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# Improving Benzodiazepine and Hypnotic Prescribing in an Acute Mental Health Hospital

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**Abstract**

**Aims -** Prolonged or overuse of benzodiazepines carries potential psychological and physical risks. We aimed to monitor and reduce benzodiazepine and hypnotic prescribing within St Patrick's University Hospital (SPUH).
**Methods -** Revisions to clinical practice introduced included: raising awareness of benzodiazepine and hypnotic prescribing through audit and feedback; increased clinical pharmacist input; limiting *pro re nata* (PRN) prescription validity to seven days; and limiting the range of prescribers permitted to write PRN benzodiazepines or hypnotics. Effects of these changes were audited between 2011 and 2014.
**Results -** Initial benzodiazepine prescribing (66% prescribed benzodiazepines, 41% regularly and 33% PRN) were reduced by over a third. Reductions were also observed in patients prescribed hypnotics (67% to 36%) and more than one benzodiazepine (21% to 5%).
**Conclusions -** Changes in practice, implementable in non-psychiatric settings, had a clear impact on benzodiazepine and hypnotic prescribing within SPUH and this was sustained over time.

# Improving Benzodiazepine and Hypnotic Prescribing in an Acute Mental Health Hospital

## Introduction

Although their introduction in the 1950's was a major step forward from often lethal barbiturates; mounting evidence suggests that benzodiazepines cause harm in clinical practice. Reviews have sought to quantify risks and identify optimal treatment with benzodiazepines. The UK Committee on Safety of Medicines (CSM) advised that benzodiazepines should be only prescribed for "two to four weeks for relief of severe or disabling anxiety that is subjecting the patient to unacceptable distress"; and hypnotics for "severe or disabling insomnia in patients who are extremely distressed".[1] Similar guidelines have been issued internationally and in Ireland.[2] US guidelines specify that long-term prescribing should only be used in rare cases where benefits outweigh risks.[3] However, usage continues to be widespread.

Risks associated with benzodiazepines and/or hypnotics include a strong link with increased falls and fracture; impairment of psychomotor performance, most notably driving; cognitive impairment and dementia, increased incidence of community-acquired pneumonia; an association with risk of incident cancer; and increased all-cause mortality.[4,5,6] Additionally, high prevalence of benzodiazepines in toxicology reports for suicides in Ireland have been highlighted. Between 1998 and 2007, benzodiazepines were implicated in nearly one-third (31%) of all deaths by poisoning and the disinhibiting effects of benzodiazepines may also increase risk of suicide attempts.[4,7]

Increased recognition of excessive prescribing of benzodiazepines and hypnotics from published literature and data from the Irish Mental Health Commission (IMHC) prompted an audit to better understand prescribing of benzodiazepines and 'z' hypnotics within our hospital.[8] The 2010 Medication Report of the IMHC Inspections identified that 57% of all inpatients nationally were prescribed benzodiazepines, with 62% of those prescribed regular benzodiazepines and 62% prescribed *pro re nata* (PRN) or 'when required' benzodiazepines. Similarly, within St. Patrick's University Hospital (SPUH), 62% of inpatients sampled by the IMHC were prescribed benzodiazepines, 57% of those being regular prescriptions and 68% PRN. The IMHC also found that, despite lack of evidence of therapeutic value, 24% of inpatients nationally were prescribed more than one benzodiazepine (18% of inpatients in SPUH). The Commission highlighted that high inpatient usage of benzodiazepines may be due

to poor knowledge about benzodiazepine prescribing and recommended that centres should audit use of benzodiazepines.[9] Recommendations to reduce benzodiazepine and 'z' hypnotic prescribing were identified and implemented in SPUH in 2010/2011.

## Aim

The aim was to identify if implemented changes in practice impacted on benzodiazepine and hypnotic prescribing in the hospital through repeated audits of prescribing rates.

