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MEDICATION ERRORS AND PATIENT SAFETY

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ABSTRACT

Patient safety is an important issue for hospitals. Medication errors (ME) occur every day any phase of drug delivery process from prescribing to drug administration. Since most ME are preventable, one approach to improving the safety of these complex process is to identify the individual points of failure through a medication errors reporting process and implement remedial countermeasures. In this papers the authors describe the reporting system of ME adopted in the hospital of Trento-Italy (HT) both as part of the organization strategy aimed at improving patient safety, as well as by it's characteristics of being confidential (information remains anonymous and is only used to improve organizational performance), non-punitive (to encourage openness in reporting) and system-oriented (focus on processes). HT management has implemented and "ad hoc" form for confidential reporting of ME available through intranet and "stressed" by Pharmacy with meetings in Units. The form, strictly confidential and FMEA model based, has four sections: process phase; professional involved; type of errors; organizational conditions. In 2005 several Units have sent a total of 289 forms with 353 ME: 189 (53%) related to prescription and 127 (38%) related to administering; the majority (163= 57%) happened in the morning shift; the majority of ME caused no harm: 113 (39,1%) ME in the A category: 54 (18,7%) in the B category: 54 (18,7%) ME in the C category. Feedback to Units is given by Pharmacy. Since the causal factors of consequential incidents with harm are similar to those of non consequential near misses. we believe that knowing what happened could improve the effectiveness of preventive measures such as computerized physician order entry and prescription & administration new records, both implemented in our Hospital. Furthermore pharmacist intervention can decrease the occurrence of such events and pharmacists who are awareness of preventability factors involved in adverse drug events can become proactive leaders in the area of medication safety.

Introduction:

Patient safety has become an international priority, especially after the Institute of Medicine published in the year 1999 the report *To err is human: building a safer health system*[1] which identified the seriousness of the problem[2]. One of the major threats to patient safety in hospitals is represented by the occurrence, clinical consequences and cost of adverse drug events (ADEs), defined as injuries resulting from medical intervention related to the administration of a drug[3]. A medication error (ME) is, according to the National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP)[4], any preventable event that may cause or lead to inappropriate medication use or patient harm. Such events may be related to professional practice, health care products, procedures, and systems including prescribing; order communication; product labelling;, packaging, and nomenclature;

compounding; dispensing; distribution; administration; education; monitoring; and use[5]. The epidemiology of ME in hospitals[6] is like the tip of an iceberg: reported ME are only a small fraction of what really happens and ME are estimated to occur nearly in 1 of every 5 doses of the typical site (20%)[7]. ME occur every day, and during any phase of the drug delivery process, from prescribing to drug administration. Errors resulting in preventable ADEs occurred most often at the stages of ordering (56%) and administration (34%), transcription (6%) and dispensing (4%) errors were less common[8]. The percentage of errors rated potentially harmful is a small fraction of this number, but although death or serious injury occur only infrequently, those medication errors that do have such results shake the foundation of public confidence in health care and increase health care cost. Among other organization, the Joint Commission International (JCI) has adopted patient-safety goals as part of the accreditation process, and accredited hospitals are reporting data on the quality of care, including the prevention of medication errors[9]. JCI requires health care organizations to develop a process for identifying and reporting medication errors. The goal of error reporting is to understand the kinds of errors that occur in an organization and redesign processes to prevent similar errors in the future[10].
It is generally agreed upon that effective risk management depends crucially on establishing a reporting culture that makes possible to learn from detailed analysis of mishaps, incidents and near misses. Physicians and nurses in general oppose reporting of information on medication errors, because of a *name, blame, shame* culture, and worries about malpractice lawsuits. Nonetheless, the greater use of information technology (the use of such solutions as computerized order entry systems, bar coding of medication, electronic prescribing) and strategies for sharing information have the potential to make care safer and therefore reporting of errors must be strongly encouraged[11].

