ORIGINAL ARTICLE

STRATEGIC ASSESSMENT OF INJECTABLE MEDICATION ADMINISTRATION ERRORS IN TERTIARY CARE HOSPITAL: A CONCURRENT STUDY

Majid Khan[1], Muhammad Riaz[1],Najm ur Rahman[1]

ABSTRACT

Introduction: The administration errors are the predominant subpart of medication errors that is the third leading cause of deaths in the United States. It has been documented by World Health Organization (WHO) that most health team members are untrained about safe injection administration practices and, therefore, liable to error. The current study was conducted in Emergency and Endocrinology department of Lady Reading Hospital, Peshawar with the aim to assess safe injection practices recommended by WHO in a tertiary care hospital.

Material & Methods: The CDC guidelines were used and data was collected while using WHO prescription indicators.

Results: The 30 days concurrent study was conducted on 350 patients in which 62.8% were male, and 37.2% were female. Patients were typical in the age ranges from 50-75 years. The CDC 8 steps guidelines were not followed in letter and spirit. Out of total steps, step one was wholly followed for 350 patients, step two followed for 300 patients, step three followed for 290 patients, step four for 300 patients, step five for 310 patients, step six for 290 patients, step seven was entirely ignored and step eight was not observed in the current sample of the study. The total percent deviations from the standard were (24.9%).

Conclusion: The CDC guideline was not followed up to the mark for the administration of drugs in the hospital.

Key Words: administration errors; CDC guideline; WHO guideline

Authors' Declaration: The authors declared no conflict of interest and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All authors contributed substantially to the planning of research, question designing, data collection, data analysis and write-up of the article.

Authors' Affiliation

[1]Shaheed Benazir Bhutto University, Sheringal

Corresponding Author

Najm ur Rahman

Shaheed Benazir Bhutto University, Sheringal

email: najm@sbbu.edu.pk

This article may be cited as: Rahman N, Khan M, Riaz M. Strategic assessment of injectable medication administration errors in tertiary care hospital: a concurrent study. Rehman J Health Sci. 2021; 3(2). 107-109

Submitted: May 11, 2021 Revisions Submitted: August 27, 2021. Accepted: November 24, 2021

INTRODUCTION

According to the Oxford dictionary, administration means 'the act of delivering or applying medications.[1] the medication administration error is defined as the deviations from the prescription of the doctor or manufacturer administration instructions. The nurse must be professionally intelligent and competent to administer the drug to the patient and handle the patient's worse situations as per their Act 33 2005.[2]

The World Health Organization (WHO) defined safe injections as those that do not harm the recipient, health care workers, and community. It is strictly prohibited by 'WHO' to use injections only for money-making.[3] According to WHO, approximately 16 billion injections are administered annually for curative purposes in developed countries. The WHO suggested that 'make the choices of injections smart' because many injections are used unnecessarily worldwide. It has been reported that injections cause hepatitis B in 21 million individuals, hepatitis C approximately in 2 million individuals, and human immunodeficiency virus/AIDS infections in 260,000 peoples.[4] The WHO recommended safe injection practices. The unsafe injections practice is common in Asia than other developed countries. The WHO mandates healthcare providers to play a vital role in using the right injections.[5-9] The common malpractices observed during the injections are no skin disinfection, improper injection speed, needle stick injury, route substitution, mixing of two injections in one ampoule and prolonged use at one site.[2,10]

The injectable are life-saving, expensive and 100% bio-available than the oral route of drugs and administration.[9,11] The prime duty of the health practitioners is to educate the patients and insists them on the use of oral medications and considered them equally effective and safer than injectables.[10,11] The administration error is regarded as the most predominant medication error source than prescription and dispensing errors.[12,13]

Safety guideline for injections administration recommended by the Centre for Disease Control and Prevention CDC, these guidelines consist of 8 steps that should be followed;

Step 1: Never administer a single syringe for two or more patients; even with changed the needle.

Step 2: Once the needle used for one patient, never use it for another patient vial or drip

Step 3: Never enter a needle into a vial once used

Step 4: Never use a single vial or multiple vial doses for another patient than original

Step 5: Give multi-dose of medications to a single patient as possible

Step 6: Never use IV bags or bottles solutions for two or more patients

Step 7: Follow infection control ways during injections (disinfection and antiseptics)

Step 8: When placing a catheter or injecting it into the spinal canal, use a surgical mask.

The slogan of CDC regarding injectable is 'one needle, one syringe in only one time'.[2,5,11]

MATERIAL AND METHODS

This 30 days concurrent study was conducted in the Emergency and Endocrinology department of Tertiary Care Peshawar. Various patients were coming for treatment and most of these patients were from KPK and some were from Afghanistan. All patients with various diseases, like diabetes mellitus, thyroid, diarrhea, Cushing Syndrome who were coming to the emergency and endocrinology department of the tertiary care hospital, Peshawar were included in this study. The patients of other departments including cardiology, dermatology and pulmonology were excluded.

Case histories of 350 patients were collected while using the 'WHO Nairobi 1985' which recommended 30 prescriptions for sample per facility. The data was collected in the month of January, 2019. The data was collected with the official permission from the hospital director and manager of the pharmacy. In this study, the data collector well trained from universities both socially and ethically and were reasonably trained for prescription analysis. The collector collected 11.6 prescriptions per day in hospitalized patients. Every patient and nurse were analysed for the injectable medication administration. The WHO indicator was used as a standard for prescription review and CDC guidelines for injectable medication administration.

