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Implementation of Universal Precautions for Health Workers in the City Health Services in Indonesia

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Abstract

Background: The most health problem in Indonesia for health services is infectious diseases. So the need to implement Universal Precautions is one of the efforts to prevent infection in health facilities. **Aim :** This study aims to implementation of universal precautions for health workers in the city health services. This study uses a quantitative design that is observational, with a cross-sectional study design. **Methods:** The sample in this study was the total number of health personnel in health services as many as 108 people consisting of a hospital as many as 89 nurses, a public health center with 9 nurses, and a clinic as many as 10 nurses. The instrument used in the application of universal precautions is through observation, using a monitoring sheet. **Results:** The result proportion of the not application of universal precautions at the level of hospital health services is 83.3%. The results showed that the higher the level of health care, the higher the average application of universal precautions. The application of universal precautions at the health service level has the same level of service in handling patients, and there are still nurses who do not use APD aprons. **Conclusion:** The health service conducts training and the head of the room directs the nurse about universal vigilance when the shift changes, so that the nurse can apply universal precautions according to the standard operating procedures (SOP).

Keywords: Universal Precautions, Knowledge, Attitude, Leadership Support, Hand Washing

1. Introduction

Health workers that are exposed to blood and other bodily fluids will have a higher risk of being infected with blood-borne viruses such as HIV / AIDS, Hepatitis B (HBV) and hepatitis C (HCV). The probability of risk is greatly influenced by the prevalence of disease in the patient and the frequency of exposure. Frequent exposures such as needle prick or other sharp object injuries, splashes around blood or other body fluids into the eye, nose or mouth, blood in contact with a cut skin. One of the strategies to protect health workers is the implementation of universal precautions.

Universal precautions are part of infection control efforts in healthcare services. Other efforts that are components of infection control in service areas are surveillance, measurement of outbreaks, development of policies and work procedures as well as continuous education and training in infection prevention, which cannot be separated.

Standard universal precautions apply to all types of care for all patients, irrespective of the patient's disease state. These precautions must follow applicable SOPs when there is a risk of potential exposure to 1) blood; 2) all body fluids, secretions and excretions except sweat (regardless of whether they contain blood); 3) skin and 4) mucous membranes. Universal precautions also include hand hygiene measures and personal protective equipment (PPE) (Ndu and Arinze-Onyia, 2017; Banach *et al.*, 2018; Committee on infectious diseases, 2018). Exposure to blood-borne pathogens can adversely affect health care workers, especially in resource-poor countries (Prüss-Üstün, Rapiti and Hutin, 2005; Motamed N, BabaMahmoodi F, Khalilian A, Peykanheirati M, 2006).

Health problems in Indonesia that are high in health services are infectious diseases. Based on the WHO healthcare associated infection in the world in several reporting countries. Shows varying numbers on the incidence of HCAI from 5.7% to 19.1%. The reported HCAI incidence rates were Albani 19.1%, Mali 18.4%, Tunisia 17.9%, Serbia 17.4%, Brazil 14%, Ghana 6.7%, Thailand 6.5%, Mongolia 5, 4%, Malaysia 14%, and Indonesia 7.1% (WHO, 2011).

In Indonesia, there is an infection prevention and control unit (PPI) which has the objective of identifying and reducing the risk of infection that is acquired and transmitted among patients, staff of health professionals, contract workers, volunteers, and visitors. Awareness of the application of universal precautions has not been fully implemented. Based on target observations in implementing universal precautions in handwashing, use of PPE, disposal of medical and non-media waste, linen management has not all reached the predetermined target of 100%.

2. Method

The research design used in this study observational, with a cross-sectional study design. The research begins with the preparation of a research proposal and a discussion about the head researcher and the members to agree on the research topic, the research method to be used, and the timing of the research. Furthermore, the data collection stage.

2.1 Sample Collections

The data used in this study are primary data, namely by conducting interviews for a questionnaire that will measure the implementation of universal precautions in health services to be implemented. This data will also be complemented by the results of field observations. The next step was checking the data to ensure that the data obtained were complete, filled in and consistent. The last stage in this research is dissemination. In this study, the data collection technique that the writer used was a saturated sample (total sampling) where the respondents of this study were all health workers in health services (hospitals, public health centers and clinics). The total number of health personnel of health services is 108 people, consisting of a hospital with as many as 89 nurses, a public health center with 9 nurses and a clinic as many as 10 nurses.

