

Knowledge and Practices Regarding Blood Sample Collection Procedures among House Officers and Nurses of Services Hospital Lahore

Dr hassan jawad ; Dr aneela anwar ; Dr adil hussain ; Dr tauqir aslam

Abstract:

Background:

Work environments have peculiar health-related risks. Doctors and other healthcare workers (HCWs) encounter work-related hazards associated with their clinical and laboratory activities in the hospital. Blood and other effluents from infected patients may bear such pathogens as HIV, hepatitis B and hepatitis C virus, increasing the risk of transmission from such accidents as needle pricks and contacts with deep body fluids **Objective:** *The objective of this study was to determine the knowledge and practices regarding blood sample collection among house officers and nurses working in Services Hospital Lahore.*

Material and Methods:

Study Design: Cross sectional study

Study Setting and duration:

Medical and surgical wards of Services institute of medical sciences, 6 months from April 2014 – October 2014.

Inclusion criteria: Internees working in Services hospital medical and surgical ward and regular staff nurses working in Services hospital medical and surgical ward

Data Collection and analysis: 75 internees and 75 staff nurses those fulfilling the inclusion criteria were selected for the study through simple random sampling. A detailed questionnaire regarding knowledge and practices about blood collection procedure was given all the information was collected in a structured questionnaire (attached). Data was entered and analyzed in SPSS ver: 16.0. Frequency tabulation

was done for nominal variables knowledge about blood sampling procedure and practices regarding blood sample. Cross tabulation was done for dependent variables like knowledge and practices among interneers and staff nurses.

Results: A total of 150 nurses and interneers (75 in each group) were interviewed regarding knowledge and practices about venues blood sampling during their ward duties. Mean age of nurses and house officers were 22.92 SD 3.514 and 24.03 SD .697. Knowledge among nurses and house officers showed that 79.1% of nurses and 73.2% of trainees knows that use of gloves is necessary, 77.6% of nursed and 78.9% of trainees knows that blood sample should be placed on inverters, 52.2% of nurses and 59.2% of trainees knows that the identity of patient should be asked every time before blood sampling. Practices among nurses and trainees showed that 73.8% of nurses and 52.3% of trainees introduce themselves to patient before blood sampling, 58.5 % of nurses and 73.8% of trainees checks the identity of patients. 38.5% of nurses and 72.3% of house interneers wear necessary personal protective instrument.

Conclusions: The conclusion of my study is that overall knowledge and practices among majority of staff nurses and house was good. Practices among nurses and house officer's lacks in checking identity of patient, minimizing discomfort and wearing personal protective equipment.

Key words: Blood sampling, Nurses, House officers, Knowledge, Practices.

INTRODUCTION:

Work environments have peculiar health-related risks. Doctors and other healthcare workers (HCWs) encounter work-related hazards associated with their clinical and laboratory activities in the hospital. ^{1, 2} Blood and other effluents from infected patients may bear such pathogens as HIV, hepatitis B and hepatitis C virus, increasing the risk of transmission from such accidents as needle pricks and contacts with deep body fluids ^[3, 4]. A safe injection is one that is given using appropriate equipment; does not harm the recipient, does not expose the provider to any avoidable risk and does not result in any waste that is dangerous to other people (the community). ^{3, 4}

Injection safety is an integral component of infection prevention and control; an element of standard precautions; key element of patient and healthcare worker safety; supported by infection prevention and control policies and procedures such as hand hygiene, housekeeping and waste management; a critical item of the continuous quality improvement (CQI) programme, managed by the healthcare team and specifically the infection prevention and control team in the health facilities.

Unsafe injection practices during blood sample collection are associated with risks such as: (a) Transmission of infections e.g. HBV, HCV and HIV; (b) Paralysis resulting from injection of a drug into a nerve resulting in weakness of the limb supplied by the nerve; (c) Adverse events following injections of which the most threatening is anaphylaxis (Sudden collapse of the circulatory system due to immunological response to the injected drug). The groups at risk

of these unsafe injection practices include: (a) Patients / clients especially immune-compromised individuals; (b) Healthcare workers especially doctors, nurses, laboratory scientist, laundry worker etc.; (c) Healthcare waste management personnel; (d) Communities through indiscriminate healthcare waste disposal; (e) Drug users.

