

Identifying Variations in Incident Reports on Drug Services to Improve Service Quality

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ABSTRACT

Background: Monitoring the management of drug services, including incident reports, is essential as evidence of the application of patient safety culture. This study conducted a classification of variations in an incident report on drug services to improve the quality and safety of patients in the hospital.

Methods: The quantitative descriptive study used a case study design. Retrieval of data used documentation study techniques in the 2016 incident reports.

Results: Reports of incidents in the drug services group that require careful monitoring were 16.6% (n=35) of the total that occurred in 2016. There were 11 variations of incident reports that happened in the drug services group. The incidence of drug incompatibility variation dominates the information compared to other incident variations, 28.6% (n=10). Ineffective communication between officers, unclear command/ prescription writing, and lack of supervision are the leading causes of this incident.

Contribution: This study can be helpful to provide an overview of the benefits of drug service reports in hospitals.

Keywords: drug services, incident reports, quality improvement, medical errors, hospital safety

1. Introduction

The issue of patient safety is a topic of great concern in several countries, including Indonesia. According to the government's decree, Indonesia pays full attention to patient safety as stipulated in the Minister of Health Regulation No.11 of 2017 related to the National Patient Safety Target. Hospitals that will carry out accreditation must implement patient safety targets in hospitals. The Hospital Patient Safety Committee in Indonesia and the Joint Commission International (JCI) used the Nine Life-Saving Patient Safety Solutions from the World Health Organization (WHO) Patient Safety (2007) in setting this goal. The National Patient Safety Target encourages specific improvements in patient safety (1). The hospital applies six patient safety goals: patient identification accuracy, effective communication, the safety of drug services, the certainty of surgical services, risk of infection, and patient risk due to falls (1).

JCI is one of the international accreditations commonly obtained by hospitals. JCI accreditation is a variety of initiatives designed to respond to the world's increasing needs for a standards-based evaluation system in health services (1). The JCI standards require hospitals to provide drug services with quantity, quality, and affordable prices. Management needs to monitor the safety of the safe use of drugs because most medical interventions require drugs. One of the methods to promote medical safety is through incident documentation reports. Drug errors or often called medication errors, are serious problems. Medication errors are a case that usually occurs in unexpected events in Indonesia (3). Furthermore, medication errors can affect patient safety, and as a significant cause of death, can also affect the costs incurred by the hospital.

Medication errors in the USA have caused hospital costs to increase to \$3.5 billion annually (4). These medication errors need special attention. Moreover, the research found that 34% of unexpected events occur due to medication errors made by nursing staff (4). This pattern demonstrates that the role of nurses is significant in preventing medication error incidents, while all health workers must always work together in preventing incidents of medical errors. This research focused on identifying incident report variations in drug services to improve the quality and safety of patients in the hospital.

2. Material and Methods

This research was a descriptive study with a quantitative approach. The data collection technique used was a documentation study. The population sample in this study was the incident reports in 2016. The sampling

technique used was purposive sampling, the selection sample based on incident reports related to drug services. The total population was 211 incident reports with a specific piece of 35 incident reports related to drug services. The location of the study was at the Government District Hospital in Yogyakarta Province. The research variable in this study was the categorical grouping in the incident reports.

3. Results and Discussion

Below are presented the results of the analysis of the incident report documentation study in 2016.

a. Number of Reports and Variations in the Incidents of Drug Services

Table 1. presents the results of the analysis of the documentation study on the number of incident reports in drug services of 35 from 211 incident reports reported to the hospital. The drug service incidents ranked third in the most significant number of incidents in 2016. Although not the highest incident group, drug service incidents also impacted financial inefficiencies that the hospital must correct.

