

Antipsychotic and sedative medication use in long-term care facilities providing dementia care

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ABSTRACT

AIM: This study aimed to quantify use of antipsychotic and sedative medications in residents with dementia in long-term care facilities in the Waikato District Health Board (DHB) catchment and to identify factors associated with the prescription of these medications.

METHODS: Resident records and the medication charts of 271 residents with a diagnosis of dementia from 13 dementia units in the Waikato DHB catchment, as well as the psychogeriatric (PG) unit, were reviewed for current prescriptions for any antipsychotic or sedative medication and the date those medications were most recently prescribed.

RESULTS: Antipsychotics were prescribed for 133 (49.1%) residents, with a mean (95% CI) of 401 (354–448) days since the most recent prescription was made. Only 16.8% of antipsychotic prescriptions were prescribed in the preceding 12 weeks, with 31.3% of prescriptions prescribed more than a year prior. Residents were more likely to be prescribed an antipsychotic if they were male (56.9% vs 42.6%, $p=.019$) or had an incident form completed (30.8% vs 19.6% $p=.03$). Regression analysis showed only gender (OR 1.79, 95%CI 1.07–2.98, $p=.026$) was associated with antipsychotic medication prescription. Sedatives were prescribed for 60 (22.1%) residents, with a mean (95%CI) of 487 (431–544) days since the most recent prescription was made, and 44.8% of prescriptions were dated more than a year prior. Residents were more likely to be prescribed a sedative if they entered the facility at a younger age (76.9 vs 79.5, $p=.042$) or had been in the current facility longer (980 vs 734 days, $p=.048$). Following regression analysis, no individual factors were significantly associated with sedative prescription.

CONCLUSION: With clear evidence of the risks of antipsychotics to patients with dementia, the proportion of residents prescribed an antipsychotic or sedative in this study, in conjunction with the prolonged duration of prescription, is cause for concern and needs addressing.

Dementia, a syndrome characterised by progressive decline in cognition and daily functioning, increases in prevalence with advancing age. As the proportion of the New Zealand population aged 65 years and older increases, there will be a concomitant increase in dementia cases. Cases of dementia are projected to triple to 170,000 by the year 2050.¹ This in turn will increase the prevalence of those presenting with the unique challenges associated with the behavioural and psychological symptoms of dementia (BPSD). BPSD is defined by the International Psychogeriatric Association (IPA) as symptoms of disturbed thoughts, mood, perception or

behaviour frequently occurring in people with dementia. BPSD is common, with an estimated point prevalence of 60–80% and a cumulative risk of 95%.² The resultant distress of BPSD causes both individual suffering and increased caregiver burden.³ It is also associated with worsening cognition and a hastened progression to a more severe dementia.⁴

The causes of BPSD are usually multifactorial in nature, with a complex interplay of both biological and psychosocial factors contributing to both aetiology and pathogenesis. As such, BPSD treatment guidelines⁵ emphasise a holistic understanding of the patient, their symptoms and the circum-

stances within which the symptoms occur. The mainstay of management centres around psychosocial interventions, with the use of psychotropic medications only considered when trials of behavioural or psychological interventions have not been of adequate benefit and the risks associated with medication use have been weighed up.⁵ Evidence for the efficacy of antipsychotic medication in BPSD is poor, with 5–11 patients needing to be treated to achieve clinically significant improvement in one additional patient.⁶ Furthermore, recent studies have demonstrated that implementing an antipsychotic deprescribing protocol after 12 weeks on an antipsychotic is not associated with any increase in BPSD symptoms in 67–80% of patients.^{7,8}

The risks associated with the use of antipsychotics are significant and include cerebrovascular events, gait disturbance, orthostatic hypotension, sedation, QT prolongation and increased mortality.⁹ There is also evidence of an association between duration of antipsychotic use and mortality,¹⁰ with an additional death in 100 patients with BPSD treated for 12 weeks increasing to 17 additional deaths in 100 patients with BPSD treated for two years.¹¹ These risks resulted in an FDA black box warning in 2005 against the use of antipsychotics in patients with dementia.¹² Despite these known risks and the black box warning, use of antipsychotics and benzodiazepines in residential care remains common. Indeed, a recent systematic review and meta-analysis¹³ reviewing 89 international studies of central nervous system medication use in aged residential care calculated an overall pooled estimate of 26.1% for antipsychotic and 36.2% for benzodiazepine use.