2.2 Assessments

This questionnaire has been tested for validity and reliability. The instrument used in the application of universal precautions is by means of observation, using a monitoring sheet. Observation techniques by observing respondents in handwashing activities, the appropriateness of using PPE, waste management, and linen management. This observation is assisted by the chairman of each ward in 1 monitoring. How to score on handwashing monitoring, compliance with the accuracy of PPE, waste management and linen management, namely if the respondent's answer is No then it is given a value of = 0, and if the respondent's answer is yes then it is given a value = 1. Instrument used on knowledge with the questionnaire method. How to questionnaire by filling the multiple choice as many as 10 questions related to vigilance universal. Give one of the correct answers by giving across, if the respondent's answer is wrong then it is given a value of = 0, and if the respondent's answer is wrong then it is given a value of = 1. This instrument is used in attitude to the questionnaire method, the questions total 17 questions. Respondents can provide responses by means of a checklist in the column provided. Attitude

variables use scale Liker, tenure open questions to determine the vulnerability of the first respondent's work. The instrument used is a questionnaire filled with 5 questions. Respondents can provide a checklist in the column provided.

2.3 Statistical Analyses

This analysis is used to see the differences between groups of variables. The statistical test used is the independent t-test. Analysis of differences in application of universal precautions between groups using the T-Independent Test was used to test the mean between different groups. In the T-Independent test, there is a Levene's Test for Equality of Variance, which is to find out the variance equation between the two groups and Levene's Test for Equality of Means, which is to find out the average difference between the two groups. If the value of the Levene's Test for Equality of Variance > 0.05 then the variance between the two groups is the same and the data read is equal variance assumed and vice versa if the Levene's Test for Equality of Variance is ≤ 0.05 then the variance between the two groups is not the same and the data read is equal variance not assumed.

The result of p-value ≤ 0.05 means that there is a significant difference between the control group and the experimental group and vice versa, if the p-value > 0.05 then there is no significant difference between the control group and the experimental group. If the data is normally distributed, it is used in parametric statistical analysis in the form of an independent t-test to see if there is a significant difference in the application of Universal Precautions. If the data is not normally distributed, a non-parametric statistical analysis is used in the form of Mann-Whitney.

3. Results

Implementation of universal precautions was carried out at three levels of health services, namely hospitals, health centers and clinics for 108 nurses. This research also examines the variables of knowledge, attitudes and leadership support.

Table 1: Frequency distribution of the Implementation of universal precautions

Variable	Health Service Facilities			
	Hospital	Public Health Center	Clinics	Total
Application of universal precautions				
Not applying	60 (83.3)	5 (6.9)	7 (9.7)	72 (100)
Applying	29 (80.6)	4 (11.1)	3 (8.3)	36 (100)
Knowledge				
Deficient	50 (52.7)	6 (9.4)	8 (12.5)	64 (100)
Good	39 (36.3)	3 (3.7)	2 (4.1)	44 (100)
Attitude				
Negative	68 (81)	7 (8.3)	9 (10.7)	84 (100)
Positive	21 (87.5)	2 (8.3)	1 (4.2)	24 (100)
Support from leadership				
Less supportive	44 (80)	4 (7.3)	7 (12.7)	55 (100)
Support	45 (84.9)	5 (9.4)	3 (5.7)	53 (100)

Table 1 shows the highest proportion of the not application of universal precautions at the level of hospital health services is 60 (83.3%), at the health center the highest proportion of those who did not apply was 5 (6.9%), while at the level of clinical health services the highest proportion was not apply by 7 (9.7%). The highest proportion of knowledge at the level of hospital health services with less knowledge was 50 (52.7%), while at public health centers as the highest proportion of knowledge was less than 6 (9.4%), while at the clinical health service level the highest proportion of knowledge was less than 8 (12.5%). Attitudes have the highest proportion to the level of hospital health services, namely negative attitudes to 68 (81%), while at Public Health Center the highest

proportion of negative attitudes is 7 (8.3%), while at the level of clinical health services the highest proportion is negative attitudes of 9 (10.7%). Leadership supported with the highest proportion of the level of hospital health services was 45 (84.9%), while at public health center the highest proportion was 5 (9.4%), while at the clinical health service level the highest proportion was less supportive at 7 (12.7%).

