

PRN psychotropic medications: The need for nursing research



ANBS

KEY WORDS

prn medication;
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This paper highlights the inadequacy of existing research for the purposes of evidence-based prn (Latin, pro re nata or 'as needed') medication practice in psychiatric settings and notes the absence of relevant evidence-based clinical practice guidelines and policies, both nationally and internationally. The professional, ethical and legal importance of PRN medication practices is also discussed, and shown to add to the urgency of developing a research agenda which will serve as an adequate basis for good clinical practice. This paper summarises the relevant research and identifies problems that can arise for clinicians involved in the administration of prn medications in mental health settings. It concludes by highlighting key issues which urgently require empirical investigation.

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INTRODUCTION

Although indispensable in the clinical situation, the concept of prn (Latin, *pro re nata* or 'as needed') medication is inherently problematic because, by definition, it usually allows for the administration of medication based on the clinical judgment of nurses. Furthermore, prn prescriptions often provide for the nurses' judgment to extend to the exact dosage to be administered, the route of administration, and even the frequency of administration: these judgments may be further complicated by the prescription of more than one prn for a given individual. This makes prn medication an exception to the normal procedure where such decisions are usually made by a doctor.

Since it could be argued that, 'of all the duties performed by the nurse, the administration of drugs is potentially the most hazardous, carrying with it the possibility of fatal consequences' (Edginton, 1995, p. 188), the administration of prn medications should be considered fraught with additional legal, professional, and clinical dangers. Despite these dangers, and the widespread use of prn medications in a variety of health care settings, relatively little empirical research has been conducted on prn prescription or administration practices. This is especially the case in relation to the use of psychotropic drugs in mental health settings. To evaluate the relevant published studies on this topic the authors searched all the major computerised medical, psychological and nursing databases, including CINAHL, Medline, Infotrac, Ingenta, ProQuest 5000, APAIS – Health, Australasian Medical Index, AusportMed, CINCH – health, DRUG, Health and Society, HIV/AIDS database, RURAL, Psychinfo, the Joanna Briggs Institute, and the Cochrane Library. Search terms included 'prn', 'pro re nata' and 'as needed', searched individually and cross-referenced to both 'psychotropic' and 'medication', and no limits were placed on the date of publication.

The complete corpus of recent published

research yielded by database searches is summarised in Table 1.

Whilst the authors have not employed guidelines for critiquing which are as explicit and precise as those used in a standard Cochrane review, we have assessed the literature in a way that reflects the criteria adopted for critiquing research articles outlined in major texts on qualitative and quantitative research.

PRN USE OF PSYCHOTROPIC MEDICATIONS IN MENTAL HEALTH SETTINGS

In the mental health setting, prn medications are frequently used as a means to manage patients who display symptoms of becoming agitated, disturbed or aggressive. Past research indicates that prn medications were prescribed for approximately 75% of psychiatric inpatients and administered to approximately 50% (Craven et al., 1987). In some cases, administration will be reserved for occasions when individuals fail to respond to non-pharmacological methods such as de-escalation, talking and separation from the group (Keltner & Folks, 1997). In other cases, prn medication may be the first course of action, whether or not that is appropriate. The management of patients presenting with these and other acute psychiatric disorders shows that a wide range of prn medications are involved. For example, studies by Gray et al. (1997) in the United Kingdom, McKenzie et al. (1999) in New Zealand, Geffen et al. (2002) and Usher et al. (2001) in Australia, indicate that benzodiazepines, antipsychotics, antihistamines, and sedatives are all commonly prescribed prn medications. The British study by Gray et al. (1997) found the most common prn medication administered by mental health nurses to be procyclidine, an anticholinergic used to counter the side-effects of antipsychotic drugs. Usher et al. (2001) found a high reliance on the typical form of antipsychotic medication, notably phenothiazines, in the prn management of most behav-

TABLE 1: EMPIRICAL STUDIES OF PRESCRIPTION AND USE OF PSYCHOTROPIC MEDICATION PRN, PUBLISHED FROM 1996.

