where the expertise exists
- If there are concerns about both depression and anxiety, then the PHQ-4 can be used as screening tool for both anxiety and depression.
- Depending in the score and their distribution, the patient may be referred for further assessment using the Generalised Anxiety Disorder GAD-7 tool, PHQ-9 or both
- Risk of suicide and how the adolescent functions at home and school should be assessed

### Criteria for diagnosing depression

- Panel: Criteria for ICD-10 depressive episode
- Core symptoms (at least two must be present)
  - Depressed mood present for most of the day and almost every day
  - Loss of interest or pleasure in activities
  - Decreased energy or increased susceptibility to fatigue Associated symptoms
  - Loss of confidence or self-esteem
  - Unreasonable feelings of self-reproach or excessive inappropriate guilt
  - Recurrent thoughts of death or suicide, or any suicidal behaviour
  - Diminished ability to think or concentrate
  - Change in psychomotor activity, agitation, or retardation
  - Sleep disturbance
  - Change in appetite with corresponding change in weight

## Severity of depression according to the International Classification of Diseases-10<sup>th</sup> Edition (ICD-10)

Number of core symptoms* present	Severity of depression
At least four	mild depressive episode
At least six	moderate depressive episode,
At least eight	severe depressive episode.

\*Symptoms must be present for at least 2 weeks

### Differential diagnosis

- Adjustment disorder is associated with a stressor and starts within 3 months of the stressor and does not extend more than 6 months of the stressor relates to Dysthymic disorder.
- Persistent low mood which is not severe enough to be depression and last for at least 2 years (1 year for children and adolescents)

### Management

- The goal of management is to reduce symptoms and impairment, reduce the risk of relapses and shorten the duration of the current episodes.
- Many children will recover on their own within 4 weeks so watchful waiting is the best approach.
- In all cases of depression, an attempt must be made to identify and address any contributory factors such as abuse or bullying.
- Depression in paediatrics should be treated depending on severity:

**Mild depression:** psychosocial interventions (including group sessions, supportive psychotherapy, self-help guided therapy, cognitive behavioural therapy, and behavioural activation). The friendship bench is a cognitive behaviour therapy intervention that can be used by lay persons and provides a forum to address common mental health problems including anxiety and depression.

**Moderate to severe depression;** antidepressants + psychosocial interventions

- Antidepressants – selective serotonin reuptake inhibitors (fluoxetine), first line.
  - Recommended start up dose 10mg. If 10mg tablets or capsules not available, give 20mg on alternate days. If no improvements after 4-6 weeks, refer/ liaise with tertiary services
- Mild to moderate depression can be managed at the primary and secondary level granted that the services are available and there is monitoring of patient progress.

- Severe depression is best managed at a tertiary facility and if in any doubt.

**Note:** Always assess for **suicide risk** and refer such patients urgently, use the P4 screener for suicide risk

- SSRI may initially cause agitation especially in the first 2-4 weeks
- Monitor all patients on treatment especially SSRIs closely for any worsening symptoms including suicidal ideation and any change in behaviour. Advise family and close caregivers to monitor for the same

### **Primary level**

Facilities should screen for depression and refer to secondary facilities

### **Secondary level**

- Facilities can assess, diagnose, and manage depression.
- If there is unavailability of trained staff or resources, the above interventions have failed or if the patient develops worsening symptoms or suicidal ideation always liaise with the tertiary-level team for referral for assessment and even admission depending on the severity and risk

### **Tertiary level**

- Facilities can assess diagnose and manage complicated cases of depression.
- At risk patients should be assessed for inpatient management within appropriate psychiatric units
-

## Suicide/Self-Harm

Suicide is becoming an increasingly important cause of death amongst youth and adolescents.

Worldwide it is the fourth leading cause of death in children aged 15-19 years old.

### Definitions

**Suicide, death by suicide, or suicide death:** Death caused by injurious behaviour to the self with an intent to die

**Suicide attempt, suicidal behaviour:** Non-fatal, potentially injurious behaviour to the self with an intent to die; might not result in injury

**Suicidal ideation, suicidal thoughts:** Thinking about, considering, or planning suicide

**Self-injury, non-suicidal self-injury:** Purposeful acts of physical harm to the self with the potential to damage body tissue but performed without the intent to die

**Self-harm:** Term used to describe any act of harm inflicted by the self; includes suicide attempt, self- injury and non-suicidal self-injury