Table 2: Distribution of respondents according to attitude in the implementation of universal precautions in health services

Attitude	Strongly Agree	Agree	Disagree	Strongly Disagree
1. Risk of contracting hepatitis B after one needle stick	42 (35)	69 (59)	7 (6)	
2. Giving nursing to infected patients	22 (18.8)	84 (71.8)	12 (9.4)	
3. Put intravenous and inject using gloves	23 (19.7)	76 (64.1)	19 (16.2)	
4. Lines when processing the contamination equipment you must wear your hands	23 (19.7)	76 (64.1)	19 (16.2)	
5. Closing needles using one-handed technique	22 (18.8)	77 (65)	19 (16.2)	
6. Sharps should be placed in a transparent container	64 (54.7)	46 (38.5)	8 (6.8)	
7. Exposed, disposed of in infectious waste	13 (10.3)	85 (72.6)	20 (17.1)	
8. Gauze Handsoon and disposable bath masks are disposed of in medical waste	13 (10.3)	87 (74.4)	18 (15.4)	
9. If exposed to blood and body fluids, help first disinfectant	13 (11.1)	81 (68.4)	24 (20.5)	
10. Report of exposure to special services	7 (5.1)	87 (74.4)	24 (20.5)	
11. Nurses do not allow contact with HIV / positive patients	9 (7.7)	11 (9.5)	97 (82.9)	1 (9)
12. not assume that all patients have the potential for infectious disease	8 (6.8)	7 (6)	102 (86.3)	1 (9)
13. Need to be careful when treating wounds that bleed	50 (42.7)	43 (35.9)	25 (21.4)	
14. Nurses see that the safety box is full, immediately closes and replaces new	50 (42.7)	43 (35.9)	25 (21.4)	
15. In an emergency condition that requires DPR action, PPE is not important	3 (1.7)	5 (4.3)	98 (83.8)	23 (10.3)
16. Conducting nursing in infected patients to non-infected patients even though the gloves are not exposed to blood	3 (2.8)	45 (38.5)	66 (56.4)	3 (2.6)
17. Although treating infected patients will not contract when working according to SOP	30 (25.6)	88 (74.4)		

Table 2 shows the highest proportion of strongly agree is the attitude of nurses for sharp waste such as syringes that must be placed in a transparent container as many as 64 (54.7). The proportion the highest level of agreement is hands coons and used masks disposed of in medical waste, after receiving help such as I above, report the exposure to the special service / occupational medicine, and the attitude of the nurse who, although caring for infected patients, I am sure they will not be infected if I work according to the SOP as many as 87 (74.4%), the highest proportion for the attitude of nurses who disagree is attitude 101 (86.3%), the highest proportion of nurses who strongly disagreed was the attitude of nurses who should not assume that all patients had the potential for infectious diseases as much as 23 (10.3%).

Table 3: Distribution of respondents according to support for implementation universal precautions in health services

No	Support	Never		Sometimes		Often		Always	
		n	%	n	%	n	%	n	%
1.	Hospital directors work together to ensure safe working conditions			54	45.3	14	12	50	42.7
2.	PPI is active in the socialization of standard precautions			12	9.4	30	25.6	76	65.0
3.	The head of the room does safety, talking about universal precautions	3	2.6	7	6	92	78.6	16	12.8
4.	PPI is active in monitoring universal vigilance			5	12	72	61.5	31	26.5
5.	Reward is held by the PPI team, to nurses who obey universal precautions	76	65	14	13	22	18.8	5	4.3

Table 3 shows the proportion of support from leaders who never give reward by the PPI team, to nurses who obey in implementation precautions universal as much as 76 (65%), the proportion of leadership support who sometimes is directors working together to ensure safe working conditions is 53 (45.3%), the proportion of leadership support that is often is the head of room do not do safety talking about precautions universal before the morning application as many as 92 (78.6%), the proportion of leaders who are always PPI active in socializing standard precautions is 92 (78.6%).