## Methods

SPUH is Ireland's largest, independent, not-for-profit mental health service with, in total, 288 adult inpatient beds and about 3000 admissions per year, approximately 16% of all admissions to Irish Psychiatric Units and Hospitals.[10]
A clinical audit was undertaken within the hospital to benchmark benzodiazepine and hypnotic prescribing against standards in best practice guidelines and the IMHC report recommendations.[11,12] Recommendations included enhancing the pharmacy service to wards and multidisciplinary teams (MDTs) where pharmacists highlight doses above recommended limits, if more than one agent is used for a single indication, and prolonged duration of prescriptions. In addition, only consultants are permitted to prescribe PRN benzodiazepines or hypnotics; PRN prescriptions are valid for only 7 days from the date of prescribing to ensure that they remain current and to facilitate review at weekly MDT meetings; and an indication for use must be documented for PRN medications. Standardised withdrawal protocols were developed to facilitate withdrawal planning, information leaflets on "Coming off Benzodiazepines or 'Z' Drugs" and "Sleep Hygiene" were made available to patients, and all ward beverages switched to decaffeinated.
Since 2010, benzodiazepine and hypnotic use has been audited at least annually to assess the impact of these changes on benzodiazepine and hypnotic prescribing, and to determine whether changes were sustained over time. Approval was obtained from the Clinical Governance Committee via the Hospital Audit Committee and all patient data were anonymised. Each audit was a cross-sectional audit of medical records of all current adult inpatients on a specific day with a range of 272-285 patients in the hospital during the audits. Data were systematically collected on a standard pro-forma by Pharmacy and Audit Department staff and results amalgamated and analysed with reference to previous audit data.

