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Prescribing safely in elderly psychiatric wards: survey of possible drug interactions

AIMS AND METHOD

A cross-sectional survey of patient drug prescriptions on two elderly psychiatric wards was carried out to estimate the potential of drug–drug interactions. Two standardised databases, British National Formulary (BNF; British Medical Association & Royal Pharmaceutical Society of Great Britain, 2007) and UptoDate (www.uptodate.com/), were employed.

RESULTS

A majority (96%) of drug prescriptions in our study could potentially cause drug–drug interactions. Most patients were on multiple drugs (on average eight drugs per patient). There was poor concordance between the two databases: BNF picked up fewer cases of potential drug–drug interactions than UptoDate (43 *v.* 152 instances) and they also estimated the potential for hazardousness differently.

CLINICAL IMPLICATIONS

Polypharmacy is common in elderly psychiatric patients and this increases the possibility of a drug–drug interaction. Estimating the risk of interactions depends on a sound knowledge in therapeutics and/or referring to a standardised source of information. The results of this study question the concordance of two well-referenced databases.

Older people are at risk of adverse drug interactions because of high rates of physical comorbidities, and hence increased risk of polypharmacy, as well as age-related changes in pharmacokinetics (Katona, 2001). Within this group, the elderly psychiatric population are particularly prone to be on a number of drugs, including psychotropics, which increases the potential of a harmful drug–drug interaction (Davies *et al*, 2004). The risk of such interactions has been investigated in a few studies which have been conducted on hospital wards as well as in out-patient settings (Bjorkman *et al*, 2002; Davies *et al*, 2004). However, there does not seem to be a standardised method for estimating the risk of drug interactions; some have focused on pharmacokinetic while others have assessed pharmacodynamic potential of drug interactions and some a mixture of the two. There is also inconsistency in using a single reliable and standardised source of information for checking the potential for drug interactions – various software and databases have been quoted in published literature.

All National Health Service (NHS) trusts in England have access to either the printed and/or electronic version of the British National Formulary (BNF; British Medical Association & Royal Pharmaceutical Society of Great Britain, 2007). The BNF is a highly respected and standardised source of information published jointly by the British Medical Association and the Royal Pharmaceutical Society of Great Britain – appendix 1 of the BNF lists potential drug–drug interactions.

UptoDate (www.uptodate.com) is a respectable comprehensive medical database offered in cooperation with major medical societies in the USA. The database is peer reviewed and frequently updated to reflect current clinical practice and therapeutics. It is available on some NHS trusts intranet.

This study aimed to investigate the potential of drug–drug interactions in two elderly psychiatric units based in England and to check the concordance between the two databases commonly used to estimate the risk of drug interactions, the BNF and UptoDate, which were also used in this study.

Method

This was a cross-sectional study (survey) of all drug prescriptions of patients admitted to two elderly psychiatric wards: one an organic ward and the other a functional ward in a district general hospital at Gateshead, Tyne and Wear. Consultants working on the wards were informed about the study and their permission was sought to review the clinical case notes; consent was obtained for all of these.

Notes were reviewed between 1 April and 30 May 2007. All medications prescribed and dispensed on more than one occasion were considered for the study. There were no exclusion criteria. No attempt was made to collect demographic data or diagnosis of the patients as this was not within the remit of the study. The data were anonymised and stored on NHS computers. The list of medications for each patient was entered first on the UptoDate software and then checked for concordance with the BNF; the chi-squared test (with Yates correction) was used to calculate statistical significance.

Results

We screened drug prescription notes for 48 patients and included them in the study. A total of 399 medications were prescribed, with on average 8.3 prescriptions for each patient (range 2–14, s.d.=3.23). There were 152 instances of potential drug–drug interactions according to UptoDate, involving 46 of the 48 participants. These were categorised by the software into three recommended actions: monitor therapy (123 instances), consider therapy modification (29 instances) and avoid

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Table 1. Concordance of drug–drug interaction between UptoDate and BNF databases

Category of drug–drug interaction assigned by UptoDate (n=152)	Non-hazardous and potentially hazardous n (%)[1]	Potentially hazardous n (%)[2]
Monitor therapy (n=123)	23 (18.7)***[3]	5 (21.8)
Consider therapy modification (n=29)	20 (69)	4 (20)***[4]
Avoid combination (n=0)	0 (0)	0 (0)

***$P<0.001$.

1. Drug–drug interaction documented in BNF. Percentage of the total n of assigned interactions by UptoDate.
2. Drug–drug interaction as identified by BNF. Percentage of total n of assigned interactions by BNF in column 2.
3. $P<0.001$ for comparison between columns 1 and 2.
4. $P<0.001$ for comparison between columns 2 and 3.

combination (0 instances). The same information was then entered onto the BNF database (Table 1).

The BNF categorised drug interactions as those that were not hazardous, or those that were potentially hazardous and the drug combination should be avoided or only undertaken with caution and appropriate monitoring.

The BNF picked up fewer instances, but all of the potential drug interactions identified by UptoDate (43 out of 152 identified by UptoDate, 28.2%), approximately a quarter of these (22%) were categorised as potentially hazardous.

There was poor concordance between the two databases; those drug interactions that were categorised by UptoDate for considering therapy modification were not categorised by the BNF to be potentially hazardous and vice versa.

Discussion

The results of this study confirm other findings (Edwards & Kumar, 1984; Rittmansberger *et al*, 1999; Davies *et al*, 2004) that polypharmacy is common in the elderly psychiatric population. Our patient population was relatively small and focused on the in-patient wards of a district general hospital covering a city of approximately 200 000 inhabitants (Office for National Statistics, 2001). However, all patient case notes were included in this survey and therefore the results may be extrapolated to most elderly psychiatric in-patient units.

Most drug–drug interactions can be deduced if there is a good understanding of pharmacological and therapeutics principles (Routledge *et al*, 2004). Increasingly, physicians look towards their pharmacist colleagues to offer them advice regarding possible drug interactions as patients are often on multiple drugs and it becomes difficult to estimate the risk of a drug–drug interaction. However, pharmacists are often in short supply on most in-patient wards.

This study was planned basing on a real-life situation of a doctor working on a busy elderly psychiatric in-patient ward where there was no regular pharmacist input. The doctor had to either call up the pharmacist to get advice regarding the potential of a drug–drug interaction or look up the BNF or UptoDate databases himself to satisfy that his prescribing was safe. The results of the study suggest that there is very poor concordance between these two well-established databases for estimating potential drug interactions, which could put into question their validity.

A logical extension of the study would be to calculate the actual prevalence and incidence of adverse effects related to the drug–drug interaction in a larger study.

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Declaration of interest

None.

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