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The Effect of Independent Double Check Implementation against the Six Correction Principle in Preparation and Administration of Injected Medication on Inpatients X Hospital, West Java

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ABSTRACT
IDC is conducted by a second trained nurse and corrected the results by researchers/research assistants. The study was conducted in March - June 2021. The number of nurses involved was the first 39 nurses and the second 33 nurses. The data was analyzed using SPSS version 25. IDC's implementation of 5895 injection drugs affects the correct time (p=0.000) and the correct documentation (p=0.041) in the setup. IDC has both partial and simultaneous influences with the characteristics of the first nurse on the correct dosage and time on drug preparation (p= 0.000). IDC also affects correct dose, timing and documentation on injection drug administration (p<0.05). The educational characteristics of the first nurse have a partial influence on proper documentation on the preparation and administration and correct timing on the administration of injection drugs (p<0.05). The nurse's work experience also has a partial influence on proper documentation on the administration of injection drugs (p=0.001). IDC implementation reduces ME <5%. Thesupervise and effect of nurse workload on IDC implementation needs to be analyzed more deeply.

Keywords: Independent Double Check, Preparation and Administration Of Drugs Injeksi, Prinsip Six Correct

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BACKGROUND

*Patient safety*has become a global issue and atop priority in every health service worldwide (Join*Commission International,*2015). One of the goals of patient *safety* is to prevent *medication error* (ME) that can harm patients and provide safe services for patients in the hospital. The decree of the Minister of Health of the Republic of Indonesia No. 129/Menkes/SK/II/2008 on minimum hospital service standards states that the incidence of drug errors is 0%. This is spelled out by PMK RI No. 72 of 2016 on Pharmaceutical Services in Hospitals which aims to protect patients and the public from drug use. Pharmaceutical services and drug use are an important part of patient care, a responsibility not only on pharmacists, but also to professional care providers and staff. Other orphanage clinics include nurses. (Rs accreditation commission, 2019: 216).

Nurses make sure the correct drug before being given to the patient can be done through 10 correct drug administrations, namely: correct patient, correct drug, correct dose, right time, right route, proper education, true documentation, true drug rejection, correct assessment and correct evaluation. (Kozier., at all, 2018: 814). Verification of the suitability of the drug before giving the drug to the patient is carried out by the nurse at least by paying attention to six correctly, namely: correct patient, drug, dosage, route, Time,and documentation is done to prevent serious ME events. (O'Brien, 2019:156; Rs Accreditation Commission, 2019: 229).

Medication error is a serious event that can cause disability and even death of patients. (Westbrook et al., 2016). There are 5.2 million me incidents in India (Patel et. al., 2018) and 7000-9,000 deaths in the Americas each year. (Tariq., Vashisht.,& Scherback, 2020). Me incidence is the most common occurrence in hospitals, which is about 20% of the incidence of incident *reports* (Hines, Kynoch & Khalil, 2018, in the UK, 50% occurred atthe time of*administration* (Hines, Kynoch & Khalil, 2018), 66.4% ME reported frequently in non-critical care wards (Harkanen et all, 2019), 71.4% occurred in hospitalization (Budihardjo, 2017). Me numbers in West Java X Hospital in 2019 from 449 ME, 390 (86.9%) occurred in hospitalization, and 144 (32.1%) occurred in injection drugs, while January - July 2020 from 194 incidents of ME, 169 (87.1%) occurred in hospitalization, and 76 (39.2%) due to injection drug errors.

Various efforts have been made by Hospital X West Java in reducing me incidence, among others, by implementing *an Independent double check* (IDC)process at the setup stage. *Independent Double Check* is a security measure used to detect errors in drug administration through the drug review process by two independent nurses. Each nurse performs the verfication of drug administration independently without any input from each other. (Kozhier et all, 2018: 813; Vathana,2019). IDC is one strategy to help detect potentially harmful errors in patients before administering the drug to patients. (ISMP, 2019).

Idc's procedure is one strategy to lower ME if done correctly. *(Health Information and Quality Authority*,2018:72). Idc implementation is carried out starting from prescribing of drugs *(prescribing),* preparation of drugs *(preparation),* concocting drugs *(dispensing),*and administering drugs to patients *(administering a Medication* includes the correct patient, correct drug, correct dose, correct route,and correct time at the time of preparation and administration of the drug to the patient. (ISMP, 2019).