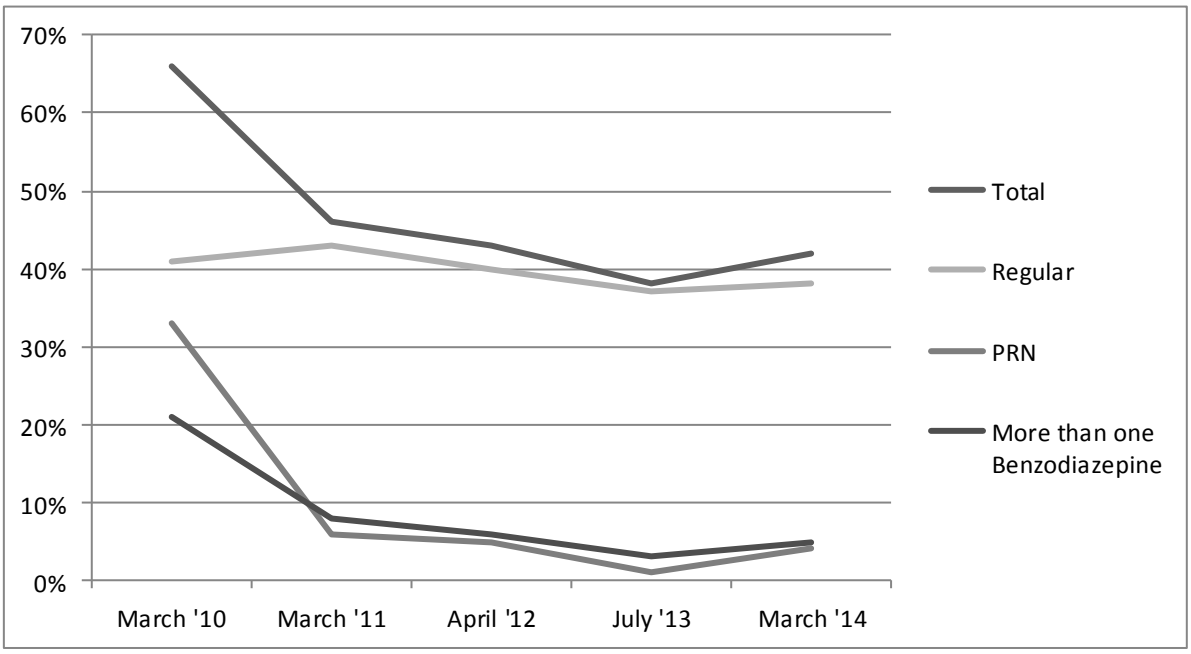
## Results

Data were collected for adult inpatients only. The initial audit in March 2010 showed a high percentage of patients prescribed benzodiazepines (66%), 41% of those regularly and 33% on a PRN basis. Additionally, 21% of patients were prescribed more than one benzodiazepine simultaneously (See Table 1 and Figure 1). After implementation of changes in practice in 2010/2011, there was a steady reduction in benzodiazepine prescribing (a 36% reduction in prescribing overall and an 88% reduction in PRN prescribing) over 4-years. There was a reduction from 21% of patients being prescribed more than one benzodiazepine to only 5%, but a more modest reduction in the number of patients prescribed regular benzodiazepines from 41% to 38% (7% overall reduction) was observed.

**Table 1. Results of Percentage of Inpatients Prescribed Benzodiazepines (Audits SPUH 2010-2014)**

| Date of Audit | Mar 2010 | Mar 2011 | Apr 2012 | Jul 2013 | Mar 2014 |
|---|---|---|---|---|---|
| % prescribed benzodiazepines | 66% | 46% | 43% | 38% | 42% |
| % prescribed regular benzodiazepines | 41% | 43% | 40% | 37% | 38% |
| % on PRN benzodiazepines | 33% | 6% | 5% | 1% | 4% |
| % prescribed more than one benzodiazepine | 21% | 8% | 6% | 3% | 5% |

