WHO essential drugs for common Psychiatric disorders in children.

1. Anxiety disorders-  
2. Depression  
3. Bipolar disorder  
4. Attention Deficit Hyperactivity disorder  
4. Tourette’s syndrome  
5. Enuresis  
6. Psychotic disorders  

1. Anxiety disorders:

SSRIs are the medications of choice in treating childhood anxiety disorders. They are well tolerated with mild transient side effects. Controlled trials have established the safety and efficacy of SSRIs for childhood anxiety disorders. Fluoxetine, Fluvoxamine and Sertraline have been shown to be more effective than Placebo in RCT’s. As anxiety disorders often co-exist with depression, children prescribed SSRI’s for both conditions should be monitored closely for increased suicidal thoughts and behaviour. Since SSRI’s have been available, TCA’s are used less often because of the need for cardiac monitoring and the medical risks associated with overdose of TCA’s. Venlafaxine, TCA’s, and benzodiazepines may be used as alternatives to SSRIs. Benzodiazepines are used clinically as adjunct short term treatment (2-4 weeks) with SSRIs for rapid reduction of severe symptoms of anxiety.

Recommend for essential drug list: Fluoxetine; Sertraline and/or Fluvoxamine

**Fluoxetine:** Liquid 20mg/5ml and capsules 20mg  
Doses: 8-12 Years: start on 10mg/day; increase to 20 mgs after a few weeks if no therapeutic effect.

**Sertraline Tablets:**  
Doses: 6-12 years; 25mgs single daily dose (morning or evening)  
Increase by 25 mgs weekly if no therapeutic effect obtained. May be given in divided doses over 50mgs daily. Maximum dose 200mgs/day

**Fluvoxamine:** Tablets 50mg, 100mg  
Doses: 8-12 years: 25mgs nocte; increase to 50mgs after a week if no effect.

**Sources**


2. Depression

SSRIs: Fluoxetine is the only medication which has proven efficacy in clinical trials for treating depressive illness in children and adolescents. Other SSRI's have shown small differences between the drug and placebo. Caution: SSRI’s are associated with an increased risk of suicidal thoughts and behaviour in the early phases of treatment. There have been no reports of completed suicides attributed to treatment with SSRI’s. Children need careful monitoring with regular reviews during the early phases of treatment. Overall the use of SSRI’s has decreased suicide rates in children and adolescents.

Recommend: Fluoxetine (liquid and capsules)
Dose: 8-12 years: initial dose 10mgs mane, increase to 20mgs mane after 2 weeks if necessary.

Sources


Hammad T, Laughren T, Racoosin J. Suicidality in paediatric patients treated with antidepressant drugs. Arch Gen Psych 2006; 63:332-339


3. Bipolar disorder:

The validity of Bipolar disorder in young children has not yet been established. In the USA the number of children diagnosed with BD has been increasing in the past decade; this is not a global trend. There is ongoing debate and controversy on BD as a diagnosis in children, therefore no global consensus on treatment. Treatment guidelines are based on adult literature. In the USA only Lithium is FDA approved for use in children over 12 years. My opinion is that it is premature to include any medications for children in this category.

4. Attention Deficit Hyperactivity disorder:

Efficacy of stimulants in treating childhood ADHD has been demonstrated in many double blind, placebo-controlled trials during the past 3 decades. Two types of stimulants—Methylphenidate and amphetamine—have equal efficacy. Both are available in short and long acting preparations. Short acting immediate release formulations must be taken 2 or 3 times during the day. Longer acting sustained release formulations have equal efficacy, are more convenient and enhance compliance as they are given by the parents as a single daily dose. Short acting formulations are useful in initiating treatment in children under 16Kgs in weight; sustained release medications are not available in very low doses but are increasingly used as first line treatment in older children. Medication is not recommended for children younger than 6 years old.

i) Methylphenidate: (first line)

Short acting (e.g. Ritalin) Modified release/sustained release (e.g. Concerta, Equasym XL, Ritalin LA). Some children have difficulty swallowing capsules which have to be swallowed whole (Concerta). Ritalin LA and Equasym XL capsules may be opened, sprinkled on soft food and swallowed without chewing.

**Ritalin:** Formulation: Tablets Available as 5mg, 10mg (scored), 20mg (scored) Doses: 4-6 years: 2.5mgs twice a day; increase weekly by 2.5mgs if needed Maximum dose: 1.4mgs/Kg/Day in divided doses

6-12 years: 5mgs once or twice a day; increase by 5 mgs weekly if needed; Maximum dose 60mgs/day

**Concerta XL:** Formulation Capsules Available as 18mgs, 27mgs, 36mgs, 54mgs: Doses: 6-18 years: 18mgs mane; increase by 18mgs weekly if needed Maximum dose 54mgs

**Equasym XL:** Formulation Available as 10mg, 20mg, 30mg Capsules Doses: 6-18 years: 10mgs mane; increase by 10mgs weekly if needed. Maximum dose 60mgs daily

Due to concerns about the long term effects of stimulants on growth it is recommended that a child's height and weight should be monitored at least once or twice a year on growth charts (more frequently if needed). If the child fails to maintain expected growth consider a drug holiday or a different medication and check for growth recovery.
ii) Atomoxetine (Selective norepinephrine reuptake inhibitor). Prescribed as a second line medication if child has severe side effects on stimulants, or if stimulants are contra indicated. Atomoxetine has a delayed onset of action and may take several weeks to observe therapeutic effect. Parents and children often prefer the option of taking drug breaks on weekends or during school holidays; Atomoxetine must be taken continuously which makes it less desirable for some families.