The main purpose of IDC's process is to ensure safe drug delivery because it is able to detect 95% of errors and from the average error event of 5% (1:20) can be lowered to 0.25% (1:400) (ISMP, 2019). This is supported by the results of penelitian

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conducted by Simamora (2019), by doing IDC witha total of 2638 injection drug preparations, found 153 (5.8%) mismatch records document between Nurse 1 and Nurse 2 for the Principle of Five True, i.e. most 1) correct time incompatibility by 3.7% (98 events),2) correct incompatibility dose 1.5% (39 events),3) Correct incompatibility of patients 0.3% (8 events),4) correct drug incompatibility by 0.2% (5 events).

Independent Double Check preparation of injection drugs at Hospital X West Java has started since 2019 but SPO-SHLC-NUR-17-002 about double *check* has not changed. In August 2020 the Nursing Deviation conducted a review of idc's application on drug preparation and revised SPO-SHLC-NUR-17-002 on *double check* to Independent Double *Check* and came into effect since 2020. September 2020, this is in accordance with the results of Simamora research (2019). SPO-SHLC-NUR-17-002 on Independent Double *Check* mentions the first nurse preparing the drug with the principle of six correct and the second nurse double *checked* independently of the drugs that have been Prepared by the first nurse. The first nurse gives the medicine to the patient who has been verified by the second nurse at the time of preparation. Idc implementation in accordance with SOP is still carried out at the stage of drug preparation (taking drugs from the patient's room to the drug mixing room and mixing). medicine).

IDC's standard oprasional procedure (SOP) has not yet reached the stage of administering the drug to the patient, while errors can occur at the time of drug delivery to the patient. This is documented in the reporting data on ME injection drug events where unexpected events / KTD 20 events (25%) events, unscathed events / KTC 88 (61.1%) events and in 2020 the incidence of ME injection drugs reported KTD 5 (5.3%) events, and KTC 56 (73.7%) events. (Quality*& Risk* RS X West Java). Therefore, it is necessary to conduct IDC implementation research to the provision of bato bat topatients.

Other efforts that have been made by Hospital X West Java together with nursing managers in order to suppress and reduce the incidence of ME are: using the *unit dose dispensing* (UDD)system in hospitalization, *drug calculation* training, iv therapy *e-learning* and through classes conducted 3-4 times a year, providing a special room for places to do IDC, making and socialization of the policy/SPO on *Independent double check* at the injection drug preparation stage, and principle six is correct in the preparation of drugs (correct patient, correct dose, correct route, correct dose, correct time,and correct documentation) as well as ensuring all nurses have details of clinical authority through acredential/creditsential process.

Based on the efforts that have been made, it is expected that all nurses have been competent in the administration of injection drugs and able to implement injection drug administration through the IDC process. Various efforts have been made by RS X West Java, but the incidence rate of ME is still high and with the recommendation of the previous researcher, Simamora (2019), idc is still high. It needs to be further researched to find out its effect on the principle of six true preparation and administration of injection drugs to patients in the inpatient room of Hospital X West Java .

METHOD

The research design used is a quasi-experiment with the approach of preparing and administering drugs to patients by the first nurse after idc was conducted by a second nurse accompanied by a team of researchers. .

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The population in this study was the entire action/activity of preparation and administration of injection drugs by the first nurse in the inpatient room "C" of West Java X Hospital. The researcher's reason is because, the first nurse is the implementing nurse who prepares and delivers the drug, while the second nurse serves as an assessor /verification of the suitability of the drug that is It was prepared by the first nurse.

The samples taken in this study were the entire incidence of preparation and administration of injection drugs in the morning and evening *shifts* of 5895 preparations and 5895 injection drug administrations. Sampling techniques use *purposive sampling* because all samples have inclusion and exclusion criteria that correspond to the phenomena studied. The sample criteria taken in this study are the action /incidence of injection drug preparation and injection drug administration given im, SC, IC, and IV (bolus, intermittent and continuous).).