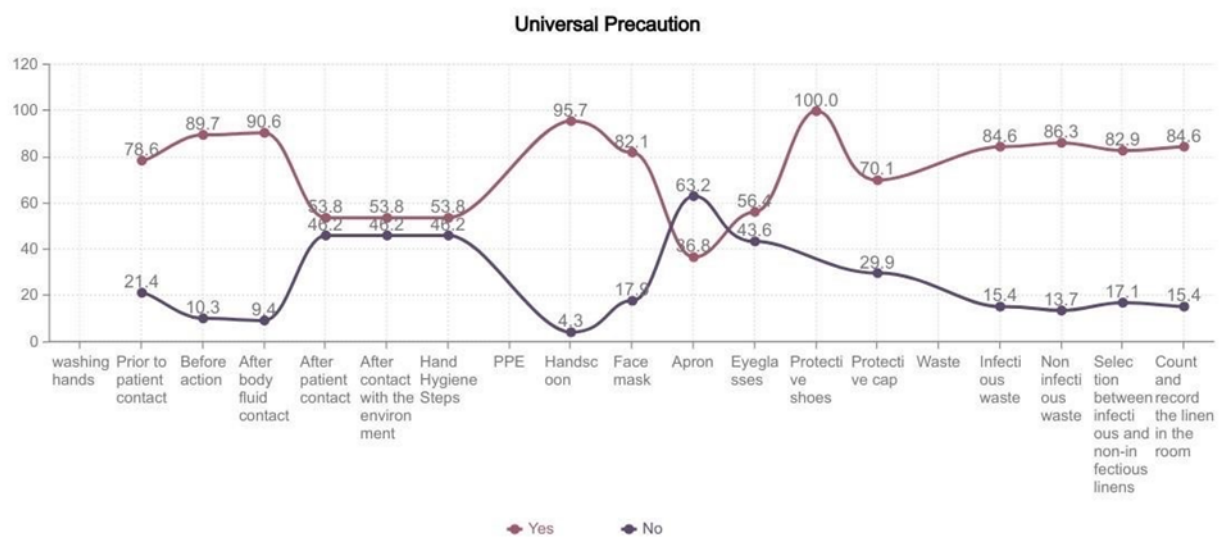


Figure 1: Distribution of respondents in the implementation of universal precautions in health services

Figure 1 shows the highest proportion of nurses who washed their hands was after contact with the patient's body fluids as much as 106 (90.6%) and the highest proportion of nurses who did not wash their hands was at the time. After contact with the environment and hand hygiene steps as much as 61 (52.1%). Based on, the highest proportion of nurses who wore PPE were protective shoes as much as 117 (100%) and the lowest proportion of nurses who wore PPE was aprons as much as 43 (36.8%). According to the observation of waste and linen, the highest proportion of nurses who carried out non-infectious waste was 101 (86.3%) and the highest proportion of processing linen in counting and recording linen in the nurse's room using PPE was apron as much as 99 (84.6%).

Table 4: Differences in the Implementation of universal precautions at the level of health care

Facilities Health	n	Mean	SD	Value F (Anova)	p
Hospital	89	7.13	1.524	1.338	0.826
Public Health Center	9	6.67	1.658		
Clinics	10	6.40	1.265		

Table 4 shows the average the implementation of universal precautions in hospitals is 7.13, health centers are 6.67 and clinics with an average of 6.40. The results show that the higher the level of health services, the higher the average application of universal precautions. The application of universal precautions at the level of health care has the same level of care in treating patients.

4. Discussion

The highest proportion of knowledge at the level of hospital health services with less knowledge was 50 (52.7%), while at the public health center the highest proportion of knowledge was less than 6 (9.4%), whereas at the level of clinical health services The highest proportion of knowledge was less than 8 (12.5%). The level of knowledge of health workers in this study is similar to findings reported in previously published studies in both Afghanistan and neighboring Iran (Motamed N, BabaMahmoodi F, Khalilian A, Peykanheirati M, 2006; Salehi and Garner, 2010). Based on the results of research, good knowledge has been carried out, namely nurses who know the definition of universal precautions as many as 87 (74.4%), nurses who know the purpose of universal precautions as many as 71 (60.4%), nurses who know the main principles of precautions universal as many as 96 (82.1%), nurses who know the factors that can affect universal alertness are 66 (56.4%), nurses who know when Universal precautions are implemented are 89 (76.1%), nurses who know how to provide good health care. Contact with the patient's blood/body fluids, when to wash hands as much as 94 (80.3%), Nurses who know what personal protective equipment (PPE) to use when injecting, inserting infusions, processing contaminated equipment as many as 91 (77.8%), Nurses who know how to close the syringe with one-handed technique (Recapping) are 100 (85.5%), Nurses know how to handle the needle 100 m infusions that have been contaminated safely (96.6%), while the nurses know how to use universal precautions, namely, nurses who do not know the impact if they do not apply Universal precautions as many as 97 (82.9%).