The World Health Organization (WHO) estimates that 16 billion injections are administered annually in developing countries of which 90-95% is for therapeutic purpose. Approximately 5% of HIV, 40% of Hepatitis C and 32% of Hepatitis B virus infections are caused by unsafe and unnecessary injections worldwide ^{3, 4}. According to a national cross-section survey conducted in August, 2004, disposable syringes and needles have been used almost exclusively since the 1980s in Nigeria. However a high percentage of the facilities were discovered not to always adhere to injection safety practices. The WHO defines healthcare waste as the total waste stream from a healthcare or research facility that includes both potential risk waste and non-risk waste materials.

Risks and hazards associated with healthcare waste include: needle stick injuries; transmission of infections or diseases; re-use of some types of waste (accidental or intentional); environmental pollution or degradation; exposure to radiation; fires and public nuisance (Offensive smells, unsightly debris). Eighty percent (80%) of healthcare waste is general waste or low risk waste, 20% can be dangerous and referred to as risk waste while 1% of risk waste is sharps waste ^{3, 4}.

This study aimed to assess the knowledge, perception and practice of injection safety and HCWM is important as increasing the knowledge and positively changing the attitude and practice

of injection safety and HCWM through training of healthcare workers will go a long way in minimizing/eliminating the above mentioned risks associated with unsafe injection practices and improper HCWM.

It has been observed that the highest prevalence of HIV-infected persons is found in developing countries and the highest needle prick injuries are also recorded in this region of the world⁵. Injuries from needle pricks are thought to be the commonest work-related hazard reported from a Nigerian teaching hospital⁶. The risk of acute hepatitis C infection in a health worker following a needle prick injury has been estimated to be from 1% to 5%⁷. The available estimates suggest that contracting hepatitis B infection due to a needle prick injury has a risk close to 100 times that of contracting HIV⁸. Needle prick injuries are a common occurrence among health workers in Nigeria. It is estimated that more than 80% of workers in the health care sector will experience a needle prick injury at some point in their career⁹, and this is commoner amongst the surgeons, house officers and younger nurses¹⁰

Every day while caring for patients, nurses and doctors while collecting blood samples are at risk to exposure to blood borne pathogens potentially resulting in infections such as HIV or hepatitis B and C. These exposures, while preventable, are often accepted as being a part of the job. In the United States, needle stick injuries have begun to decrease from an estimated one million exposures per year in 1996 to 385,000 per year in 2000. This decline has resulted from the protections afforded by the Occupational Safety and Health Administration's (OSHA) Blood borne Pathogens Standard. Reasons for the success in decreasing needle stick and sharps injuries may be attributed to the elimination of needle recapping and the use of safer needle devices, sharps collection boxes, gloves and personal protective gear, and universal

precautions.^{11,12} The prevention of needle stick injuries has made slow progress over the past 20 years since the HIV epidemic drew attention to the deadly nature of health care work and to protection of health care worker health and safety.¹³ In Africa, where the AIDS virus originated and where the prevalence of the human immunodeficiency virus (HIV) among hospitalized patients is highest in the world, attention has been directed only recently at protecting health care workers. Nurses, especially those infected from a preventable exposure, have been at the forefront of advocacy for prevention. This article includes a review about the hazard of exposure to blood borne pathogens and epidemiology of occupational infection. The author discusses how to apply standard methods of occupational health and industry hygiene using the hierarchy of controls framework to prevent exposure to blood, and discusses evidence-based prevention and efficacy of particular control measures. Legislative progress and implementation of enforceable policy to protect health care workers is outlined.¹⁴

Young doctors especially interneer are exposed to blood borne infections by pathogens, such as HIV, and hepatitis B and C viruses, as they perform their clinical activities in the hospital. Compliance with universal precautions has been shown to reduce the risk of exposure to blood and body fluids.¹³ A study conducted in Abeokuta metropolis, Ogun State, Nigeria. To assess knowledge among doctors, trained and auxiliary nurses, laboratory scientists and domestic staff. About a third of all respondents always recapped used needles. Compliance with no recapping of used needles was highest among trained nurses and worst with doctors. Less than two-thirds of respondents (63.8%) always used personal protective equipment, and more than half of all respondents (56.5%) had never worn goggles

during deliveries and at surgeries. The provision of sharps containers and screening of transfused blood by the institutions studied was uniformly high. A high percentage (94.6%) of HCWs observed handwashing after handling patients. The use of barrier equipment was variable in the institutions studied. The intend to assess the knowledge of interness and staff nurses regarding collection procedure from blood samples which constitute a important safety aspect of not only the health care providers but also to the health care seekers.^{15,16}

Our study will be based on the knowledge and practices of house officers and nurses, working in different medical and surgical wards of Services Hospital Lahore, regarding blood sample collection procedures. The research will include biodata and all the information relevant to our study.