When no longer able to be safely cared for at home, long-term care for those aged 65 years and older in New Zealand is provided by one of four types of aged residential care (ARC) facilities. Rest homes and hospital level care provide care for those requiring physical assistance with activities of daily living. Dementia care is utilised by those who need a secure facility but have limited physical care needs. Psychogeriatric (PG) care, the highest level of care, is reserved for those with complex mental, cognitive or physical needs.¹⁴ Although those in dementia

level care require a diagnosis of dementia to be eligible, it has been estimated that 55% to 77% of those in the other types of care also have a diagnosis of dementia.¹⁵

Most ARC facilities are privately owned enterprises contracted by district health boards (DHBs) to provide an agreed number and type of residential care beds.¹⁶ Facilities operate to a national standard of services, but variability remains, including in the use of psychotropic medication, as a result of a combination of individual facility characteristics and organisational culture.¹⁷ Studies investigating the prescription of psychotropic medications in a New Zealand setting are heterogenous, with some focussed on prescribing rates in the general population and others on psychotropic prescribing in aged residential care.

Three studies investigate psychotropic medication prescribing in the general population aged 65 years and older. Ndukwe et al¹⁸ conducted a population-level study using pharmaceutical dispensing data to describe and characterise the prescription of psychotropic medication in the 65+ population between 2005 and 2013. They demonstrated a 27.5% increase in the dispensing of a defined daily dose per 1,000 older people per day (DDD/TOPD) for antipsychotics, a 10.3% increase in the DDD/TOPD for sedatives/hypnotics, and a 5.9% decrease in the DDD/TOPD for anxiolytics. In the same period there was a 22.5% increase in the prescription of any psychotropic medication, with the proportion of psychotropic prescriptions accounted for by antipsychotics increasing from 4.3% to 4.5% and decreasing for both hypnotics/sedatives (37.2% to 33.5%) and anxiolytics (7.1% to 5.5%). Jackson et al¹⁰ used the New Zealand Atlas of Healthcare variation to examine the dispensing of antipsychotics and benzodiazepines in the New Zealand 65+ population between 2008 and 2012. Across the four-year period of the study, antipsychotic prescription increased from 22.4 to 23.8 per 1,000 people, and benzodiazepine prescription increased from 106 to 109 per 1,000 people. The study also commented on a relationship between antipsychotic dispensing and dementia/psychogeriatric-occupied bed days but did not present data to support this statement. Using Ministry of Health prescribing data, Wilkinson and

Mulder¹⁹ also showed a 49% increase in antipsychotic prescribing across all ages between 2008 and 2015. They demonstrated that rates of prescribing by ethnicity were the highest across both genders in the 65+ age group for Europeans (male 3.97% and female 5.04%), Pacific peoples (male 3.51% and female 3.61%) and Asian (male 1.68% and female 2.53%) and for Māori females (4.09%). Rates of antipsychotic prescribing in Māori males aged 65+ (3.50%) were second only to Māori males in the 25–44-year-old age group (4.77%).