Data collection tools are tools that are selected and used by researchers to obtain data or information needed in research. (Rukajat, 2018: 112). The data-collecting tools used in the study by assessing on idc implementation sheets nurse first and second on the preparation and administration of injection drugs. Assessment is the activity of researchers to determine and record the results of activities/actions systematically carried out by the first nurse and the second nurse at the preparation stage. and the administration of injection drugs about the principle of six true (true patient, correct drug, correct route, correct dose, correct time,and correct documentation). Data collection about the characteristics of the first and second nurses is done by way of interviews and obtaining data *base* from the head of the room in charge of the inpatient room. . This is done by researchers because the biodata of all employees is contained in a system that has been integrated and *updated* automatically so that the data is more accurate. .

The data collection process was carried out after the researcher received approval of ethical information from KEPPKSTIKSC on March 10, 2021 and received research approval from the chairperson of the STIK Sint Carolus study program which was approved. by the Director of X West Java hospital on March 15, 2021. In the process of collecting data, researchers were assisted by nine research assistants who had been approved by the head of nursing at Rs X West Java. The study was conducted for 3 months from March 22, 2021 to June 21, 2021 ptherewere morning, afternoon and afternoon drug delivery activities. In the data collection process, researchers assisted nine research assistants who had been approved by the head of nursing at Rs X West Java.

Researchers explain the purpose and purpose, how to conduct research to research assistants who are willing and have signed a letter of approval to be a research assistant and willing to maintain confidentiality. nurses involved in idc implementation are carried out. After that the researchers asked the nurses involved in idcimplementation (first nurse and secondnurse) to fill out the approval sheet and apply to participate in the study. Researchers first explained the intent and purpose of the study before participants filled out the approval and application sheet as idc implementers. Researchers also explained the negative impact that may arise, the benefits of the study results for participants and hospitals, aspects of maintaining participant confidentiality during the study. and research data collection procedures.

The next step is to revise IDC's SOP Preparation and Injection Drug Administration, then socialize refreshment about IDC implementation, conduct *pre-*

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test and *post-test* after *refreshing* all nurses The second (nurse who did IDC). IDC refresh, *pre,*and *post-test* are done gradually through *online.* Furthermore, an assessment is carried out on the ground at the time of data collection. The data collection procedure is done by conducting an assessment. The assessment is based on the records of the nurse who prepared the drug (the firstnurse) and the records of the nurse who conducted IDC (the secondnurse) as well as observations made by researcher/research assistant.

The note used by each nurse is an IMR form. The implementation technique is that each nurse (the first nurse and the second nurse) writes the results six correctly in a separatenote sheet. The first step is the nurse who prepares the drug (the first nurse) to prepare the injection drug in accordance with the instructions in the patient's IMR in the IDC room. Furthermore, the nurse who prepares the drug (the firstnurse) records the results of the injection drug preparation in sequence in a note sheet that has been prepared. by researchers.

After the process of IDC activities at the drug preparation stage with the principle of six is correctly completed, then the researcher and/or research assistant conduct an assessment and correction of the correctness of the preparation results carried out the first nurse and the second nurse before proceeding to the stage of administering the drug to the patient. The stage of administering drugs with the principle of six correctly is also assessed and corrected by researchers and/or research assistants at the time of injection of the drug. The results of the assessment from the second nurse and the correctness correction of the research team became the final results of IDC implementation to be analyzed. Upon completion of drugadministration, the first nurse and the second nurse give the paraf and the name of the nurse who delivered the drug,and who perform IDC on the patient's IMR form.

To avoid biased results, the records of the first nurse and the second nurse who carried out idc's corrected implementation process were collected daily at the end of the *shift.* afternoon by researchers. Next, the researchers used idc implementation data collection sheets (setup) of first nurses and second nurses and IDC implementation data collection sheets (granting) nurses. first and second nurse who contains about the details of the implementation of principle six correct preparation and administration of injection drugs to write code 0 or 1 on each column of injection drugs observed. Code writing 0 or 1 is adjusted based on the first and second nurse records at the time of doing IDC. Code 0 for WRONG and code 1 for RIGHT.

During the IDC implementation process, if the researcher finds any untruths after idc (second nurse), the researcher will correct the truth according to imr. The results of the assessment from the second nurse and the assessment/correctionof the research team will be used as a result of idc implementation. The purpose of ethical considerations is done so that the incorrectness can be corrected as early as possible for patient safety.

