The effect of the ABCDE assessment method and an educational session on nursing physical assessment in the general ICU at Dr Sardjito Hospital, Special Region Yogyakarta, Indonesia

Eri Yanuar Akhmad Budi Sunaryo

Thesis submitted for a Master of Nursing Science (Intensive Care Nursing)

School Of Nursing
Faculty of Health Sciences
The University Of Adelaide

2015

Table of Contents

Signed Statement

I certify that this thesis contains no material that has been accepted for any award of any other degree or diploma in any other university.

To the best of my knowledge, this thesis contains no material previously published or written by another person, except where due reference has been made in the text.

I give consent to this thesis being available for loan and photocopying, when deposited in the School of Nursing Library.

Eri Yanuar Akhmad Budi Sunaryo
8 October 2015

Acknowledgements

I would like to express my gratitude to my wonderful supervisors—Assoc. Prof. Judy Magarey RN, CCC, DipN, BN, MNurs (Research), DNurs; and Ms S Millington RN, RM, CCRN, BA, MN (Cardiac) Cert. IV (Workplace Training & Assessment)—for their excellent guidance, encouragement and support.

I would like to thank the head of the ICU, director of nursing and all nurses in the ICU at Dr Sardjito Hospital, and the staff of the School of Nursing The University of Adelaide, Human Research Ethics Committee, University of Adelaide Ethics, Ethics Committee in the Faculty of Medicine, School of Nursing, Faculty of Medicine, Universitas Gadjah Mada for their support and cooperation.

I thank God for keeping me healthy throughout the study. To my wife and my parents, this thesis is dedicated to all of you. I could not have done this without your support and prayers.

I acknowledge the valuable assistance of Ms Happy Indah Kusumawati during all processes in Indonesia; Mr Satriyo Krido Wahono for all your support; Ms Sri Setiyarini for contributing time for discussion; Mr Bayu Fandy Ahmad for being my personal statistician; Elite Editing for proof read my thesis and Melinda Diah Asmoro and Tiara Sas Dhewanti for your great efforts in this research.

Last but not the least; I thank my wonderful friends and colleagues for believing in and encouraging me throughout the period of my study.

List of Abbreviations

ABCDE	Airway, breathing, circulation, disability, exposure
ABG	Arterial blood gas
ACCCN	Australian College of Critical Care Nurses
ATLS	Advanced Trauma Life Support
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CNE	Continuing nursing education
CRT	Capillary refill time
CTD	Cognitive Test for Delirium
CVP	Central venous pressure
ECG	Electrocardiography
ETT	Endotracheal tube
GCS	Glasgow Coma Scale
HREC	Human Research Ethics Committee
HTT	Head-to-toe
ICDSC	Intensive Care Delirium Screening Checklist
ICU	Intensive care unit
IPPA	Inspection, palpation, percussion and auscultate
MHREC	Medical and Health Research Ethics Committee
MV	Mechanical ventilation
RASS	Richmond agitation–sedation scale
RIPPLES	Recognition in prior professional learning, experiences, and skills
SPSS	Statistical Package for Social Sciences
US	United States
VAP	Ventilator-associated pneumonia

Abstract

Background: Nurses responsibility for physical assessment has changed greatly over the years. Traditionally nurses had very limited responsibility for physical assessment and patient assessment was not considered to be part of the nursing role. As nurses' roles have become more sophisticated, patient assessment skills have become essential (McKenna et al. 2011). There have been no studies regarding the effect of an education session on nursing physical assessment using the airway, breathing, circulation, disability, exposure and equipment (ABCDE) approach in intensive care unit (ICU) settings.

Methods: The research design for this study was quasi-experimental. The participants were all nurses working in the general ICU of Dr Sardjito Hospital in Special Region Yogyakarta, Indonesia (n=24). The intervention in this study was an education session regarding physical assessment utilising the ABCDE approach.

Results: Analysis of the effect of an education session on ABCDE physical assessment revealed that all dependent variables had $p < 0.05$ (airway and disability, $p = 0.001$; breathing, circulation, exposure and equipment aspects, $p < 0.0001$), which suggests that the education session had a significant effect on ABCDE physical assessment in the ICU.

Conclusions: Physical assessment with the ABCDE approach has been shown to provide a structured and systematic method in nursing physical assessment, and to influence nurses' actions regarding physical assessment in the ICU setting. This method also shows considerable promise and has the potential to contribute to improving the practice of assessment in various clinical settings.

Keywords: nursing, physical assessment, intensive care unit, ICU.

Chapter 1: Introduction

This thesis reports on an investigation of the effect of the airway, breathing, circulation, disability, exposure and equipment (ABCDE) assessment method, and an educational session, on physical assessment by nurses and nurses' perceptions regarding the importance of and responsibility for this activity in the general intensive care unit (ICU) at Dr Sardjito Hospital in Special Region Yogyakarta, Indonesia. The setting was chosen because the researcher had been working in the particular unit.

This chapter introduces and briefly outlines the context and purpose of the study. It also provides a statement of the research question, and the aims, objectives, significance and assumptions of the study are discussed. In addition, important terms used in the study are defined.

1.1 Context of the Study

Nurses are the largest group of healthcare professionals working in the ICU and they work at the front line of patient care (Anderson et al. 2014; Lakanmaa et al. 2014). One of the more important clinical competencies required for an ICU nurse to implement professional nursing practice is the ability to perform a comprehensive and accurate physical assessment (Anderson et al. 2014). However, a study by Birks et al. (2013) found that the number of regular physical assessments carried out in the clinical setting is low.

1.2 Purpose of the Study and Statement of the Research Issue/Problem

The purpose of this study was to evaluate the effect of the ABCDE assessment method and an educational session on nursing physical assessment activities by ICU nurses in the general ICU at Dr Sardjito Hospital. In addition, it sought to assess the

effect of this intervention on nurses' perceptions regarding their responsibility for and importance of this activity.

1.3 Statement of the Hypothesis or Research Questions

The question addressed in this study was 'Will the implementation of the ABCDE assessment method and an educational session influence bedside nurses' physical assessment activities, and their perceptions regarding their responsibility for and importance of this activity in the general ICU at Dr Sardjito Hospital?'

1.4 Aim and Objectives

The aim of this study was to examine the effect of the ABCDE initial assessment method and an education session on nursing physical assessment and the nurses' perceptions regarding the responsibility for and importance of this activity in the general ICU at Dr Sardjito Hospital. The objectives guiding this study were to:

- explore and describe the practice of nursing physical assessment
- explore and describe the effect of the ABCDE assessment method and an education session on nursing physical assessment
- implement and evaluate the effectiveness of the ABCDE assessment method and an educational session in improving physical assessment by bedside nurses in ICU in three eight-hourly shifts (morning, afternoon and night)
- evaluate the attitudes of registered nurses to assessment.

1.5 Significance of the Study

The importance of this research in relation to health/nursing practice include that it (a) has the potential to improve the quality of nursing care in the ICU by exploring, describing and changing practice of nursing physical assessment in the general ICU setting; (b) will provide a new perspective on nursing practice regarding the use of the ABCDE initial assessment method; and (c) may assist in the development of strategies for ICU nurses to improve physical assessment in the ICU.

