Managing behaviours that challenge in patients with acquired brain injury (ABI) – short guide.

**This short guide is aimed at doctors providing emergency or out of hours input.**

**This should not be used in isolation as the full pathway pack should be implemented by the treating team. Full pathway:** [**https://www.bsuh.nhs.uk/library/wp-content/uploads/sites/8/2023/12/ABI-Challenging-Behaviour-Full-Pathway.docx**](https://www.bsuh.nhs.uk/library/wp-content/uploads/sites/8/2023/12/ABI-Challenging-Behaviour-Full-Pathway.docx)

* Confirm patient has an ABI (includes stroke, traumatic brain injury, meningitis/encephalitis, hypoxic brain injury, brain tumour, alcohol related brain disease; **does not** include dementia, neurodegenerative diseases or learning disability).
* Behaviours that challenge may include verbal or physical aggression, sexual or social disinhibition, agitation, withdrawal and/or difficulty in care.
* **If you are using approaches that may restrict liberty, the patient should be under a DOLS,** remember principles of Mental Capacity Act and use least restrictive approach.

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# Stage 1 - Assessment

* **Assess for & treat medical causes / complications that may be causing or contributing**:
	1. Intracerebral e.g. bleed, hydrocephalus, CNS infection - CT/MRI brain +/- LP
	2. Seizure disorder – seizure chart, EEG
	3. Infection (non CNS) – septic/infection screen
	4. Hypoxia – O2 sats, ABG, CXR, CTPA, echo
	5. Metabolic & endocrine – U&Es, calcium, LFTs, TFTs, cortisol
	6. Paroxysmal sympathetic hyperactivity – nursing notes / observations
	7. Sleep disruption – nursing notes / observations, use of sedating meds
	8. Adverse medication effects / polypharmacy – e.g. anticholinergic SEs, serotonin syndrome, neuroleptic malignant syndrome
	9. Withdrawal from alcohol or drugs – may need chlordiazepoxide, nicotine pathway or opiate replacement
	10. Sources of discomfort – lines, urinary, GI, inadequate pain control, occult injuries
	11. Fat embolism syndrome – usually following long bone fracture. Tachypnoea, tachycardia, fever +/- rash. Supportive treatment
* **Assess risk to self and others.**

# Stage 2 – Intervention / Management

* Implement behavioural management strategies & environmental adaptation
* Consider pharmacological management – see section below

# Stage 3 – Review

* Review and document which interventions work

# Pharmacological treatment guidelines

Agitated patient with ABI

**Is safety of patient, staff or others at immediate risk & therefore rapid reduction in agitation required?**

**YES NO**

 ACUTE MANAGEMENT REGULAR MANAGEMENT

 (see section A below) (see Section B below)

**Step 1:** Non pharmacological methods **Step 1:** Work through pathway

(de-escalation, distraction, environment)

**Step 2: Olanzapine or Risperidone Step 2:** Review for co-morbid

(if not suitable or available, give lorazepam; symptoms

see doses below)

**Step 3:** Review impact & consider repeat **Step 3:** MDT decision re choice

dose, or alternative route or medication of and instigation of regular medication

**Step 4:** Review use of medication daily, **Step 4:** Review impact & need

decide if regular medication required at for ongoing medication daily

72 hours post first prn / acute dose & consider if able to wean every 72

hours

## SECTION A - Acute management**:**

* **Step 1:** Non pharmacological methods – as above
* **Step 2:** Preferably oral medication if safe & accepted by patient

If not accepted or possible, or if first oral dose not effective within 45-60 mins, move to Step 3

* **Step 3:**  Review impact of first dose. If patient remains a risk, either repeat

oral dose as per guidance below OR use different medication via oral route OR use intramuscular (im) route

**Dosing**

* **Olanzapine – PO OR IM**  (avoid in dementia, Lewy body disease, parkinsonism)
	+ Standard adult 5-10mg po or IM, wait 2 hours before considering repeat dose, maximum 20mg/24 hours)
	+ Elderly (over 65) – for im dosing, 2.5-5mg (then as above, maximum dose 20mg/24 hours)
* **Risperidone - PO** (preferred to olanzapine in dementia other than Lewy body)
	+ Standard adult dose 500mcg -1 mg po, wait 1 hour before considering repeat dose, maximum 2mg/24 hours initially in divided doses, then can be titrated up)
	+ Elderly (over 65) or dementia– 250mcg po, wait 1 hour before considering repeat dose, maximum 1mg/24 hours initially in divided doses, then can be titrated up)
* **Lorazepam – PO or IM** (avoid if respiratory depression, benzodiazepine hypersensitivity or pregnant; can be given if Lewy body dementia when olanzapine & risperidone should be avoided)
	+ Standard adult dose 1-2mg po or im - repeated after 60 mins if required, up to maximum of 4mg/24 hours
	+ Elderly (over 65) 0.5-1mg po or im – repeated after 120 mins if required, up to maximum of 2mg/24 hours
* **Haloperidol / Promethazine** (try other options first if possible in patients with ABI, as haloperidol can prolong post traumatic amnesia and hinder neurological recovery**;** avoid haloperidol if cardiovascular disease, including QT interval prolongation – ECG prior (if given without ECG prior, considered off label use))
	+ Can be given individually or together (promethazine can be used for tranquilisation but may also reduce extrapyramidal side effects of haloperidol)
	+ Haloperidol - standard adult dose 5-10mg po or 2.5 – 5mg im (maximum oral 20mg/24 hours, maximum im 12 mg/24 hours). In elderly - 0.5-2.5mg po or 1.0-2.5mg im (maximum 5mg/24 hours)
	+ Promethazine - 25-50mg po or im (maximum 100mg/24 hours. In elderly – 10-25mg po or 12.5-25mg im (maximum 50mg/24 hours)
* Seek senior advice before instigating IV use
* Maximum daily doses apply also for combined routes (i.e. include oral & parenteral route in dosing totals)
* Consider other medication effects e.g. on sedation / respiratory depression and **avoid polypharmacy within same group**
* NEWS and AVPU should be carried out at least every hour for 4 hours following po administration, and every 15 mins for first hour post im administration
* Review use of prn medication every 24 hours, and decide whether regular medication required by 72 hours post first dose