In analyzing the relationship between nominal free variables (idcimplementation by the second nurse) with categorically bound variables (correct preparation and administration of injection drugs with principle six correct by the first **nurse)** This included being corrected by the second nurse and the research team) used the Chi-Square test. The logistic regression test is used to analyze the influence of one or more independent variables of IDC and the characteristics of the first nurse with a variable dependent principle of six correctly on the simultaneous preparation and administration of injection drugs.

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RESULT

The characteristic picture of nurses analyzed is not only in the implementing nurse (the firstnurse), but also on the nurse who did IDC (the secondnurse). Univariate and bivariate analysis of nurse characteristics 1 and nurse 2 can be seen in Table 1.

Table 1. Analysis of Characteristics of The **First Nurse and Second Nurse** in **The Hospital's C Hospital Inpatient Room. X.** West **Java.**

Characteristics of nurses	Propose yourself (%)		
	First Nurse N=39	Second nurse N=33	Value p
1. Education			
DIII	15 (38,5)	14 (42,4)	0,266
Ners Hotels	24 (61,5)	19 (57,6)	
2. Work experience			
> 3 bln - <5 th	21 (53,8)	16 (48,5)	
5-10 th	14 (35,9)	13 (39,4)	0,105
>10 th	4 (10,3)	4 (12,1)	
3. Frequency of preparing and delivering drugs/*shifts*			
1-5 injection drugs	11 (28,2)	11 (33,3)	0,518
6-10 injection drugs	27 (69,2)	21 (63,6)	
>10 injection drugs	1 (2,6)	1 (3,0)	
4. Nurse's career path			
Pre PK > 3 bln	5 (12,8)	0 (0)	
PK I	17 (43,6)	17 (51,5)	0,134
PK II	8 (20,5)	7 (21,2)	
PK III	9 (23,1)	9 (27,3)	

Table 1. The number of nurses involved in the study consisted of the first 39 nurses and the second 33 nurses. Bivariate shows no meaningful difference between the characteristics of the first nurse and the second nurse.

Table 2. The effect of IDC's implementation of principle six is **correct** on **the preparation and** delivery **of injection drugs** in RS **X West Java**

Principle 6 Is Right	Injection drug preparation n (%)	Gift injectable drug n (%)	Value p
True patient	5894 (99,98)	5895 (100)	1,0
Correct medicine	5895 (100)	5895 (100)	ON
Right way	5895 (100)	5895 (100)	ON
Correct dosage	5891 (99,9)	5895 (100)	0,134
Right time	5861 (99,4)	5810 (98,6)	**0,000**
Correct documentation	5876 (99,7)	5860 (99,4)	**0,041**

Table 2 shows that IDC implementations found time and documentation incorrectness on the preparation and delivery of meaningful injection drugs.

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Table **3.** IDC's Meaningful Value and The Characteristics of the First Nurse (Implementer)That Affect the Six True Injection Drug Preparation in The Hospital's C Hospital Inpatient Room. X. West Java.

Characteristic Factors of the First Nurse	The Meaningful Value of IDC's Influence and The Characteristics of the First Nurse on the Six True Injection Drug Preparations					
	True patient	Correct medicine	Right way	Correct dosage	Right time	Correct documentation
1. Partial						
IDC	0,410	0,979	0,979	**0,000**	**0,000**	0,217
Education	0,966	0,982	0,982	0,215	0,175	**0,007**
Work experience	0,975	0,977	0,977	0,263	0,326	0,087
Frequency of drug administration	0,987	0,876	0,876	0,973	0,313	0,124
Career path	0,976	0,751	0,751	0,999	0,504	0,797
2. Simultaneously/ Omnibus						
IDC and the characteristics of the First Nurse	0,155	0,764	0,764	**0,000**	**0,000**	0,059

Table 3. IDC shows that it has only a significant effect on the correct dose (value p = 0.000)and on the correct time (p =0.000). While the characteristics of the first nurse only education affect the correct documentation (p =0.007). Simultaneously IDC's shared factors/characteristics of the first nurse had a significant influence on the preparation of injection drugs on the principle of correct dose (p= 0.000),and correct timing (p =0.000).

