Audit: prescription of 'as required' (p.r.n.) medication in an in-patient setting

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Aims and method This audit examines the quality of 'as required' (p.r.n.) prescribing for in-patients before and after standard setting.

Results There were improvements in writing oral/intramuscular prescriptions and in the use of different drugs regularly and p.r.n. There was a trend for improvement in completion of guidelines for those on high doses but completion was not influenced by hidden p.r.n. prescribing. Writing p.r.n. prescriptions as a ranged dose was common and did not improve significantly.

Clinical implications By using some simple measures, improvements in some aspects of potentially problematic p.r.n. medication can be achieved.

There has been increasing concern in recent years about the quality of antipsychotic prescribing. High-dose prescribing and polypharmacy have given particular cause for concern in view of serious side-effects, and a consensus statement has been published by the Royal College of Psychiatrists (Thompson, 1994). Previous audits have identified that the standards are not always followed but that audit can improve prescribing (Cornwall *et al*, 1996; Yorston & Pinney, 1997). Previous research has indicated that 'as required' (p.r.n.) prescribing may be a continuing factor to problems with high-dose prescribing (Morgan *et al*, 1996) and a potential source of accidental overprescribing. In the Buckinghamshire region a report from the Mental Health Act Commission raised concerns about the quality of p.r.n. prescriptions and the duration of use of p.r.n. medication (Aloa, 1995). The audit also included benzodiazepine prescribing because antipsychotics and benzodiazepine are often used together for behaviour control, sedation and to reduce anxiety.

The study

The hospital studied provides mental health care for a medium-sized town with in-patient facilities divided into four in-patient areas: acute admissions, rehabilitation, secure rehabilitation and long-stay. On a single day the medication prescription charts of all current adult in-patients were analysed and the antipsychotic and benzodiazepine medication prescribed was recorded for that day. The doses of p.r.n. medication administered were recorded for the previous three-month period.

The standards applied are shown in Table 1. The notes of patients prescribed doses above the *British National Formulary* (BNF) maximum doses were scrutinised for compliance with the Royal College of Psychiatrists' guidelines at initial prescription and at three months (Table 1, Item 6).

Scoring from case notes is recognised as subjective. We attempted to overcome this by scoring a full point if an item was definitely completed and clearly recorded, but giving half a point if it was partially completed or not clearly recorded. A number of measures to improve prescribing were implemented:

(a) Circulation of College guidelines to all departments and medical staff.
(b) Teaching session and circulation of standards.
(c) Introduction of orange stickers by pharmacists on prescription charts to alert to high doses.
(d) Introduction of check-lists with items to complete for patients on high doses.
(e) Agreement to prioritise discussion of p.r.n. medication for discussion in the context of the overall medication and care plan in multi-disciplinary team meetings.
(f) Purchase of portable electrocardiograph (not obtained before re-audit).

The prescription charts were re-audited after six months.

Findings

Audit

The findings of the audit are summarised in Table 2. Mean patient age was 48 years (range

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Table 1. Standards derived from Royal College of Psychiatrists' guidelines

1. 'As required' (p.r.n.) medication should be prescribed at a specific dose and not as a ranged dose from which the administrator can choose.
2. Antipsychotics should not be prescribed at equal doses written as oral/intramuscular. Drugs have different bioavailability orally and intramuscularly and equal doses do not have equal effects.
3. 'As required' drugs are intended as a short-term measure and the physician has a duty to review short-term prescriptions and transfer medication given to regular prescription.
4. Prescriptions should give a clear indication for a recognised symptom treatable by the drug. The use of agitation as an indication should be avoided due to confusion with the side-effect of akathisia. Preferred indications are sedation, psychotic thoughts and symptoms, disturbed behaviour and violence.
5. Ideally, the same drug should be prescribed p.r.n. and regularly, and only one antipsychotic should be prescribed p.r.n.
6. High-dose prescribing (including the potential for high-dose prescribing due to p.r.n. medication) should be minimised and best practice should be followed, as described in the Royal College of Psychiatrists' Guidelines.