1.6 Assumptions

Based on the literature and personal experience, it was assumed that the number of physical assessments by ICU bedside nurses was low. It was assumed that the ABCDE physical assessment method and an education session would improve nursing physical assessment by these nurses. It was also assumes that the ABCDE physical assessment method was not being used by the nurses.

1.7 Definitions of Terms

The terms used in this thesis and a detailed understanding of the concepts are as follows:

- Airway: 'A natural passage for air to enter and exit the lungs' (Venes & Taber 2005, p. 72).
- Associate nurse: A nurse who has responsibility to deliver care based on the primary nurse's care plan (Shirey 2008).
- Breathing: 'The act of inhaling and exhaling air' (Venes & Taber 2005, p. 332).
- Circulation: 'Movement in a regular or circular course' (Venes & Taber 2005, p. 490). In this study, circulation refers to circulation in the circulatory system, which means 'circulation of body fluids in the cardiovascular and lymphatic systems' (Venes & Taber 2005, p. 493).
- Disability: In the context of the ABCDE assessment method this is related to patient's level of consciousness (Coyer et al. 2007).
- Endotracheal tube (ETT): 'A catheter inserted into the trachea to provide or protect an airway' (Venes & Taber 2005, p. 814).
- Exposure: 'The making visible of a body part' (Venes & Taber 2005, p. 872), which involves nurses exposing patients from head to toe to observe bodily signs (Coyer et al. 2007).
- Glasgow Coma Scale (GCS): 'A scale to determine a patient's level of consciousness. It is a rating from 3 to 15 of the patient's ability to open his or her eyes, respond verbally, and move normally. The GCS is used primarily

during the examination of patients with trauma or stroke' (Venes & Taber 2005, p. 2084).

- Inotrope: An agent that influences the force of muscular contraction, specifically cardiac muscles (Venes & Taber 2005).
- ICU: An area in a hospital that has separate and self-contained staff and equipment. This area dedicated to manage patients with life-threatening conditions and monitor patients' condition that potentially threat patient life. (College of Intensive Care Medicine 2010).
- Physical assessment: 'The process of evaluating objective anatomic findings through the use of inspection, palpation, percussion, and auscultation' (Campbell & Lynn 1990, p. 37).
- Primary nurse: A nurse who has '24-hour-per-day accountability for planning, delivering, monitoring, and coordinating care' (Shirey 2008, p. 370) The Associate Nurse is also responsible for implementing this plan.

1.8 Conclusion

This chapter introduced the topic of the research and the researcher's area of interest. An overview of the context was also provided. The aim is to examine the effect of the ABCDE initial assessment method and an education session on nursing physical assessment in the general ICU at Dr Sardjito Hospital. The research question that was the focus of the study was whether the implementation of the ABCDE assessment method and an education session would affect bedside nurses' physical assessment skills, and their perception regarding the importance of and responsibility for this activity.

Chapter 2: Literature Review

> A careful nurse will keep a constant watch over her sick, especially weak, protracted, and collapsed cases, to guard against the effects of the loss of vital heat by the patient himself
>
> —Florence Nightingale (1860)

2.1 Introduction

This chapter will explore concepts related to physical assessment, such as its history and evolution. In addition, it will discuss the nurse's role in physical assessment; physical assessment techniques and approaches; nurses' roles in critical care; nurses' perceptions regarding physical assessment; and previous research around ABCDE methods. This information will be used to justify the need for this research.

2.2 Search Strategy

In searches for relevant literature, Scopus was used as the main database. Keywords such as ('nursing') AND ('physical assessment') were employed; 38 documents were found but only 16 of them were relevant to the current study.

Following this, other keywords ('nursing physical assessment') AND ('intensive care unit') were added and 45 documents were found; however only seven of these were relevant. In addition, because some of these full text articles were available from ScienceDirect, other papers were recommended that were relevant to the research topic.

To enrich the literature review, the researcher also searched PubMed and CINAHL (Cumulative Index to Nursing and Allied Health Literature) using the same keywords. Some papers found had already been identified through Scopus. However, several

additional papers were discovered and used to inform the background for this research project, and justify the need for the research.

2.3 History and Evolution of Physical Assessment

The literature indicates that the ancient Greeks were the first to consider physical assessment and diagnosis (Talley & O'Connor 2010). Since classical Greek times, examination of the patient has been considered vital because disease was viewed 'in terms of the discomfort it causes' (Talley & O'Connor 2010, p. xiv). Until the 19th century, medical diagnosis was empirical and based on the classical Greek belief that all disease had a single cause regarding an imbalance of the four humours: yellow bile, black bile, blood and phlegm (Talley & O'Connor 2010). For example, the ancient Greeks noticed that patients with jaundice often had an enlarged liver that was firm and irregular; shaking a patient and listening for a fluid splash was one of the methods of assessment they recognised (Talley & O'Connor 2010).

The current emphasis on the use of history taking and physical assessment for diagnosis developed only in the 19th century. During this time, the difference between *symptoms* (subjective complaints from the patient's perspective) and *signs* (objective changes noticeable by the clinician) evolved (Talley & O'Connor 2010). However, modern physical assessment (examination) has its origins in principles developed by Hippocrates, Vesalius, Morgagni, Sydenham, Auenbrugger, Corvisart, Laennec, Louis, Mueller and Osler (Walker et al. 1990).

Hippocrates and his colleague developed a basis for physical assessment by establishing medicine as a profession with a rational basis, and using observation (inspection) and feeling (palpation) in patient examination (Talley & O'Connor 2010; Walker et al. 1990). Herophilus of Alexandria (335–280 BC) described a method of taking the pulse in the 4th century BC. However, it was Galen of Pergamum (130–200 AD) who proved the pulse rate could represent a major physical sign of disease, and this was crucial. After the 18th century, pulse rates per one minute were being

documented, and this was considered to be a reflection of the body's condition (Talley & O'Connor 2010).

At the beginning of the thirteenth century in Italy, Vesalius further developed the understanding by promoting dissection of human bodies for education purposes. In addition, he was the first to publish an accurate human anatomy text in 1543. Subsequent to this, in 1761, Morgagni established morbid anatomy, or pathology as it is now known, as a discipline (Walker et al. 1990). Another scholar who contributed to this understanding was Sydenham (1666–1683), whose definitions of disease led to the concept of nosology, or classification of disease (Walker et al. 1990).

However, the discovery of percussion by Auenbrugger in 1760 and its dissemination by Corvisart in 1808 was considered to be the actual beginning of physical assessment in its modern form (Walker et al. 1990). In 1816, Laenec invented the stethoscope, which revolutionised the approach to physical assessment. However, other scholars are attributed with introducing these practices into medical education. These include Pierre Louis (1800–1850 French school), Johannes Mueller (1830–1900 German school) and William Osler (Johns Hopkins University 1893), who changed medical practice in the United States (US) and the rest of the Western world (Walker et al. 1990).

2.4 Nurses' Roles in Physical Assessment

Nurses' responsibility for physical assessment has changed greatly over the years. Traditionally nurses had very limited responsibility for physical assessment and patient assessment was not considered to be a nursing role. However, as the nurse's role has become more sophisticated, their involvement of patient assessment has become essential (McKenna et al. 2011). This activity and the information it provides is even more essential in settings from which routine medical review is absent (Harris et al 1998). Nurses should be able to systematically assess a patient's condition and recognise any deviation to enable timely medical intervention as needed (Harris et al 1998).