Table 4. Idc's Meaningful Value and Characteristics of The First Nurse (Implementer)That Affects The Six True Injection Drug Administration in The Hospital's Hospital C Hospital. X. West Java

Factor	The Meaningful Value of IDC's Influence and The Characteristics of The First Nurse (Implementer) on the Six True Injection Drug Administrations					
	True patient	Correct medicine	Right way	Correct dosage	Right time	Correct documentation
1. Partial						
IDC	0,985	ON	ON	0,975	**0,000**	**0,029**
Education	0,996	ON	ON	0,979	**0,010**	**0,001**
Work experience	0,997	ON	ON	0,973	0,069	**0,001**
Frequency of drug administration	0,927	ON	ON	0,076	0,463	0,764

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Career path	0,974	ON	ON	0,498	0,312	0,575
2. Simultaneous / Omnibus						
IDC and the Characteristics of the First Nurse	0,358	ON	ON	**0,017**	**0,000**	**0,001**

Table 4. Idc's partially demonstrated and educational characteristics had a significant influence on true time (p=0.000) and p=0.010), and true documentation (p=0.029 and p=0.001). The characteristics of work experience also affect only the correct documentation (=0.001). The characteristics of the other first nurse have no influence on the principle of six true drug administration. Simultaneously showed that IDC shared thefactors/characteristics of the first nurse having a significant influence on the correct dose (p = 0.017), true time (p=0.000) and correct documentation (p = 0.001).

DISCUSSION

Characteristics of nurses.

Results of research in tabel 1. Showing educational characteristics in this study Ners is more dominant compared to diplomas, work experience is more dominant over three months to 5 years, with the majority frequency of preparing and delivering drugs averages 6-10 drugs per *shift.* Bivariate analysis showed no meaningful difference between the characteristics of the first nurse and the second nurse. Although the career path between the first nurse and the second nurse is no different, but there is no second nurse with the characteristics of the career path of Pre PK >3 bln. Thus the implementation of IDC has been carried out by the first nurse and the second nurse with almost the same characteristics of nurses involved in this study at RS X West Java.

ISMP (2019), said two nurses who double check *independently* are unlikely to make the same mistake. This statement is supported by the Hospital Accreditation Commission (2019: 29) which says drug verification can be done by competent people (knowledge, experience and have permission) in In this study the first nurse and the second nurse had had the same knowledge through idc socialization before the study was conducted. In addition, the first and second nurses have had details of clinical authority in delivering drugs. The difference in status between the first nurse and the second nurse is due to the status factor in the task where the first nurse as the executor and the second nurse as the person in charge of the *shift.* Or the team leader.

Idc's implementation of the sixth principle is correct on the preparation and delivery of injection drugs.

The results of the study in tabel 2 showed that idc implementation found incorrect timing and documentation on the preparation and administration of meaningful injection drugs. Although idc implementation correctly improves patient and correct dosage,on drug delivery, idc implementation does not significantly affect drug preparation. The results of giving are better (100%) than the preparation because before the administration of the drug has been corrected by the second nurse and the research team so as to reduce the incidence of *mediaction error* (ME). ethically.

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True drugs and true ways are not affected by IDC implementation because IDC results show the same truth (perfect)on the preparation or delivery of drugs, so it cannot be assessed. the difference. The value of the results of the preparation and administration of injection drugs on the principle of correct drug and correct constant way (100%). The assumption of the researcher, the principle of correct drug and the right way has been understood and has been implemented properly so that there is no ME on the right drug and how to give on the preparation Or the administration of injection drugs to patients.

The results of *idc's chi-square* implementation analysis on setting and delivering at correct time have a meaningful relationship ($p<0.05$). In this study found the correctness of time in the preparation of drugs 5861 (99.4%) while the exact (correct) time on drug delivery to patients decreased to 5810(98.6%). A total of 1.4% (85 drugadministrations) were not given in a timely manner due to: inpatient room activity at the time of drug administration (36 drugadministrations), nurse compliance in calculating *drip* drip drip droplets (29 drug *drip*administrations), patient conditions such as swollen infusion (9 drug administration), transfusion (3 drug administration), thoroughness nurse in reading IMR (8 drug administration).

