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Achieving evidence-based prescribing practice in an adult community mental health service

AIMS AND METHOD

Prescribing in everyday practice frequently deviates from evidence-based guidelines. Previous work compared practice in a community mental health service with evidence-based guidelines and identified factors related to suboptimal prescribing. This study reports the impact of a multifaceted intervention on prescribing practice. A Prescribing Practice Quality (PPQ) score was generated from six key aspects of prescribing at initial assessment and again 1 year later

after an intervention to reduce suboptimal prescribing practices.

RESULTS

A total of 264 patients were attending the service at both the initial and follow-up phase and were thus exposed to the prescribing intervention. In this population, PPQ scores were significantly lower at follow-up (0.96 v. 0.67, $P < 0.001$). Improved prescribing practice was predicted by receipt of adjunctive supportive inputs, such as anxiety management ($P = 0.003$).

Similarly, mean PPQ scores substantially decreased when the total patient population was considered at each time point (0.75 in 2001 and 0.52 in 2002). These results suggest a reduction in both the initiation and continuation of suboptimal practices.

CLINICAL IMPLICATIONS

Prescribing in real-world settings can be improved by interventions that target multiple aspects of service activity. The provision of supportive inputs is a key factor in improving practice.

Although guidelines for the optimal use of psychotropics are widely available, prescribing in real-world settings routinely differs from suggested standards (Wilkie *et al*, 2001; Harrington *et al*, 2002; Lelliott *et al*, 2002). Polypharmacy, high-dose antipsychotic use, and maintenance use of benzodiazepines or anticholinergic agents, all lack a robust evidence base and can be associated with serious adverse effects (Mackay, 1994; Marken *et al*, 1996; British Medical Association & Royal Pharmaceutical Society, 2002; Taylor *et al*, 2003). This gap between evidence generated in the highly controlled paradigms of evidence-based medicine and the reality of everyday practice has been highlighted for research attention.

The implementation of agreed prescribing guidelines has been advocated as an effective way of assuring quality in the drug treatment of major mental disorders (Steele *et al*, 2000; Taylor *et al*, 2000) but other work has indicated that change in practice is difficult to achieve in reality (Bauer, 2002). Successful implementation of guidelines tends to occur where change is supported by multi-faceted interventions that include educational sessions, feedback mechanisms and additional or altered utilisation of existing resources (Thomson-O'Brien *et al*, 2000; Elliot *et al*, 2001; Bauer, 2002). More optimal prescribing has been reported with a specialised review service for antipsychotic medication (Stone *et al*, 2002) but there has been little study of the applicability of evidence-based prescribing standards in routine services.

Previous cross-sectional studies have identified the frequency of six key areas of suboptimal prescribing in a generic community mental health service (Box 1); age, being in receipt of intramuscular antipsychotic preparations, and degree of contact with consultant staff were predictors of prescribing quality (Meagher & Moran, 2003). This study reports the impact of a multifaceted intervention on psychotropic prescribing within this service.

Method

The South-East Limerick Mental Health Services operating through St Anne's Day Hospital provides mental healthcare for a mixed urban–rural population of 46 000 in Southeast city and county Limerick. A generic multi-disciplinary team operates from a community-based day hospital providing a typical range of psychological and pharmacological treatments.

Initial assessment

Over a 3-day period in 2001, all open case files in the service were evaluated with regard to demographics, history of service contact and current treatment (including drug treatment and contact with members of the multidisciplinary team). Clinical diagnoses were made

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by the consultant or senior registrar according to ICD-10 criteria (World Health Organization, 1993).

Assessment of prescribing practices

The quality of prescribing practices within the service was compared with standards outlined in the *Psychotropic Drug Directory* (Bazire, 2001) and the *Maudsley 2001 Prescribing Guidelines* (Taylor et al, 2001). Six common suboptimal prescribing practices were rated (absent=0, present=1) to produce a Prescribing Practice Quality (PPQ) score such that higher scores reflect less judicious prescribing practice (see Box 1). Patients were considered in receipt of treatments if they were receiving a regular prescription for the agent at the time of the audit or received the agent on an as-required basis for more than 2 of the previous 4 weeks. Chlorpromazine equivalents (Centorrino et al, 2002) were calculated according to accepted criteria. The total PPQ score was considered an indicator of quality of overall prescribing and its relationship to other aspects of service use was examined.

Follow-up assessment

All available case files were re-evaluated 1 year later after the implementation of a multicomponent intervention that included guidelines to address suboptimal prescribing (see Boxes 2 and 3).