Staff should have good knowledge about infection prevention, behave and act appropriately in taking every action. This is very important because every individual who works in a hospital or other health service center is a group of people who are very vulnerable to contracting or transmitting infection (Spiritia, 2008; Wilson E. Sadoh, Adeniran O. Fawole, Ayebo E. Sadoh, Ayo O. Oladimeji, 2006). Low awareness and understanding of preventive measures among health workers are associated with the absence of information during training and orientation programs, in addition to lack of knowledge due to not providing training to health workers on safe behavior inpatient care and adherence and knowledge of the practices provided is still lacking (Wilson E. Sadoh, Adeniran O. Fawole, Ayebo E. Sadoh, Ayo O. Oladimeji, 2006).

Attitudes have the highest proportion at the level of hospital health services, namely negative attitudes of 68 (81%), while at Public Health Center the highest proportion of negative attitudes is 7 (8.3%), while at the level of clinical health services the highest proportion is negative attitudes of 9 (10.7%). The form of attitude taken strongly agrees and agrees with the nurse on the risk of contracting hepatitis B after one needle stick as much as 110 (94%), the nurse strongly agrees and agrees to provide nursing care to patients with infections such as hepatitis that must be previously vaccinated against hepatitis 106 (90 , 6%), the nurse strongly agrees and agrees that 98 (83.8%) must wear gloves when installing the infusion and injecting, the nurse strongly agrees and agrees that when processing contaminated equipment, 98 (83.8%) must wear gloves, Nurses strongly agree and agree that closing the syringe with one-handed technique (recapping) can prevent the risk of needling injuries as much as 98 (83.8%), the nurse strongly agrees and agrees that sharp trash such as syringes must be placed in a transparent container as many as 109 (93.2%), the nurse strongly agrees and agrees with the exposed gauze and if it is exposed to blood/body fluids when performing nursing care for patient infection, first aid with disinfectants as much as 97 (84.7%), Nurses strongly agree and agree as soon as they receive help as above, report the exposure to special services/ occupational

medicine as many as 93 (79.5%), Nurses strongly agree and agree 19 (17.2%) did not have the possibility to serve and contact HIV positive patients, the nurses strongly agreed and agreed that they should not assume that all patients had the potential for infectious diseases as much as 15 (12.8%), the nurses strongly agreed and agreed that they needed to be careful -Be careful when treating wounds that have the potential to produce blood/body fluids as much as 92 (78.6%), the nurse agrees and strongly agrees that if you see the safety box is full, I immediately close it and replace it with a new one as much as 92 (78.6%) , The nurse strongly agrees and agrees that when an emergency is needed in handling patients, CPR is required, PPE is not so important as much as 7 (6%), the nurse strongly agrees and agrees that it is necessary to perform nursing care. Care for infected patients to patients who were not infected even though the gloves were not exposed to blood as much as 47 (41.3%), Nurses strongly agreed and agreed. Although treating infected patients was sure not to be infected when working according to SOP 117 (100%).

Attitude is a trend towards overt behavior and attitude is not the only determinant, but many other factors influence the emergence of behavior. A low level of knowledge will result in negative attitudes, lack of accumulation, interference with other tasks, time-consuming, and lack of understanding in work (Jeong and Park, 2009). Leadership support with the highest proportion at the level of hospital health services was 45 (84.9%), whereas at Public Health Center the highest proportion was 5 (9.4%), while at the health service level The highest proportion of clinics was less supportive of 7 (12.7%). As for the form of support provided by the hospital often and always by the director working together to ensure safe working conditions as many as 64 (54.7%), the hospital often and always provides support with PPIs who play an active role in socializing standard precautions as many as 106 (90.6%), the hospital often and always provides support with the head of the room doing safety talking about Universal precautions before morning application as many as 107 (91.4%), the hospital often and always provides support with active PPIs in the supervision of Universal precautions as many as 103 (88%), hospitals often and always provide support in the form of rewards by the PPI team, 27 nurses who obey in implementing Universal precautions (23.1%).

