Appropriateness of Sedation for Acute Behavioural Disturbance in Older Inpatients: A Retrospective Review

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BACKGROUND

Pharmacological sedation for acute behavioural disturbance (ABD) in older inpatients is challenging, due to an increased propensity for adverse events and differences in aetiology compared to younger patients.[1] Hence, a local management guideline was published in 2016 (*Table 1*).

AIM

To evaluate the appropriateness of sedation for ABD in older inpatients by establishing compliance with local management guidelines.

METHODS

A retrospective review was conducted on patients aged 65 years and older, managed for ABD between October 2016 and December 2017. Patients were identified through Aggression Response Team incident reports, Firstnet® diagnostic records, inpatient dispensing and automated-dispensing-cabinet records. Demographic and clinical data were collected and analysed.

RESULTS

- Forty patients were included (*Table 2*). There were 112 episodes of ABD, 14% in critical care areas and 86% on general wards.
- Use of pharmacological sedation and compliance with associated guideline recommendations are outlined in *Table 3*. A range of agents outside of guideline recommendations were used including haloperidol and midazolam (*Figure 1).* Administration of sedative doses (n=183) occurred most frequently via the intramuscular (45%), then oral/sublingual (44%) and intravenous (7%) routes.
- Among those episodes managed with pharmacotherapy (n=85), 14% had documented evidence of adverse effects within 24 hours (*Table 4*). In addition there were five inpatient falls and two deaths.

Table 1. *Medication Options for Behavioural Emergency in Older Patients in the Acute Hospital (Northern Sydney Local Health District Guideline)*

Route	Drug Class	Medications	Initial dose (mg)	Maximum dose 24 hrs.	Time to reach effect	Caution*
Oral	**Antipsychotic**	Risperidone**	0.25mg	1mg	1-2 hours for peak plasma level, 2-3 days for peak effect on delirium	Hypotension, sedation, ataxia. Not for use in Parkinson's disease or Dementia with Lewy Bodies (DLB)
		Quetiapine for patients with signs of, or history of Parkinson's disease or DLB	12.5-25mg. Can repeat in 1-2hrs	100mg	1-2 hours for peak plasma level, 4-6 days for peak effect on delirium	Hypotension, sedation, ataxia
	Benzodiazepine	Diazepam for alcohol or benzodiazepine withdrawal only	2-5mg	x3 in 24 hrs. as per Alcohol Withdrawal Scale	30-90 minutes for peak plasma level, 1-2 hours for reduction in agitation	Respiratory depression, confusion, ataxia
		For those with hepatic failure use oxazepam	10mg	30mg	2-3 hours for peak plasma level	
IMI (exceptional circumstances)	**Antipsychotic**	Olanzapine	2.5-5mg (Can repeat in 0.5-1hrs)	2.5 mg increments to max total dose of 7.5 mg	15-45 minutes for peak plasma level, 2-7 days for peak effect on delirium	Confusion hypotension, bradycardia, ataxia; risk in Parkinson's disease & DLB

Key * Most important risks - see Section 4.6 Monitoring for more detailed list ** Risperidone is the only drug with TGA indication for the treatment (up to 12 weeks) of psychotic symptoms, or persistent agitation or aggression unresponsive to non-pharmacological approaches in patients with moderate to severe dementia of the Alzheimer type.

Table 2. *Demographic data for included patients (n=40)*

Age, mean [SD]	82.1 [7.4] years
Female	25%
Pre-existing dementia	55%
Charlson Comorbidity Index, median [IQR]	6 [4-7]
Ontario Falls Risk Score on admission, median [IQR]	16 [14-22]

Table 3. *Use of Pharmacological Sedation: Compliance with Guideline Recommendations*

≥ 1 Non-pharmacological de-escalation technique used	50% (n= 56/112)
Pharmacological sedation used	76% (n= 85/112)
Consent for pharmacotherapy obtained	8% (n= 7/85)
Median number of sedative doses per episode [IQR]	2 [1-3]
Sedative agent selected outside of guideline recommendation	85% (n=156/183)
Repeat dose given at inappropriate time interval *(parenteral <30 min or oral <60 min)*	23% (n=23/98)
Dose exceeding guideline recommendation	56% (n=15/27)
Sedation Assessment Tool recorded within 24 hours of first dose	0% (n=0/85)
Vital observations completed per guidelines *(every 15 minutes for 30 min, then every 30 min for 4 hours or until awake)*	1% (n=1/85)
Time from sedation to first vital observations, median [IQR]	207 min [93.5-423.8]

