Brain Injury Psychiatry Workshop

Ralf Ilchef (Director Liaison Psychiatrist RNSH, Supervisor icare Brain Injury Psychiatry Program (iBIPP))

Jodi Cartoon (2019 iBIPP Psychiatry Fellow)

icare™ THE UNIVERSITY OF SYDNEY Brain and Mind Centre The Royal Australian & New Zealand College of Psychiatrists NSW GOVERNMENT Health Northern Sydney Local Health District

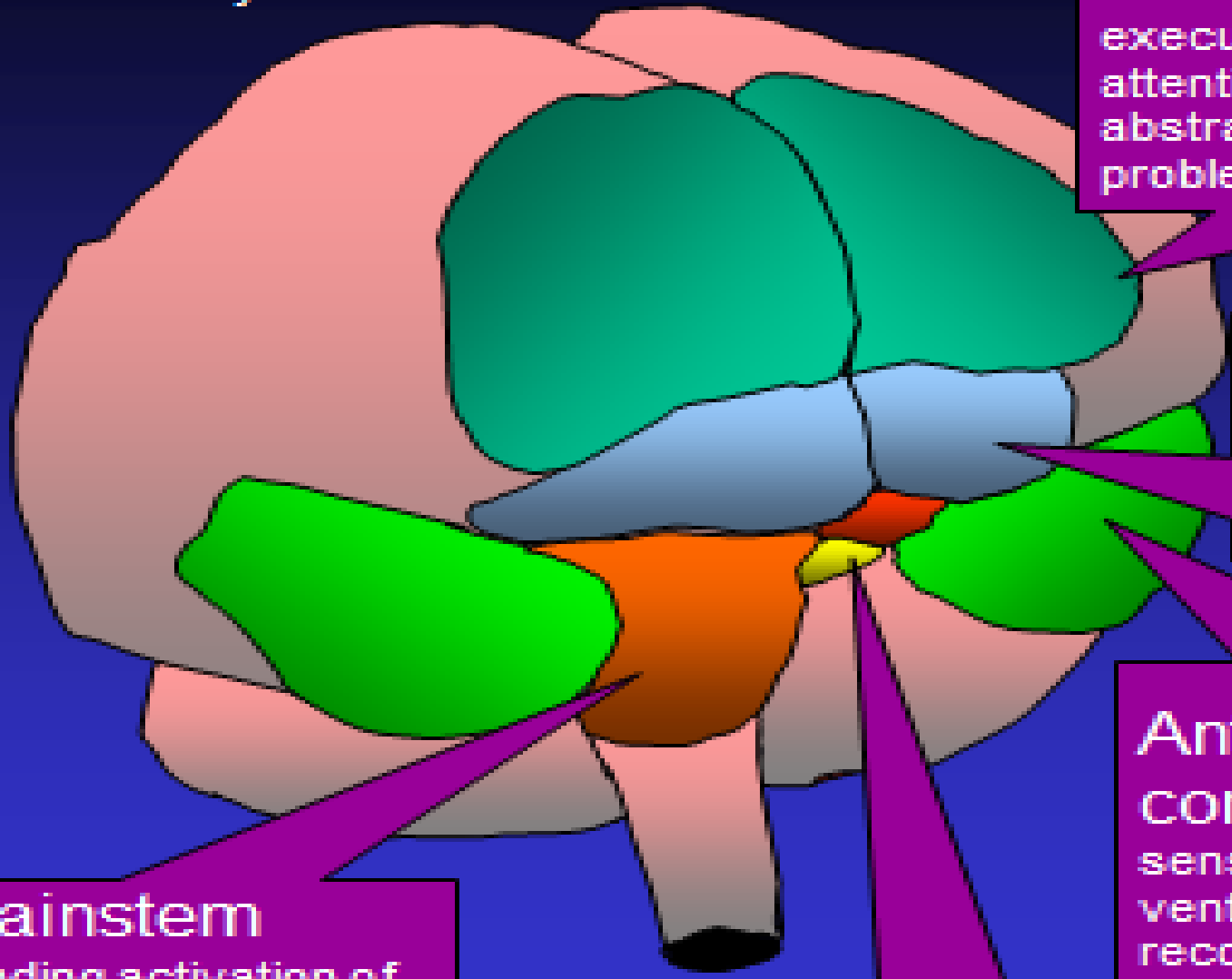
Aggression and Agitation

Severe behavioural disturbances in brain injury

- Or, what to do if the Positive Behaviour Support model isn't working for extreme behavioural disturbance.

  - **Aggression and severe compulsive behaviours**
  - **Sexually inappropriate behaviour**

Adapted from Arciniegas and Beresford
Neuropsychiatry: an introductory approach
Cambridge University Press 2001



Dorsolateral prefrontal cortex

executive function, sustained attention, memory retrieval, abstraction, judgement, insight, problem solving

Orbitofrontal cortex

emotional and social behaviour

Anterior temporal cortex

sensory-limbic interactions
ventral part involved in face recognition

Ventral brainstem

arousal, ascending activation of diencephalic, subcortical, cortical structures

Hippocampus

declarative memory

Why **not** to use medications

- Not good for our participants!
- Hard on their sensitive recovering brains, likely to interfere with neurorehabilitation, increase falls risk, have tolerability problems (weight gain, impaired mobility, sedation).
- So preface everything I say with first, strenuous attempts at behavioural and environmental management per PBS, with family support wherever possible.