According to Snehandu B. Karr's theory, one of the 5 determinants of behavior is social support. A person's behavior tends to require legitimacy from those around him. In this case, health behavior, in this case, is the application of universal precautions, nurses need the support of those around them (Notoadmodjo, 2010). In making efforts to implement universal precautions, the support of the leaders is very meaningful in implementation. Continued leadership is important in empowering health workers to implement universal precautions (Mabachi *et al.*, 2016).

Nurses who wash their hands in the application of universal precautions in health care are when the nurses come in contact with body supplies as many as 106 (90.6%). Nurses wash their hands in the application of universal precautions in health care when the nurse before taking action as many as 105 (89.7%). Nurses wash their hands in the application of universal precautions in health care when the nurse before contact with patients as many as 92 (72.6%). Nurses wash their hands in the application of universal precautions in health care after contact with patients as many as 63 (53.8%). As for the nurses who did not wash their hands in the application of universal precautions in health care, 56 (47.9%) were the nurses after contact with the environment. Nurses who did not wash their hands during the step Hand Hygiene were 56 (47.9%).

According to Atkinson *et al.* 2013 maintenance of hand hygiene saves more time by using alcohol gel which is then rubbed on the hands rather than using running water which takes a lot of time. Hand hygiene and health significantly reduce the number of disease-causing microorganisms on both hands and arms and minimize cross-contamination (e.g. from health workers to patients). Failure to practice proper hand hygiene and hygiene is considered to be a major cause of infectious nosocomial infections in health care and spreads multiresistant microorganisms and has been recognized as an important contributor to the onset of outbreaks (Atkinson *et al.*, 2016).

Low adherence to handwashing is related to academic and habitual training during nursing education, while others point to individual, group, and institutional factors^[14] The highest proportion of the use of PPE by nurses is wearing protective shoes as much as 117 (100%). 5 nurses did not use PPE handsooon (4.3%), 21 (17.9%) nurses who did not use PPE aprons, 74 (63.2%) nurses who did not use PPE aprons. Using glasses as much as 51 (53.6%)

nurses who do not use protective caps as much as 35 (29.9%). A study conducted in Delhi reported that only 10.1% of self-reporting needle stick injuries by nurses mainly from the OB / Gyn Word Health Organization department mentioned that three levels of control were hospital-acquired infection prevention: The first was administrative control, which was steps are taken to ensure that the entire system works effectively. The second is environmental and engineering control, including environmental cleaning, spatial separation, and space ventilation. The third is to further reduce the risk of transmission and includes self-protection, namely the provision of appropriate personal protective equipment (PPE) (e.g. masks, respirators) (Atkinson *et al.*, 2016).

The highest proportion of infectious waste treatment in the application of universal precautions was 99 (84.6%), The highest proportion of non-infectious waste treatment in the application of universal precautions was 101 (86.3%), The highest proportion of waste treatment was Selection between infectious and non-infectious linens put in bags according to type in the application of universal precautions as much as 97 (82.9%), the highest proportion of waste treatment counting and recording linen in the room in the application of universal precautions was 99 (84.6%). The existence of various health service facilities, including hospitals, clinics, and health centers, will produce both liquid and solid waste. Hospital solid waste is better known as hospital waste. Solid waste (garbage) is something that is not used, disliked or something that must be disposed of, generally the result of solid human activity (Pittet 1, S Hugonnet, S Harbarth, P Mourouga, V Sauvan, S Touveneau, 2000). Hospital solid waste is all hospital waste in the form of solid as a result of health service activities consisting of medical and non-medical waste (Ministry of Health of the Republic of Indonesia, 2006). According to the World Health Organization waste treatment, for environmental cleaning use adequate procedures for routine cleaning and disinfection of environments and frequently touched surfaces. For the handling of linen, one should pay attention to the time of transportation and handling the goal of avoiding the transfer of pathogens from the patient to the environment (Word Health Organization, 2007).

5. Conclusion

The higher the level of health services, the higher the average application of universal precautions. The application of universal precautions at the level of health care has the same level of care in treating patients. It is better if the infection prevention and control unit conducts training and the head of the room directs the nurse about universal vigilance when a shift change occurs, so that nurses can apply precautions universal according to the SOP in addition to completing PPE in each ward, checking water in the ward, implementing supervision and giving sanctions to nurses who violate the application of precautions universal, so that nurses can implement precautions universal according to the SOP imposed by the hospital.

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