Panca, (2018) said the time error of drug administration can occur due to *human error* in terms of the accuracy of nurses in reading IMR. Drug errors can also occur due to the environment or activities of WHO nurses (2016:7); the presence of intruption at the time of giving drugs (Manias, et *al,*2018; Wondmieneh *et al*,2020). Busy environmental factors (38%) affect the timeliness of drug administration (Ayorinde.,Alabi, 2019). In addition,ME can also occur due to lack of nurse professionalism, in this case nurse compliance in carrying out sop drug administration (WHO,2016: 7), where in this study, found 29 drip drugs were not given in a timely manner. In addition, ME because of the wrong time can also occur due to patient factors (WHO, 2016: 7). This is in accordance with the results of studies where the patient's condition (swollen infusion, transfusion) thus affects the timeliness of drug administration.

The results of *IDC's chi-square* implementation analysis on the preparation and delivery of correct drug documentation have a meaningful relationship ($p<0.05$). The accuracy of drug preparation documentation was 5876 (99.7%) while the accuracy of documentation on drug administration decreased to 5860 (99.4%). In this study found 35 IMRs that were not signed after administration of the drug. IMR is signed after being corrected by the researcher/research assistant. This incident is because when giving the drug the interruption is 25 events (roomactivity: patientbell, visit doctor, phone and others) and 10 IMR signed after correction by researchers/assisiten researchers because nurse compliance is still not consistent.

O'Brien, (2019:160); Manias, *et al,* (2018), say, drug errors can occur when documentation procedures are not fully adhered to by nurses. While the Hospital Accreditation Commission (2019: 410) on Medical Information and Record Management (MRIM) emphasized the importance of documentation to improve health services and improve patient safety. . It is also in accordance with Nursing Law number 38 of 2014 which says documentation is one of the obligations that nurses must do after taking nursing actions to improve their health. patient safety. Care in the *patient's* healing process through nurse professionals *(core) and* the science of how to prepare and administer drugs *(cure) developed* by Lydia *Hall* can ease the burden. patient safety improvements. (Teting.,Natalia., Ermayani,2018:7). A

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professional nurse is a nurse who is able to help patients recover quickly. (Risnah., Irwan,2020: 90).

So the results of this study are in accordance with the results of previous research where ME can occur due to timeerrors, and incomplete documentation that can be affected due to the busyness factor of the room, nurse compliance in running a standard SOP, and unpredictable patient conditions. Therefore idc implementation needs to be improved/tightened especially the truth of the time and documentation of drug delivery to ensure patient safety and prevent fatal events in the treatment room. inap C RS X West Java where the research was conducted. Affirmation of all three aspects *(care, core* and *cure)* in the patient's healing process needs to be considered and improved to get a safe nursing care. This is in accordance with the results of IDC implementation conducted at Hospital X West Java, proving that it can reduce the incidence rate of ME by less than 5%.

The effect of IDC implementation and the characteristics of the first nurse on principle six is correct on the preparation and administration of injection drugs.

Partial research results at the injection drug preparation stage showed that IDC had only a significant effect on the correct dose (value p = 0.000)and on the correct time (p = 0,000). While the characteristics of the first nurse only education affect the correct documentation (p =0.007).

The results of saputra et al (2019) study say that education has a significant relationship to the completeness of documentation (p<0.05). Similar results were also reported by mulyanto et al research (2020) that a meaningful relationship between the level of education and the completeness of documentation (p = 0.046). Abukhader (2015) also said, higher education showed a significant improvement (p <.05) in the practice of proper drug administration including proper documentation after being given training. The level of education and the existence of socialization affect the principle of six true drug administration including documentation. (Darmawan (2017).

The results of this study when compared to previous research can be said to be still consistent that education and socialization affect the correct principle of documentation. The first nurse and the second nurse at X Hospital in West Java have socialized idc implementation before the research.

Other first nurse factors/characteristics have no significant effect on the patient's correct drug preparation, correct drug, correct manner and correct documentation. The cause of no effect can be caused because the first nurse and the second nurse have had the same knowledge through IDC socialization before the study is done so that it can reduce me event numbers. This is in accordance with Suzan.,Hoover (2019) who said if all nurses consistently conduct independent examinations, this can prevent mis-preparing and administering drugs.