As their role evolved, nurses became responsible for recording vital signs. The assessment and recording of vital signs has long provided the basis of nurses' physical assessment. Vital signs consist of the pulse, respiratory rate, body temperature and blood pressure (Simel 2011). Vital signs should be directly assessed if a patient looks unwell because they provide important basic information (Talley & O'Connor 2010).

As nurses' responsibilities have progressed, they have taken on a broader role in physical assessment. Nurses in the US, Canada and Australia already include physical assessment skills in their nursing practice as a component of health assessment (Lesa & Dixon 2007). This includes using the skills of physical assessment techniques such as looking (inspecting), feeling (palpating), tapping (percussing) and listening (auscultating) (Talley & O'Connor 2010).

2.5 Physical Assessment Technique

Physical assessment is a means of obtaining objective data about patients to direct clinical decision making. Williams and Hopper (2010) also indicate that bodily functions that have been identified as having potential problems should be given special attention. The most common approach used is referred to as the IPPA (inspection, palpation, percussion and auscultate) format (Williams & Hopper 2010).

Inspection uses observation skills to gather data that can be seen and also smelled, such as a patient's respiratory effort, skin colour or wound size; this phase continues during further assessment (Altman 2004; Williams & Hopper 2010). Palpation uses the fingers or hands to feel an area, such as an abdomen, for firmness (Williams & Hopper 2010). In the percussion phase, the assessor generally taps on the patient using usually the middle finger of the non-dominant hand in the area being checked, while the middle finger of the dominant hand taps on the non-dominant finger (Williams & Hopper 2010). This will elicit sounds described as dull, flat, tympanic or resonant (Williams & Hopper 2010). The auscultation phase usually proceeds by using a stethoscope to hear heart sounds (apical, tricuspid, mitral and pulmonary valves) and lungs sounds (anteriorly, laterally and posteriorly) (Williams & Hopper

2010). However, as the scope of practice of nurses continues to evolve, their role in physical assessment has changed. For nurses working in particular specialities, the competencies and skills required differ. For example, nurses working in the mental health area will have a specific assessment approach for their patients; the emergency and critical care areas will also require different approaches to assessment.

2.6 Physical Assessment Approach

To extend the investigation from the patient's health history, nurses should conduct a physical assessment (Baid 2006). If the health history indicates that only one specific area of the body requires examination, a focussed assessment will be conducted (Baid 2006). However, some clinical circumstances could make it necessary to perform a comprehensive (full body) physical assessment rather than focus on one particular system (Baid 2006). There are two physical examination sequences using the techniques of inspection, palpation, percussion and auscultation: a body system and a head-to-toe (HTT) approach (Baid 2006).

2.7 Body System Approach of Physical Assessment

This is a formal approach to physical assessment that examines the parts of the body using systems (Talley & O'Connor 2010). This type of approach applies to all major systems and aims to detect peripheral signs of disease in each system (Talley & O'Connor 2010). For example, assessment of the cardiovascular system includes the heart and all the major blood vessels, and a general inspection assessment of the patient's fingernails (Talley & O'Connor 2010). However, one weakness in this approach is that time is not taken to stand back and look at the patient's general appearance or to assess their face, hands and body (Talley & O'Connor 2010).

Talley and O'Connor (2010) classify physical assessment by body systems: the cardiovascular, respiratory, gastrointestinal, genitourinary, haematological, rheumatological, endocrine and nervous systems.

2.8 Head-to-toe Format of Physical Assessment

The HTT approach facilitates a complete physical assessment (Yudkowsky et al. 2004). The HTT was developed from Donald Novey's *Rapid access guide to physical examination* and it has been reworded and clarified over the years based on the experience during usage by over 4000 students (Yudkowsky et al. 2004).

2.9 Nurses' Roles in Critical Care

> The new developments in anaesthetics, antibiotic and surgical techniques have widened the field of nursing considerably, and there are now many new fields open to nurses who wish to specialize.
>
> —Madeleine Masson (1985)

The term 'critical care' is used to encompass both intensive and high-dependency patient care (Nimmo & Singer 2011, p. 1). The type of care provided in the critical care unit normally differs from that in general wards. This means that staff in these areas need to be trained specifically for this work and can rapidly assess a patient, recognise the severity of their underlying illness and initiate immediate life-saving management if needed (Nimmo & Singer 2011).

Critical care nursing is defined as a 'specialty within nursing that deals specifically with human responses to life-threatening problems' (American Association of Critical-Care Nurses [AACCN] 2015, p. np). A critical care nurse is defined as a 'licensed professional nurse who is responsible for ensuring that acutely and critically ill patients and their families receive optimal care' (AACCN 2015, p. np). In Australia, critical care nursing has developed and continued to evolve since the late 1960s and early 1970s, when the ICU was introduced (Harris & Chaboyer 2002).

Critical care nurses have many roles including that of bedside clinician, nurse educator, nurse researcher, nurse manager, clinical nurse specialist and nurse practitioner. Critical care nurses are also responsible for caring for patients who

deteriorate. Some are also responsible for identification, intervention and management of clinical problems. They also provide direct patient care including assessing, diagnosing, planning and prescribing pharmacological and non-pharmacological treatment of health problems. Some critical care nurses also provide more complex care and make clinical decisions related to complex patient care including risk appraisal, interpretation of diagnostic tests and providing treatment, which may include prescribing medication (AACCN 2015). Critical care nurses are nurses functioning at an advanced level, thus they should be well versed in advanced physical assessment skills, have experience within the field in which they are practicing, possess postgraduate qualifications, advance their role by means of expansion and not extension, and contribute to both education and research within their specialty (Harris & Chaboyer 2002).

The Australian College of Critical Care Nurses (ACCCN) has developed standards for critical care nurses. Standard 9 in the domain *critical thinking and analysis* states that a critical care nurse 'applies integrated patient assessment and interpretive skills to achieve optimal patient outcomes' (ACCCN 2015, p. 13). This will allow them to fulfil the other standards in this domain:

- Standard 10—Develops and manages a plan of care to achieve desired outcomes
- Standard 11—Evaluates and responds effectively to changing situations
- Standard 12—Engages in and contributes to evidence-based critical care nursing practice (ACCCN 2015, pp. 13–15)

Thus, there is clearly an expectation that critical care nurses assess their patients.

2.10 The ABCDE Method

There are many mnemonics that use variations of the abbreviation 'ABCDE': the awakening and breathing coordination, delirium monitoring and management, and early mobility (ABCDE) bundle related to delirium, immobility, sedation/analgesia and ventilator management in the ICU; the score for predicting risk of stroke after a transient ischaemic attack—age, blood pressure, clinical features, duration (ABCD-

score), and diabetes (ABCD2-score); and asymmetry, border irregularity, colour variation, diameter greater than 6 mm, evolving and 'funny looking' mole in the dermatology area (Engelter et al. 2012; Jensen & Elewski 2015; Kram et al. 2015).