OBJECTIVES:

The objective of this study was to determine the knowledge and practices regarding blood sample collection among house officers and nurses working in Services Hospital Lahore.

MATERIAL AND METHODS:

A Cross sectional study was conducted in Medical and Surgical wards of Services institute of medical sciences during April 2014 – October 2014. Sample size of 150 estimated from epi-info to estimate a proportion of physician to be interviewed for dietary counseling practices along with mother's level of satisfaction with confidence level of 95%, acceptable difference of 0.08 and assumed proportion = 0.50 (50% have adequate knowledge and practices). We interviewd 75 interneess and 75 staff nurses working in Services hospital Lahore.

75 interneess and 75 staff nurses those fulfilling the inclusion criteria were selected for the study through simple random sampling. A detailed

questionnaire regarding knowledge and practices about blood collection procedure was given to each respondent. The variable of interest were knowledge about procedure of collecting blood, safety measures regarding blood sampling collection, knowledge about protective equipment during blood sampling collection and attitude regarding blood sampling collection procedure. Data was entered and analyzed in SPSS ver: 16.0. Frequency tabulation was done for nominal variables knowledge about blood sampling procedure and practices regarding blood sample. Cross tabulation was done for dependent variables like knowledge and practices among interneess and staff nurses regarding procedure of collecting blood, safety measures regarding blood sampling collection, knowledge about protective equipment during blood sampling collection and attitude regarding blood sampling collection procedure.

RESULTS:

A total of 150 nurses and interneess (75 in each group) were interviewed regarding knowledge and practices about venues blood sampling during their ward duties. Mean age of nurses were 22.92 SD 3.514 with minimum age of 18 and maximum of 32. Mean age of interneess were 24.03 SD .697 with minimum age of 23 and maximum age of 25. (Table no: 1). Among nurses 100.0% were females and among interneess 54.7% were male and 45.3% were females. (Table no: 2).

Over all knowledge showed that 76.1% knows that use of gloves is necessary, 78.3% knows that blood sample should be placed on inverters, 57.2% knows that the identity of patient should be asked every time before blood sampling, 47.8% knows that statis should be performed every time before blood sampling, 78.3% knows that patient should be allowed to rest before sampling, 67.4% says that bleeding more than once can be done,

51.4% says that the test tube can be placed in pocket or on counter. (Table no: 3).

Over all practices showed that 63.1% introduce themselves to patient before blood sampling, 66.2 % checks the identity of patients. 68.5% checks identity of unconscious patients before blood sampling, 55.4% wear necessary personal protective instrument, 56.2% prepare patient skin before blood sampling, 74.6% do recapping of needles, 40.0% minimize patients discomfort and 56.9% do a pre-labeling of blood sample prior to sampling. (Table no: 4).

Knowledge among nurses showed that 79.1% knows that use of gloves is necessary, 77.6% knows that blood sample should be placed on inverters, 52.2% knows that the identity of patient should be asked every time before blood sampling, 35.8% knows that status should be performed every time before blood sampling, 92.5% knows that patient should be allowed to rest before sampling, 73.1% says that bleeding more than once can be done, 37.3% says that the test tube can be placed in pocket or on counter. (Table no: 5).

Knowledge among interneers showed that 73.2% knows that use of gloves is necessary, 78.9% knows that blood sample should be placed on inverters, 62.0% knows that the identity of patient should be asked every time before blood sampling, 59.2% knows that status should be performed every time before blood sampling, 64.8% knows that patient should be allowed to rest before sampling, 62.0% says that bleeding more than once can be done, 64.8% says that the test tube can be placed in pocket or on counter. (Table no: 5).

Practices among nurses showed that 73.8% introduce themselves to patient before blood sampling, 58.5 % checks the identity of patients. 75.4% checks identity of unconscious patients before blood sampling, 38.5% wear necessary

personal protective instrument, 53.8% prepare patient skin before blood sampling, 75.6% do recapping of needles, 44.6% minimize patients discomfort and 67.5% do a pre-labeling of blood sample prior to sampling. (Table no: 6).

