

Analysis of reported medication errors and definition of a plan of action for a safer medication process

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Background and objectives

A multidisciplinary working group 'Safe Medication Process' was installed in the Ghent University Hospital, with the aim to discuss reported medication errors in order to define preventive measures. Since 2009, an electronic reporting system was installed and the number of reported errors had continuously increased. In 2012, the aim was to define a plan of action with specific items to enhance medication safety.

Method

All reported medication errors during the year 2012 were analyzed within the hospital pharmacy in terms of level of drug process, drug class involved, severity ^[1], frequency, and type of preventive actions. These actions can be classified into three categories i.e. related to technology, to human factors or to the drug process ^[2]. The aim of the working group was to define a set of actions which would prevent frequent medication errors with a possible high severity at different levels of the drug process ('systems approach').

Results

A total of 298 errors were reported in 2012 of which 53,7% reached the patient. Prescribing errors accounted for 31% of the reports, administration errors for 27%, dispensing / preparation errors by the pharmacy for 19%, transcription errors for 7%. Other errors consisted of communication problems e.g. at patient transfer moments or concerning prescriptions of consulting physicians.

Severity of the reported errors was attributed as described in the table.

All types of drugs seemed to be involved in reported medication errors, however more severe errors concerned high-risk medication e.g. heparin, insulin, concentrated electrolytes, blood factors, anti-epileptic drugs etc.

Number of reported errors	298	
Errors that did not reach the patient	138	46,3%
C – no harm	50	16,8%
D – monitoring required	92	30,9%
E – temporary harm – no treatment required	3	1,0%
EB – temporary harm – treatment required	10	3,4%
F – temporary harm – (prolonged) hospitalization	3	1,0%
G – permanent patient harm	0	0,0%
H – intervention required to sustain life	2	0,7%
I – death	0	0,0%

For most of the errors, different preventive actions were defined, accounting for a total of 563 preventive actions. Only a minority were related to solve technology failures (3.1%). For most errors, preventive actions consisted of a combination of human factors approach (e.g. education and training – 43%), and actions to change elements of the drug process (e.g. procedures – 36%) or to implement technology (e.g. electronic prescribing – 18%).

The working group selected seven actions for the year 2013, based upon frequency of cited preventive actions and severity of occurred errors. For each action, an 'owner', a target group and a progression scheme was defined.

Acties werkgroep Veilig GeneesmiddelenProces

- **Farmaceutische controle vóór aflevering (apothek);** focus op dosis, weekfrequentie, verderzetting van kritische medicatie
- **Thuismedicatie: ziekenhuisbrede procedure:** bevraging, registratie, verderzetting, substitutie, communicatie bij ontslag
- **Geneesmiddeleninformatie: waar te vinden?** Intranet, UZGMBulletin, EPD,...
- **Sensibiliseren omtrent HAM medicatie (High Alert Medication)** labeling stockplaatsen, poster, UZGMBulletin, herverpakking...
- **Verpleegkundigen sensibiliseren voor 'five rights' controle** (juiste patiënt, medicatie, dosis, toedieningsweg, tijdstip)
- **E-learning farmaceutisch rekenen** promoten
- **Registratie van medicatie allergieën:** correcte bevraging en registratie

Conclusions

The analysis of reported medication errors in the hospital pharmacy provided useful information to develop a plan of action with concrete actions to enhance medication safety. Most of these actions rely on education and training and on redesign of the drug process.

References

1. National Coordinating Council for Medication Error Reporting and Prevention: www.nccmerp.org
2. Schaaf TW van der, Wright LB 2005. Systems for Near Miss Reporting and Analysis. In: JR Wilson and EN Cornett. Evaluation of Human Work. CRC Press.