

Medication Safety Forum

Identifying and reducing the risk of drug interactions during polypharmacy



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Potent treatments and OTC drugs are factors that increase the probability of adverse events. Computerised patient records come to the rescue.

Introduction

Adverse events are often caused by the interaction of drugs with different mechanisms of action. Several trials have demonstrated that 4–6% of patients are admitted to hospital for adverse drug reactions and 16% of these events depend on interactions [1]. Another trial [2] showed that 263 doctors recognised only 53% of mild or serious drug interactions, and only 54% of life-threatening interactions. Phase III trials test drugs in conditions that hardly ever represent real life conditions. Moreover the majority of studies are retrospective and Adverse Drug Reaction reports are all made after a problem has occurred.

There were two elements to our project. Firstly we assessed the risk of drug interactions on a specific population, combining knowledge of their treatment with knowledge of emergency admissions to a local hospital. Secondly, we supplied information to general practitioners, with the aim of correcting or preventing the interactions observed.

The Emergency Department of IRCCS S Matteo supplied data of patient hospitalisations, the Pavia Local Health Unit supplied data (taken from the patient database) of the drugs patients were prescribed before and during the hospitalisation.

First phase of the project

The project about drug interactions started in 2005 and concerned only hospital patients. Interactions were identified from the merged data and were classified by Micromedex according to their potential seriousness: dangerous, major, moderate, minor. We identified 483 different types of potential interactions involving

3,390 patients. In several cases we recorded more than one type of interaction in the same patient, a total number of 4,927 cases, as explained in Table 1.

Second phase of the project

From 2007 onwards, we extended the project focus to the whole provincial population. We analysed the drug prescription data of patients aged 65 or over, who were taking at least three different drugs and whose treatment period exceeded 30 days. We identified 2,243 different types of potential interactions that involved 33,951 patients. In several cases we recorded more than one type of interaction in the same patient, making a total of 193,151 cases.

The risk of interaction is recognised. We inform general practitioners of any patients who are at risk of an interaction, so they can change the treatment. Each general practitioner receives a patient report stating the type and seriousness of the interaction, a literature review of the interaction and evaluation of the possible time of onset.

The patients reported as being at risk are monitored for possible suspension or change of treatment. In almost all cases, the treatment has been changed. Having start-

ed with dangerous interactions, we are now also monitoring major interactions.

In the future we hope to detect a reduction in patients being admitted to hospital because of drug interactions and to extend our project to other Local Health Units and hospitals in Lombardia.

Conclusion

Correlation between drug therapy and the admittance to hospital was revealed by merging data from the Emergency Department, IRCCS S Matteo of Pavia, and the Local Health Unit of Pavia. We then made data about the interactions available to general practitioners, with the aim of preventing drug interactions.

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Table 1: Number of types and severity of drug interactions

Seriousness	Number of different types of interaction	Number of cases
Dangerous	3	3
Major	149	1,208
Moderate	289	2,958
Minor	42	758

Our first study showed for example three patients, each with a different type of drug interaction we identified as 'dangerous'. All patients were admitted as emergencies.

References

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