Objective:

Describe HT reporting system of ME both as part of the organization strategy aimed at improving patient safety, as well as by it's characteristics of being confidential (information remains anonymous and is only used to improve organizational performance), non-punitive (to encourage openness in reporting) and system-oriented (focus on processes)

Methods:

The Hospital of Trento-Italy (HT) is part of the Health Care Trust-APSS, a very complex organization of the National Health System, with a workforce of 7.000 employees, 11 primary care districts and 2 hub and 5 spoke acute hospitals. HT is the main health care facility of the APSS and has the following characteristics: 874 beds (of which 110 Day Hospital beds), ≈ 38.000 admissions in 2004, ≈ 2.000 employees (335 physicians) and cost of production up to € 217.000.000. HT is accredited by JCI and provides a full range of medical and surgical services, including three intensive care units and all major specialties.
The process of medication management has been taken into examination according to JCI accreditation model. ME are reported through a process and time frame defined by the organization (standard COP.11.6.3); the organization's leaders identify key measures (indicators) to monitor the organization's clinical and managerial structures, processes and outcomes (QPS 3); clinical monitoring includes the use of antibiotics and other medications and medication errors (QPS 3.4).
The Hospital Quality and Patient Safety (QPS) Committee has adopted a procedure to identify and report ME related to any stage of the highly complex medication process including prescribing, preparing, administering and monitoring of therapeutic effects. Reporting of ME,

based on the conceptual frame of the Failure Mode and Effect Analysis (FMEA) model and Ishikawa fishbone diagramming, is strictly confidential and anonymous. Reporting of ME is gathered using a form (figure 1) divided into four sections: 1) medication system process phase when error occurred; 2) professionals involved; 3) error outcome category; 4) organizational conditions under which the error occurred. It is possible to report more than one ME in a single form.
Caregivers fill out the form by checking boxes to indicate the stage in which the error occurred (prescribing, preparing, or administering), the type of error, who made the error and who detected it (by role only, no names are used), and where and when it occurred. Users classify the outcome related to ME using the National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) Index for Categorizing Medication Errors. According to NCC MERP error outcome has been divided into four main categories: circumstances or events that could have caused an error (A); error with no harm (B, C, D); error with harm (E, F). The form also allows users to report circumstances that may have contributed to the error and make additional observations. The form, available through hospital intranet, has been "stressed" by the pharmacist (member of the QPS Committee) with specific meetings in the Units.
The error reporting form is only filled out by the person who detected the error; completed forms are then reviewed and signed by both the head nurse and the director of the unit in which the error occurred. Ultimately, all reports are sent to Pharmacy; six-month summary reports are submitted to the QPS Committee and to HT units.

Results:

The new reporting system has been introduced to staff since the beginning of the year 2005. until the time of writing several HT units have sent to the Pharmacy a total of 289 forms with 353 ME, split by type of error, shift and outcome.
Regarding the medication system phase under which the errors occurred, 189 ME (53,5%) were related to the prescription phase; 37 ME (10,4%) to the preparation phase, and 127 ME (35,9%) to the administering phase. The most common causes of medication error: incomplete prescriptions, illegible writing, and failure to administer a prescribed drug (figure 2 and 3). Error outcome category shows that the majority of ME caused no harm: 113 (39,1%) ME in the A category; 54 (18,7%) in the B category; 54 (18,7%) ME in the C category (figure 4). Only 23 out of 289 forms show a ME that caused a temporary harm.

Discussion:

The reporting system yielded important information about the relationship between medication errors and time of day. While the majority of medication errors (163/353 = 46%) occurred during the morning shift when most of the tasks are performed, the night shift appears to be more high-risk in terms of the ratio of errors to total prescriptions/administrations carried out.
According to these findings most ME had no actual adverse impact on patients, and no permanent patient harm was reported
Efforts to introduce the reporting system ran up against a few cultural obstacles among clinical staff, there were strong barriers due not only to resistance to change, but also to fear of local laws and regulations requiring mandatory reporting of adverse events with harm
To overcome these obstacles, the project team turned to education and Pharmacy conducted several meetings with clinical staff to explain the new system. The no blame approach helped in overcoming resistance and fostered a team-based approach to medication safety. Legal

concerns were dealt with by clarifying that near miss reports with no actual harm did not need to be communicated to public authorities.

Conclusions:

ME reporting and monitoring should lead to performance improvement initiatives to address the causes of errors and prevent future events. At HT the findings generated through the error reporting system have reinforced the need for several medication safety initiatives. The hospital recently implemented a new medication and administration record that reduces transcriptions and hand-over and supports order verification. The hospital is also continuing with efforts to implement computerized physician order entry (CPOE) and automated medication distribution (AMD) systems throughout the organization.

The project team plans to provide feedback to individual departments on their use of the system, conduct audits of system processes, provide updates on new safety procedures, and generally focus on continuous education in safety and risk reduction because while processes are important, people are also a key to success.