Table 1. Percentage of incident distribution

No.	Name of Incident	Reports	Percentage (%)
1	Drug service incident	35	16.6
2	Other incidents	176	83.4
	Total	211	100

According to a study in America that included two education hospitals with 700 beds, as many as 2% of patients in the hospital experienced incidents in drug service. The impact is an increase in expenditure or over-financing by the hospital to more than 2.8 million US dollars annually (5). Because of the high incidence and the significant impact on increased health costs, incidents in drug services need to be discussed further and become a more serious concern for hospitals.

In this study, the percentage of medical error incidents involving drug services reached as much as 16.59%. Accordingly, this error pattern needs to be prevented and requires efforts to make improvements. Hospitals can make efforts to achieve patient safety goals in drug services. However, to determine which measures are most appropriate, it is necessary first to trace the variations of the incidents, the root causes of the incidents, and other causes of the happenings in the medication services at the hospital.

Table 2. presents the results of the analysis of incident variations from the study of incident report documentation related to drug services in hospitals. Researchers found that there were 11 variations of incidents related to drug services in hospitals. Drug incompatibility and drug writing/drug therapy incompatibility became the dominant event variation groups with the same number of incidences of 8 cases.

Table 2. Percentage of variation in drug service incidents

No	Incident variation group	Reports	Percentage (%)
1	Injection not given	2	5.7
2	Injection dose mismatch	4	11.4
3	Drug dosage mismatch	5	14.3
4	Incompatibility of drug delivery schedule	2	5.7
5	Drug incompatibility	8	22.9
6	Discrepancy in the route of administration of drugs	1	2.9
7	Medication not given	2	5.7
8	Discoloration of the drug	1	2.9
9	Writing prescription is not clear	1	2.9
10	Error writing in prescription	1	2.9
11	Discrepancy in writing therapy/ drugs	8	22.9
	Total	35	100

The variation of the dominant incident involves drug incompatibility and the discrepancy in writing therapy/ drugs. This medication error occurs because the officers are not careful in copying the prescription ordered by the doctor. This copying error often occurs in the data items involving the duration of drug administration written on the Integrated Patient Development Record sheet. Based on the 4th standard of the *Medication Management and Use*, to avoid prescription copying errors occurring again, the hospital needs to formulate policies and procedures that govern prescribing, prescribing orders, and copying safe prescriptions.

Drug incompatibility in question is the incidence of patients receiving drugs that are different from those prescribed. The prescription is a paper or electronic request from a medical person to a pharmacist (6). The medication contains a recommendation that the pharmacists provide, and they deliver the drug to

the patient by referring to the applicable provisions. The most common places for incidents of drug incompatibility to occur are in the pharmacy section and patient care ward.

Medication is an essential resource in inpatient care, so drug delivery errors increase the risk of aggravating the patient's condition (2). Referring to the JCI accreditation standard edition 6 on the management and use of drugs, standard 6.1 states that compliance with prescription drugs is necessary to provide drug services safely(2). In addition, communication with standardized electronic systems can reduce the incidence of drug safety-related incidents, including drug orders, laboratory tests, and radiological examinations (7). Other references are in the minimum pharmaceutical service standards that specify hospitals should guarantee the number of errors in drug administration reaches the target of 0% (8). The existence of an incident report on drug services that occurred at the hospital is an indicator that the hospital has not met the minimum service standards. But that does not mean hospitals with no incident reports on drug services indicate that the hospital is of high quality. The application of an incident reporting culture becomes the basis for service improvement efforts, with the hope of preventing a second incident from occurring and creating quality service goals.