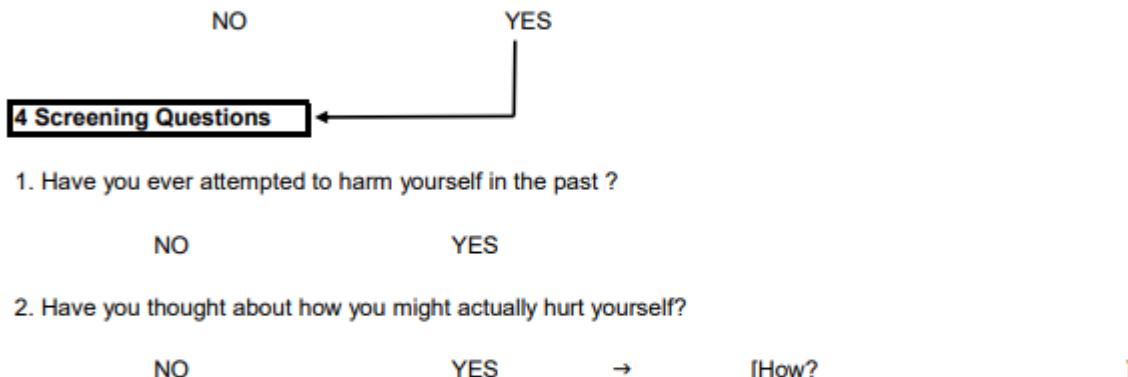
### Risk factors/causes

- Personal – history of depression and other mental health illnesses, previous suicide attempt, substance abuse, chronic disease or pain, adverse childhood experiences, sense of hopelessness
- Environmental – community violence, discrimination, suicide cluster in community, lack of access to healthcare
- Societal Risk Factors - stigma associated with help-seeking and mental illness, easy access to lethal means of suicide among people at risk, unsafe media portrayals of suicide
- Relationship – abusive environment, bullying, loss of a relationship, social isolation, history of suicide by a family member or loved one, violent relationships

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#### P4 Screener for Assessing Suicide Risk (a,b)

Have you had thoughts of actually hurting yourself?



3. There's a big difference between having a thought and acting on a thought.  
How likely do you think it is that you will act on these thoughts about hurting yourself or ending your life some time over the next month?

- a. Not at all likely \_\_\_\_\_
  - b. Somewhat likely \_\_\_\_\_
  - c. Very likely \_\_\_\_\_

4. Is there anything that would prevent or keep you from harming yourself?

NO YES → [What?]

Risk Category	Shaded ("Risk") Response	
	Items 1 and 2	Items 3 and 4
Minimal	Neither is shaded	Neither is shaded
Lower	At least 1 Item is shaded	Neither is shaded
Higher		At least 1 Item is shaded

a: P4 is a mnemonic for the 4 screening questions: *past* suicide attempt, *suicide plan*, *probability* of completing suicide, and *preventive* factors.

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b: Any individual who responds "yes" to a question about thoughts of self-harm is asked 4 additional questions-the 4 P's on past history, plan, probability, and preventive factors. Shaded responses are those that are more concerning for suicidal ideation.

Dube, Kurt K., Barr MJ, Theobald D, Williams LS. The p4 screener: evaluation of a brief measure for assessing potential suicide risk in 2 randomized effectiveness trials of primary care and oncology patients. *Prim Care Companion J Clin Psychiatry*. 2010;12(6):PCC.10m00978. doi: 10.4088/PCC.10m00978buk. PMID: 21494337; PMCID: PMC3067996.

## Management

- General measures
- Screen for risk of harm to self as above
- Manage those with high risk of suicide as below:
  - Manage any injuries that may be present from previous attempts at self-harm
  - Do not leave person alone
  - Admit
  - Remove access to means of self-harm/suicide (bleach, pesticides, firearms, medications) known to be toxic in overdose including paracetamol, amitriptyline, theophylline)
  - Maintain regular contact if possible – suggested weekly contact for the first 2 months

### Reduce immediate risk:

- Manage the patient who has attempted a medically serious act of self-harm
- Trauma and injuries
- If medically stable, assess for imminent risk of self-harm/suicide: imminent risk of suicide is likely in a patient who is extremely agitated, violent, distressed or lacks communication with any the following:
  - Current thoughts or plan of self-harm/suicide or
  - History of thoughts or plan of self-harm in the past month or act of self-harm

### Manage underlying factors:

- Ensure optimal treatment and support of other conditions like chronic pain and mental health conditions (depression, mood disorders, substance use disorders, psychosis, dementia)
- Identify psychosocial stressors like bereavement, intimate partner violence, financial or relationship problems, bullying, divorce, separation.