Box 1. Prescribing Practice Quality (PPQ) items and scoring

- Polypharmacy, i.e. use of two agents of same class
- Receiving thioridazine
- High-dose antipsychotic use, i.e. total dose in chlorpromazine equivalents greater than 1 g/day
- Maintenance benzodiazepine treatment
- Maintenance hypnotic treatment
- Routine use of anticholinergic agent.

1 point per item present; Score range 0–6; higher scores suggest less optimal prescribing.

Box 2. Multicomponent intervention to address suboptimal prescribing

- Evidence-based guidelines were agreed by consensus and derived from the *Maudsley 2001 Prescribing Guidelines* (see Box 3)
- Specific psychoeducational and anxiety management sessions were made available to support change, especially for patients receiving maintenance benzodiazepine medication
- Weekly multidisciplinary team meetings were used to regularly re-emphasise the importance of implementing the policies through case examples, highlighting how protocols should be applied.

Box 3. Guidelines to avoid suboptimal prescribing practice

- The use of antipsychotics in high doses (greater than 1 g/day in chlorpromazine equivalents) should be avoided unless specific evidence exists to indicate a benefit for the patient, and even then the usefulness of such dosing should be regularly reviewed.
- Polypharmacy, i.e. the use of more than one agent from any psychotropic class, should be avoided except where there is either an evidence base to support such practice (e.g. mood stabiliser combinations) or evidence of specific benefit to the patient.
- Thioridazine should not be used where antipsychotic treatment is being initiated. Patients already receiving thioridazine should be informed of the new evidence concerning use and encouraged to undergo a discontinuation programme. Those patients who are unwilling to change from thioridazine or who appear to have a specific response to this agent should have an electrocardiogram and serum potassium levels should be monitored at least bi-annually.
- Maintenance anticholinergic agents can be necessary for some patients receiving antipsychotics but most can be optimally managed without routine use. Patients receiving anticholinergic agents should be educated regarding the adverse effects of these agents and encouraged to reduce and/or discontinue use on a trial basis. Those patients receiving depot antipsychotic preparations who have previously experienced significant side-effects should be given the option of reducing anticholinergic use to the initial 5–7 days post-depot.
- Patients should be educated regarding the problems of benzodiazepine agents and the need to minimise use. Those with sleep disturbance should be educated about non-pharmacological methods of enhancing sleep quality (e.g. caffeine avoidance, exercise, etc.). Hypnotic agents should only be used in severe cases and agents with lower addictive potential should be preferred. All patients receiving benzodiazepines should be encouraged to attempt phased discontinuation and offered support with anxiety management sessions and/or supportive counselling.

Statistical analysis

Statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 10 for Windows. Changes in PPQ scores (non-normal data) were calculated with Wilcoxon signed ranks testing. Predictors of improved PPQ score were identified by logistic regression analysis.

Results

Demographics

During the course of the year the total case-load was substantially reduced by a policy of active follow-up of non-attenders, with discharge from the service as appropriate. The diagnostic and demographic characteristics of the total population at each assessment point are shown in Table 1. A total of 264 patients were attending the service at both assessment points and thus exposed to the period of intervention. This 'intervention cohort'

**Table 1. Clinical characteristics of those attending the St Anne's Day Hospital in 2001 and 2002**

	2001	2002
Total case-load	640	441
Age, years: mean (s.d.)	41 (14)	43 (15)
Gender		
Male	311	225
Female	329	216
Time attending the service, years: mean (s.d.)	6.8 (7.7)	7.5 (8.4)
Severe mental illness, n (%)	215 (34)	180 (42)

tended to have been in contact with the service for a longer period (mean 10.6 years), with a high frequency of severe mental illness (56%) and use of psychotropic medication (94%).

Prescribing practices

At the initial assessment, 232 patients (46% of those receiving psychotropics) had at least one suboptimal prescribing practice. At follow-up, 139 patients (38% of those receiving psychotropics) had at least one suboptimal aspect of prescribing. Within the intervention cohort, the number with suboptimal practices decreased from 155 (59%) to 120 (45%) over the period of follow-up. Similarly mean PPQ scores substantially diminished both in the service attenders overall at each point (0.75 in 2001 to 0.52 in 2002) and also within the intervention cohort (0.96 in 2001 to 0.67 in 2002). The mean reduction in PPQ score within the intervention cohort was 0.28 points. At the second assessment in 2002, PPQ scores were reduced in both the population overall and in the intervention cohort ($P=0.0005$), indicating a reduction in both initiation and continuation of suboptimal practices.

