Hospital admissions for ‘drug-induced’ disorders in England: a study using the Hospital Episodes Statistics (HES) database

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Aims
To review Hospital Episode Statistics (HES) data for England coded as being ‘drug induced’ during 1996–2000 and to consider their potential utility for assessing the public health burden of adverse drug reactions (ADRs) and studying drug safety.

Methods
ICD-10 codes including the words ‘drug-induced’ or ‘due to’ a medicine or which are recognized to be invariably caused by a drug were extracted along with external cause codes indicating that a drug was implicated (i.e. Y40-59 in ICD-10). We also calculated the proportions of patients with each ‘drug-induced’ code for whom an external cause code had been applied.

Results
During the 5-year study period there were almost 53.8 million hospital admissions in England, of which 44 411 (0.083%) were coded as ‘drug induced’ and 168 958 (0.314%) were associated with a relevant external cause code. The numbers of patients with ‘drug-induced’ codes used were generally stable during the study period (range 7454–8860 per year) but the application of external cause codes increased in each year and by 40% overall (from 24 786 in 1996 to 34 843 in 2000). The overall proportion of ‘drug-induced’ codes associated with a relevant external cause code was quite low (12–15%) but there was considerable variation between codes.

Conclusions
Comparisons with published studies indicate that HES data grossly underestimate the burden of drug-induced disorders as a cause of hospital admission. There are likely to be multiple underlying reasons including under-recognition, under-recording and limitations of the coding system. The potential of these data for identifying previously unrecognized serious ADRs is limited by constraints on the availability of detailed data regarding individual cases.

Introduction
Adverse reactions to medicinal drugs are an important cause of morbidity and mortality in the developed world [1, 2]. In 1998 a meta-analysis of 39 US studies of hospitalized patients estimated the frequency of serious adverse drug reactions (ADRs) to be 6.7% and fatal ADRs 0.32% [3]. Based on these findings, it was suggested that ADRs were between the fourth and sixth leading cause of death. In the UK, a study conducted in Oxford in the early 1990s estimated an overall ADR