Five New Zealand studies investigate psychotropic medication prescribing in aged residential care. Kerse²⁰ carried out a medication chart and medical record audit of 606 residents in 14 randomly selected aged residential care facilities in 1999–2000, 50% of whom had a diagnosis of dementia. Benzodiazepines were prescribed in 33.5% of all residents and ‘major tranquilisers’ in 17% of residents. Compared to those without dementia, residents with a diagnosis of dementia were more likely to be prescribed a major tranquiliser (25% vs 10%, $p < .001$). Tucker and Hosford²¹ surveyed the prescription of psychotropic medications in 1,053 residents from 26 rest homes (including five dementia units and 11 private hospitals) in 2005 and compared the findings to a similar survey carried out in 1990. They showed an increase in antipsychotic prescribing from 21.9% to 23.7%, with a higher level of antipsychotic use in dementia units (59.5%) compared with 17% for rest homes and 29.5% for hospital level care. Benzodiazepine prescribing over the same period reduced from 29.6% to 12.4%. Heppenstall et al²² reviewed the electronic records of a stratified random sample of 222 residents from the 2008 Older Persons’ Ability Level (OPAL) study of all aged residential care facilities within the Auckland region’s three district health boards. They reported antipsychotics prescription in 19.1% of residents, benzodiazepines in 21.0% and a non-benzodiazepine hypnotic (zopiclone) in 12.5%. Tordoff et al²³ undertook an audit of 228 residents across 13 dementia and psychogeriatric units in 2011 and found antipsychotic prescription in 50.4% and benzodiazepine prescription in 39%. Prescribing had reduced to 38.2% and 25.8% respectively when remeasured

in 2013 following a range of interventions to improve prescribing practices. Peri et al¹⁷ investigated 537 residents across 14 residential care facilities (including four dementia units) and found antipsychotics prescribed in 20%, hypnotics in 31% and sedatives in 19% of all residents.

These studies indicate the prescription of antipsychotics in New Zealand has at best remained unchanged, if not increased, since 1990. The prevalence of antipsychotic use is further magnified in dementia and psychogeriatric care facilities where the majority of residents have a diagnosis of dementia. The aim of this study was to quantify use of antipsychotic and sedatives in dementia units and the PG unit in the Waikato District Health Board (WDHB) catchment area and potentially identify factors associated with the prescription of psychotropic medication.

Methods

This study was approved by the New Zealand Ministry of Health’s Health & Disability Ethics Committee, approval number 16/STH/135.

Setting and participants

Dementia units and the PG unit in the WDHB catchment area were invited to participate in the study in December 2016. These facilities are all privately owned enterprises, contracted to WDHB to provide aged residential care beds at dementia or PG level care. PG is the highest level of residential care and is required for dementia residents with more complex physical and/or behavioural care needs that cannot be adequately provided in a dementia unit. Spanning both rural and urban areas, the WDHB is one of 20 district health boards in New Zealand, with a 65+ population of 65,000. At the time of the study there were 18 dementia units and a psychogeriatric hospital in the region. All 14 dementia units within Hamilton City and the Waikato, South Waikato, Matamata-Piako, and Waipa districts were approached. Due to geographical practicalities, the four dementia units situated further afield in the Thames/Coromandel, Hauraki and Ruapehu districts were not approached. Thirteen of the 14 dementia units approached, as well as the PG unit, agreed to participate. Resident records and the medication charts

of all 280 residents in participating units were reviewed. Following exclusion of nine residents with primary diagnoses of schizophrenia, bipolar disorder or an intellectual disability, 271 residents with a primary diagnosis of dementia were included in the analysis.

Data collection

Baseline demographic data were collected for all residents and included age, gender, ethnicity, diagnosis, age at entry and duration of stay in their current facility. Each resident's current medication chart was reviewed for current prescription of any antipsychotic and/or sedative medications. Antipsychotic medication included both first- and second-generation antipsychotics. Sedative medications included all benzodiazepines and zopiclone, a non-benzodiazepine hypnotic. The date the medication was most recently prescribed was used as a proxy for the duration (in days) since the medication was last reviewed. All resident files were also reviewed for formal incident forms completed by staff in the preceding six months, as a proxy for BPSD in excess of what would reasonably be expected in a secure dementia facility.