Specific aspects of prescribing practice

The change in the six aspects of prescribing practice are depicted in Table 2. For those patients who remained in

contact with the service during the intervention, the rates of full implementation of guidelines to discontinue suboptimal practices were: thioridazine use (89%), polypharmacy (47%), high-dose antipsychotic use (40%), maintenance benzodiazepine use (38%), maintenance hypnotic use (35%) and maintenance anticholinergic use (30%). In addition, many patients, although still receiving benzodiazepine and hypnotic agents, had undergone substantial dose reduction ($n=27$). Many patients receiving benzodiazepine agents dropped out from the service during this period of prescribing rationalisation ($n=32$).

The reasons for continued suboptimal practices for each of the six aspects of prescribing are shown in Table 2. Failed discontinuation of benzodiazepines was frequently a result of patient refusal (26%). In contrast, continued anticholinergic use (83%) was frequently related to the implementation of policy not being explicitly considered, i.e. no documented comment in case notes.

Exposure to multicomponent interventions

Potential predictors of improved prescribing (age, gender, duration attending service, diagnosis, number of medications, receipt of supportive psychological inputs to facilitate medication changes, duration of suboptimal practice, principal medical contact) were assessed by logistic regression analysis (PPQ score improved v. PPQ score not improved). Two variables emerged as significant independent predictors of reduced PPQ score: total number of medications received ($P<0.001$) and receipt of supportive psychological inputs to facilitate changes in medication ($P=0.003$), with those who received adjunctive psychological support (e.g. anxiety management) almost four times as likely to experience improved prescribing practice.

Table 2. Prescribing practices in 2001 and 2002

	Suboptimal practice					
	High-dose antipsychotic use	Polypharmacy	Thioridazine use	Maintenance anticholinergic use	Maintenance benzodiazepine anxiolytic use	Maintenance sedative/hypnotic use
2001	10	60	36	67	78	106
Discontinued	4	23	24	16	20	24
Service drop out	0	7	8	14	25	38
2002	6	30	4	39	41	57
Continued	6	26	4	37	33	44
Initiated	0	4	0	2	8	13
Reasons for continuation of suboptimal practices						
Failed trial	1	4	2	4	6	9
Reducing dose	1	4	0	0	12	7
Refused	0	1	2	2	10	10
Not documented	4	17	0	31	5	18



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Discussion

This study of prescribing in a busy multidisciplinary mental health service concurs with studies from other centres that indicate that prescribing practices frequently deviate from recommended evidence-based guidelines (Harrington et al, 2002; Lelliott et al, 2002). At any time, between one-third and one-half of those attending the St Anne's community mental health service had one or more aspect of their medication regime which was outside suggested guidelines. Such practices can reflect unproven prescribing strategies but more typically relate to educational deficits or to other constraints (Taylor, 2002).

Discontinuation of thioridazine and use of polypharmacy were most amenable to change with this programme. Benzodiazepine use altered less, partly because of the high rate of drop out among the population receiving these agents but also the reluctance of these patients to participate in dose reduction programmes, which has been noted in other studies (Oude Voshaar et al, 2003). Recent reports of thioridazine discontinuation in people with learning disability (Matthews & Weston, 2003) indicate adverse effects in more than half. Although we did not measure such events, it is reassuring that the majority of patients successfully discontinued thioridazine (89%), with only four continuing because of an apparent specific response to this agent ($n=2$) and patient refusal ($n=2$).

The introduction of clear prescribing policies can improve prescribing practice (Steele et al, 2000; Taylor et al, 2000) but education alone tends to produce only modest and transient improvement (Eagles et al, 2000; Bauer, 2002). Identification of suboptimal practices along with clear guidelines as to how improvements can be made is helpful for junior doctors who may lack knowledge about good practice. Moreover, given that decisions about prescribing are often greatly influenced by the attitudes of nursing staff or relatives, clear policies that have been agreed by consensus and are supported by the multidisciplinary team increase the likelihood of adherence to good practice. In addition, regular review of prescribing is a disincentive to the commencement of new bad practice. The reduction in suboptimal prescribing practice in both the intervention cohort and those entering the service suggests that this intervention impacted on initiation and continuation of such practice.