The reporting system, strictly confidential, uses a systemic approach based on the consideration that since human are fallible, we should try to change the conditions under which people are working with a no blame approach that makes it possible to learn from errors[12]. Since the causal factors of consequential incidents with harm are similar to those of non consequential near misses, we believe that knowing what happened can improve the effectiveness of preventive measures. The focus on medication use system an ME reporting helped the awareness of staff on the possible consequences of their daily actions.

BIBLIOGRAPHY

[1] Institute of Medicine, *To Err is Human: Building a Safer health System*, Washington DC National Academy Press, 2000

[2] Battles J B, Lilford R J, *Organizing patient safety research to identify risks and hazards*, Qual Saf Health Care 2003; 12 (Suppl II):ii2-ii7

[3] American Society of health –System Pharmacists: *Suggested definitions and relationships among medication misadventures, medication errors, adverse drug events, and adverse drug reactions*, ASHP online, www.ashp.com

[4] The National Coordinating Council for Medication Error Reporting and Prevention: *About medication errors*, www.nccmerp.org

[5] Joint Commission Resources, *Preventing Medication Errors: Strategies for Pharmacists*, 2001, ISBN:0-86688-697-4, Oakbrook Terrace, Ill

[6] Bobb A., Gleason C. et al., *The Epidemiology of Prescribing Errors*, Arch Intern Med/Vol 164, April 12, 2004, 164:785-792

[7] Barker K., Flynn E.,et al., *Medication Errors observed in 36 Health Care Facilities*, Arch Intern Med/Vol 162, Sep 9, 2002, 162:1897-1903

[8] Bates DW, Cullen DJ et al., *Incidence of adverse drug events and potential adverse drug events. Implication for prevention*, JAMA 1995;274:29-34

[9] Joint Commission International, *Joint Commission International Accreditation Standards for Hospitals*, second edition, effective January 2003, ISBN: 0-86688-779-2, Oakbrook Terrace, Ill

[10] Weissman J., Annas C., et al., *Error reporting and Disclosure Systems*, JAMA, March 16, 2005-Vol 293, n. 11, 1359:1366

[11] Altman D., Clancy C. et al., *Improving Patient Safety – five years after the IOM Report*, N Engl J Med Nov 11, 2004, 351;2041:43

[12] Reasons J., *Human error: models and management*, BMJ 2000;320:768-770 (18 March)

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[1] Institute of Medicine, *To Err is Human: Building a Safer health System*, Washington DC National Academy Press, 2000

[2] Battles J B, Lilford R J, *Organizing patient safety research to identify risks and hazards*, Qual Saf Health Care 2003; 12 (Suppl II):ii2-ii7

[3] American Society of health –System Pharmacists: *Suggested definitions and relationships among medication misadventures, medication errors, adverse drug events, and adverse drug reactions*, ASHP online, www.ashp.com

[4] The National Coordinating Council for Medication Error Reporting and Prevention: *About medication errors*, www.nccmerp.org

[5] Joint Commission Resources, *Preventing Medication Errors: Strategies for Pharmacists*, 2001, ISBN:0-86688-697-4, Oakbrook Terrace, Ill

[6] Bobb A., Gleason C. et al., *The Epidemiology of Prescribing Errors*, Arch Intern Med/Vol 164, April 12, 2004, 164:785-792

[7] Barker K., Flynn E.,et al., *Medication Errors observed in 36 Health Care Facilities*, Arch Intern Med/Vol 162, Sep 9, 2002, 162:1897-1903

[8] Bates DW, Cullen DJ et al., *Incidence of adverse drug events and potential adverse drug events. Implication for prevention*, JAMA 1995;274:29-34

[9] Joint Commission International, *Joint Commission International Accreditation Standards for Hospitals*, second edition, effective January 2003, ISBN: 0-86688-779-2, Oakbrook Terrace, Ill

[10] Weissman J., Annas C., et al., *Error reporting and Disclosure Systems*, JAMA, March 16, 2005-Vol 293, n. 11, 1359:1366

[11] Altman D., Clancy C. et al., *Improving Patient Safety – five years after the IOM Report*, N Engl J Med Nov 11, 2004, 351;2041:43

[12] Reasons J., *Human error: models and management*, BMJ 2000;320:768-770 (18 March)