Independent examination (IDC) turned out to be effective in helping to detect drug errors, especially dosecalculation, drug frequency (drug administration time) (ISMP, 2019). Supported by the results of Simamora's thesis research (2019) which said,IDC at the setup stage can capture the correct mismatch of doses by 1.5% (39 events) and the correct mismatch of time by 1.5% (39 occurrences). 3.7% (98 occurrences) of 2638 drug preparations. This is also in accordance with research conducted by Johanna *et al* (2020) which said,IDC can reduce 92.5% of ME incidence in the drug preparation and administration phase. Examinations performed

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by *double check* independently are also reported to be significantly effective than single *check* primarily for detecting drug dosing errors. (Douglass., *at al.* (2017).

Simultaneously demonstrating that IDC together with the factors/characteristics of the first nurse has a significant influence on the preparation of injection drugs against the correct principle of dosage (p = 0.000), and correct time (p =0.000). These results show IDC both partially and simultaneously alongside the characteristics of the first nurse significantly affects the correct dosage and correct timing of the drug preparation. The results of the accuracy of the preparation of injection drugs on the principle of correct dose 5891 (99.9%) and correct time 5861 (99.4%), so true dose and correct time is something that needs to be more considered in preparation of injection drugs. Documentation also needs to be considered even though it is only partially influenced by the education of the first nurse. Documentation in the preparation of the drug is one way of communication to the team that the drug has been done double *check* to ensure the preparation of injection drugs is appropriate. (Murray, 2017: 20).

Idc's meaningfulness and the characteristics of the first nurse whoaffected six correct injection drugs in the hospital's inpatient room. X. West Java can be seen in table 4. The results showed that partially IDC and educational characteristics had a significant influence on true time (p=0.000) and p=0.010), and true documentation (p=0.029 and p=0.001). The characteristics of work experience also affect only the correct documentation (=0.001). Other characteristics of the first nurse had no effect on the principle of six true drug administration.

Table 4 simultaneously shows that IDC's shared factors/characteristicsof the first nurse had a significant influence on the correct dose (p = 0.017), true time (p=0.000) and true documentation (p = 0.001). Principle six is true especially true time and documentation is something that needs to be more considered in the administration of injection drugs because the results of injecting drugs on the right principle time 5810 (98.6%) and correct documentation 5860 (99.4%) and multivariate hasil show IDC both partially and simultaneously together with the characteristics of the first nurse affects the true meaning of time and correct documentation of drug administration. True drug doses also urgently need attention on IDC drug administration to maintain the quality of drug preparation and administration as well as patient safety.

So IDC and the factors/characteristics of the first nurse both partially and simultaneously affect the correct timing and correct documentation of drug administration. The educational characteristics of the first nurse consistently partially affect proper documentation on both the preparation and administration of the drug. The characteristics of work experience also affect meaningfully correct documentation on drug administration.

IDC can detect mis-preparing and administering drugs by principle 5 correct (true patient, drug, manner, dosage, time). (Kozier, *et al*,2018: 818). Research conducted by Johanna *et al* (2020) also reported IDC can reduce 92.5% of ME incidence in drug preparation and administration. While ISMP (2019) states that independent examination (IDC) more effectively helps detect errors in the preparation and administration of drugs, especially dose calculation, frequency Drug (time of administration of the drug).

The results of the above research are also in line with previous research conducted by Bulbul et.al (2014); Kim et. al (2018); Vaidya (2017) who said that the errors that often occur in the phase of drug administration are mis-dosing and time

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because of the act of injecting drugs and variations are more widely treated. Stay with a limited grant time of 60 minutes before or after the appointed hour. In addition, the activities of nurses also affect the timeliness of drug administration. This is supported by WHO research (2016:7); (Jhonson *et, all,* 2017); Panca (2018); (Ayorinde.,Alabi, 2019) who said that the timeliness of drug administration is influenced by environmental factors (activity/busyness of the room).

According to researchers one of the factors of the accuracy of drug preparation and delivery based on the principle of 6 correct drug preparation and administration is education and work experience. A person's education becomes one of the benchmarks that affect the results of the work of nurses in terms of drug administration. This can be seen in the results of studies that show educational characteristics have a significant influence on true time (p=0.000) and true documentation (0.001).

This result contradicts the Bulbul *et.al* (2014) which said higher education does not affect the timeliness of drug administration (p = 1,000) as well as the results of the study Setianingsih., Septiyana (2019) which Tests tested with *Sperman's rho* showed no association (p >0.05) between education level and drug administration with principle 6 correct including correct timing and documentation. The results of the study are in accordance with Abukhader's research (2015) which said, higher education showed a significant improvement (p < 0.05) in the practice of proper drug administration. including punctuality and documentation after training. Darmawan's research results (2017) also said the level of education and socialization affect the principle of six true drug administration including documentation.