This work has limitations. The lack of a control group raises the possibility that the changes noted may reflect a reduction towards the norm from a high baseline rate of suboptimal practice. However, baseline rates of high-dose antipsychotic use and polypharmacy are somewhat lower than those reported in other studies (Lelliott et al, 2002). In addition, these suboptimal practices tend to be ingrained, particularly among those using services over a long period, and are unlikely to be reduced without a potent intervention. It is interesting that the provision of multidisciplinary support to facilitate medication change predicted reduced suboptimal practices but it remains unclear to what extent different components of the multi-modal intervention interact to facilitate change. Studies have indicated that educational interventions or

dissemination of guidelines alone have little impact on prescribing practices. Multifaceted interventions that include reorganisation or additional resource allocation, as well as the provision of alternatives to suboptimal practice, are more likely to result in altered practice (Bauer, 2002).

This study involved a 1-year follow-up period but short-term gains may not endure (Lin et al, 1997), particularly where the intervention, or particular components of it, are not continued over time. Nevertheless it is encouraging that in this study of a typical community mental health service with a high patient turnover, prescribing practices improved both in the intervention cohort as well as in the overall population that included many newer patients. This suggests that better prescribing is relatively independent of the duration of service attendance.

Finally, this study is typical of the majority of studies of intervention to improve practices in health settings in that it does not include a specific measure of clinical outcome, but rather presumes that adherence to evidence-based guidelines will deliver superior outcomes. Thomson-O'Brien et al (2000) reviewed 37 studies of the effects of audit and feedback on practice and found that less than one-quarter included measures of patient outcome to support findings. Improved adherence to evidence-based practices does not necessarily translate into improved outcomes for patients. Bauer (2002) in a review of 41 studies of adherence to mental health practice guidelines found that only 6 of the 13 that included outcome measures demonstrated a positive impact. Evidence-based medicine, as its name suggests, is limited by the availability of evidence to inform any specific situation. Given that many complex areas of practice are relatively unstudied, evidence-based medicine cannot provide absolute guidance for many clinical questions. Moreover, even where guidelines for prescribing are followed, patient adherence is by no means guaranteed (Fischer & Owen, 1999). The current evidence-based approach to disseminating scientific knowledge is heavily reliant on meta-analytical reviews that are more applicable to specific treatments than to the services that control their delivery. More research on the applicability and impact of treatment guidelines should inform efforts to bridge the substantial gap between ideal and real-world practice.

Declaration of interest

None.

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RICHARD HODGSON AND RAVINDRA BELGAMWAR

Off-label prescribing by psychiatrists

AIMS AND METHOD

To report on the use of atypical antipsychotics in one health district by examining secondary care prescribing patterns for these medicines in North Staffordshire between 1994 and 2001. With one exception, these drugs were licensed solely for use in schizophrenia during the study period.

RESULTS

A total of 502 patients were initiated on atypical antipsychotics in the

study period. Of these, 297 (59.2%) had a diagnosis of schizophrenia (ICD-10 codes F20–29). Off-label prescribing was common, but psychiatrists were least likely to prescribe clozapine off-label (2.2%). Affective (18.4%) and organic disorders (12.4%) were the main disorders treated off-label. Olanzapine had the highest off-label use (44.5%).

CLINICAL IMPLICATIONS

The high off-label use of atypical antipsychotics has clinical and

economic implications. Although off-label prescribing may be in the patient's best interests, they should be informed and give their consent. Commissioning bodies, such as primary care organisations, are basing their budgets on guidance from the National Institute for Clinical Excellence, which can have implications for funding this off-label use.

The use of atypical antipsychotics has increased dramatically since their introduction in the 1990s. Expenditure on atypical antipsychotics in the West Midlands rose by 105% between July 1999 and September 2002 and the number of prescriptions increased fivefold between 1996 and 2001 (Ashcroft et al, 2002). Within the study period reported here (1994–2001), these drugs were solely licensed for the treatment of schizophrenia, with the exception of risperidone, which was licensed for 'acute and chronic psychosis'. This diagnostic specificity is in contrast to the broader licensed indications for many conventional antipsychotics when initially licensed. In the UK, clozapine

was licensed in 1989, risperidone in 1993 and olanzapine in 1996.

In June 2002, The National Institute for Clinical Excellence (NICE, 2002) recommended the first-line use of atypical antipsychotics for the treatment of schizophrenia along with further research in their use. Health organisations are expected to implement NICE technology assessments within 3 months. Funding is made available centrally for implementing NICE guidance, although incorporation in local budgets may not be transparent. More recently, funding is via generic uplifts, which further cloud the allocation of NICE budgets. In reality the National Health Service has