Data analysis

Continuous data are summarised by means and standard deviations (SD) and ranges and counts by numerators and denominators and proportions expressed as percentages. For the continuous variables, normality assumptions were reasonably well met, and t-tests and ANOVA were used as appropriate for comparisons of groups. For categorical variables, Chi-square tests of independence were used to compare groups. Binomial logistic regression was used to assess confounding between independent variables. Statistical analysis was carried out using the Statistical Package for Social Sciences version 20.0 (SPSS Inc., Chicago, IL, USA).

Results

Demographic details are presented in Table 1. Residents had a mean (95% CI) age of 81 (80.0–81.9) years, 54.6% were female and 90.8% were New Zealand European/Pākehā. Mean age of entry into their current home was 78.9 (77.9–79.9) years, for an

average duration of 791 (706–877) days. Sixty-eight residents (25.1%) had at least one incident form completed in the preceding six months.

Antipsychotics were prescribed for 133 residents for a mean (95% CI) of 401 (354–448) days, giving a point prevalence of 49.1% (43.0%–55.2%). Sedatives were prescribed for 60 residents for a mean of 487 (431–544) days, giving a point prevalence of 22.1% (17.3%–27.6%). Among those prescribed an antipsychotic, 16.8% of the current prescriptions were issued in the preceding 12 weeks, with 31.3% of prescriptions unadjusted for >52 weeks. Among those prescribed a sedative, 19% were issued their prescriptions in the preceding 12 weeks, with 44.8% of prescriptions unadjusted for >52 weeks.

Resident characteristics of those prescribed antipsychotics to those who were not are compared in Table 2. There was no difference in resident age (80.1 vs 81.9 years, $p=.072$), age at entry into their current dementia unit (78.2 vs 79.6 years, $p=.187$), or duration of residence in their current unit (727 vs 849 days, $p=.169$). Residents were more likely to be prescribed an antipsychotic if they were male (56.9% vs 42.6%, $p=.019$) or had an incident form completed (30.8% vs 19.6% $p=.034$). A binomial logistic regression was performed to ascertain the effects of age, age at entry into care, duration in current care home, gender and having an incident form on the likelihood of being prescribed an antipsychotic (Table 3), with only male gender shown to be a predictor of antipsychotic prescription (OR 1.79, 95%CI 1.07–2.95, $p=.026$).

Resident characteristics comparing those prescribed sedatives to those who were not are presented in Table 4. There was no difference in resident age (79.6 vs 81.4 years, $p=.140$), gender (24.4% vs 20.3%, $p=.416$) or having had an incident form completed (31.7% vs 23.2% $p=.183$). Residents were more likely to be prescribed a sedative if they entered the facility at a younger age (76.9 vs 79.5 years, $p=.042$), had been in the current facility longer (980 vs 734 days, $p=.048$) or were resident in psychogeriatric hospital (36.6% vs 15.9%, $p<.001$). A binomial logistic regression (Table 5) showed no factor significantly predicted sedative prescription.

Table 1: Demographic characteristics of residents.

		Total (N=271)
Age (years)	Mean 95% CI	81.0 80.0–81.9
Age at entry into facility (years)	Mean 95% CI	78.9 77.9–79.9
Gender (%)	Male Female	123 (45.4) 148 (54.6)
Ethnicity (%)	New Zealand European/Pākehā Māori Other	246 (90.8) 10 (3.7) 15 (5.5)
Duration at current facility (days)	Mean (SD) 95% CI	791 706–877
Residents with incident forms (%)	Number of residents (%)	68 (25.1)
Antipsychotic (%)	N (%)	133 (49.1)
Antipsychotic duration (days)	Mean 95% CI	401 354–448
Antipsychotic duration (%)	<12 weeks 12–52 weeks >52 weeks	22 (16.8) 68 (51.9) 41 (31.3)
Sedative (%)	n(%)	60 (22.1)
Sedative duration (days)	Mean 95% CI	487 431–544
Sedative duration (%)	<12 weeks 12–52 weeks >52 weeks	11 (19) 21 (36.2) 26 (44.8)
Level of care (%)	Dementia care Psychogeriatric	189 (69.7) 82 (31.3)

Table 2: Characteristics of residents prescribed an antipsychotic compared to those who were not.