Author(s)	Year	Key focus of study	Key outcomes	Country(ies) where study conducted	Cohort size
Geffen, Sorenson, Stokes, Cameron, Roberts & Geffen	2002	Audit of practice in 2 metropolitan hospitals	Drugs prescribed PRN were mostly typical antipsychotics, benzodiazepines. Coprescription of typical antipsychotics PRN with regularly scheduled atypical antipsychotics was common (64%). PRN prescriptions rarely gave indications for use (6%). Evidence of poor documentation surrounding PRNs.	Australia	184 consecutive admissions over 3 month period
Usher, Lindsay & Sellen	2000	nurses' administration of prn in one regional and one urban facility	in 24% of cases, no record of who initiated use of prn; in 36% of cases, no reason for administration documented, and reasons given often did not correlate to medication given; effect of administration undocumented in 55% of cases; antipsychotics accounted for 30% of PRN administrations, anxiolytics for 40%, and hypnotics for 26%; most PRN given on day of admission; PRN associated with longer-stay;	Australia	90 files, yielding 57 individuals prescribed prn
Bernard & Littlejohn	2000	adolescent in-patient unit; all psychotropics included	60% received PRN; limited prescribing habits; small number of clients accounted for large % of PRN use; PRNs as used in response to misdemeanors; used more frequently in evenings.	England	500 consecutive admissions over 7 year period
McKenzie, Kudimoff, Benson & Archillingham	1999	nurses' administration of PRN to adult in-patients	45% received PRN on day of admission; 30% on 2nd day; multiple administration commonest in cases of bipolar disorder; >40% of PRN administration was at night; >30% lacked documentation	Australia	122

Continued ...

TABLE 1: CONTINUED ...

Author(s)	Year	Key focus of study	Key outcomes	Country(ies) where study conducted	Cohort size
Bowden	1999	adult in-patients; prescription of prn benzodiazepines and antipsychotics before and after new protocols	simple protocols improved prescribing practices, but use of 'ranged' dosages persisted	England	78
Milton, Lawton, Smith, & Buckley	1998	prescription cards of all in-patients in facilities in 1994 and 1996 across city examined to assess impact of new national dosage guidelines	4-5% of PRN prescriptions lead to administration; however, only 7 "occasions" when PRN was administered among 1994 cohort, and 10 among 1996, so implications limited	England	1994 - 200 1996 - 230
Tobias & Pulliam	1997	national survey of prescription data from US nursing facilities	at any one time, patients have 3.03 PRN prescriptions; antidepressants account for 26.3%, antipsychotics for 14.2%, anxiolytics for 10.9% and hypnotics for 2.7% of prescriptions	United States	878 facilities
Newton, Murthy & Qureshi	1997	PRN prescribing habits in District Gen. Hospital	2% of cohort prescribed doses which took total over rec. limits;	England	247
Gray, Smedley & Thomas	1996	type of medications and reasons for administration, in two acute units in inner London	benzodiazepines 25% of PRNs administered, procyclidine 16%; oral admin. on 77% of occasions and IMI on 5%; 20% requested by patient, 18% for pain, 12% for agitation, 11% for side-effects	England	44 (26M, 18F)

NB: Vcirol, Robert, Meister, Oros & Baumann (1999) is omitted since it analysed data produced in 1987 and 1992.

journal disturbance, and this is consistent with the recent study by Geffen et al. (2002). The authors of both Australian papers have expressed concern at this reliance on typical antipsychotics, given that the trend in non-prn prescribing is away from the use of these drugs, and toward the atypical antipsychotics, such as clozapine and/or recently developed benzodiazepines such as lorazepam (Demczar & Levin, 1996; Power et al., 1998; Buckley, 1999).