In this study, ABCDE is used to indicate airway, breathing, circulation, disability, exposure and equipment (Carrington & Down 2010; Thomas & Deakin 2007; Thompson, Kilroy & Tesfayohannes 2006). This approach was adopted and modified for use in the critical care area by Couchman et al. (2007) and Coyer et al. (2007). The ABCDE method was initially developed by the Advanced Trauma Life Support (ATLS®) Program, which was designed for evaluation and management of injured patients (Søreide 2008). ATLS® was developed by the American College of Surgeons following an aeroplane crash involving a surgeon and his family in a Nebraska cornfield: the surgeon noted that the current assessment system was inadequate (Søreide 2008). A study by Thim et al. (2012) stated that the ABCDE approach should be utilised when injury or critical illness is suspected, but it is not recommended in cardiac arrest. Couchman et al. (2007) considers this approach is important in primary surveys to recognise life-threatening conditions that require immediate medical intervention.

2.10.1 Assessment of Airway (A)

In airway assessment, critical care nurses should be aware that the patient's airway should be patent and secure (Couchman et al. 2007).

2.10.1.1 Assessment of Artificial Airway

Patients in ICU usually require mechanical ventilation and an artificial airway to help them breathe and to protect their airway. There are several assessments that the bedside ICU nurse should undertake:

- Tube placement (ETT or other devices)

There are strategies to verify ETT placement, such as auscultation (listening to air movement), observing chest movement, monitoring end-tidal carbon dioxide (CO_2) and radiological examination (Couchman et al. 2007).

- Tube security

  Tube security refers to maintenance of the correct tube placement (tube length is secure and correct) and also minimising injury to the airway caused by extreme movement of the tubes and equipment (Couchman et al. 2007).

- Cuff pressure status

  Regular assessment of cuff pressure status will enable effective management to reduce the risk of aspiration from under-inflation, and tracheal mucosal injury from cuff over-inflation (Couchman et al. 2007). Moreover, Couchman et al. (2007) found continuous control of a pressure cuff is associated with a decrease of micro-aspiration and ventilator-associated pneumonia (VAP). Several primary techniques are utilised in the clinical setting: measuring cuff pressures to ensure they remain at or below 25 mm Hg (with cuff pressure manometer); inflating the cuff with the minimum volume of air required to ensure air leak on inspiration (minimal occlusive volume); and inflating the cuff with the minimum volume of air to allow a small leak on inspiration (minimal leak technique) (Couchman et al. 2007).

2.10.1.2 Airway Patency

Following artificial airway assessment, nurses should also assess airway patency. Assessment of airway patency is based on lung secretions (suctioning). Lung secretions should be assessed for colour, consistency and volume (Couchman et al. 2007). Suctioning will both provide the opportunity to assess secretions and support the patient's airway, because removing secretions can help to provide clear access to the lungs (Couchman et al. 2007).

2.10.1.3 Assessment of Airway Pressure

For ICU bedside nurses, observation of airway pressures and trends in pulse oximetry and end-tidal CO_2 readings are also important (Couchman et al. 2007). End-tidal CO_2 monitoring using capnometry is considered a reliable technique for assessing tube placement but is influenced by the clinical setting, availability of equipment and staff experience. The numerical and waveform displays provide continuous data on expired CO_2 levels, changes to which may indicate tube dislodgement or obstruction; however, subtle changes to tube position such as movement into the larynx may not be directly detected (Couchman et al. 2007).

2.10.1.4 Adequacy of Humidification

Inadequate humidification can lead to airway obstruction (partial or complete) and respiratory tissue impairment (Couchman et al. 2007). Two humidification systems are available: heated humidifiers, and heat and moisture exchangers (Couchman et al. 2007).

A holistic approach involving adequate systemic hydration is also important because inappropriate humidification will manifest in excessive secretions (thick or thin) or crusting in the artificial airway, water in the circuit, or changes in airway pressure (Couchman et al. 2007).

2.10.2 Assessment of Breathing (B)

The main component of breathing assessment is making sure that the patient is still breathing by observing the rise and fall of the chest, and patient colour (Couchman et al. 2007).

There are several ways that a nurse should assess a patient's breathing:

- Assessment of respiratory rate, volume and pressure

Data from the ventilator, such as respiratory rate, tidal volume, minute volume and airway pressure, can be helpful for understanding lung function, a patient's respiratory effort and respiratory status, and appropriateness of ventilator settings (Couchman et al. 2007).

- Auscultation

  Auscultation should be performed by bedside ICU nurses. It should be conducted on both sides for comparison (listen for asymmetry) and then top to bottom, noting the location, quality, intensity and presence of adventitious sounds (Couchman et al. 2007; Sarkar et al. 2015). Auscultation should be performed on the anterior, lateral and posterior side (Couchman et al. 2007; Sarkar et al. 2015).

- Arterial blood gas (ABG) analysis, pulse oximetry and capnometry

  Monitoring gas exchange is a regular aspect of caring for a patient requiring mechanical ventilation. ABG analysis is the gold standard for determining arterial CO_2 and oxygen levels. Pulse oximetry and capnometry are relatively simple and effective tools for monitoring gas exchange to reduce the complications and costs associated with repeated ABG analysis (Couchman et al. 2007).

2.10.3 Assessment of Circulation (C)

Assessment of circulation is done to ensure that the patient has adequate functioning of this system. This should include assessment of the pulse (strength, regularity and rate) and of the patient's colour (Couchman et al. 2007).

Assessment of heart rate, rhythm, blood pressure, central venous pressure (CVP), peripheral perfusion, urine output, chest x-ray, serum electrolytes and haemoglobin (anaemia) are very important in assessment of circulation. Following this, patients receiving mechanical ventilation should have continuous multi-lead electrocardiography (ECG) monitoring to enable continuous assessment of heart rhythm and to recognise if there are cardiac arrhythmias or myocardial ischemia (Couchman et al. 2007).

Nutrition also has an important role for patients in the ICU, especially during the weaning phase, because patients are expected to breathe with minimum support from the ventilator (Couchman et al. 2007). Some evidence from pilot studies shows that utilisation of a feeding protocol (closely monitoring food absorption and increasing the feeding rate gradually) and administration of prokinetic agents as required are related to improved outcomes (Couchman et al. 2007).

Patients requiring mechanical ventilation have a significant risk of nosocomial infections from the insertion of artificial tubes (e.g. ETT, urinary catheter, central venous catheter, intravenous line) and immune suppression. Hence the nurse should assess the patient's temperature, because if it is elevated it can be a sign of infection (Couchman et al. 2007). Several other methods can be used to identify a response to infection, including measurement of white blood cell count,), IL-6 and) levels (Couchman et al. 2007).

Patients requiring mechanical ventilation frequently have elevated blood glucose levels due to the initiation of the body's stress response. For this reason, monitoring and control of the patient's blood glucose level is essential. Van den Berghe et al. (2006) suggested that maintenance of blood glucose within tight limits (4.4–6.1 mmol/L) is related to a reduction in mortality (Couchman et al. 2007). The *Surviving Sepsis Guidelines* recommend that patients with severe sepsis should have their blood glucose level maintained at less than 8.3 mmol/L (Couchman et al. 2007)

Monitoring of urinary output is very important, as is observing levels of urea and creatinine to recognise any renal impairment. Adequate mean arterial pressure, cardiac output and renal perfusion should be maintained to prevent acute renal failure (Couchman et al. 2007; Coyer et al. 2007). According to a recent evidence-based review, ensuring urine output is greater than or equal to 0.5 mL/kg/hour is one way of maintaining adequate renal function (Couchman et al. 2007).