		Prescribed anti- psychotic N=133	Not prescribed antipsychotic N=138	Sig.
Age (years)	Mean 95% CI	80.1 78.6–81.6	81.9 80.6–83.3	.072
Age at entry into care (years)	Mean 95% CI	78.2 76.7–79.3	79.6 78.2–81.0	.187
Duration in current home (days)	Mean 95% CI	727 703–878	849 722–977	.169
Gender	Female Male	63 (47.4) 70 (52.6)	85 (61.6) 53 (38.4)	.019
Ethnicity	New Zealand European/Pākehā Māori Other	121 (94.5) 5 (3.9) 3 (1.6)	125 (93.3) 5 (3.7) 4 (3.0)	.945
Incident forms	Yes (%)	41 (30.8)	27 (19.6)	.034
Prescribed a sedative	Yes (%)	40 (30.1)	20 (14.5)	.002

Table 3: Univariate (unadjusted OR) and logistic regression (adjusted OR) comparing residents prescribed an antipsychotic to those who were not.

	Unadjusted OR (95%CI)	Sig.	Adjusted OR (95%CI)	Sig.
Age	0.97 (0.95–1.00)	.073	0.96 (0.53–1.73)	.892
Age at entry	0.98 (0.95–1.01)	.187	1.02 (0.57–1.84)	.942
Gender	1.78 (1.10–2.89)	.019	1.79 (1.07–2.98)	.026
Incident form	1.82 (1.05–3.20)	.034	1.72 (0.97–3.22)	.062
Duration in current facility	0.99 (0.99–1.00)	.172	0.99 (0.99–1.00)	.908

Table 4: Characteristics of residents prescribed a sedative compared to those who were not.

		Prescribed sedative N=60	Not prescribed sedative N=211	Sig.
Age (years)	Mean 95% CI	79.6 77.3–82.0	81.4 80.3–82.5	.140
Age at entry into care (years)	Mean 95% CI	76.9 74.5–79.5	79.5 78.4–80.6	.042
Duration in current home (days)	Mean 95% CI	980 753–1,208	734 643–825	.020
Gender	Female Male	30 (50) 30 (50)	118 (55.9) 93 (44.1)	.416
Ethnicity	New Zealand European/Pākehā Māori Other	53 (89.8) 3 (5.1) 3 (5.1)	193 (94.6) 7 (3.4) 4 (2.0)	0.347
Incident forms	Yes (%)	19 (31.7)	49 (23.2)	0.183
Prescribed an antipsychotic	Yes (%)	40 (66.7)	93 (44.1)	.002

Table 5: Univariate (unadjusted OR) and logistic regression (adjusted OR) of comparing residents prescribed a sedative to those who were not.

	Unadjusted OR (95%CI)	Sig.	Adjusted OR (95%CI)	Sig.
Age	0.97 (0.94–1.01)	.140	.98 (0.49–1.99)	.972
Age at entry	0.97 (0.93–1.00)	.044	.99 (0.49–2.00)	.980
Gender	1.27 (0.71–2.25)	.417	1.29 (0.70–2.38)	.411
Incident form	1.54 (0.82–2.88)	.185	1.61 (0.85–3.11)	.148
Duration in current facility	1.00 (1.00–1.00)	.023	1.00 (0.99–1.00)	.649

Discussion

Despite the increasing evidence around the relatively poor efficacy and increased risks associated with antipsychotic and sedative prescription in individuals with dementia, this study shows the use of these medications in dementia care and PG facilities remains high. Although there was a trend towards reduced prescribing of antipsychotics in dementia units, from 59.5% in 2005²¹ to 50.4% in Auckland in 2011,²³ the 48.2% of residents in this study currently prescribed an antipsychotic suggests this trend has plateaued.