   At initial prescription the following should be done:
   electrocardiogram, full blood count/liver function tests/urea and electrolytes, reason for high-dose prescription clearly stated in notes, consent of patient to high dose clearly recorded or second opinion with appropriate section recorded, physical examination, pulse/blood pressure/temperature recorded at least once, mental state examination, consultant endorsement of prescription recorded, multi-disciplinary discussion of medication recorded.

   At three months the following should be done:
   electrocardiogram, mental state examination, review of decision to prescribe clearly recorded, pulse/blood pressure/temperature recorded at least three times.
7. Benzodiazepine prescriptions should be for the short term only, in view of the risk of dependence, particularly for lorazepam.

Table 2. Summary of audit findings

	Audit	Re-audit	Significance
Total no. of patients	78	75	-
No. on any antipsychotic	72	65	-
Percentage on any p.r.n.	78%	83%	-
Percentage on only p.r.n.	11%	7%	-
Antipsychotic drugs			
Prescriptions ranged (p.r.n.)	80% (53/66)	68% (41/60)	NS (χ^2=2.3, d.f.=1)
Prescriptions written oral/intramuscular (haloperidol and droperidol only)	50% (13/26)	6% (1/16)	P<0.05 (χ^2=8.5, d.f.=1)
Chlorpromazine equivalent dose (mg CPZ eq)			
Mean regular dose	755	749	-
Mean regular+p.r.n.	1303	1271	-
Above BNF maximums			
Regular drugs only	1%	6%	-
Including p.r.n. drugs	11%	15%	-
Above 1000 mg CPZ eq			
Regular drugs only	20%	18%	-
Including p.r.n. drugs	37%	35%	-
Polypharmacy			
More than one regular drug	21% (15/72)	22% (14/65)	NS (χ^2=-0.01, d.f.=1)
Different p.r.n. and regular drug	45% (22/48)	20% (10/51)	P<0.05 (χ^2=7.8, d.f.=1)
More than one p.r.n. drug	10% (5/56)	2% (1/55)	NS (χ^2=2.7, d.f.=1)
Benzodiazepines			
Prescriptions ranged (diazepam and lorazepam)	44% (11/25)	88% (21/24)	P<0.05 (χ^2=10.2, d.f.=1)
Oral/intramuscular prescriptions (lorazepam)	69% (9/13)	70% (14/20)	NS (χ^2=0.002, d.f.=1)
Above BNF maximum (lorazepam)	46% (6/13)	None	

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16–95) and there were 42 females and 36 males. The numbers in each clinical area were: acute, 21; rehabilitation, 16; secure rehabilitation, 15; and long-stay, 26. Prescribing of p.r.n. medication was a significant source of potential high dosage. More service users could potentially receive doses above the BNF maximum doses via p.r.n. medication than those on a high dose of a regular single drug, with even greater percentages if chlorpromazine equivalence was used (Reay, 1989). However, in only one service user (of potentially eight) did actual receipt of p.r.n. medication lead to exceeding the maximum dose and in one other to reaching the maximum dose.

The mean score for completing College guidelines for patients prescribed high-dose medication was 4.3 (maximum score, nine items) at initial prescription and 0.3 (maximum score, four items) at the three-month follow-up. Scores for those receiving high-dose regular medication were similar to the scores for those who could receive a high dose through p.r.n. administration.

Only 42% of patients prescribed a regular and a p.r.n. drug were prescribed the same drug. Some patients (n=5) were prescribed more than one p.r.n. drug and one patient was prescribed three.

Most patients prescribed a p.r.n. drug were prescribed only one for most of their admission. Within the long-stay areas, all p.r.n. prescriptions dated back unchanged to at least 1995, and some to 1994. There was some indication that administration of p.r.n. medication was low compared with prescription: for instance, 55% (22/40) of long-stay and rehabilitation patients never received a dose of a p.r.n. antipsychotic even though they were prescribed it throughout the three-month study.

Re-audit

There were no significant differences in numbers in the different clinical areas (acute, 22; rehabilitations, 15; secure rehabilitation, 14; long-stay, 26) or in age or gender distribution, but there was a statistically significant reduction in oral/intramuscular prescribing ($P<0.05$, χ^2 test). Prescribing lorazepam above the maximum dose had stopped. A similar number of patients were prescribed more than one antipsychotic regularly after the audit. However, of those on regular and p.r.n. medication, an increased percentage were now on the same drug ($P<0.05$, χ^2 test). Of those on any p.r.n. medication, only one (2%) was on more than one p.r.n. drug, compared with 9% (n=5) of the pre-audit group.

