



Original Research Article

## The Evaluation of Universal Precaution Programs Performance at Wahidin Sudirohusodo Hospital in Indonesia

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### ABSTRACT

Health care staffs such as nurses are at risk of acquiring infections from patients at the workplace. The knowledge and awareness of universal precautions is thus essential for all healthcare workers and people in other at risk occupations. The objective of this research was to evaluate the performance of implementation of universal precaution programs by nurses in Wahidin Sudirohusodo Hospital in Indonesia.

The research found that the performance of universal precaution program at Wahidin Sudirohusodo Hospital by nurses was high (94,4%) but the several activities in the program still low such as the nurse did not sterilizing using ethylene gas and chemical liquid (98,4%) and did not discard the needle to special garbage bin (83,9%). This research also found that there was positive relationship between leadership and supervision activities with performance of universal precaution programs by nurses.

To improve the performance of universal precaution program, the hospital managers and nurse leader should be improves their leadership and supervision activities in hospital to prevent the health care staff for infections.

**Keywords:** universal precaution, evaluation, performance

### INTRODUCTION

Health care professionals and particularly nurses are often exposed to microorganisms, many of which can cause serious or even lethal infections. [1-3] In 1996, the Centers for Disease Control and Prevention (CDC) issued the Standard Precautions, a set of guidelines to prevent exposure, [4] but unfortunately, despite the simplicity and clarity of these guidelines, compliance among nurses is reported low. [5-8] Although high incidence of occupational exposure to microorganisms is observed among all health care professionals, [9-11]

nurses are among those who are more highly exposed. [12] Therefore it is ethical to explore the factors that affect nurses' compliance with Standard Precautions.

Many researchers focused on the factors that contribute to non-compliance with Standard Precautions. Reported factors were lack of knowledge, [13,14] lack of time, [7] forgetfulness, [13,14] lack of means, [13,14] negative influence of the equipment on nursing skills, [8] uncomfortable equipment, [15] skin irritation, [14] lack of training, [16] conflict between the need to provide care

and self-protection [16] and distance to necessary equipment or facility. [14]

Nurses may acquire an infection during the provision of nursing care because of occupational exposure to microorganisms. Relevant literature reports that, compliance with Standard Precautions (a set of guidelines that can protect health care professionals from being exposed to microorganisms) is low among nurses. Additionally, high rates of exposure to microorganisms among nurses via several modes (needle sticks, hand contamination with blood, exposure to air-transmitted microorganisms) occur. [17]

Universal precautions is defined by the centre for disease control (CDC) as a set of precautions or actions designed to prevent the transmission of HIV, HBV, HCV and other body fluid, blood borne pathogens when providing first aid or health care. [18]

Body fluid to be treated with universal precautions are blood, cerebrospinal fluid, peritoneal fluid, pleural fluid, pericardial fluid, synovial fluid, amniotic fluid, urine, semen, vaginal secretions, saliva any other fluids from tissues, organs, non-intact skin and mucous membrane. The aim of universal precautions is to protect both the health worker from being infected and the uninfected patient from getting infected by the health worker. [19]

The knowledge and awareness of universal precautions is essential for all healthcares especially for the nurses who always contact with patients 24 hours in hospital. The objective of this research was to evaluate the performance of implementation of universal precaution programs by nurses in Wahidin Sudirohusodo Hospital in Indonesia.

## MATERIALS AND METHODS

Nurses safety as a part of the quality health care that is the result of structural

components and processes within the hospital organization. Organizational Factor consists of resources availability, leadership, supervision, job design, and compensation. Universal precautions is an effort made for the protection, prevention and minimizing cross-infection (cross infections) among nurses and patients as a result of direct contact with body fluids which infected of infectious diseases (such as HIV/AIDS and hepatitis). This research was conduct at 2003 in inpatient department of Wahidin Sudirohusodo Hospital in Indonesia. The numbers of respondent were 124 nurses. The research used survey methods. The chi-square test used to clarify the relationship between performance of universal precautions program implementation and organizational factors (resources availability, leadership, supervision, job design, and compensation).

## RESULTS

The table 1 showed that the universal precaution program performance by nurses at Wahidin Sudirohusodo Hospital already in high performance (94,4%) but there were several activities in universal precaution program still low.