### Monitoring and follow-up:

- For all cases of medically serious acts of self-harm/suicide or where there is an imminent risk of self-harm/suicide:
  - Do not leave person alone. Place in a secure, supportive environment in health facility while awaiting referral.
  - Remove access to means of self-harm/suicide (bleach, pesticides, firearms, medications) known to be toxic in overdose including paracetamol, amitriptyline, theophylline).
  - Maintain regular contact if possible – suggested weekly contact for the first 2 months.

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- Follow-up for as long as the risk of self-harm/suicide persists. At every contact, reassess for suicidal thoughts and plans.
- Educate patient/carer:
  - If one has thoughts of self-harm/suicide, seek help from a trusted family member, friend or health worker
  - Talking about suicide does not trigger the act of suicide and may lower the risk of following through on suicidal plans
- Refer to mental health services, if available or community resources like religious centres, crisis centres or support groups.
  - Try to locate family/friends to care for and support patient during this phase.
  - Encourage carers to find support for themselves as well.

## Post Traumatic Stress Disorder

### Definition

This is a mental health disorder that comes about following experiencing or witnessing a negative event (e.g. physical, mental, sexual abuse, trauma) and is characterised by invasive thoughts about the event such as fear and anxiety leading to avoidance of similar situations and interferes in normal daily function or activity.

These symptoms should last for at least a month but can occur up to 6 months or more after the initial event. PTSD may be also associated with depression, anxiety and substance abuse

### Risk factors

- Related to the event
  - The child's proximity to the event
  - The frequency of the event
  - Duration of the event
- Personal factors
  - Resilience – how easily or well a child recovers from negative events
  - Coping mechanisms
  - Underlying mental health disorder
- Environmental/social factors
  - The lack of family or community after the event
  - Lack of support system

### Signs and symptoms

- The American Psychiatric Association characterizes the clinical presentation of PTSD by the presence of several symptom clusters that can be remembered by the mnemonic "TRAUMA". This serves as quick way for people to remember the symptoms but is not a diagnostic test.
  - A Traumatic event occurred in which the person experienced, witnessed, or was confronted by actual or threatened serious injury, death, or threat to the physical integrity of self or other and, as a response to such trauma, the person experienced intense helplessness, fear, and horror
  - The person Reexperiences such traumatic events by intrusive thoughts, nightmares, flashbacks, or recollection of traumatic memories and images.
  - Avoidance and emotional numbing emerge, expressed as detachment from others; flattening of affect; loss of interest; lack of motivation; and persistent avoidance of activity, places, persons, or events associated with the traumatic experience

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- Unable to function – symptoms are distressing and cause significant impairment in social, occupational, and interpersonal functioning
- These symptoms last more than 1 Month
- The person has increased Arousal, usually manifested by startle reaction, poor concentration, irritable mood, insomnia, and hypervigilance

### Investigations/Diagnosis

- A patient who demonstrates these features should be referred to secondary level for further assessment using a diagnostic tool such as the DSM-5.
- DSM-5 criteria for diagnosis of PTSD for children 6 years and older:
  - A. Exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways:
    - Directly experiencing the traumatic event(s)
    - Witnessing, in person, the event(s) as it occurred to others.
    - Learning that the traumatic event(s) occurred to a close family member or close friend. In cases of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental
    - Experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (e.g. first responders collecting human remains: police officers repeatedly exposed to details of child abuse)
  - B. Presence of one (or more) of the following intrusion symptoms associated with the traumatic event(s), beginning after the traumatic event(s) occurred:
    - Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s)
    - Recurrent distressing dreams in which the content and/or effect of the dream are related to the traumatic event(s)
    - Dissociative reactions (e.g. flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring. (Such reactions may occur on a continuum, with the most extreme expression being a complete loss of awareness of present surroundings)
    - Intense or prolonged psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event(s)
    - Marked physiological reactions to internal or external cues that symbolize or resemble an aspect of the traumatic event(s)
  - C. Persistent avoidance of stimuli associated with the traumatic event(s), beginning after the traumatic event(s) occurred, as evidenced by one or both of the following:
    - Avoidance or efforts to avoid distressing memories, thoughts, or feelings

