Do Electronic Information Systems Facilitate Errors in Medication Management?

Virpi Jylhä, Kaija Saranto

Department of Health and Social Management, University of Eastern Finland, Kuopio, Finland

Abstract and Objective

Human error is common when information management is conducted manually. Sometimes errors correct themselves; however, in the hospital context, if they lead to adverse drug events (ADEs), the consequences can be serious. This retrospective study aimed to identify types of ADEs related to information management via electronic information systems. The research questions were as follows: 1) What kind of ADEs have occurred? 2) What are the causes of these errors? The results of this study confirm previous studies indicating that accurate patient data has a major role in safe practices.

Keywords:

Information management, Medical errors, Information systems

Introduction

Medication use process has been shown to be prone to errors. New information systems have been introduced in order to prevent these errors [1]. However, the information systems may actually facilitate new kind of errors if work processes are not developed in parallel with the adoption of the systems [2]. Thus information management processes should be analyzed in more detail.

Method

Official register data of national authority were analyzed using qualitative and quantitative methods. The data included patient complaints and official statements on causes of deaths during 2001-2007. The data were retrieved by a manual database search and a review of all relevant cases. A total of 67 ADEs were found. In 18 of these ADEs an electronic information system was in use. The data for these 18 cases were analyzed using content analysis; this was based on a classification of the ADEs adapted from the literature.

Results

A total of 18 ADEs were analyzed. All caused harm to the patient, and 15 caused death. Nine events (50%) involved physicians; six involved registered nurses. Two main ADE types were identified 1) *Inadequate documentation* (n=8); 2) *Improper activities* in prescribing (n=3), dispensing (n=4) and administration (n=3).

In most of the ADEs (n=10) were caused by human error. Failure to review patient data was a common cause (n=6) of ADEs, particularly in the prescription phase. Cross-tabulation of error types/causes showed that ADEs related to inadequate documentation were usually caused by human error (n=5). These errors were related to 1) use of a copy-paste method; 2) manual transfer of data from paper to electronic patient records; 3) reliance on memory in documentation. Poor computer interfaces were also related to inadequate documentation.

Conclusion

The results showed that the data in information systems is fragmented, and that multiple entries are needed to document patient data in the records. In addition, patient data is copied manually. Overall, information systems should give better support to the documentation of care and to data use. More attention needs to be paid to the information management process in order to support the work of health professionals. The study does not explain why patient data is not reviewed, even when it is available to health professionals. There may be a connection with fragmented data entries in electronic patient records; however this is an aspect that should be studied in the future.

References

[1] Kaushal R, Shojania KG, Bates DW. Effects of computerized physician order entry and clinical decision support systems on medication safety: a systematic review. Arch Intern Med. 2003;163(12):1409-16.

[2] Rechmann MH, Westbrook JI, Koh Y, Lo C, Day RO. Does computerized provider order entry reduce prescribing errors for hospital inpatients? a systematic review. J Am Med Inform Assoc 2008;16:613-623.

Address for correspondence

Virpi Jylhä, virpi.jylha@uef.fi
P.O.Box 1627, FI-70211 Kuopio, Finland