

# Learning, to help them learn

Seminar on Learning Disability and ADHD

25th June 2017

Country Inn & Suites, Patto Plaza, Panaji

Medical Management of ADHD

**Dr Ravindra Agrawal**



Psychiatric Society  
of Goa



Goa State Commission for  
Protection of Child Rights



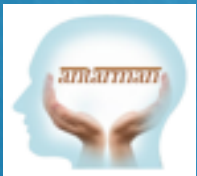
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Community Management of ADHD

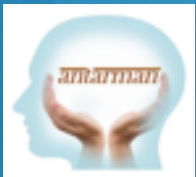
# Medical Management

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PSYCHIATRIST



# Is there a role of medications ?

- Doctors always want to prescribe ?
- Children should not be given medications unless absolutely necessary... definitely not psychotropic.
- Medications can have side effects

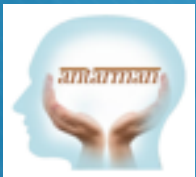




..to understand need for medication

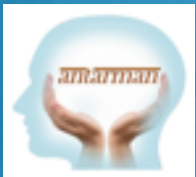
## .. brief revisit

- ADHD is a neurodevelopmental disability; the various neurobiological features of the child's brain are maturing later than those of his peers
- This a case of delay and not disarrangement or deformity
- It is not a disease
- 2 very important features : failure of inhibition and impulsivity ( physical & emotional)



# .. Failure of inhibition

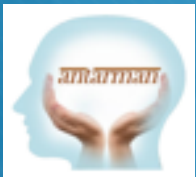
- Inability to suppress irrelevant motor behaviour
- Inability to contain irrelevant verbal output
- Tendency to do the first thing which comes into his mind.
- Failure to persevere : the child is unable to stop self from responding to an environmental distractor
- Loses track of the goal , unable to get back / reengage





# Failure to contain the emotional impulsivity

- Unable to regulate one's (normal) mood
- Results in constant display of emotional state – being quick to anger, unable to tolerate frustration, impatient
- This is different from mood disorders wherein there is too much mood being expressed.



# Role of these key issues

Failure of inhibition	Failure to regulate emotion
Poor attention Unable to stay on a task Unable to learn	Quick anger Poor frustration tolerance No patience 'emotional'
<b>POOR ACADEMIC PERFORMANCE</b>	<b>REJECTION BY PEERS POOR SELF ESTEEM</b>



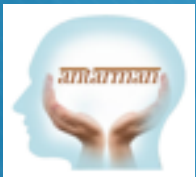
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# Advantage of medications

- Better attention = better academic performance
- Decreased behavioural disturbance, decreased emotionality
- Better social adjustment
- IMPROVED Self esteem of the child
- Achievement of true potential





# What medications are available?

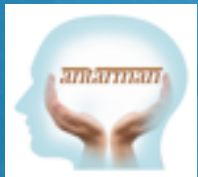
Non stimulants	Stimulants	Miscellaneous
Atomoxetine	Methylphenindate	Clonidine
	Dexamphetamine	Guanafacine
		Bupropion
		Modafinil



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# how do medicines work?

- Lack of dopamine in brain circuits in ADHD : makes more dopamin available
- Empowers the brain's inhibitory mechanism
- Fine tunes the working of neurons in two important areas in the brain ' anterior cingulate' and 'striatum'
  - Judging the consequence of action in social/ emotional conflict
  - Faulty switch of internal self vs projected self





# Medication : Atomoxetine

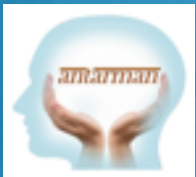
- Works by inhibiting re-uptake of chemical called norepinephrine in the front of the brain
- The dose is started gradually and is built up over a few days. It can take upto 3 weeks for the action onset.
- Effect is not as robust as stimulants
- Better in those children who have history of substance use, tics, anxiety, insomnia and loss of appetite
- Can cause stomach upset, somnolence, dizziness, fatigue. Don't give in those with h/o suicidal ideation and those with cardiac defects
- One needs to monitor liver enzymes every 4-6 months



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# Medication : methylphenindate

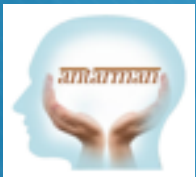
- More effective than atomoxetine
- Blocks the re-uptake of dopamine and norepinephrine in the brain and basal ganglia→ making more of it available.
- Can cause appetite suppression, headache , insomnia and as an addictive potential
- Avoid in : those taking steroids, past history of psychiatric disturbance, history of drug addiction, narrow angle glaucoma and structural heart defects