Formulation: Capsules: 10mg, 18mg, 25mg, 40mg, 60mg  
Dose: 6-12 years: initial dose 0.5mgs/Kg/day as a single daily dose morning or evening; after one week increase to maintenance dose of 1.2mgs/Kg/day as a single daily dose or divided doses twice a day.  
Maximum dose: 1.4 mg/Kg/day

iii) Amphetamine preparations: Used primarily for refractory ADHD.

Short acting e.g. Aderall, Dexedrine (5mgs scored tablet),
Long acting e.g. Aderall XR

Doses: 6-12 years: start with 2.5 mgs twice a day; increase weekly by 2.5-5mgs. Maximum dose is 20mgs daily in divided doses.

Caution: ADHD often co-exists with Tourettes and epilepsy. Children on stimulants who also have Tourettes or Epilepsy should be monitored closely to ensure that ADHD medication does not exacerbate the condition. Amphetamines have greater tendency for exacerbation than methylphenidate. Amphetamines have a high potential for abuse. Use for prolonged periods of time may lead to drug dependence

Recommendation for essential drug list: Methylphenidate (short acting and modified/sustained release preparations). Atomoxetine (supplementary list)

Sources


MTA cooperative Group( 2004a) National Institute of Mental Health Multimodal Treatment Study of ADHD follow-up: 24 month outcomes of treatment strategies for ADHD. Paediatrics 113: 754-761


4. Tourettes syndrome (classified as a neurological disorder)

Medications with proven efficacy for treating touretts syndrome in children:
Clonidine, haloperidol, pimozide, risperidone, sulpiride. (See note on antipsychotics under 6 below).

**Haloperidol:** Formulation: tablets and oral concentrate (2mg/ml)
Dose: 3-12 years (15-40 Kgs) start with 0.5mgs daily increase by 0.5mgs weekly.
Therapeutic dose range; 0.05-0.075mh/kg/day

Sulpiride: 2-12 years 50-400mgs in divided doses

**Clonidine** (second line for children who have not responded to standard treatment)
May cause hypertensive reaction and other withdrawal symptoms if withdrawn rapidly

**Pimozide:** tablets 1mg,2mg
2-12 years initial dose 0.05mg/kg/day at night; increase every third day to maximum dose of 0.2mg/kg/day (not to exceed 10mg/day)

Recommend: Pimozide and Haloperidol


5. Enuresis

**Imipramine** has been used extensively for treating primary nocturnal enuresis. It is important to first exclude possible organic causes for enuresis. Imipramine is effective in doses lower than when it is used as an anti-depressant. There is a high relapse rate when the drug is discontinued.

6-11years: Usual dose is 1-2.5mg/Kg in a single dose at night. Start with 25mgs at night, increase to 50mgs after one week if no response. Maximum dose is 2.5mg/Kg/day or 50mgs/day. **Caution:** Cardiac Disease, epilepsy. An ECG is recommended before starting medication.
DDAVP: nasal spray and tablets


6. Psychosis

Psychotic disorders are very rare in childhood. When psychotic symptoms occur the focus is to investigate and exclude underlying organic causes. There is limited information on the efficacy and safety of anti-psychotics in children for treating psychotic disorders. The trend is towards the use of atypical agents (e.g. sulperide, risperidone) which are less likely to cause extra pyramidal side effects. However there is increasing concern about the metabolic side effects of atypical antipsychotics (weight gain and developing type 2 diabetes). Although used in children none of the atypical antipsychotics are currently licensed for use in children less than 12 years for treating psychosis. As more data empirical data becomes available WHO will need to review the list and possibly include an atypical agent.

**Haloperidol:** formulation-tablets and oral liquid (already on WHO list)
Indications: acute and chronic psychotic disorders; Tourette’s disorder
Doses: 3-12 years (15-40Kgs) Initial dose 0.5mgs daily; increase by 0.5mgs weekly.
Maximum dose is 0.15mg/Kg/day

**Chlorpromazine:** although currently on the WHO List largactil is not used preferentially in clinical practice and may be replaced by atypical agents as more data becomes available on their use.

Recommend: remove Haloperidol and Chlorpromazine injections from list; keep oral liquid and tablets and review at later date.

Sources:


Other Sources:


Summary of recommendations:

1. **Generalised Anxiety disorder:** (NB- OCD and panic attacks: classified under diagnostic category of anxiety disorders)
   Fluoxetine (Capsules or Tablets and liquid 20mgs/5ml)
   Capsules and tablets already on WHO list; add liquid formulation
   Indications: Depression: Age restriction: USA (FDA)-not approved for use under 8 years; UK not licensed for under 12 yrs
   OCD: not FDA approved under 7 years

   **Sertralline:** Tablets
   Indications: OCD: Age restriction: 6 years
   Fluvoxamine Tablets (supplementary list)
   Indication: OCD: Age restriction 8 years

   **Diazepam**—already on list; may be used short term for reduction of severe symptoms of anxiety

2. **Major Depression:**
   Fluoxetine: tablets and liquid as above.
   Age restriction: FDA not approved less than 8 years
   UK not licensed under 12 years
   Caution for SSRI’s: Increased risk of suicidal thoughts in early phase of treatment therefore need close monitoring.

3. **Bipolar disorder**
   No global consensus on diagnosis and treatment in this age group

4. **ADHD:**
   Methylphenidate immediate release: Tablets
   Sustained release: tablets or capsules
   Atomoxetine tablets (supplementary list)

5. **Tourette’s** (classified as a neurological disorder)
   Pimozide Tablets
   Haloperidol (already on WHO list)

6. **Enuresis (elimination disorder)**
   Imipramine tablets
   DDAVP (supplementary list)

7. **Psychotic disorders**
   Haloperidol and chlorpromazine—remove injection; keep tablets and oral liquid