The contemporary approach to psychopharmacology for psychotic disorders supports the use of lower doses of typical antipsychotics and increased use of atypical antipsychotics (Parker et al., 1998; Buckley, 1999). Atypical antipsychotics are better tolerated by the patient and are at least as effective as typical antipsychotics (Geffen et al., 2002). Further, there is evidence that using typical antipsychotics prn may interfere with the therapeutic action of regularly prescribed atypical antipsychotics (Geffen et al., 2002). Preferential prescription and administration of typical antipsychotics is a matter of concern given that people with an enduring mental illness describe side effects due to typical antipsychotic medications as greatly impeding their quality of life (Jablensky et al., 1999).

The use of benzodiazepines as prn management for acute agitation and psychoses is also a recommendation of the RANZCP Committee on Psychotropic Drugs and Other Physical Treatments (1999), and is supported by Geffen et al. (2002). Geffen et al. (2002) recommend the use of benzodiazepines as a first-line strategy for the management of acutely psychotic patients because they avoid the problems of antipsychotic polypharmacy and the extrapyramidal side effects associated with the use of typical antipsychotic medications, such as dystonia. It is interesting to note that a survey conducted a decade ago by Sheline and Nelson (1993) of patients who presented to a psychiatric emergency service in St Louis, Missouri, found that the preferred choice of regular prescribed medication was benzodiazepines, and that almost

one third of respondents regarded antipsychotics as the last resort. In a service sensitive to the needs of consumers, the fact that this trend of relying on the prescription and administration of traditional prn antipsychotic medication calls for reconsideration.

PRN PSYCHOTROPIC MEDICATION RESEARCH

The research conducted on prn medication use in mental health settings has concentrated on prevalence, frequency, time of day, administration methods, and nurses' reasons for giving the medication. Generally, it has been found that most prns are given in the first few days after admission and are most frequent in the evening and at weekends (Fishel et al., 1994; Gray & Smedley, 1996; McKenzie et al., 1999; Usher et al., 2001). Not surprisingly, the commonest routes of administration of prn medications are oral and intramuscular.

As suggested earlier, patients in mental health settings are prescribed and administered prn medications for many reasons. McKenzie and his colleagues (1999) retrospectively examined the files of 122 patients admitted to two acute care units and a rehabilitation unit. They discovered that 1373 prn administrations were given over 15 months and that the main reason for administration were: patient request (20%), agitation (18%); sleep disturbance (5.8%) and verbal/physical aggression (4.4%). These findings are similar to those of other studies (see for example, Gray & Smedley, 1996), and research investigating nurses' opinions suggests that agitation is the main reason for administration of prns (Gray et al., 1997; Kaplan & Burner, 1997). A difficulty arises here, however, because 'agitation' is a loosely defined term, its severity is likely to be open to personal interpretation, it has a variety of causes, and it can be understood and responded to differently by patient, doctor, nurse and family member. Allen (2000) reports that although a number of tools have been used in studies to measure

agitation, including the Brief Psychiatric Rating Scale, Overt Aggression Scale, and the Agitated Behaviour Scale, defining, identifying and assessing agitation remains problematic from a clinical perspective.

The findings of a study by Milton et al. (1998) are surprising, and generally at odds with others. They found that in only 7 cases out of 200 in one year, and 10 out of 230 in another, did prn prescribing actually lead to administration of the medication. The authors are of the belief that the low rate suggests prns may be prescribed routinely and unnecessarily, however, hospital policy may actually prevent administration of as needed medications. Unfortunately, Milton et al.'s (1998) published report is very brief and does not enter into a discussion of why this might be occurring. Geffen et al. (2002) raise concerns about the high incidence of prescription of prn psychotropic medications because once prescribed, they are given on the 'initiative' of the nurse. In that study the researchers found that most prn prescriptions (87%) specified a maximum frequency or maximum daily dose but very few (6%) specified indications for administration.

A further concern, raised in the more recent Australian study by Usher et al. (2001), relates to nurses' failure to document observations made before and after prn administration. In 36% of cases, nurses failed to document any clear reason for resorting to the administration of prn medication and, in 55% of cases, failed to record the effects or outcomes. This troubling preliminary finding indicates the urgency for, and importance of, conducting larger scale research on mental health nurses' administration of prn medication, and especially on ways of improving documentation and reporting. This was supported by the Geffen et al. (2002) study which found that the reason for the PRN administration was recorded in only 59% of cases. Furthermore, they claim that failure to specify indications for use and record outcomes are common problems with prn administration.