It is also important to check that intravenous infusions are being delivered according to a current order with the correct rate, composition, time of expiry, point of administration, and so on (Couchman et al. 2007).

2.10.4 Assessment of Disability (D)

Assessment of disability is related to a patient's level of consciousness. The GCS is the most common tool used to assess the patient's level of consciousness in terms of arousal and verbal/physical response (Couchman et al. 2007). However, there are obvious limitations with the use of the GCS for intubated patients: patients cannot communicate verbally due to placement of the ETT. To some extent this limitation has been overcome through the use of communication scoring systems that assess the patient's ability to communicate non-verbally, including mouthing words, using letter boards, writing notes, and so on (Couchman et al. 2007). Sedated patients are often unable to respond and this will influence their GCS.

Most patients in ICU experience pain during their admission (Couchman et al. 2007; Coyer et al. 2007). Pain has many deleterious effects, so it is considered as the fifth vital sign. One method of pain management is intravenous administration of opioids. A combination of opioid and sedative drugs will provide a synergistic effect that allows a lower dosage of each drug to be used effectively; thus pain management and sedation are inextricably linked (Couchman et al. 2007; Coyer et al. 2007). Continuous intravenous is preferred over intermittent administration of opioids drugs to achieve a steady state in patients requiring mechanical ventilation (Coyer et al. 2007). Recommended drugs include benzodiazepines for their anxiolytic and amnesiac properties, including midazolam (most frequently utilised for rapid sedation), diazepam (also for rapid sedation) and lorazepam (for longer term use). Propofol is a hypnotic delivered in a lipid emulsion that slows the activity of the brain and the nervous system; it is utilised for sedation in situations where rapid arousal may be needed (Coyer et al. 2007). However, there are some side effects from continuous intravenous sedation, for example it may prolong mechanical ventilation time (Couchman et al. 2007; Coyer et al. 2007). Thus, ICU nurses should assess the patient's level of sedation to reduce mechanical ventilation time, length in intensive

care and the possibility of complications such as VAP (Couchman et al. 2007; Coyer et al. 2007).

One important aspect that is not commonly monitored in critical areas is delirium. This is variously referred to as ICU psychosis and ICU syndrome, and it is linked to increased length of stay, morbidity and mortality (Coyer et al. 2007). There are several tools to detect delirium in critical care patients: the Cognitive Test for Delirium (CTD), the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) and the Intensive Care Delirium Screening Checklist (ICDSC) (Coyer et al. 2007). Those tools all have strengths and weakness: for example, the CTD and CAM-ICU require patients to be aware so that they can obey commands or nod/shake their head in response to questions, whereas the ICDSC can be implemented with unresponsive patients (Coyer et al. 2007).

In the sedated patient, neurological condition is important. An ICU bedside nurse should assess pupil size and reaction as part of neurological assessment because early signs of neurological deterioration, such as a decrease in level of consciousness, are masked, which increases reliance on late signs such as pupillary changes (Couchman et al. 2007).

2.10.5 Assessment of Exposure (E)

This involves exposing patients from head to toe, which enables other signs to be observed in relation to the patient's body, in particular the integumentary system. Exposure should also take into account preserving the patient's dignity and surrounding environment (Coyer et al. 2007; Hassan & Tesfayohannes 2006).

The risk of skin integrity impairment in patients requiring mechanical ventilation is increased due to the immobility associated with sedation and ventilation. Pressure ulcer prevention is crucial to reduce pain and suffering, and the patient's length of stay and ventilation time (Coyer et al. 2007). One of the most important measures is positioning because it can improve patient comfort and aims to optimise oxygen

transport (through the effects of improving ventilation/perfusion mismatching), reducing breathing and myocardial workload (Coyer et al. 2007). Evidence shows that a semi-recumbent position with the head of the bed elevated from 30 to 45° will reduce the incidence of VAP (Coyer et al. 2007). This is because the degree of bedhead elevation and the time spent supine are identified as risk factors for aspiration of gastric contents and the development of VAP (Coyer et al. 2007).

2.10.6 Assessment of Equipment (E)

Equipment refers to all equipment used for the patient's care, which should be assessed. Essential equipment at the bedside includes a self-inflating manual resuscitation bag with an appropriate face mask, and a high-flow suction unit with Yankeur sucker and endotracheal suction catheters (Couchman et al. 2007). ICU nurses should ensure all equipment is present, readily accessible and in full working order, including checking that the ventilator is connected where possible to an uninterrupted power supply, intravenous infusions are being delivered according to a current order (correct rate, composition, time of expiry, point of administration), patient equipment is functioning properly, monitoring devices are connected appropriately and alarm limits are all set to safe levels (Couchman et al. 2007).

2.11 Nurse Perception and Physical Assessment

The perception that the use of physical assessment is not nurses' responsibility is reported in the US, Canadian and Australian literature; this relates more to selected physical assessment skills as identified above, rather than physical assessment in general (Lesa & Dixon 2007). Edwards and Davis (2005) found that internationally educated nurses perceived themselves to be less proficient in cardiac assessment and interventions, and the use of technology. However, they were more proficient in wound and skin management, and general physical assessments.

Factors that influence whether nurses conduct physical assessment include lack of competence, confidence, role models, time and resources, and lack of support from

nursing supervisors, emergency department physicians and hospital administrators. Nurses also fear making a mistake because of not using these skills regularly, not doing enough assessments, high workloads and role ambiguity. These are all barriers to nurses conducting physical assessment (Lesa & Dixon 2007).

2.12 Research around ABCDE Methods and the Importance of this Study

In this section, the research is reviewed with respect to gaps identified in the literature and an argument is developed regarding the need for this study. There have been some studies related to nursing physical assessment but most were conducted in general nursing areas or in pre-registration education. Secrest, Norwood and Dumont (2005) found that the majority of physical assessment skills taught in pre-service education programs were not used in practice. That study was conducted in North America and the respondents consisted of 12 educators and 51 practicing nurses. The study had several limitations including small sample size, use of a non-random sample and the fact that most of the practicing nurses were ICU nurses.

Birks et al. (2013) also showed that many of the physical assessment skills taught to nurses are used rarely or not at all. That study, conducted in Australia with 1220 respondents, also had some limitations: in particular, the sample of nurses was mainly from one state and data were self-reported (which can lead to research bias).

Douglas, Windsor and Lewis (2015) explored physical assessment skills utilisation by 208 graduating nursing students at an Australian university and measured their knowledge, frequency and barriers to physical assessment skills during clinical practice. They found that of 126 skills, only five were used consistently by students in clinical practice. Inspection (general observation) of the patient was the most common skill used, whereas the more complex skills of palpation, percussion, or auscultation were not used at all. Most skills (70%) were not performed and/or learned in clinical practice and students also perceived that nursing physical assessment was marginalised in both the university and clinical practice. Douglas, Windsor and Lewis

(2015) found that lack of confidence is a significant barrier to use of physical assessment skills.