**Figure 1. Benzodiazepine Prescribing Audits SPUH 2010-2014**

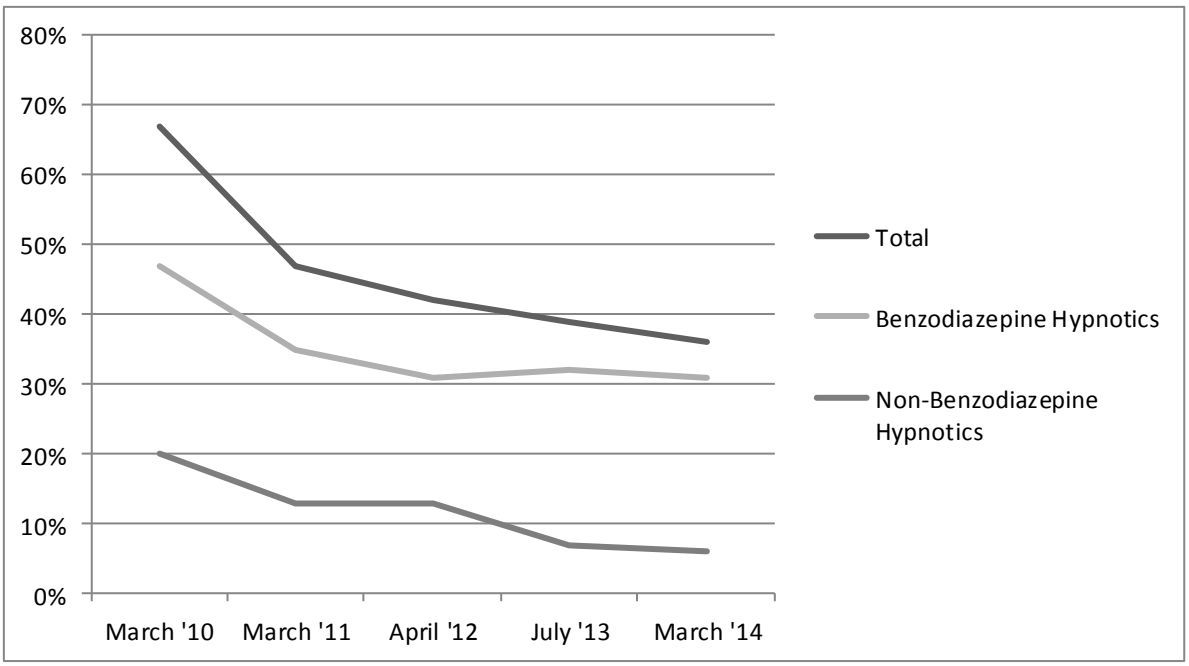



Two-thirds of inpatients (67%) were prescribed hypnotics at the first audit consisting of 47% 'z' hypnotics and 20% benzodiazepine hypnotics with none prescribed a combination of 'z' and benzodiazepine hypnotics. Over the audit period there was a substantial reduction in hypnotic prescribing by almost half (46%). 'Z' hypnotic prescribing reduced by 34% overall (from 47% to 31%) and benzodiazepine hypnotic prescribing reduced by 70% (from 20% to 6%) (See Table 2 and Figure 2).

**Table 2. Results of Percentage of Inpatients Prescribed Hypnotics (Audits SPUH 2010-2014)**

| Date of Audit | Mar 2010 | Mar 2011 | Apr 2012 | Jul 2013 | Mar 2014 |
|---|---|---|---|---|---|
| % prescribed hypnotics | 67% | 47% | 42% | 39% | 36% |
| % prescribed non-benzodiazepine hypnotics | 47% | 35% | 31% | 32% | 31% |
| % prescribed benzodiazepine hypnotics | 20% | 13% | 13% | 7% | 6% |

**Figure 2. Hypnotic Prescribing Audits SPUH 2010-2014**




Reduction of benzodiazepine and hypnotic prescribing has slowed in more recent audits but has continued to reduce modestly (See Figure 1 and 2). Alcohol detoxification using chlordiazepoxide was considered as a potential confounder in increasing the apparent numbers of patients prescribed benzodiazepines but, when examined, prescriptions accounted for only 2-4% of benzodiazepine prescriptions.

## Discussion

This study shows that significant changes to practice in a clinical setting led to decreases in benzodiazepine and hypnotic prescribing which were sustained over time. Limiting PRN prescription validity to seven days, and limiting clinicians permitted to prescribe PRN benzodiazepines or hypnotics appeared to bring about the greatest change in prescribing of benzodiazepines, though other changes including increasing clinical pharmacist input to wards and MDTs; and increasing awareness of overprescribing through audit feedback, and MDT interaction are likely to have impacted particularly on multiple benzodiazepine and hypnotic prescribing. Such changes are easily replicable in more general hospital settings.

In contrast to large reductions in PRN, multiple benzodiazepine and hypnotic prescribing there was a relatively small reduction in regular benzodiazepine prescribing. This may be due to switches from PRN to regular prescribing, or it may be that this level of prescribing is to be expected in an acute inpatient mental health facility with a large proportion of chronic patients and readmissions. The initial prescribing levels were similar to a 2009 study of benzodiazepine and hypnotic prescribing in another acute psychiatric inpatient unit in Ireland where benzodiazepines were prescribed regularly to 51% of patients.[13] Between 20% and 52% of patients being prescribed benzodiazepines has been reported in UK hospital studies and a more recent Scottish study found 68% of inpatients were prescribed benzodiazepines and 26% more than one benzodiazepine.[14,15] Hypnotic prescribing of 45% among patients in a hospital in North Wales reduced to 30% after 18 months following circulation of good practice guidelines and encouragement of junior doctors to prescribe only short courses and

regularly review hypnotic prescriptions in ward rounds.[16] A 2007 New Zealand study found high levels of both benzodiazepine (87%) and 'z' hypnotic prescribing (57%) in psychiatric inpatients though found just under two-thirds of patients were not prescribed any sedatives at discharge.[17]