Practices among interneers showed that 52.3% introduce themselves to patient before blood sampling, 73.8 % checks the identity of patients. 61.5% checks identity of unconscious patients before blood sampling, 72.3% wear necessary personal protective instrument, 58.5% prepare patient skin before blood sampling, 73.8% do recapping of needles, 35.4% minimize patients discomfort and 46.2% do a pre-labeling of blood sample prior to sampling. (Table no: 6).

DISCUSSION:

Improving the accuracy of patient identification is the highest priority for patient safety¹⁷. This is the single most important step in blood testing. For example, patient identification at VBS may be the major source of error in blood transfusions, and is largely the result of noncompliance with guidelines. Critical patient identification errors in blood testing have been reported to occur in up to one per 1000 procedures or specimens^{86,87}. It is estimated that misidentification of laboratory specimens results in 160 000 adverse events every year in the USA¹⁸. The results in this study demonstrate serious shortcomings in the identification procedures in the surveyed wards. For example, almost half of the participants reported using health care cards for patient identification. The health care card, issued to all residents of Sweden, contains name, address and Swedish identification number, but no photograph, and should therefore never be used for identification purposes. Furthermore, the vast majority of respondents in the wards reported to not always using wristbands for identification of inpatients.¹⁹

Our findings are in line with previous studies, indicating that patient identification procedures in VBS require urgent attention. Although unacceptable, some of the results regarding patient identification may have logical explanations. Practices among nurses showed that 73.8% introduce themselves to patient before blood sampling, 58.5% check the identity of patients, 75.4% check identity of unconscious patients before blood sampling, 38.5% wear necessary personal protective instrument, 53.8% prepare patient skin before blood sampling, 75.6% do recapping of needles, 44.6% minimize patients discomfort and 67.5% do a pre-labeling of blood sample prior to sampling. Practices among internees showed that 52.3% introduce themselves to patient before blood sampling, 73.8% check the identity of patients, 61.5% check identity of unconscious patients before blood sampling, (Table no: 6).

Not asking the patient for name and identification number was more commonly reported in the psychiatric, intensive care and women's health/pediatric wards, where patients more often have an impaired ability to communicate in some studies²⁰. Already knowing that the patient as the means of identification was also more commonly reported in the psychiatric wards, which may be due to the longer durations of stay among patients there. However, in the medical and surgical wards, almost all respondents reported not using wristbands for identification purposes. This is a serious error since samples are collected from patients with impaired consciousness in these wards. Although less likely to have such potentially tragic consequences as patient identification errors, errors during the actual sampling procedure are believed to be the most common type of preanalytical error²¹. For example, incorrect positioning of the patient before and during VBS and prolonged venous

stasis²² may have clinically significant effects on test results. This study suggests that both of these issues, as well as vertical storage of test tubes after sampling (for proper coagulation of serum samples), could all be improved in the wards surveyed. As the most remarkable finding, almost all respondents in the wards reported removing stasis after VBS²⁴.

This study results also indicate that inversion of test tubes was not performed according to international recommendations⁷⁸⁻⁸⁰ and VBS instructions in the laboratory manual. However, some studies report that inappropriate test tube inversion does not introduce clinically important preanalytical error for coagulation and hematological testing, at least in healthy volunteers. In my study Knowledge among nurses showed that 79.1% knows that use of gloves is necessary, 77.6% knows that blood sample should be placed on inverters, 52.2% knows that the identity of patient should be asked every time before blood sampling, 35.8% knows that stasis should be performed every time before blood sampling, and knowledge among internees showed that 73.2% knows that use of gloves is necessary, 78.9% knows that blood sample should be placed on inverters, 62.0% knows that the identity of patient should be asked every time before blood sampling, (Table no:5)

CONCLUSION: The study concluded that overall knowledge and practices among majority of staff nurses and house was good and practices among nurses and house officer's lacks in checking identity, minimizing patient discomfort and wearing personal protective equipment.

