

Adverse drug event (ADE) as a cause of hospital admission

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Drug related morbidity (DRM) can be divided in adverse drug events (ADE) and others. ADE are adverse events that occurs directly from the use of a drug. Others DRMs include morbidity from not receiving a drug. Some of the ADE are serious and can lead to hospitalisation (DRA or drug-related admissions). The most important point is: “how many of these hospitalisations for ADE are avoidable?”. The logical process to identify preventable hospitalisations for ADE, or preventable drug related admissions (PDRA) is quite complex. IF one state that a prescription was inappropriate, AND IF the administration of this drug is related to an adverse event, AND IF this event has lead to a hospitalisation, THEN one can speak this is possibly a PDRA.

Reliability of epidemiologic studies on that topic is questionable. Because of evolution with time of demography, of medical practices (both in prescribing and in decision to hospitalize), and of definition of DRM or ADE, results of studies seem to show an evolution according to their year of publication. More, largest studies are mainly retrospective studies, and results of studies seem to show a link between the number of subjects involved and the rate of DRA. Other problems of reliability concern the definitions used by authors, and differences between countries regarding the health service system organisation and availability. However, and all together, studies show an average DRA/total admissions rate of 4% in adults, and of 17% in elderly. Of all these DRAs, a third to a half seems to be preventable (PDRA).

In geriatrics, a study (Laroche, 2006) shown that 19% of patients present an ADE on admission, and 11% a serious one. Yet, not all these serious ADE were related to inappropriate medication. In fact, this study shows that serious ADE attributable to inappropriate medications account for 25% out of all serious ADE, for 15% out of all ADEs, for 4.2% out of all inappropriate medications, and for 2.8% out of all hospitalisations.

Some treatments seem to be more frequently related to PDRA than others: antiplatelets (16%), diuretics (16%) and NSAID (11%) are the three most involved treatments. Beyond drugs themselves, PDRA are also associated with drug-management problems: patient adherence problems (33%), prescribing problems (31%), and monitoring problems (22%) are the most common ones. Other conditions identified to be statistically and independently related with DRA are nursing home residency (OR = 1.5), impaired renal function (OR = 1.3), congestive heart failure (OR = 1.3) and number of drugs prescribed.

References:

1. Beijer, Pharm World Sci, 2002
2. Howard, Br J Clin Pharmacol, 2006
3. Laroche, Br J Clin Pharmacol, 2006
4. Lau, Arch Intern Med, 2007