**If above steps not effective, seek senior advice and support & consider IV sedation**

**Following use of acute pathway, review to consider if regular medication should be instigated – see Section B for guidance.**

## SECTION B - Regular management

* Ensure previous sections of this pathway worked through (see stages 1-3 in this guide, and full pathway pack on BSUH info-net) and implement plans as appropriate before deciding that medication is appropriate
* Assess for co-morbid symptoms & aim to treat maximum number of symptoms with fewest number of medications (see table below) – select most appropriate single option first
* **Decision to start medication should be an MDT decision**
* Start low, go slow
* Reduce antipsychotic medications to half usual adult dose in elderly
* Use REGULAR dosing
* **Avoid prn medication – use may reinforce agitated behaviours. Discuss with nursing team when prn medication is appropriate or not**
* Watch for over sedation, respiratory depression and paradoxical increase in agitation especially with benzodiazepines
* Be aware prescribed medication may also affect cognition adversely, and can cause sedation and akathisia
* There is evidence that benzodiazepines and haloperidol may adversely affect neurological recovery
* Reassess and review medication daily. Gradually reduce dose as agitation improves, e.g. every 3 days

## Table: Pharmacological options in agitation with ABI according to co-morbid symptoms

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No co-morbid symptoms** | **Depression** | **Sympathetic / autonomic symptoms** (i.e.tachycardia, hypertension, sweating) | **Irritability / lability / mania or seizures / epilepsy\*** | **Psychosis** |
|  |  |  |  |  |
| Olanzapine  | Sertraline | Propranolol | \*\*Valproate | Risperidone  |
| Risperidone | Citalopram | Clonidine | Carbamazepine | Olanzapine |
| Lorazepam |  |  |  | Quetiapine |

\* Patients may be on levetiracetam (Keppra) for prophylaxis or treatment of ABI related seizures. Levetiracetam can have side effects of anxiety, aggression, confusions and disturbed mood. Consult neurology for advice on potential antiepileptic switch if required.

\*\* As per MHRA advice, valproate should not be used in women or girls of childbearing potential unless the conditions of the Pregnancy Prevention Programme are met and then only if other treatments are ineffective or not tolerated.

## Prescribing guidance (all po, use lower dose range for elderly)

* Olanzepine 5 – 10 mg od

Increase up to max 20mg od if needed

* Risperidone 500mcg -1 mg bd

Increasing up to 1-2mg bd if needed

* Lorazepam 1 – 2 mg po, up to max 4mg in 24 hours
* Sertraline 50mg od initially

Assess response at 2 weeks, if insufficient response but

tolerated, increase dose to 100mg od, and again to

150mg od at 4 weeks if required

* Citalopram 10 - 20mg od initially

Assess response at 2 weeks, if insufficient response but

tolerated, increase dose to 20 – 40mg

* Propranolol 10mg bd initially

Titrate up by 10mg per dose every 2 days, up to 40mg

bd or tds as symptoms, HR and BP allow (caution in

asthma; contraindicated in uncontrolled heart failure and

heart block)

Often most useful in young patients with TBI

* Clonidine May be used as IV infusion in critical care setting

25-50 micrograms tds – qds

Can be gradually weaned as able

May be transitioned onto beta blocker e.g. propranolol if ongoing requirement

* Valproate Various formulations available, seek further advice from

pharmacy or neurology

As per MHRA advice, valproate should not be used in women or girls of childbearing potential unless the conditions of the Pregnancy Prevention Programme are met and then only if other treatments are ineffective or not tolerated.

Caution in liver disease, consider vitamin D supplementation

* Carbamazepine 50-100mg od – bd, increased in steps of 100-200mg

every 2 weeks as required up to 1000mg in divided doses

* Quetiapine 25mg bd day 1, 50mg bd day 2, 100g bd day 3, 150mg

bd day 4 then adjust according to response, max 600mg/day