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- about or closely associated with the traumatic event(s)
  - Avoidance or efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s)
- D. Negative alterations in cognitions and mood associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:
- Inability to remember an important aspect of the traumatic event(s) (typically due to dissociative amnesia and not to other factors such as head injury, alcohol, or drugs)
  - Persistent and exaggerated negative beliefs or expectations about oneself, others, or the world (e.g. "I am bad," "No one can be trusted," "The world is completely dangerous," "My whole nervous system is permanently ruined")
  - Persistent, distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others
  - Persistent negative emotional state (e.g. fear, horror, anger, guilt, or shame)
  - Markedly diminished interest or participation in significant activities
  - Feelings of detachment or estrangement from others
  - Persistent inability to experience positive emotions (e.g. inability to experience happiness, satisfaction, or loving feelings)
- E. Marked alterations in arousal and reactivity associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:
- Irritable behaviour and angry outbursts (with little or no provocation) typically expressed as verbal or physical aggression toward people or objects
  - Reckless or self-destructive behaviour
  - Hypervigilance
  - Exaggerated startle response
  - Problems with concentration
  - Sleep disturbance (e.g. difficulty falling or staying asleep or restless sleep)
- F. Duration of the disturbance (Criteria B, C, D, and E) is more than 1 month
- G. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning
- H. The disturbance is not attributable to the physiological effects of a substance (e.g. medication, alcohol) or another medical condition.

**Criteria for diagnosis of PTSD for Children 6 Years and Younger (DSM-V)**

- In children 6 years and younger, exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways:
  - Directly experiencing the traumatic event(s)
  - Witnessing, in person, the event(s) as it occurred to others, especially primary caregivers. Note: Witnessing does not include events that are witnessed only in electronic media, television, movies, or pictures
  - Learning that the traumatic event(s) occurred to a parent or caregiving figure
- Presence of one (or more) of the following intrusion symptoms associated with the traumatic event(s), beginning after the traumatic event(s) occurred:
  - Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s). Note: Spontaneous and intrusive memories may not necessarily appear distressing and may be expressed as play reenactment
  - Recurrent distressing dreams in which the content and/or effect of the dream are related to the traumatic event(s). Note: It may not be possible to ascertain that the frightening content is related to the traumatic event
  - Dissociative reactions (e.g. flashbacks) in which the child feels or acts as if the traumatic event(s) were recurring. (Such reactions may occur on a continuum, with the most extreme expression being a complete loss of awareness of present surroundings.) Such trauma-specific reenactment may occur in play
  - Intense or prolonged psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event(s)
  - Marked physiological reactions to reminders of the traumatic event(s)
- One (or more) of the following symptoms, representing either persistent avoidance of stimuli associated with the traumatic event(s) or negative alterations in cognitions and mood associated with the traumatic event(s), must be present, beginning after the event(s) or worsening after the event(s):  
Persistent Avoidance of Stimuli
  - Avoidance or efforts to avoid activities, places, or physical reminders that arouse recollections of the traumatic event(s).
  - Avoidance or efforts to avoid people, conversations, or interpersonal situations that arouse recollections of the traumatic event(s). Negative Alterations in Cognitions
  - Substantially increased frequency of negative emotional states (e.g. fear, guilt, sadness, shame, confusion).
  - Markedly diminished interest or participation in significant activities,

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- including constriction of play.
- Socially withdrawn behaviour.
- Persistent reduction in expression of positive emotions.
- Alterations in arousal and reactivity associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:
  - Irritable behaviour and angry outbursts (with little or no provocation) typically expressed as verbal or physical aggression toward people or objects (including extreme temper tantrums)
  - Hypervigilance
  - Exaggerated startle response
  - Problems with concentration
  - Sleep disturbance (e.g. difficulty falling or staying asleep or restless sleep)
- The duration of the disturbance is more than 1 month.
- The disturbance causes clinically significant distress or impairment in relationships with parents, siblings, peers, or other caregivers or with school behaviour.
- The disturbance is not attributable to the physiological effects of a substance (e.g. medication or alcohol) or another medical condition.

Assessment should be done by a psychologist or someone trained and experienced in conducting such assessments

### Differential diagnosis

- Acute stress disorder
- Adjustment disorder
- Disinhibited social engagement disorder
- Reactive attachment disorder

### Management

- Not everyone who has PTSD requires medical attention but some will require treatment as the symptoms can be debilitating. Many people will work through it with social and family support and symptoms will resolve over time – watching and waiting.
- Treatment options when required include psychotherapy and in some cases, medication is required. Psychotherapy – cognitive behaviour therapy which includes group therapy and prolonged exposure therapy amongst others can be used

Medication – these can be used to control the symptoms of PTSD, can be used in combination with psychotherapy.