The researcher identified no studies regarding the effect of an education session on nursing physical assessment activities using the ABCDE approach in ICU settings. Thim et al. (2012, p. 117) also stated that 'the evidence supporting the systematic ABCDE approach to critically ill or injured patients is expert consensus'. Hence, this created an opportunity for the researcher to focus on how an education session may improve nursing physical assessment with the ABCDE approach and also its effects on nurses' perceptions of their physical assessment responsibility, and the importance of nursing physical assessment in the ICU setting. A review by Lesa and Dixon (2007) revealed that physical assessment skills education within a holistic health model would enable nurses to contribute a more comprehensive health assessment to the planning and monitoring of their patients.

2.13 Conclusion

This chapter highlights research relevant to physical assessment using the ABCDE approach, and education in physical assessment. The factors that influence whether nurses choose to conduct physical assessment were discussed. In addition, factors that affect nurses' ability to conduct physical assessment, their perception regarding physical assessment responsibility, and the importance of nursing physical assessment were considered.

Chapter 3: Methods

3.1 Introduction

This chapter outlines the research design and why this approach was taken. It will give detailed information regarding the study setting, participants and recruitment, ethical considerations and analysis of the results, as well as a discussion of reliability and validity.

A quantitative research methodology was utilised in this study because this design can be used to describe new situations, events or concepts, examine relationships between variables and determine effectiveness of a treatment (Burns, Gray & Grove 2011).

3.2 Description of Research Design

The research design for this study was quasi-experimental. This design is also widely known as a non-equivalent control group pre-test–post-test design (Polit & Beck 2006). It involves the manipulation of a research variable but lacks both randomisation and a control group (Loiselle, Lippincott & Wilkins 2011). There are some disadvantages of the quasi-experimental design, including that cause and effect interference cannot be made easily, there is always at least one plausible rival explanation for the results, and there is an alternative explanation for the results (Loiselle, Lippincott & Wilkins 2011). However, its advantages are that it is practical and feasible for a setting in which it may be difficult to conduct a true experimental design or innovative treatment, and it does introduce some research control when full experimental rigour is not feasible (Loiselle, Lippincott & Wilkins 2011).

3.2.1 Study Population

The participants involved in this study were all nurses working in the general ICU at Dr Sardjito Hospital who met the inclusion criteria.

3.2.2 Inclusion Criteria

The inclusion criterion for this research was all ICU bedside nurses who had been working in ICU for more than six months and therefore had completed the induction program with or without any ICU-specific training.

3.2.3 Exclusion Criteria

Some participants were excluded from the study:

- all non-bedside nurses (nurse managers, nurse educators and nurses with no clinical role and who were not involved in clinical practice at the bedside)
- ICU nurses who were not rostered during the study period, such as nurses on annual, monthly or maternity leave, or who had retired during the study period.

3.2.4 Recruitment Strategies

The researcher met with the head of ICU, the nursing director, an ICU intensivist as director of the intensive unit and some ICU nurses and invited them to an information session about this project as well as discussing how they could assist in the recruitment process. The researcher spoke with the head of ICU about the nurses in the unit who met the inclusion/exclusion criteria; he indicated that all the nurses met the inclusion criteria except for two who were not considered bedside nurses: himself and one other colleague. The total population in this study was 24 nurses.

The head of ICU and ICU nurses who joined the information session told the researcher that they considered the research to be so important that they thought all

the ICU nurses should participate in the education session. In addition, the head of ICU suggested that because of the lack of human resources in the unit, it was impossible to do an education session in one day; he suggested that the education session should be held over two days. The head of ICU scheduled participation in the education session for each nurse based on the roster.

3.2.5 Study Setting

The study was conducted in the general ICU at Dr Sardjito General Hospital in Yogyakarta, Indonesia. The unit has the capacity to accommodate up to 12 patients and consists of 10 regular beds and two isolation rooms. It is an adult general ICU providing care for patients after head, abdominal or heart surgery; those with respiratory failure who need mechanical ventilation; those with autoimmune disorders such as Guillain–Barre syndrome; those with multi-organ failure or spinal injury; and also patients suffering from trauma.

3.2.6 Intervention

The researcher prepared all equipment and facilities for the education session, including and information booklet (see Appendix 1), intravenous (IV) line drug stickers, stethoscopes, penlights and a file folder to hold the stickers prior to their use. There was no education booklet available to use for the education session so this had to be prepared by the researcher.

The intervention in this study was an education session about physical assessment using the ABCDE approach. The session was held in the unit's meeting room where audio–visual tools and a mannequin were available to simulate the physical assessment process.

The education process was held over two days, for three hours each day. The three-hour session was partitioned into two hours for a lecture and one hour for a practical session with nurses working in pairs.

3.3 Data-gathering Instruments

The data-gathering instruments in this study consisted of two questionnaires: one distributed pre-intervention and one post-intervention. A questionnaire is defined as a 'printed self-report form designed to elicit information through written or verbal responses of the subject' (Burns, Gray & Grove 2011, p. 1191).

3.3.1 Formation of the Questionnaire

No tools were found in the published literature that were suitable or available to collect data on assessment methods used by nurses in the ICU. One study published by Birks et al. (2013) was entitled 'The use of physical assessment skills by registered nurses in Australia: issues for nursing education', but the tools used were unavailable despite emailing the author. Thus, the two questionnaires were formulated specifically for this research.

The questionnaire included questions exploring the demographic backgrounds and items related to ABCDE assessment: two open-ended questions, and two Likert scale questions.

Closed questions were used to collect demographic data such as participation in the education session, gender, initial nursing qualification, position in the ICU, role as a preceptor or a clinical instructor, ICU qualifications and continuing nursing education (CNE) in the preceding two years.

Items were designed to collect information regarding nurse's assessment in the previous shift for the airway, breathing, circulation, exposure and equipment (ABCDE) categories. The tool was designed using the ABCDE approach as published in the literature describing initial assessment in acute and emergency settings (Thim et al. 2012; Wood & Garner 2012) with adaptations made for the ICU setting (Couchman et al. 2007; Coyer et al. 2007; Thim et al. 2012).

Open questions were used to identify when nurses assessed their patients, important information noted during their assessments, factors influencing their ability to assess patients and factors influencing whether they conducted physical assessments.

A Likert scales with ratings from *strongly agree* to *strongly disagree* was used to identify nurses' perceptions regarding who has responsibility for, and the importance of, nursing physical assessment in the ICU.

The research instrument in this study was developed in English at the University of Adelaide and implemented in Bahasa Indonesia for data collection, because this is the national language and is required in the research setting. Translation and back translation were utilised in this study and were conducted by a professional translator.

3.4 Issues of Validity and Reliability

In quantitative research, validity and accuracy will influence the results (Polit & Beck 2006). Validity and reliability are the two most essential principles for evaluating measurement instruments (Schneider & Whitehead 2013).

3.4.1 Validity

Validity describes the accuracy of an instrument in reflecting all aspects of the construct of interest (Schneider & Whitehead 2013). The quality and rigour of a quantitative study is determined by the ability of the instruments to measure what they were designed to measure (Schneider & Whitehead 2013). Three main types of validity are construct, criterion-related and content validity (Schneider & Whitehead 2013). Instrument (measurement) validity is tested in relation to content, structure and determining evidence of relationships between variables and the measure (Schneider & Whitehead 2013).

