Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://www.elsevier.com/journals/international-journal-of-nursing-sciences/2352-0132

Original Article

Establishment and application of medication error classification standards in nursing care based on the International Classification of Patient Safety

*Xiao-Ping Zhu, Xia Duan, Mei-Mei Tian, Yan Shi**

Department of Nursing Care, Tenth People's Hospital, Tongji University, Shanghai, China

ARTICLE INFO

Article history:
Received 13 November 2013
Received in revised form
1 May 2014
Accepted 12 May 2014
Available online 7 August 2014

Keywords:
Adverse events
Classification
ICPS
Medication errors
Nursing care

ABSTRACT

Objective: To standardize the classification, reporting and analysis of medication errors in nursing in order to improve patient safety management by achieving real-time monitoring and systemic analysis.

Methods: A system of classifying nurse-related adverse drug effects into four category grades was developed based on the framework provided by the International Classification of Patient Safety. Three investigators used the system to classify 1343 nursing-related drug adverse events reported between January 2006 and December 2010 at 15 tertiary medical institutions in Shanghai.

Results: The classification standard incorporated all relevant information provided in the reporting system and revealed that the greatest frequency of drug adverse events resulted from staff-related factors. In particular, the largest number of events resulted from routine violations, followed by technology type errors of negligence and fault.

Conclusion: Application of this classification system will help nursing administrators to accurately detect system- and process-related defects leading to medication errors, and enable the factors to be targeted to improve the level of patient safety management.

1. Introduction

The management of patient medications is a high-risk nursing activity, and an estimated 78% of nurses have made medication errors [1]. One study on nurse medication management found that 27% of nursing time is spent on drug-related activities; fetching and checking drugs accounts for 7.4% of their time, drug delivery accounts for 6.7%, 3.9% of their time is spent retrieving account information, another 3.9% is spent handling medical order accounts and 2.8% of their time is spent on medication documents [2]. Moreover, the probability of medication errors is likely to increase along with the increase in the number of drugs available for treatments.

Errors can be minimized and patient safety improved by utilizing drug-related adverse event reports and designing a more robust, fault-tolerant healthcare system [3]. However,

* *Corresponding author.*
E-mail address: shlzk2002@163.com (Y. Shi).
Peer review under responsibility of Chinese Nursing Association.
http://dx.doi.org/10.1016/j.ijnss.2014.05.025

Table 1 – Categories of nursing-related drug event grading levels.

Grade 1	Grade 2	Grade 3	Grade 4
1. Staff factors	1.1 Cognitive factors	1.1.1 Insight or understanding	
		1.1.2 knowledge type	
		1.1.3 illusion-related	
		1.1.4 Halo effect	
	1.2 Behavioral factors	1.2.1 Technology type	1.2.1.1 Negligence
			1.2.1.2 Fault
		1.2.2 Rule type	1.2.2.1 Incorrect use of a good rule
			1.2.2.2 Application of a bad rule
		1.2.3 Bias	1.2.3.1 Biased evaluation
			1.2.3.2 Confirmatory bias
		1.2.4 Selectivity	
	1.3 Attitudinal factors	1.3.1 Problems in attention	1.3.1.1 Distracted or careless
			1.3.1.2 Trance or forgetfulness
			1.3.1.3 Too much attention
			1.3.1.4 He (she) has not seen it, thus he (she) does not recall it
		1.3.2 Fatigue or exhaustion	
		1.3.3 Overconfidence or assumption	
		1.3.4 Violation or noncompliance	1.3.4.1 Routine violation
			1.3.4.2 Situational violation
		1.3.5 Risk-taking behavior	
		1.3.6 Reckless behavior	
		1.3.7 Sabotage or criminal act	
	1.4 Communication factors	1.4.1 Methods of communication	1.4.1.1 Documental communication
			1.4.1.2 Electronic communication
			1.4.1.3 Verbal communication
		1.4.2 Language barrier	
		1.4.3 Health Literacy	
		1.4.4 Communication objects	1.4.4.1 Staff
			1.4.4.2 Patients
	1.5 Disease factors	1.5.1 International Classification of Diseases	
		1.5.2 International Classification of Primary Care, Version 2	
		1.5.3 Problems of abusing or using substance	
	1.6 Emotional factors		
	1.7 Social factors		
2. Patient factors	2.1 Cognitive factors	2.1.1 Knowledge type	
		2.1.2 Illusion-related	
	2.2 Attitudinal factors	2.2.1 Problems in attention – distracted or careless	
		2.2.2 Overconfidence or assumption	
	2.3 Disease factors		
3. Work or environmental factors	3.1 Physical environment/infrastructure		
	3.2 The distance from medical services is far		
	3.3 Environmental risk or safety evaluation		
	3.4 Existing standards/norms/regulations		
4. Organization or service factors	4.1 Draft/system/process/step		
	4.2 Organizational decisions/culture		
	4.3 Society and organization		
	4.4 Resources/workload		
5. External factors	5.1 Natural environment		
	5.2 Products, technologies and infrastructure		
	5.3 Services, systems and policies		

Note: Grading levels are based on the World Health Organization International Classification of Patient Safety system.

the classification of nursing-related drug adverse events is not standardized in China, where most of the current classification methods focus on "appearance characteristics" and "consequences" of events. These methods are based on experience, and do not incorporate impact factors, pre-control measures or other categories [4]. The present study used the World Health Organization International Classification of Patient Safety (ICPS) framework [5] to construct a comprehensive, accurate and meticulous classification of nursing-related drug adverse events. This classification normalizes terms and adverse event grading to expedite pooling of resources, allowing for rapid delivery and feedback of adverse event information. In this way, practitioners can improve their ability to identify and learn from errors, which will reinforce the flexibility of the healthcare system against various risks, reduce incidence of adverse events, improve medical and nursing quality, and lay an important foundation for efficient sorting of safety management.