The mean score for patients prescribed high-dose medication for completing College guidelines was 6.6 at initial prescription and 1.2 at the three-month follow-up.

Comment

Good prescribing needs to recognise p.r.n. medication as potentially problematic, especially because it is often prescribed by junior doctors out of hours and may be more likely to be omitted from multi-disciplinary team discussions.

The original audit identified that p.r.n. prescribing is a potential source of high-dose prescribing, whether in actual dosage terms or in chlorpromazine equivalence. Following the audit there was a slight shift, in that the high-dose group contained more people on regular high doses and less on p.r.n. doses. This may indicate a recognition that it is advisable to contain a high dose within regular prescribing, to avoid accidental overprescribing. However, it was no more likely that guidelines were followed in the group receiving a high dose within regular prescribing. It was very difficult to rate the notes retrospectively, because note-keeping was often poor and the findings on guideline completion may be misleading. Further research could be undertaken prospectively to enable more objective recording of data than subjective case-note scoring. Numbers in the high-dose groups were too small for statistical analysis but there was a trend for guideline completion to improve with the introduction of stickers to highlight high doses and check-lists. Adherence to guidelines was still incomplete, especially at three months, and a means of reminding the team at this time might be useful. One of the most important tests, the electrocardiogram (ECG), was the most poorly completed. No patient in either phase of the study had received an ECG at three months and we hope that the purchase of a portable electrocardiograph will help with this, because the group were often too disturbed to travel to the general hospital for the test.

There was high usage of prescriptions with ranged doses, and this reduced only slightly (and non-significantly). There are some concerns about the use of ranged doses in that it may place a burden on the administrator, for which they are not trained, or lead to higher doses being administered than are necessary. Our clinicians valued the flexibility of ranged doses and felt that a high standard of multi-disciplinary work within in-patient areas meant that nurses could be highly skilled in the use of ranged medication.

Our external standards suggested that p.r.n. prescriptions should be seen as short term, and one standard suggests a seven-day stop order on the script (Aloa, 1995). In our study this was not reflected in clinical practice, with long-term prescriptions and a low rate of administration. This might indicate overprescription and a failure to review p.r.n. medication. However, to keep cancelling p.r.n. medication or to provide a seven-day deadline could be wasteful both of

the clinician's time and of the medication prescription charts, and also could remove flexibility.

'As required' prescribing was a significant contributor to polypharmacy, although this was reduced significantly on re-audit. The use of two drugs may be deceptive when considering the risks of high dose, and using different p.r.n. drugs could lead to overprescribing, at least in terms of chlorpromazine equivalence, although it is not clear how dangerous this is (Hillam & Evans, 1996).

It is interesting that some changes were achieved but not others. The standards that changed more readily, such as oral/intramuscular prescriptions, may be those that are more readily acceptable to the clinical team, easy to remember and change and appear most important and relevant.

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Antipsychotic drugs for non-psychotic patients

Results of a questionnaire survey of prescribing practices among Wessex psychiatrists

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Aims and method The aim of this study was to examine the pattern and basis of use of psychotropic drug prescriptions by psychiatrists to relieve anxiety symptoms arising from non-psychotic disorders. A questionnaire survey was conducted among senior psychiatrists in the Wessex region.

Results The response rate was 74%. A range of psychotropic drugs was used to treat non-psychotic anxiety symptoms, most commonly selective serotonin re-uptake inhibitors, tricyclic antidepressants and antipsychotic drugs. Antipsychotic drugs are reserved for second- and third-line treatments, mainly in low doses but sometimes in high doses and for long periods. The use of antipsychotic drugs as anxiolytics was seen by the majority of responders as reasonable practice, and they are considered suitable alternatives to benzodiazepines. This practice was based mainly on personal experience.

Clinical implications Anxiety symptoms arising from non-psychotic disorders are common in the out-patient population. Although antipsychotics are used by psychiatrists to relieve these symptoms, the 'evidence base' for such practice is flimsy and mainly based on clinical experience. The benefit/risk ratio should be