**Table 1. Respondents charactersites**

Characteristics	n	%
Ages (Years)		
< 30	81	65,3
30-40	27	21,8
41-50	15	12,1
> 50	1	0,8
Sex		
Male	16	12,9
Female	108	87,1
Education Backgrounds		
Senior High School for Nurses	1	0,9
Diploma	85	68,5
Undergraduate	38	30,6
Universal Precaution Performances		
High	117	94,4
Low	7	5,6
Total	124	100

In Table 2 showed that the number of nurses did not sterilizing using ethylene gas and

chemical liquid were 98,4%, did not discard the needle to special garbage bin were 83,9%, did not used special clothes when

treated patient with potential contacted with patient blood were 71% and the gloves was not sterilize were 58,1%.

**Table 2. Universal Precaution Performances**

No	Sub Dimension	Never %	Rarely %	Almost Always %	Always %	Total %
1	Washing hands after contact with patients	2,4	5,6	4,8	87,1	100,0
2	Used soap/antiseptic to washing hands	0	2,4	7,3	90,3	100,0
3	Washing hands times (10-15 seconds)	2,4	42,7	49,2	5,6	100,0
4	Used gloves when contact with patients	7,3	49,2	43,5	0	100,0
5	Makes sure the gloves was sterilize	58,1	41,9	0	0	100,0
6	After used gloves, washing hands	36,3	8,1	55,6	0	100,0
7	Used masker	4,8	75,0	17,7	2,4	100,0
8	Used gowns when treated patient with potential contacted with patient blood	71,0	12,1	13,7	3,2	100,0
9	Used special boats and clean	4,0	46,8	47,6	1,6	100,0
10	Used disposable needles stick	0	0	11,3	88,7	100,0
11	Close the needle stick with one hand method	22,6	0	6,5	71,0	100,0
12	Discard the needle to special garbage bin	83,9	,8	2,4	12,9	100,0
13	Doing a decontamination	13,7	11,3	75,0	0	100,0
14	Sterilization the medical equipment	0	27,4	67,7	4,8	100,0
15	Sterilizing using ethylene gas and chemical liquid	98,4	1,6	0	0	100,0
16	After sterilize, put the equipment in clean and sterilize places	2,4	7,3	89,5	,8	100,0
17	Discard the contamination garbage to special garbage bin	8,9	9,7	9,7	71,8	100,0
18	Discard the non-medical garbage into a black plastics/bin	0	12,9	2,4	84,7	100,0
19	Discard the medical garbage into a yellow plastics/bin	0	8,9	3,2	87,9	100,0

The chi square test in table 3 showed that form five organizational factors such as resources availability, leadership, supervision, job design and compensation, the dimensions whose have positive relationship between with performance of universal precaution programs by nurses only leadership and supervision activities.

**Table 3. The Chi-square test between performance of universal precautions program implementation and organizational factors (resources availability, leadership, supervision, job design, and compensation).**

Organizational Factors	Chi square test
Resources availability	p= 0,344
Leadership	p=0,039* φ= 0,199
Supervision	p= 0,042* φ= 0,208
Job Design	p=0,099
Compensation	p=1,000

Note: \*positive relationship.

## DISCUSSION

Application for universal infection control precautions means that all patients' body fluids should be treated as infectious,

since it is not known who is infected and carries a virus. The purpose of these precautions is to prevent the exposure and infection of health care workers from blood-borne pathogens. The rationale for applying the precautions is that the health care worker may not know who is and is not infected, thereby making it important to treat all blood and body fluids as infectious.

By assuming that all blood, body fluids, and tissues are potentially infectious, measures are taken to safely handle these body substances such as hands and skin surfaces should be washed after contact with blood and/or body fluids, after removing gloves, and between patient contacts. The Gloves should be worn for touching blood and/or body fluids, mucous membranes, non-intact skin, or items/surfaces soiled with blood and/or body fluids. Gloves should be changed after contact with each patient and hands washed after glove removal. The gowns should be worn when a particular task may result in contamination of clothing or exposed skin due to splashing or spattering of blood or other body fluids.

The masks and protective eyewear should be used any time there is a potential for blood or body fluids to contaminate mucous membranes of mouth, nose, or eyes. The Surgical caps or hoods and fluid resistant knee-high booties should be worn in instances when gross contamination can reasonably be anticipated. The needles and sharps should be placed directly into a puncture-resistant, leak-proof container. Needles should not be recapped, bent, broken, or manipulated by hand. The disposable resuscitation devices for CPR should be used in an emergency. Cleaning up spills of blood and other body fluids: Gloves should be worn. Forceps should be used to pick up any sharp objects such as broken glass or plastic before fluid wiped up. A hospital-grade disinfectant should be applied to the area of the spill.