The WHO released several publications that explain examples of problem areas in treatment: errors in prescribing, errors in drug administration, errors in drug preparation, administrative errors (such as medication administration schedules), and errors in monitoring the patient's condition (9). Administrative errors found in this study are very diverse, such as injection not given, mismatched injection doses, mismatched drug dosages, and unclear writing in prescriptions. A feedback system led by a hospital pharmacist is one of several solutions to improve staffing regarding prescribing and patient safety (10).

b. The causes of variation in the incident of drug services

Many factors can cause variations in drug services, such as environmental, team, or individual characteristics. The effectiveness of drug services can be very urgent and involves health workers who play the primary role in drug administration. To determine the causes of this variation in incidences, the researchers analyzed incident reports, particularly in 11 groups of drug service variations. Based on the study of incident report documentation by examining the description section of the chronology of the incident report data, there were six causes found for the variation of incidents in drug services (Table 3). The inaccuracy of health workers was the most common cause of variation in the incidence of drug services with 16 cases. The low level of supervision was the second cause of the variation in the service incidence with eight patients, followed by the third most frequent cause, namely unclear writing of instructions with seven cases.

Table 3. Causes of variations in drug service incidents

No	Causes of incident variation	Amount	Percentage (%)
1	Ineffective communication between health workers involved	2	5.7
2	Unclear writing of instructions	7	20.0
3	Low supervision	8	22.9
4	Inaccuracy of health workers	16	45.7
5	Lack of patient knowledge	1	2.9
6	Lack of drug logistics supervision	1	2.9
	Total	35	100

The inaccuracy of health workers ranked as the highest cause of incidents in the service of drugs in the hospital. The inaccuracy of health workers in providing drug services reported was: not given medications/ injections by nurses and errors in administering drug doses. These errors were reported as an incident because they did not comply with the instructions given by the doctor.

One study that explored the misuse of drug services in the elderly service found the following causes of drug service errors, namely: 1. inaccuracy in prescribing, especially on the route, date of therapy termination, and the signature of the prescribing doctor; 2. drug names are written with unacceptable abbreviations (due to the use of abbreviations, symbols, and error-prone doses); and 3. dangerous drug administration. The solution offered in the study is to establish a proper recording and analysis system before prescribing (11). Another explanation provided to prevent errors in the administration of drugs to patients is by applying a unique label for medicines to watch out for (12).

According to the ten principles of drug administration, nurses should implement the correct time in which the administration of drugs is proper and by the established schedule, and the focus of correct dosage. In providing nursing care related to the management of drug use, nurses should pay attention to the ten principles of drug delivery/ medication to patients, namely: correct medication, correct dosage, correct

patient, the correct route, correct time, correct client education, correct documentation, correct to reject instruction, accurate assessment, and accurate evaluation (4,9).

In providing drug services, nurses can fully implement the ten principles of drug administration by adhering specifically to the following three principles: 1) Correct assessment, namely verifying the completeness and details of drugs/ medication according to requests/ written orders from the authorities, 2) Correct dosage, i.e. verifying the correctness of the dosage of the drug to the prescribers, and 3) Correct time, namely carrying out the administration of drugs precisely and by the specified schedule. These principles need to be applied to provide better quality drug services, and patient safety, especially related to drug services, can be achieved.

Good communication between health workers is the basis of service quality and patient safety. If there is a communication error between officers during service, it must be resolved immediately with repair efforts to prevent incidents from occurring during service(14).

c. Officers related to the occurrence of drug services incidents

Table 4. presents the results of the analysis of the 2016 incident report documentation study related to officers who provide services when drug service incidents occur. There are seven types of officers who, in their work, cause incidents in drug services. Uniquely, it turns out that the patients themselves are also the cause of some drug service incidents. Based on the analysis results, the researchers found that the patient was the cause of the incident. The patient is taking drugs that have contraindications to the surgical procedure.