REFERENCES:

REFERENCES:

- [1] FGN/USAID/WHO/MMIS/UNICEF. Injection safety in the context of infection

- prevention and control: Facilitators' Guide, Abuja. 2007. Geneva. WHO.
- [2] FGN. National policy on Injection Safety and HealthCare Waste Management. 2007. Abuja. FGN.
- [3] Gerbending JL. Incidence and prevalence of human immunodeficiency virus, hepatitis B virus, hepatitis C virus and cytomegalovirus amongst health care personnel at risk of blood exposure: final report from a longitudinal study. *J infect Dis.* 1994; 170(6):1410-1417. PubMed | Google Scholar
- [4] Ramos- Gomez F, Ellison J, Greenspan D, et al. Accidental exposure to blood and body fluids amongst health care workers in dental teaching clinics; a prospective study. *J Am Dental Assoc.* 1997; 1(28):1253-1261. PubMed | Google Scholar
- [5] Pruss-Ustun A, Rapiti E, Hutin Y. Sharps injuries: global burden of disease from sharps injuries to health-care workers. 2003. Geneva, Switzerland. World Health Organization. PubMed | Google Scholar
- [6] Orji EO, Fasuba OB, Onwudiegwu U, et al. Occupational health hazards among health care workers in an Obstetric and Gynecological unit of a Nigerian Teaching hospital. *J Obstet Gynaecol.* 2002; 22(1):75-78. PubMed | Google Scholar
- [7] Joint WHO/ILO Guidelines on health services and HIV/AIDS. June 2005. http://whqlibdoc.who.int/publications/2005/9221175537_eng.pdf. Accessed 5th October 2012.
- [8] Zarbo RJ, Jones BA, Friedberg RC, Valenstein PN, Renner SW, Schiffman RB, Walsh MK, Howanitz PJ. Q-tracks: a College of American Pathologists program of continuous laboratory monitoring and longitudinal tracking. *Arch Pathol Lab Med* 2002; 126: 1036–44.
- [9] Renner SW, Howanitz PJ, Bachner P. Wristband identification error reporting in 712 hospitals. A College of American Pathologists' Q-Probes study of quality issues in transfusion practice. *Arch Pathol Lab Med* 1993; 117: 573–7.
- [10] Quillen K, Murphy K. Quality improvement to decrease specimen mislabelling in transfusion medicine. *Arch Pathol Lab Med* 2006; 130: 1196–98.
- [11] Wilburn SQ. Needlestick and sharps injury prevention. *Online J Issues Nurs.* 2004 Sep 30;9(3):5.
- [12] Sadoh WE, Fawole AO, Sadoh AE, Oladimeji AO, Sotiloye OS. Practice of universal precautions among healthcare workers. *J Natl Med Assoc.* 2006 May;98(5):722-6.
- [13] Perry J, Robinson ES, Jagger J. Nursing needle-stick and sharps-safety survey: getting to the point about preventable injuries. *J Nurs* 2004;34(4):43-7.
- [14] Sadoh WE, Fawole AO, Sadoh AE, Oladimeji AO, Sotiloye OS. Practice of universal precautions among healthcare workers. *J Natl Med Assoc.* 2006 May;98(5):722-6.
- [15] Stein AD, Makarawo TP, Ahmad MFR. A survey of doctors' and nurses' knowledge, attitudes and compliance with infection control guidelines in Birmingham teaching hospitals. *J Hosp Infect.* 2003 May;54(1):68–73.
- [16] Danchaivijitr S, Tantiwatanapaiboon Y, Chokloikaew S, Tangtrakool T, Suttisanon L, Chitreechuer L. Universal precautions: knowledge, compliance and attitudes of doctors and nurses in Thailand. *J Med Assoc Thai.* 2005 Jul;78 Suppl 2:S112-7.
- [17] Chuang J, Sadler MA, Witt DM. Impact of evacuated collection tube fill volume and mixing on routine coagulation testing using 2.5-ml (pediatric) tubes. *Chest* 2004; 126: 1262– 66.
- [18] Lippi G, Salvagno GL, Montagnana M, Banfi G, Guidi GC. Evaluation of different mixing procedures for K2 EDTA primary samples on hematological testing. *Lab Med* 2007; 38: 723–25.