Ayd (1985) suggested, some years ago, that not all nurses have the knowledge and experience to enable them to make such refined clinical judgements as those required in the administration of psychotropic prns. The few studies that have explored this claim (for example Bennett et al., 1995) suggest that many psychiatric nurses have a poor knowledge of antipsychotic side-effects and do not assess patients in a systematic manner. Poor standards in relation to prn medication are not restricted to nurses however, and a number of older studies found that medical staff often made incomplete or incorrect prescriptions (Ayd, 1985; Walker, 1991). Walker (1991) examined the medical records of 138 adult admissions in a voluntary psychiatric ward and found that doctors commonly omitted vital information regarding prn prescription, such as the frequency of administration (17% of records), and the circumstances under which it was to be administered (30% of prn prescriptions). A later study by Kaplan and Busner (1997) gathered data on prn and stat (that is, single dose) medications across three child psychiatric settings, and found inconsistencies regarding the types of medications prescribed and the number of prns administered. The British study by Newton et al. (1997) also revealed inconsistencies and found that a small number of patients were being prescribed prn antipsychotics that, when added to the regular prescription, took the total dose above recommended levels. This led to the introduction of national dosage guidelines, the impact of which were evaluated on a small scale by Milton et al. (1998).

Elderly residents in aged care and mental health environments who have dementia, depression or other debilitating neurological conditions, may be prescribed antipsychotic, anxiolytic or antidepressant medications. These residents may experience pain due to chronic physical conditions such as arthritis, muscle contractures, ischaemic limbs, and decubitus ulcers. A small study by Douzjian et al. (1998)

reviewed the use of pain medication (650mg acetaminophen tds) with 10 residents in a skilled nursing facility, who exhibited behavioural problems and were receiving psychotropic medications. Using the Psychotropic Summary Sheet tool, they found that the symptoms prompting the prescription of psychotropic medications decreased by 63% in response to analgesics. As a consequence, 75% of the psychotropic medications prescribed for these patients were discontinued. This study, although not concerned with prn medication, is important here because it suggests that the interaction between physical and mental health problems is complex, poorly understood and sometimes unrecognised. Therefore, in order to administer appropriate prn medication regimes for the elderly, particularly those who are unable to effectively communicate their needs, clinicians must have sophisticated clinical assessment skills, particularly in the accurate assessment of pain, agitation and aggression.

MANY QUESTIONS REMAIN UNANSWERED

Although empirical evidence is scant, changes to the profile of clients now receiving mental health services has changed in recent years. Increased acuity, increased tendency to aggression, and refusal of, and/or resistance to treatment, coupled with pressure to minimise lengths of stay, have intensified the contexts within which nurses work (Carson, 2000), and are undoubtedly influencing decisions regarding prn medications. The potential for psychiatric emergencies is greater, and there is a need for unequivocal, high quality, evidence-based policies and procedures, related to prn medications. These should provide determinations regarding legally prescribed and clearly documented prn orders that both serve the interests of the patient and support nurses' decision-making on the occasion of their administration. Examples of guidelines touching on prn medication in such circumstances are published in

Australia by New South Wales Health (NSW Health, 2000), and focus on the use of psychotropic medication and the management of challenging behaviour in residential aged care facilities. Perhaps rather surprisingly, clinical practice guidelines on the management of violence in psychiatric/mental health settings generally do not explicitly address the issue of PRN medication (for example Royal College of Psychiatrists, 1998; UKCC, 2002).