The results of this study when compared to previous research can be said to be still consistent that education and socialization affect the correct principle of time and documentation in which nurses are treated. The first and second nurses at Hospital X West Java have socialized idc implementation before research.

M*edication errors* can occur when documentation procedures are not fully adhered to. (O'Brien, 2019:160). Documentation is therefore important and indispensable to reduce errors and improve patient safety (Hospital Accreditation Commission, 2019:412). This is supported by PMK no. 26 years (2019), which says one of the obligations of nurses is to document care in accordance with standards aimed at improving patient safety. In the study also found that the education of nurses is also important because it can affect the completeness of documentation (Saputra et al,2019) supported by mulyanto et al (2020) research that says, ameaningful relationship between the level of education and the completeness of documentation (p =0.046).

One of the main factors that contribute to the incidence of drug errors is factors related to healthworkers, including work experience. (WHO (2016:7). A nurse's work experience influences behavior in drug administration. The longer the working life of the nurse will have an effect in the accuracy of drug administration behavior because the nurse will be more trained with what is done over a long period of time, many experience and a lot to learn from drug-giving mistakes.

The results showed that the characteristics of work experience have a partial meaning (p =0.001) to the completeness of the documentation. This is in line with Haryani and Esmianti's research (2015) which said there is a relationship (p = 0.001) between the length of work with the correct accuracy of documentation in drug administration at Curup Hospital. There is a longstanding working relationship to the

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6 true principles of administering drugs including true documentation with *sperman's rho* test showing a *p-value of* 0.028. (Setianingsih & Septiyana,2019).

The interesting results of this study are true doses and consistent timing is a major problem in both the preparation and administration of injection drugs. According to researchers, this can happen because the calculation of doses, timely administration of drugs requires more accuracy and concentration. Therefore, self-administered examination (IDC) more effectively helps detect drug errors, especially dosecalculation, drug frequency (time of administration). medicine). (ISMP, 2019). While true documentation is a prominent problem in the administration of drugs. This can happen because dokumentation is done after administration of the drug, not before. (Kozhier et all, 2018: 814). Drug errors can occur when documentation procedures are not fully adhered to. If the signature box is left empty, while the drug has been given it will be at risk the drug will be given back. This can pose a risk to the patient. (O'Brien, 2019:160). Professionalism of nurses through *caring,* thoroughness, compliance, concentration in terms of treatment *(cure)* of patients through the truth of insertion and administration of injection drugs can be Speed up the patient's healing process. (Risnah., Irwan,2020: 90).

Therefore idc implementation needs to be improved/tightened especially to obtain the correctness of dosage, time and documentation of drug administration to speed up the healing process, ensuring safety. patients and prevent fatal events in the hospital room C HOSPITAL X West Java where the study was conducted. Improving a nurse's therapeutic ability *(core)* will speed up the patient's healing process. (Teting.,Natalia., Ermayani,2018:7).

CONCLUSIONS

The implementation of *Independent Double check* (IDC) on the preparation and administration of injection drugs carried out by the first nurse in this study at RS X, West Java can reduce the incidence of ME by <5% harming the patient on the preparation and administration of injection drugs. The results of the study found ME dose and time at the time of preparation of injection drugs and ME dose, time,and documentation at the time of injection drugs. The first nurse's educational factor affects proper documentation on both the preparation and administration of drugs,and affects the correct time on the administration of injection drugs. The nurse's work experience factor affects proper documentation on the administration of injection drugs. The increase in therapeutic capacity of a nurse *(core)* accompanied by *care* and treating techniques in this case the preparation and administration of injection drugs *(cure)* will increase patient safety.

Monitoring evaluations, making educational planning, non-formal training and refreshment: *drug calculation, medication management,* IDC implementation on the preparation and delivery of injection drugs consistently. Establish the implementation of IDC SPO preparation and injection drug delivery, and all nurses carry out principle 6 correctly on the preparation and administration of injection drugs. It is worth further research on the influence of supervision and workload on IDC implementation.

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