The researcher's supervisors both of whom have expertise in Intensive Care nursing assisted in the development of the questionnaire, and then a panel of experts reviewed it for face and content validity. This panel consisted of an Australian academic who has expertise in questionnaire development, an Australian ICU nurse educator and an Indonesian academic lecturer who specialises in intensive care nursing.

3.4.2 Reliability

Reliability is define as 'the consistency with which an instrument measures the attribute' (Loiselle, Lippincott & Wilkins 2011, p. 260). The reliability coefficient ranges from 0 to 1, and the higher the value, the more reliable (stable) is the measuring instrument (Loiselle, Lippincott & Wilkins 2011). Consistency was checked using Cronbach's alpha coefficient. Cronbach's alpha was measured using the Statistical Package for Social Sciences (SPSS). The Cronbach's alpha coefficient should ideally be greater than 0.7 (Pallant 2013).

3.5 Piloting of the Questionnaire

After assessment of the content and face validity was completed, the questionnaire was pilot tested. Burns, Gray and Grove (2011, p. 169) state that 'a pilot study can be conducted to develop or refine data collection instruments and also measure the validity and reliability of the research instruments'. Pilot testing was conducted in a different hospital with similar conditions to the study setting (the Academic Hospital Universitas Gadjah Mada). This hospital was selected because it reflected the expected profile of the target population and thus allowed the researcher to explore if there were any confusing or irrelevant questions. Two pilot studies were conducted because the first revealed that some of the questions were confusing and ambiguous. Following feedback and comments from ICU bedside nurses, the researcher modified the questionnaire and conducted the second pilot study with a different group of nurses from the same unit, using the modified questionnaire. The second pilot study elicited no further comments or feedbacks.

3.6 Ethical Issues

A research proposal (see Appendix 2) was submitted to the Human Research Ethics Committee (HREC) at the University of Adelaide and the Medical and Health Research Ethics Committee (MHREC) at the Faculty of Medicine Universitas Gadjah Mada—Dr Sardjito General Hospital for the approval. The head of ICU was informed about the study and gave his verbal support. Once the approvals from HREC and the MHREC were obtained, the researcher sought permission from the Education and Research Department at Dr Sardjito General Hospital to conduct the study. Once permission was granted, the researcher commenced the data collection process (Appendix 3).

As the researcher is a nurse educator in the study setting, to avoid participants feeling they were being coerced, research assistants distributed the questionnaire and participants deposited the completed questionnaires in a private box in the head of ICU's office. Research assistants distributed the pre-intervention questionnaire with an attached participant information sheet (Appendix 4), to all bedside ICU nurses who met inclusion criteria. The information sheet contained the project title, ethics approval details, the name of the principal investigator, details of the study, purpose, methods and risks, and contact names and telephone numbers of the researchers. Participants were not obliged to take part in the study and had the right to withdraw by not completing the questionnaires, as completion of these questionnaires was taken as consent to participate in this part of the study.

Prior to commencement of the education session, a consent form (Appendix 5) was distributed for participants to sign if they chose to participate. The form contained the project title, ethics approval numbers and details of the participant's rights during the study period.

Research assistants distributed post-intervention questionnaires with an information sheet attached (Appendix 6), one week after the education session. Participants were invited to complete the post-intervention questionnaire even if they were not able to

complete the pre-intervention questionnaire or attend the education session as this was confidential. However, only those who completed the both questionnaires and the education session were included in the analysis.

All data were collected anonymously and no individual was identified; only information relevant to the study was recorded. Data will be retained in a digital file on the researcher cloud service for 12 months after the data collection as per the terms and conditions of research data retention by the HERC.

3.7 Statistical Analysis

Once the data collection was completed, the researcher analysed all the data from the questionnaires. The data were coded for analysis. Each participant was given a number and the data in the completed questionnaire were considered for analysis. The researcher entered the responses into a spread sheet format using SPSS student version.

Descriptive and interferential statistics were utilised in this study. Descriptive statistics were utilised to summarise descriptive data such as demographics data and frequency of assessment by nurses; and interferential statistics were utilised to examine if there was any relationship between data, such as demographics, and the ABCDE physical assessment before intervention (the education session) (Loiselle, Lippincott & Wilkins 2011).

Content analysis was utilised in this study to analyse the open-ended questions. Content analysis is defined as ‘a technique for categorising the data into themes that can then be counted and converted into frequencies to identify dominant issues across a number of studies’ (Pope & Mays 2013, p. 149).

3.8 Summary

This chapter focussed on the purpose of the study, described the research design, validity and reliability and also statistical analysis. The inclusion and exclusion

criteria and recruitment strategies were described. A detailed description of ethical issues was provided, along with details of how confidentiality of participants was ensured. The following chapter will report the study findings.

Chapter 4: Results

4.1 Introduction

This chapter will discuss the results of this study investigating the effects of an education session on nurses' physical assessment and perceptions about physical assessment in the ICU.

4.2 Data Analysis

Descriptive statistics and graphical presentations are used to report participant responses. Data include gender, initial nursing qualification, position in the ICU, role as a preceptor or a clinical instructor, highest ICU qualification, and CNE in the previous two years.

Content analysis was utilised for the open-ended questions, such as if and when nurses do their assessment, important information gained during assessment, and factors that influenced nurses conducting physical assessment.

Inferential statistics were used to examine the effect of the education session on nurses' physical assessment.

4.3 Response Rate

The total sample was 24, of which 17 responded and completed all phases of the study (both questionnaires and the education session), providing a response rate of 70.8%.

4.4 Demographic Data

This section will present demographic data obtained during this study, including gender, initial nursing qualification, position in the ICU, role as a preceptor or a clinical instructor, highest ICU qualification, and CNE in the previous two years.

As can be seen from Table 1, most respondents were female and the majority held a Diploma of Nursing as their initial nursing qualification. In addition, most were associate nurses and most did not have a role as preceptor or clinical instructor. Few had completed advanced ICU training; most had only basic ICU training. Finally, most nurses had completed some CNE while employed in the ICU: for most this was in palliative care, and only one had completed advanced cardiac life support training.

Table 1:

	Demographic data	Number	**Percentage**
1	Gender		
	• Male	3	17.6
	• Female	14	82.4
2	Initial nursing qualification		
	• Diploma of Nursing	14	82.4
	• Bachelor of Nursing	3	17.6
3	Position in the intensive care unit (ICU)		
	• Associate nurse	13	76.5
	• Primary nurse	4	23.5
4	Role as preceptor or clinical instructor		
	• Yes	2	11.8
	• No	15	88.2
5	Highest ICU qualification		
	• Induction only	2	11.8
	• Basic ICU training	11	64.7
	• Advanced ICU training	4	23.5
6	Continuing nurse education (CNE) in previous two years		
	• No CNE	3	17.6
	• Basic trauma and cardiac life support training	2	11.8

• Advanced cardiac life support training	1	5.9
• Others: palliative care training	11	64.7

4.5 Airway Assessment

The results reported in Table 2 show that before the intervention, most airway assessment was completed by nurses, including assessment of airway patency, ETT position, ETT security and cuff pressure, and secretions. However, assessments of ETT humidification and skin condition around ETT were not assessed.