The mean duration since the prescription of either an antipsychotic or sedative was last adjusted was also high, at 401 and 487 days for antipsychotics and sedatives respectively. Only 16.8% of those prescribed an antipsychotic and 19% of those prescribed a sedative had the most recent dose change occur within the recommended 12-week period.⁵ The use of the date of prescription as a proxy for duration since the medication dose was last reviewed is acknowledged as a limitation of this study, as it is possible there was a review of the rationale for the medication in the preceding weeks and an active decision made not to make any adjustment. It is also a possibility that the last medication change reflected a dose decrease and that the resident was being actively monitored before consideration of a further dose reduction. However, 31.3% of those on antipsychotics and 48.4% of those on sedatives had not had their prescriptions adjusted for over a year, far exceeding the 12-week recommendation and suggesting that reviews are not actively occurring.

Residents prescribed antipsychotics were more likely to be male and have had an incident form completed in the last six months. Those prescribed sedatives were more likely to be younger and to have been in their current home for longer. The finding that antipsychotic prescriptions were more likely to be for male residents (1.79x) and those who had an incident form completed (1.82x) likely reflects the fact that the behaviour of these residents was interpreted as more threatening, and that the assessed risk of harm from that behaviour is higher. However, gender was also associated with having an incident form completed,

and regression analysis showed only male gender (OR 1.78x, $p=.026$), not a completed incident form (OR 1.72, $p=.062$), was associated with antipsychotic prescription. Dual prescribing of antipsychotics and sedatives was common, with 40 (14.8%) residents prescribed both. Residents prescribed an antipsychotic more than twice as likely to be prescribed a sedative compared to those not prescribed an antipsychotic (30% vs 14.5%, $p=.002$).

While it is reassuring other demographic factors have not been shown to be influencing antipsychotic prescribing, it is concerning that medication prescription was not associated with the completion of incident forms, which are usually completed when residents manifest BPSD in excess of what would usually be expected for their level of care. Only 30.8% of those prescribed an antipsychotic and 31.7% of those prescribed a sedative had at least one incident form for behavioural concerns completed in the preceding six months. It is possible that the behaviour of some residents may have been noted to be escalating and was therefore dealt with before the threshold for an incident form was reached. It is also possible the presence of symptoms severe enough to warrant an incident form being completed may have resulted in an active decision not to make any psychotropic medication changes for some residents. However, over two-thirds of residents prescribed an antipsychotic or sedative had not manifested behaviours meeting the threshold for completing an incident form in the preceding six months and could potentially have trialled a medication decrease.

A strength of this study is that 13 of the 14 dementia units approached, and the PG unit, agreed to participate in the research, reducing the risk of selection bias and providing an accurate cross-sectional snapshot of antipsychotic and sedative medication use as of December 2017 in the Waikato DHB catchment area. As described above, there are limitations to both using the date of medication prescription as a proxy for duration since the medication dose was last reviewed and using incident forms as a proxy for BPSD severity. However, the proportion of residents who had not had incident forms completed or had their medications altered for over 12 months is

significant and suggests that active medication reviews are not occurring.

With clear evidence of the risks of antipsychotics to patients with dementia,⁶ the proportion of residents prescribed an antipsychotic or sedative in this study, in conjunction with the prolonged duration of prescription, is cause for concern and

needs addressing. Recent evidence that antipsychotic deprescribing regimens^{7,8} are not associated with an escalation in BPSD indicate that active and regular reviews of prescribing, in conjunction with the upskilling of care staff,²³ can significantly reduce unnecessary antipsychotic and sedative prescription in this population.

Competing interests:

Nil.

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