Many interrelated questions surrounding the prescription and use of prn medication in the mental health setting remain. Firstly, questions arise as to the extent to which the range of medications likely to be prescribed prn is governed by the doctor's knowledge, economic considerations, and the traditions that prevail in the clinical setting, rather than being informed by the needs of patients and the application of policy guidelines and empirical research. It is likely that these factors contribute to inflexible prescribing habits, and inhibit nurses' efforts to challenge the prescription of outmoded or inappropriate medications. Unfortunately, the extent to which these factors influence nurses' decisions to actually use prn medication remains obscure. Ideally, nurses will base their decisions about the administration of prn medication on sound clinical judgement, but the powerful influence of the workplace culture should not be underestimated. Furthermore, it is understandable that doctors and nurses may prefer more traditional and established methods to manage potentially difficult situations in which the safety of the client and others may be compromised. Approaches which have been tried and tested, and with which the majority of clinicians feel comfortable, are inevitably going to be preferred.

It is not known what role resource limitations, in particular low staffing levels, play in decisions to administer prn medication when managing the potentially difficult, 'aggressive' client, nor the influence of nurses' actual or self-assessed expertise. It would be reasonable

to believe that low staffing levels, and lack of expertise in dealing with psychiatric clients, increase the likelihood of prn medication being administered. This is likely to be the case whether consent is or is not required but, again, empirical evidence is unavailable. The tendency for increased prn medication use at evenings and weekends could be construed as evidence of staffing levels influencing decisions to administer prn medications, but other explanations, such as a tendency to admit increased numbers of disturbed individuals, for more settled patients to be on leave, and for the most experienced clinical staff to be unavailable at weekends, cannot be ruled out since there is no significant empirical data available.

Secondly, it still needs to be established how nurses are classifying, and by what criteria they are identifying client symptoms and behaviours and, importantly, how these two factors influence their, and the doctor's, decision-making regarding prn medications. An associated question arises as to how well equipped nurses are to make these judgements in the light of their clinical knowledge and experience. There has been very little reported research in this area, either in relation to nurses' knowledge of psychotropic medication or their ability to make accurate clinical judgements as to a patient's mental state. In an unpublished thesis by Cook (2000), a Canadian cohort, working with the frail elderly, reported a lack of formal and informal training in relation to psychotropic medication, and a lack of knowledge about their use and effects. Clearly, much more research needs to be conducted exploring the extent of nurses' knowledge and how it is constructed.

Thirdly, data reported by Usher et al. (2001) shows that administration of prn psychotropic medication was patient-initiated almost as frequently as nurse-initiated. Although it might be surmised that, to request prn medication, patients must feel confident and secure with the staff, there is no empirical evidence as to the

factors which influence patient-initiation of prn medication and whether it influences outcomes. This finding differs from an earlier study (Fishel et al., 1994) which found that prns were more likely to be nurse initiated.

Fourthly, while efforts by nurses to identify early signs of impending aggression should lead to earlier intervention with prn medication, and thereby reduce the likelihood of harm to patients or others, there is a danger that prn medication may be the line of first resort and an over-reaction to behaviour that could have been managed without medication. It would seem reasonable to think that this might happen in a context of increasingly complex demands on mental health staff coupled with resource limitation, but again there is no research to support such a view. Research certainly indicates, however, that efforts to predict aggression are unreliable, and that to base the administration of prn medication on such a prediction is fraught with professional, legal and ethical uncertainties.

CONCLUSION

Prn psychotropic medications are an important component of the treatment of people with a psychotic illness managed in acute inpatient settings. Despite this, prn psychotropic medication is probably the least understood area of psychopharmacology. Concerns are evident in the research that has been conducted surrounding choice of antipsychotic medication and the continued use of antipsychotics as a first-line of treatment for agitation. We believe there is an urgent need for mental health professionals to self-regulate their practice, to ensure that all aspects of the prescription and administration of prn medications remain based on the best available research. Needless to say an interdisciplinary approach to such an important issue offers the most effective way forward.

In summary, it is recommended that research needs to be conducted in order to address the following issues:

- the extent to which typical antipsychotic prn medications are administered in preference to atypical antipsychotics or benzodiazepines;
- nurses' knowledge related to psychotropic medication;
- nurses' practices related to the administration of psychotropic prn medications;
- who initiates psychotropic prn medication administration in inpatient units;
- nurses' documentation pre and post prn psychotropic medication administration.

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