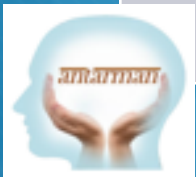
# Medication: Methylphenindate comparing the 2 forms

- Available as 2 forms :
- IMMEDIATE RELEASE ( Inspiral & Addwise) &
- PROLONGED RELEASE ( Concerta)



# Immediate release methylphenindate

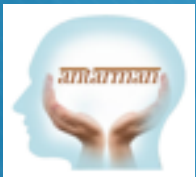
Advantage	Disadvantage
Cheaper	<p>Short duration of effect bid/tid dosing Peak/trough fluctuations throughout day Rebound/ End of dose effects Requires in-school and after-school dosing Controlled substances often required to be kept in school office and may have special requirements for administration in school Compromised privacy: children with ADHD often report experience of stigma as a direct result of taking tablets</p>





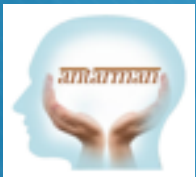
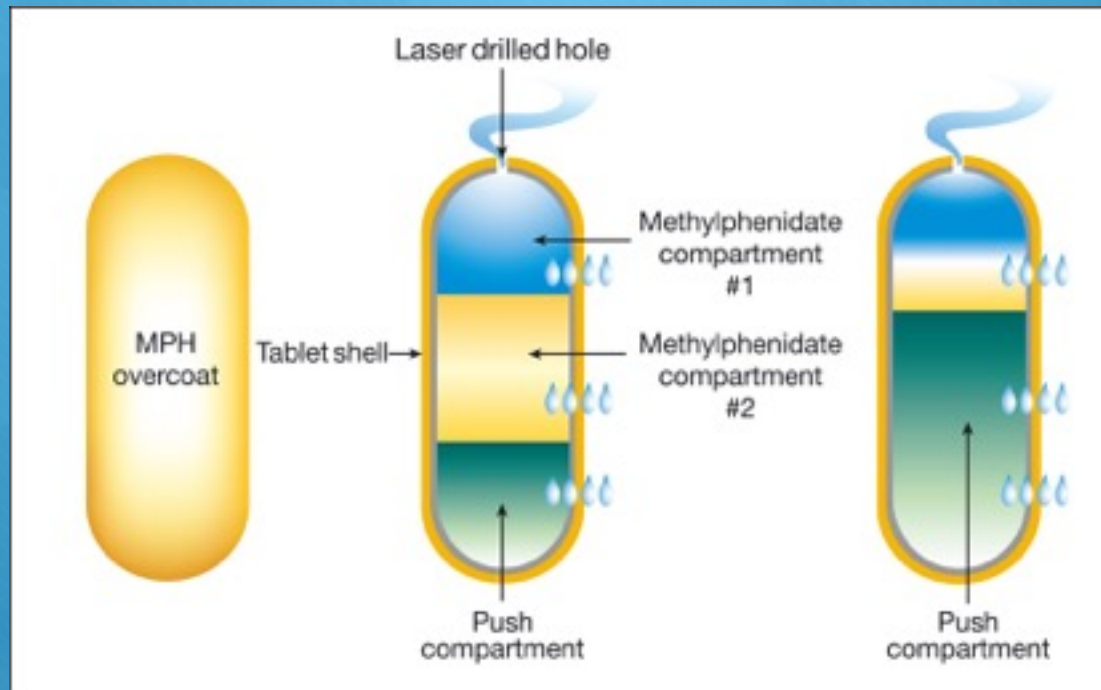
# Slow release/ controlled release methylphenindate

Advantage	Disadvantage
<b>Once a day dosing</b> <b>Does not have the peaks or troughs in drug levels in the child's brain</b> <b>No need to give the medicine in school</b> <b>More acceptable to the child</b> <b>No stigma</b>	<b>Costly</b>



# How the OROS-MPH works

(osmotic release oral system- methyl phenindate)

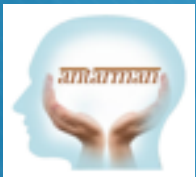


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# Other miscellaneous drugs

- Clonidine
- Guanfacine
- Bupropion
- Imipramine
- Modafinil



# Concept of drug holiday & addiction

- Only about 1/3 of the day is spent at school
- A lot of learning takes place outside the school as well (in the community)
- Does not make sense; with mutual agreement drugs can be slowly gradually.
- No evidence that it causes addiction