Table 4. Officers related to the occurrence of drug services incidents

No	Officers-related incident	Amount	Percentage (%)
1	Nurse	12	34,3
2	Pharmacy officer	6	17,1
3	Doctor	5	14,3
4	Co-Assistant doctor	8	22,9
5	Resident doctor and nurse	1	2,9
6	Nurse and pharmacy officer	1	2,9
7	Another health worker	1	2,9
8	Patient	1	2,9
	Total	35	100

Researchers found that nurses with 12 incidents dominated the reports of incidents. Based on the chronology of incident reports, incidents involving nurses, for example, include errors in drug administration to patients during hospitalization, administration of medication doses not according to instructions, and injections not given. In addition to nurses, co-assistant doctors officers contributed to the causes of some of the incidents. An example of an incident caused by a co-assistant doctor is an error in writing a prescription, which results in an error in drug administration to the patient. For this reason, it is necessary to increase the supervision of these services carried out by responsible doctors. In addition to co-assistant doctors, pharmacists also are officers who have a considerable number of errors reaching a third place with six cases. These events are examples of variations in the incidence of different doses of the drug presented. Improving the accuracy and accuracy of pharmacy staff in drug services can be a solution to reduce incidents in drug services.

Health workers have received formal education in health, have skills and knowledge, and work in health institutions (10). The main task of a health worker is to provide maximum health care. Health efforts intended include all activities related to the maintenance and improvement of community health status, one of which is in the form of treatment/ curative therapy. Drug services are an essential part of organizing corrective health efforts. Therefore, the knowledge and skills of health workers in providing drug services need to be improved to minimize incidents.

In this study, there were twelve drug service incidents that nurses caused. This figure is the cause of the incident reporting which is relatively high compared to other health workers. This condition is reasonable because nurses have the highest intensity of interaction with patients than other health workers. Nurses represent the most significant number of core health workers in hospitals (40-60%), and where providing nursing services are an integral part of health services, they have a crucial role in realizing occupational safety and health (OSH) in hospitals (11). Changes in the work atmosphere and coaching for nurses improve the quality of work for the better, and patient safety can be guaranteed (17).

In the second sequence, the other perpetrators who often caused the incident were the co-assistant doctors. In 2016 a total of eight incidents in drug services were reported to have been caused by co-assistant doctors. A young doctor or co-assistant doctor is a graduate student in medicine currently

pursuing their professional education. A variety of factors can cause the high incident of drug service incidents made by co-assistant doctors. One of which is an individual factor, namely the low quality of competence of co-assistant doctors. Indirectly, failure in the Student Competency Test of the Doctor Profession Program at each period reflects a decrease in the competence of the accompanying doctor (12). In this case, the university has an essential role in organizing appropriate education and producing competent co-assistant doctors. Accordingly, the university is responsible for the quality of the competencies of its graduates because it will have a direct impact on patient safety.

Management factors include lack of supervision by senior doctors, make the cause of the incident involving junior doctors. Doctors are responsible for errors that occur as a result of their actions. Besides that, it is also responsible for errors by the delegated medical practitioner (1). As a result, in dealing with patients, senior doctors still hold full responsibility for patient safety and the performance done by co-assistant doctors. Thus, monitoring their performance needs full attention to ensure the quality services provided to patients.

Not only do co-assistant doctors make errors, but senior doctors also have the experience of making prescription errors with an average error rate of 8.9 per hundred drug orders (19). Remedial procedures and mechanisms need to be mutually agreed upon to report all incidents reported by staff. This policy serves to create staff convenience in reporting incidents (20).

4. Conclusions

Good management of drug services aims to improve the quality and safety of patients, especially in the provision of medicines that require careful monitoring. The drug service category group had a high percentage with as many as 16.6% (n = 35) of the total that occurred in 2016. There were 11 variations of drug service incidents, with drug mismatches and discrepancies in writing therapy/ drugs and several groups of variations dominating the number of incidents. The cause of the variation in the adventures mainly occurred due to the inaccuracy of health workers, in this case, the most influential health workers, namely nurses. Appropriate and effective protection for health workers encourages them to work safely in providing health services, especially concerning drug services.

5. Conflict of Interest

All authors state that we have no conflict of interest in the research and publication of this paper.

6. Acknowledgements

Thanks to NidaNurAulia M and YuniaRachmi for helping the researchers to analyze the research data. The authors would also like to thank the Indonesia Endowment Fund for Education, and the Ministry of Finance, which supported this research.

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