Studies have also shown problematic prescribing of benzodiazepines and hypnotics in non-psychiatric hospitals. A study in Sligo General identified that 54% of inpatients over 65 were prescribed a benzodiazepine or 'z' drug, one Australian study found a third of elderly inpatients were prescribed a benzodiazepine, and another that 77% of all medical and surgical inpatients were prescribed a benzodiazepine suggesting that problematic benzodiazepine and hypnotic use are prevalent in general hospital settings.[18,19,20]

Studies examining prevalence of benzodiazepine usage found that middle-aged females living in deprived areas and with high levels of psychosocial stress or anxiety and depression are more likely to be prescribed benzodiazepines.[21] The inpatient population of SPUH is predominantly female (63%), middle-aged (mean=50 years), from urban areas, often separated with recent psychosocial stressors and suffering from chronic anxiety and/or mood disorders with about 70% of patients being readmissions.[22] Clinicians may be inclined to prescribe anxiolytics and or hypnotics as a demonstration of care and empathy for the patient's distress and this patient group are more likely to present with high levels of socio-economic and personal stressors. A study of 86 Irish GPs demonstrated that while GPs rank highly the prescribing quality indicators associated with benzodiazepine prescribing, data nevertheless showed prolonged use of benzodiazepines in over 50% of prescriptions issued suggesting that, despite awareness and acceptance of the evidence, GPs may feel that benefits outweigh risks in many patients. Prescriptions may be continued long-term into old age as some GPs may consider it "cruel to deny these patients, often well advanced in age, the degree of relief offered by benzodiazepines". [23, 24, 25]

It is likely that prescribers may feel unsupported in efforts to reduce benzodiazepine use. Benzodiazepine reduction programmes have been shown to be more successful when a mix of disciplines (e.g. medical, pharmacy and nursing) are involved in decision making, especially when feedback is verbal and written.[26] One study noted that GP alerts had little effect on benzodiazepine prescribing until a pharmacist was involved which then resulted in a reduction in benzodiazepine prescribing.[27]

Many studies have found simple interventions to reduce benzodiazepine use focused on raising patient awareness e.g. with letters and information leaflets about potential adverse effects and advice on how to gradually reduce or stop, produced prescription reductions of one-third.[28] This raises the possibility that some patients have not reduced or discontinued benzodiazepines because they were never advised to do so. Increasing awareness and providing information to patients is a simple, low cost intervention requiring little time on the part of the practitioner. Clinical pharmacists in acute hospitals routinely provide information and advice to patients about the appropriate use of their medicines including benzodiazepines and hypnotics. In SPUH pharmacist input into the MDTs has facilitated increased discussion and awareness about appropriate use of benzodiazepines and hypnotics. Given high prescribing in general hospital settings especially among elderly women, similar results should be achievable in such clinical settings where MDT working is undertaken.

Limitations of this study are that it was cross-sectional with different patients at each time point therefore individual patient data are limited. Also, the introduction of several interventions simultaneously makes it difficult to determine which had the greatest impact. However, the study was naturalistic, involving large numbers of patients and a number of audits were conducted to aid generalizability (2320 patient medication records in total). Another manuscript is in preparation analysing appropriateness of benzodiazepine and hypnotic prescribing including dosage and duration prescribed.

## Conclusions

Significant improvements in benzodiazepine and hypnotic prescribing within SPUH have been obtained with relatively simple changes to practice and increased education to staff and patients about the risks of benzodiazepine use. Many of these changes are implementable in non-psychiatric settings.

## Recommendations

Benzodiazepine and hypnotic prescribing can be reduced by:

- Limiting PRN prescription validity to seven days
- Limiting those permitted to prescribe PRN to senior clinicians
- Increasing patient awareness through verbal and written information
- Increasing clinical pharmacist input to wards and MDTs
- Increasing awareness of overprescribing through audit feedback

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## Declaration of Interest

None

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