Table 4. *Instances of Adverse Effects within 24 hours of Pharmacological Sedation (n=85)*

Hypotension *(Systolic Blood Pressure <100mmHg)*	4
Respiratory depression	2
Hallucinations	1
Increased confusion	1
Dehydration	1
Swallowing difficulty	1
QTc prolongation	2
'Over-sedation' *(missed oral medicines within 24 hours due to sedation)*	3

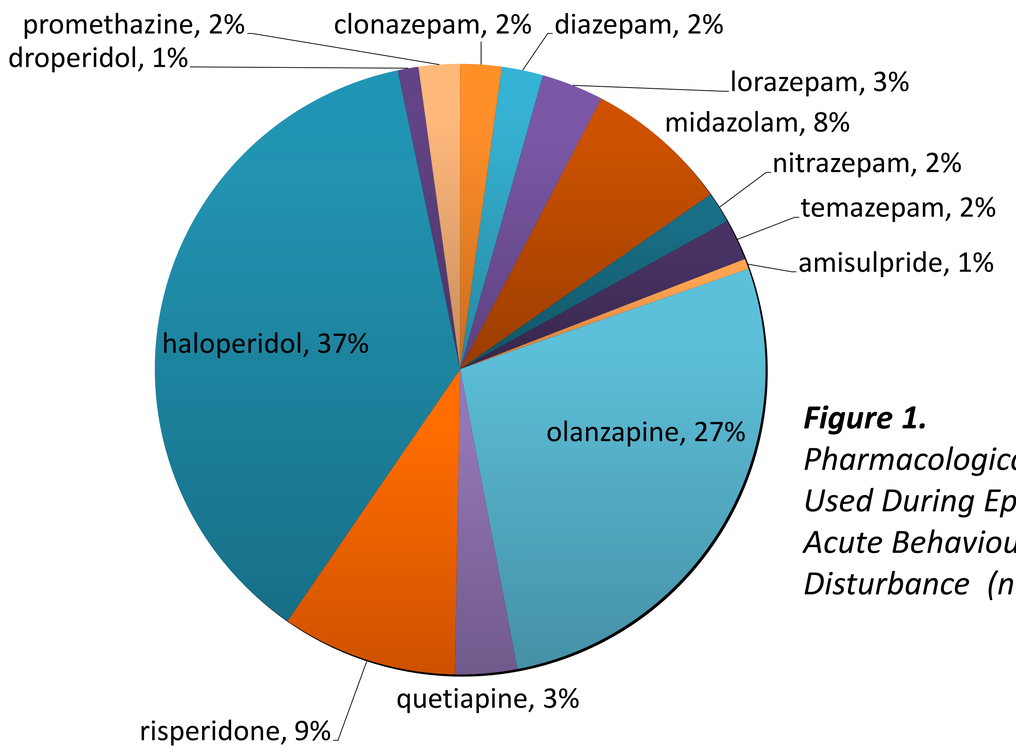

Figure 1. *Pharmacological Agents Used During Episodes of Acute Behavioural Disturbance (n=183)*

DISCUSSION

- Importantly, 85% of sedative agents used were outside of guideline recommendations. The frequent use of haloperidol is concerning due to excess risk of extra-pyramidal side effects, potential for decreased cognitive function and paradoxical worsening of agitation in dementia with Lewy bodies. Use of midazolam and other benzodiazepines is concerning due to a lack of evidence in agitated elderly, increased risk of delirium, respiratory depression and excessive sedation[2].
- Absence of sedation monitoring and delays to vital observations may reflect staffs' fear of worsening agitation or lack of knowledge regarding potential adverse effects. However this, along with excessive dosing may explain the relatively high incidence of adverse effects.
- Low numbers consented for sedation raise medico-legal concerns.
- *Limitations:* Selection bias towards those managed with versus without pharmacological sedation. Likely underestimation of consent, time to vital observations and adverse effects due to reliance on adequate documentation.

CONCLUSION

Despite a standardised management guideline for severely agitated older inpatients, we observed a strong reliance on pharmacological sedation, selection of inappropriate agents and dose, a tendency towards parenteral administration, suboptimal monitoring and associated adverse effects. Future directions include increased education and evaluating the impact of a pharmacist in the Aggression Response Team.

1) Clin Interv Aging. 2016; 11: 1559–1565. 2) Intern Med J. 2011; 41:651-657.

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