When to use medications

- In an adequately resourced setting, when all feasible behavioural and environmental interventions have been tried and the behaviour is causing acute distress or danger to the participant, other participants, carers, family or others.

- In an inadequately resourced setting, do whatever you have to do to keep the participant and everyone else (including you) safe from harm, then when the situation has resolved demand extra resources long and loud!

Pharmacotherapy of aggression

- Again, medication is a last resort when all other options have been tried
- How do we assess the evidence?
- Not many studies, quality poor - fair

Mehta, Swati, et al. "Pharmacological management of agitation among individuals with moderate to severe acquired brain injury: a systematic review." Brain Injury 32.3 (2018): 287-296.

Williamson, David, et al. "Pharmacological interventions for agitated behaviours in patients with traumatic brain injury: a systematic review." BMJ open 9.7 (2019): e029604.

Table 2. Modified Sackett's levels of evidence (14).

Level	Research Design	Description
Level 1a	RCT	More than 1 RCT with PEDro score ≥6 Includes within subjects comparison with randomized conditions and crossover designs
Level 1b	RCT	1 RCT with PEDro ≥ 6
Level 2	RCT	RCT, PEDro < 6
	Prospective controlled trial	Prospective controlled trial (not randomized)
	Cohort	Prospective longitudinal study using at least two similar groups with one exposed to a particular condition
Level 3	Case–control	A retrospective study comparing conditions including historical controls
Level 4	Pre–post test	A prospective trial with a baseline measure, intervention, and a post-test using a single group of subjects
	Post-test	A prospective intervention study using a post intervention measure only (no pre-test or baseline measurement) with one or more groups
	Case series	A retrospective study usually collecting variables from a chart review
Level 5	Observational study	Using cross-sectional analysis to interpret relations
	Clinical consensus	Expert opinion without explicit critical appraisal, or based on physiology, biomechanics or 'first principles'
	Case reports	Pre–post or case series involving one subject

PEDro = Physiotherapy Evidence Database.

Evidence for **anticonvulsants**

Level 4 evidence that **carbamazepine, valproate and lamotrigine** may reduce agitation after acquired brain injury.

Evidence for **antidepressants**

Level 4 evidence that **amitriptyline** may improve agitation post brain injury.

Level 4 evidence that **sertraline** may be effective in reducing agitation among participants who have had an ABI for greater than 3 months**.**

Level 1b evidence that sertraline may NOT improve agitation in individuals within 2 weeks of ABI.

Evidence for **amantadine**

Level 1a evidence that **amantadine** effectively reduces symptoms of agitation among those with acquired brain injury.

Evidence for **antipsychotics**

Level 3 evidence that haloperidol may NOT be effective in managing agitation behaviour among individuals with ABI.

Level 4 evidence that **droperidol, quetiapine,** and **ziprasidone** are effective in reducing agitation post-brain injury.

Evidence for **lithium**

Level 4 evidence that **lithium** is effective in reducing agitation post-brain injury.

Evidence for **beta-blockers**

Level 1b evidence that **pindolol** is effective in reducing episodes of agitation among individuals with acquired brain injury.

Level 1b evidence that **propranolol** may not be effective in reducing agitation episodes, but may be effective at reducing the intensity of agitation among individuals with ABI.

Evidence summarised I

Strong evidence for **amantadine.**

Weak evidence for **valproate, carbamazepine, lamotrigine, amitriptyline, sertraline** (after three months, not before two weeks)**, lithium, droperidol, quetiapine, ziprasidone, pindolol,** and **propranolol** (for reducing intensity of agitation only).

Mehta, Swati, et al. "Pharmacological management of agitation among individuals with moderate to severe acquired brain injury: A systematic review." Brain injury 32.3 (2018): 287-296.

Evidence summarised II

Propranolol, methylphenidate, valproic acid and **olanzapine** were the only agents suggesting a potential benefit in reducing agitation, anger or irritability. **Amantadine** showed mixed results.

Williamson, David, et al. "Pharmacological interventions for agitated behaviours in patients with traumatic brain injury: a systematic review." BMJ open 9.7 (2019): e029604.

What I do

Olanzapine (be careful if overweight or diabetic) 2.5 – 20mg/day

+/- valproate (NB unsafe in pregnancy) 200 – 3000mg/day

+/- propranolol 80 – 480mg/day (only higher doses in acute medical settings).

Occasionally add amantadine. Haven't used methylphenidate but one intriguing older study suggests perhaps we should!

Mooney, George F., and Leonard J. Haas. "Effect of methylphenidate on brain injury-related anger." Archives of physical medicine and rehabilitation 74.2 (1993): 153-160.