The data was collected on CDC guidelines, then analysed and tabulated by 'Microsoft Excel 2007 Professional edition,' and 'Graph Pad Prism 5'. The current study was carried out by the data collector with the permission of the hospital director, chief pharmacist and department incharge of the tertiary care hospital Peshawar and all of the data collectors were awarded with certificates for data collection proof and the research work was conducted with the patient consensus by the author. In this study, the CDC administration guidelines were followed and the WHO guidelines were utilized for data collection.

RESULTS

A total of 350 patients' data was collected in the Emergency and Endocrinology department of the tertiary care hospital. Out of the total patients, 62.8% were male, and 37.2% were female. Based on age, the typical patients were in the range (50-75) that is 136 (38.85%) (Table 1).

The CDC recommended an 8-steps standard for drug administration utilized in the form of a close-ended questionnaire (Yes/No). Out of total steps, step one was wholly followed for 350 patients, step two followed for 300 patients, step three for 290 patients, step four for 300 patients, step five for 310 patients, step six for 290 patients, step seven was totally deviated and step eight was not observed in the study. The total deviations in percent from the standard were (24.9%) (Table 2).

DISCUSSION

The administration errors are medication errors that are the third leading cause of deaths in the United States.[15] The injectables are susceptible and sophisticated products. Care should be taken in their administration because they are the leading causes of Hepatitis B, C, and HIV/AIDS, less common causes of septicemia, malaria, and hemorrhagic fever.[5,7,8] The administration error is the predominant subpart of medication errors. It was found higher than the rest of the two prescriptions and dispensing errors. This study insisted on administering drugs to achieve the patients' optimal state and promote rationality. The same type of insulin administration studies conducted by Teresa et al. 2017, in which they found 21% of patients did not follow the correct administration steps.[15,16]

Similarly, in our study, 75.1% of the CDC steps were followed to improve the health status of the patients. Our results regarding the standard guidelines steps are better obtained than Teresa's study in drug administration. Bifftu et al. articulated that administration errors is the most predominant part of medication errors which is 50% than to dispensing 18% and prescription errors 16%.[12] Another study evaluated in the United States on medication error reported prescription error (30%), dispensing (25%) but on the peak were administration errors (40%).[13] This shows that these errors are universal with a varied scale in different regions.

CONCLUSION

Medication errors as a subpart of comiogenic diseases and third leading cause of death than heart diseases and cancer. The CDC guidelines are not followed 100%. The role of administration of the health care setups need to be enhanced.

REFERENCES

1. Oxford Dictionary. *Oxford English Dictionary*. 2009 [http://ezproxy.ouls.ox.
2. CDC. Adapted from: Guideline for isolation precautions: preventing transmission of infectious agents in health care settings. Atlanta, GA: US Department of Health and Human Services, *Centre of disease control*; 2007.
3. WHO. World Health Organization WHO patient safety Research topic, better knowledge for safer care, *World Health Organization* 2009. Available from http: //www.who.int/ins/bitstream/10665/70145/1/WHO_IER_PSP_2009.10 eng.pdf. [Last accessed on 2016.Aug].
4. Jacques P, Clarie Nour AC, Eric P, Vincet N: Evolution of the global use of unsafe medical injections, 2000-2010. *PLos One 8* (12) 2013, 8: 12.
5. WHO. Make smart injection choices and safe injection practices for health care providers. *World Health Organization* 2017 www.who.int/infection-prevention, this work is licensed under the CC BY-NC-SA 3.0, IGO Licence.
6. Hussain H, Shah AK, Ahmad S, Khan A, Ullah A, Aman A. Assessment of prescription pattern and prescription errors using the World Health Organization drug use indicators in Lady Reading Hospital Peshawar. *Khyber Medical University Journal*. 2017. 9 (4) 181-184.
7. WHO Global Burden of Disease Study. *International Journal of STD & AIDS.* 2000, 15:7-16.

8. WHO: Safety of Injections (Questions and answers) *World Health Organization*/EHT/04.06. Geneva 27, Switzerland. 2004.
9. Singhal KC: Pharmacology laboratory manual, Pharmacy and Clinical Pharmacology, second edition. *CBS publishers and distributors* 2007, 2:6-7, 11.
10. Hadiyano: Interactional group discussion: results of controlled trial using a behavioural intervention to reduce the use of injections in public health facilities. *Social Science & Medicine* 1996, 42 (8):1177-1183.
11. Unpublished review by WHO, CDC and University of Washington 2002-3.
12. Berhanu Boru Bifftu BAD, Bewket Tadesse Tiruneh and Debrework Tesgera Beshah: Medication administration error reporting and associated factors among nurses working at the University of Gondar referral hospital, Northwest Ethiopia, 2015. *BMC Nursing* 2016, 15:43:1-7.
13. Miller MR CJ, Lehmann CU: Computer based medication error reporting: insights and implications. *BMJ Quality and Safety* 2006:15:208–213.
14. ADA: Safe-Injection_Practices.Approved by ADA in 12.01.2017.
15. Makary MA, Daniel M. Medical error-the third leading cause of death in US. *British Medical Journal* 2016;353;i2139.
16. Teresa H, Trang T Nguyen, Becky L Armor, Jamie R Farley: Errors in the Administration Technique of insulin pen devices: A result of insufficient education *Diabetes Therapy* 2017, 8 (2), 221-226.

Table 1: Distribution of patients according to age and gender (n=350)

Age(year)	Male	Female	Total	%age
01-25	62	29	91/350	26
25-50	56	23	79/350	22.57
50-75	90	46	136/350	38.85
75-90	12	32	44/350	12.57
Total	220	130	350	100

Table 2: The total steps of CDC guidelines successfully implemented

S.No	Total steps	Observed steps
1	350	350
2	350	300
3	350	290
4	350	300
5	350	310
6	350	290
7	350	00
8	Not found	This step not found