#### **The relationship between leadership and performance of universal precautions implementation by nurses.**

In this research we found that there was positive relationship between Leadership and performance of Universal Precautions implementation by Nurses with number of chi square test is  $p=0,039$  and  $\phi=0,199$ . The definition of leadership in this research is how nurses' leaders can influence their staff in an effort to achieve the goal of a good implementation of universal precautions. The other research by Jayanti (2010) also similar with this result, they found that the leadership had a positive relationship with the discipline of nurses in the implementation of universal precaution ( $p = 0.0026$ ).<sup>[20]</sup>

Leadership is an essential element in an organization. Gibson suggests that leadership can be defined as the process of persuading (inducing) others to take step towards a common goal, the rule of leaders a huge to motivate the members of the organization to increase energy to and effort to achieve group goals.<sup>[21]</sup>

In delivery nursing care to patients, it should be based on universal precautions. It needs leaders who can lead his staff in implementing the universal precautions in each activity of patient services. If the nurse leaders have perception that the universal precautions in health care were not very important, the nurse also will have the same perception. But if the leader feels it is important, he will motivate they staff to work with good performance to apply the universal precautions programs.

#### **The relationship between supervision and performance of universal precautions implementation by nurses.**

In this research we found that there was positive relationship between supervision and performance of Universal Precautions implementation by Nurses with number of chi square test is  $p=0,042$  and  $\phi=0,208$ . The other research also found the relationship between supervision and nurse performances.<sup>[20-21]</sup> The definition of supervision in this research was a directing, guiding, encouraging and motivating activity by the nurses to supervise their staff to implement universal precautions.

The role of supervision of head room as the leader in the efforts to implement universal precautions is very important. if the head of the room aware of his obligation to always carry out the direction and guidance to his staff in order to implement universal precautions then the universal precaution performance will be high.

#### **The Performance of universal precaution**

To improve the performance of universal precaution program, four standard practices are recommended; these include hand washing, use of protective barriers to prevent direct contacts, safe handling and disposal of sharps and safe decontamination of instruments and other contaminated equipment. Where injuries and blood splashes occur reporting centres should be made available. Research has indicated that

sharp injury may be under reported by 39.4% to 75%.<sup>[22]</sup> Some health care workers are not seriously concerned about infection by sharp injury and forget to report accidents. Many cases of needle stick injuries go unreported and use of universal precautions is poor.<sup>[19]</sup>

The hand is the most common vehicle for microbial transmission.<sup>[23]</sup> Hand washing has been proven as an essential and the single most effective method used in preventing the spread of infections and infectious agents. Hand washing reduces the number of potentially infectious microorganisms in the hand and decrease the incidence of infection transmission in the health care facility. Hygienic hand washing involves the use of antiseptic and / or detergents to wash the hand for as little as about 10-15 seconds or to use an alcohol based agents to disinfect the hands.<sup>[23]</sup>

Protective barriers reduce the risk of exposure of the health care workers skin or mucous membranes to potentially infectious materials and the risk of exposure to blood and other body fluids to which universal precautions apply by preventing contact with potentially pathogenic microorganisms by creating a physical barrier between the potentially infectious materials and the health care workers.<sup>[23]</sup> Health care workers must endeavor to wear personal protective equipment to guard against blood borne pathogens if there is a reasonable anticipated exposure to blood and other potentially infectious materials. If splashing is anticipated, protective eye wear should be worn along with an impervious gown or apron which provides an effective barrier to splashes. Plastic bags should be available for removal of contaminated items from the site of the spill, shoes and boots can become contaminated with blood in certain instances. The personal protective devices include gloves, apron, masks, goggles and boots.<sup>[24]</sup>

## CONCLUSION

Universal Precautions are based on the assumption that blood and other body fluids from all patients may be infectious. This system is designed to protect healthcare workers such as nurses from blood borne infectious agents (e.g. Hepatitis B Virus, Hepatitis C Virus, HIV, etc.). The transmission of diseases in health care settings can occur from patient to nurses, between patients, or from nurses to patients.

The nurses should routinely use the appropriate barrier precautions to prevent skin and mucous membrane exposure during contact with any patient's blood or bodily fluids that require universal precaution. Gloves should be used in situations where the health care worker judges that hand contamination with blood may occur. All sharp should be handled with extreme care and always washing their hand after contact with the patients.

The performance of universal precaution implementation are related to organizational factors, in this research we found that to improve the performance of universal precaution program, the hospital managers and nurse leaders should be improve their leadership and supervision activities as a part of organizational factors whose have positive relationship with The performance of universal precaution implementation.

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