- Common medications that are used are SSRIs and SNRIs (Selective serotonin re-uptake inhibitors and serotonin-norepinephrine re-uptake inhibitors) with first generation antipsychotics such as aripiprazole or risperidone being the drugs of choice for children and adolescents.

### **Primary level**

Patients should be assessed and refer to secondary level facility

### **Secondary level**

See the tertiary-level guidance below

### **Tertiary level**

- Facilities should assess and manage patients with PTSD if services are available there.
- Ongoing treatment for stable patients may be continued at primary level facilities if the skills and services are available.

**Note:** Always assess for **suicide risk** and refer such patients urgently. Monitor all patients on treatment especially SSRIs closely for any worsening including suicidal ideation and any change in behaviour. Advise family and close caregivers for monitor for the same. Refer such patients as required

### **Follow up**

- Follow up with competent qualified mental health service provider

## Psychosis

### Definition

Psychosis is defined as loss of contact with reality.

Psychosis in children and adolescents is very rare but has the worst prognosis if not identified and treated early. It is divided into early (>13 years) and very early onset (<13 years) psychosis.

### Risk factors/causes

- Personal
  - Genetic predisposition
  - Older paternal age
  - Autoimmune disorders
  - Substance abuse
- Genetic syndromes
- Environmental
  - Poor social support
  - Abuse
  - Neglect

### Prevention/promotion

- Campaigns on the prevention of substance abuse especially in school going children

### Signs and symptoms – according to DSM-5

- Early signs and symptoms may be difficult to detect but they will become overt over time. Psychosis is defined by the presence of symptoms from at least one of 5 domains:
  - **Delusions** – these are fixed beliefs that are not amenable to change in light of conflicting evidence
  - **Hallucinations** – these are perception-like experiences that occur without an external stimulus. They are vivid and clear, with the full force and impact of normal perceptions, and not under voluntary control
  - **Disorganized thinking** (formal thought disorder) - this is typically inferred from the individual's speech. The individual may switch from one topic to another (derailment or loose associations). Answers to questions may be obliquely related or completely unrelated (tangentiality)
  - **Grossly disorganized or abnormal motor behaviour** – this may manifest itself in a variety of ways, ranging from childlike "silliness" to unpredictable

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agitation. Problems may be noted in any form of goal-directed behaviour, leading to difficulties in performing activities of daily living. Catatonic behaviour is a marked decrease in reactivity to the environment

- **Negative symptoms** - Negative symptoms account for a substantial portion of the morbidity associated with schizophrenia but are less prominent in other psychotic disorders. Two negative symptoms are particularly prominent in schizophrenia: diminished emotional expression and avolition

### Investigations

- Get a full history and do a thorough physical examination
- Investigate for organic causes as is appropriate in view of the clinical findings e.g. lumbar puncture for encephalitis, HIV, levels of illicit drugs, electrolyte abnormalities, MRI/CT scan of the brain for brain tumours or history of trauma

### Differential diagnosis

- Infections – encephalitis, rabies, neurosyphilis, HIV
- Drug intoxication
- Brain tumours
- Nutritional deficiencies e.g. Vitamin B
- Autoimmune disorders – e.g., systemic lupus erythematosus (SLE)

### Management

#### General measures:

- Ensure the safety of the patient and those caring for them.
- Minimise stress and stimulation (do not argue with psychotic thinking).
- Avoid confrontation or criticism, unless it is necessary to prevent harmful or disruptive behaviour.
- Start with antipsychotic drugs - second generation antipsychotics such as aripiprazole or risperidone being the drugs of choice for children and adolescents.

#### Acute psychosis with agitation:

- Oral diazepam may be used if the patient is willing to take the treatment
- If not cooperative, parenteral diazepam 0.25mg/kg IV stat, can be repeated once
- The patient will then be assessed and continue management depending on the clinical assessment

**Primary level**

Facilities should screen for psychosis and refer all children with psychosis to tertiary facilities.

**Secondary level**

Facilities should screen for psychosis and refer all children with psychosis to tertiary facilities.

**Tertiary level**

- Facilities should assess and initiate the acute management of psychosis.
- Organic causes should be ruled out once the diagnosis and treatment have been established, ongoing care may continue at secondary facility if services are available.

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## Chapter 12: Pulmonology