- [19] Papp AC, Hatzakis H, Bracey A, Wu KK. ARIC hemostasis study-I. Development of a blood collection and processing system suitable for multicenter hemostatic studies. *Thromb Haemost* 1989; 61: 15–19.
- [20] Timms JF, Arslan-Low E, Gentry-Maharaj A, Luo Z, T’Jampens D, Podust VN, Ford J, Fung ET, Gammerman A, Jacobs I, Menon U. Preanalytic influence of sample handling on SELDI-TOF serum protein profiles. *Clin Chem* 2007; 53: 645– 56.
- [21] Kristensen GB, Nerhus K, Thue G, Sandberg S. Results and feasibility of an external quality assessment scheme for self-monitoring of blood glucose. *Clin Chem* 2006; 52: 1311– 17
- [22] Madeo M, Jackson T, Williams C. Simple measures to reduce the rate of contamination of blood cultures in accident and emergency. *Emerg Med J* 2005; 22: 810–11.
- [23] Howanitz PJ, Renner SW, Walsh MK. Continuous wristband monitoring over 2 years decreases identification errors: a College of American Pathologists Q-Tracks Study. *Arch Pathol Lab Med* 2002; 126: 809–15.
- [24] Zarbo RJ, Jones BA, Friedberg RC, Valenstein PN, Renner SW, Schifman RB, Walsh MK, Howanitz PJ. Q-tracks: a College of American Pathologists program of continuous laboratory monitoring and longitudinal tracking. *Arch Pathol Lab Med* 2002; 126: 1036–44.

RESULTS AND MAIN FINDINGS:Table no: 1 \$Knowledge Frequencies (Multiple Response Yes Frequencies)

	Responses		Percent of Cases
	N	Percent	
Knowledge 1: Use of gloves necessary?	105	16.7%	76.1%
Knowledge 2: Blood sample should be placed on inverter	108	17.1%	78.3%
Knowledge 3: The identity of patient should be asked every time	79	12.5%	57.2%
Knowledge 4: Statis should be performed every time before blood sampling	66	10.5%	47.8%
Knowledge 5: Should patient be allowed to rest before sampling	108	17.1%	78.3%
Knowledge 6: Bleeding more than one patient at a time can be done?	93	14.8%	67.4%
Knowledge 7: Test tube be placed in the pocket of my laboratory coat or on counter after performing venous sampling?	71	11.3%	51.4%
Total	630	100.0%	456.5%

a. Dichotomy group tabulated at value 1.

Table no: 2 Practices Frequencies (Multiple Response Yes Frequencies)

	Responses		Percent of Cases
	N	Percent	
Practice 1: Introduction to patient	82	13.1%	63.1%
Practice 2: Check the identity of patient	86	13.8%	66.2%
Practice 3: Check Identity of unconscious patient	89	14.2%	68.5%
Practice 4: Wear Necessary PPE (personal protective equipments)	72	11.5%	55.4%
Practice 5: Preparation of patient's skin	73	11.7%	56.2%
Practice 6: Recapping of needles	97	15.5%	74.6%
Practice 7: Minimize patient's discomfort	52	8.3%	40.0%
Practice 8: Pre-label the venous blood sample prior to blood sampling	74	11.8%	56.9%
Total	625	100.0%	480.8%

a. Dichotomy group tabulated at value 1.

Table no: 3 Knowledge*designation Cross tabulation (Multiple Response Yes Frequencies)

	Designation of respondent		Total
	Nursing	Internee	
Knowledge 1: Use of gloves necessary?	53 79.1%	52 73.2%	105
Knowledge 2: Blood sample should be placed on inverter	52 77.6%	56 78.9%	108
Knowledge 3: The identity of patient should be asked every time	35 52.2%	44 62.0%	79
Knowledge 4: Statis should be performed every time before blood sampling	24 35.8%	42 59.2%	66
Knowledge 5: Should patient be allowed to rest of patient before sampling	62 92.5%	46 64.8%	108
Knowledge 6: Bleeding more than one patient at a time can be done?	49 73.1%	44 62.0%	93
Knowledge 7: Test tube can be placed in the pocket of my laboratory coat or on counter after performing venous sampling?	25 37.3%	46 64.8%	71
Total	67	71	138

Table no: 4 Practices*designation Cross tabulation (Multiple Response Yes Frequencies)

	Designation of respondent		Total
	Nursing	Internee	
Practice 1: Introduction to patient	48 73.8%	34 52.3%	82
Practice 2: Check the identity of patient	38 58.5%	48 73.8%	86
Practice 3: Check Identity of unconscious patient	49 75.4%	40 61.5%	89
Practice 4: Wear Necessary PPE (personal protective equipments)	25 38.5%	47 72.3%	72
Practice 5: Preparation of patient's skin	35 53.8%	38 58.5%	73
Practice 6: Recapping of needles	49 75.4%	48 73.8%	97
Practice 7: Minimize patient's discomfort	29 44.6%	23 35.4%	52
Practice 8: Pre-label the venous blood sample prior to blood sampling	44 67.7%	30 46.2%	74