There were significant improvements after the education session, especially for assessment of ETT humidification and position. Moreover, there was a mild improvement in assessment of airway patency, ETT cuff pressure and airway secretions, whereas skin assessment around the ETT was unchanged. Conversely, the proportion of nurses assessing ETT security dropped from 71% (*n*=12) to 59% (*n*=10).

Table 2:

	Pre-intervention		Post-intervention	
	Yes	No	Yes	No
Assessment of:	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Airway Patency	15 (88)	2 (12)	16 (94)	1 (6)
Endotracheal tube (ETT) position	10 (59)	7 (41)	17 (100)	0 (0)
ETT security	12 (71)	5 (29)	10 (59)	7 (41)
ETT cuff pressure	13 (76.5)	4 (23.5)	15 (88)	2 (12)
Secretion	14 (82)	3 (18)	17 (100)	0 (0)
ETT humidification	0 (0)	17 (100)	16 (94)	1 (6)
Skin around ETT	0 (0)	17 (100)	0 (0)	17 (100)

4.6 Breathing Assessment

Before the intervention, nurses most often assessed respiratory rate, chest movement, patients' breathing sounds (auscultation) and pulse oximetry, with only a few nurses performing blood gas analysis assessment. Also, nurses had not been assessing patients' respiratory volumes and end-tidal CO_2.

There were significant improvements after the education session in assessment of the patient's respiratory volumes and airway pressure (tidal volume, minute volume and airway pressure), and blood gas analysis. There was also a mild improvement in use of auscultation. On the other hand, the frequency of some activities remained unchanged, including assessment of chest movement, respiratory rate, pulse oximetry assessment and end-tidal CO.

Table 3:

	Pre-intervention		Post-intervention	
	Yes	No	Yes	No
Assessment of:	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Chest movement	16 (94)	1 (6)	16 (94)	1 (6)
Respiratory rate	17 (100)	0 (0)	17 (100)	0 (0)
Breathing sounds (auscultation)	12 (71)	5 (29)	16 (94)	7 (6)
Respiratory volume	0 (0)	17 (100)	11 (65)	6 (35)
Blood gas	3 (18)	14 (82)	15 (88)	2 (12)
Pulse oximetry	15 (88)	2 (12)	15 (88)	2 (12)
End-tidal CO_2	0 (0)	17 (100)	0 (0)	17 (100)

4.7 Circulation Assessment

Before the intervention, most nurses assessed patients' blood pressure, heart rate and skin colour. However, none assessed pulse strength, hourly fluid balance, chest x-ray, or intravenous drug rate and route. Some assessed pulse with palpation, CVP, urinary

output, capillary refill time (CRT), blood results, ECG, and the dose of intravenous drugs.

Following the education session there were significant improvements in assessment of circulation—including pulse with palpation, CVP, urine output and hourly fluid balance—and of CRT, blood results, ECG, temperature and intravenous drug dose. Moreover, there was a mild improvement in assessment of patients' pulse strength, chest x-ray, and intravenous drug route and rate. Assessment of patients' colour and heart rate were unchanged, whereas in blood pressure assessment there was a mild reduction in frequency, from 94% (*n*=16) to 82% (*n*=14).

Table 4:

	Pre-intervention		Post-intervention	
	Yes	No	Yes	No
Assessment of:	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Pulse with palpation	2 (12)	15 (88)	14 (82)	3 (18)
Pulse strength	0 (0)	17 (100)	6 (35)	11 (65)
Skin colour	11 (65)	6 (35)	11 (65)	6 (35)
Heart rate	14 (82)	3 (18)	14 (82)	3 (18)
Blood pressure	16 (94)	1 (6)	14 (82)	3 (18)
Central venous pressure	1 (6)	16 (94)	11 (65)	6 (35)
Urinary output	2 (12)	15 (88)	13 (76.5)	4 (23.5)
Hourly fluid balance	0 (0)	17 (100)	12 (70)	5 (30)
Capillary refill time	2 (12)	15 (88)	8 (47)	9 (53)
Chest x-ray	0 (0)	17 (100)	4 (23.5)	13 (76.5)
Blood results	1 (6)	16 (94)	11 (65)	6 (35)
Electrocardiography	2 (12)	15 (88)	13 (76.5)	4 (23.5)
Temperature	2 (12)	15 (88)	12 (71)	5 (29)
Intravenous drug dose	2 (12)	15 (88)	11 (65)	6 (35)
Intravenous drug rate	0 (0)	17 (100)	1 (6)	16 (94)
Intravenous drug route	0 (0)	17 (100)	1 (6)	16 (94)

4.8 Disability Assessment

Before intervention, most nurses rarely assessed disability other than for level of pain. After the education session, assessment of all components generally improved. There was a significant improvement in assessment of a patient's level of consciousness, pupillary responses and sedation level.

Table 5:

	Pre-intervention		Post-intervention	
	Yes	No	Yes	No
Assessment of:	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Level of consciousness	1 (6)	16 (94)	17 (100)	0 (0)
Pupillary response	1 (6)	16 (94)	12 (71)	5 (29)
Sedation level	2 (12)	15 (88)	13 (76.5)	4 (23.5)
Pain level	16 (94)	1 (6)	17 (100)	0 (0)
Delirium level	0 (0)	17 (100)	7 (41)	10 (59)

4.9 Exposure

Before the intervention, most nurses did not conduct assessment of exposure other than for assessment of insertion site for invasive devices (e.g. IV insertion site). Following the education session, for the most part assessment of exposure was significantly improved, especially for assessment of the patient's position, skin integrity, mucous membranes and environment.

Table 6:

	Pre-intervention		Post-intervention	
	Yes	No	Yes	No
Assessment of:	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Skin integrity	1 (6)	16 (94)	17 (100)	0 (0)
Mucous membranes	2 (12)	15 (88)	12 (71)	5 (29)
Insertion site	13 (76.5)	4 (23.5)	16 (94)	1 (6)
Position	0 (0)	17 (100)	17 (100)	0 (0)
Environment	1 (6)	16 (94)	10 (59)	7 (41)

4.10 Equipment

Before the intervention, most nurses assessed the ventilator setting and other device settings, but few checked ventilator alarm settings. Moreover, none assessed the monitor and alarm settings.

In equipment, there was a significant improvement in the assessment of monitor and alarm settings after the education session. However, there was a slight decrease in assessment of patients' ventilator settings and no change for assessing other devices.

Table 7:

	Pre-intervention		Post-intervention	
	Yes	No	Yes	No
Assessment of:	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Ventilator setting	17 (100)	0 (0)	16 (94)	1 (6)
Ventilator alarm	1 (6)	16 (94)	9 (53)	8 (47)
Monitor setting	0 (0)	17 (100)	17 (100)	0 (0)
Monitor alarm	0 (0)	17 (100)	10 (59)	7 (41)
Other device setting	16 (94)	1 (6)	16 (94)	1 (6)

4.11 Nurses' Perceptions of Patient Assessment Responsibility

As can be seen from Table 8, before intervention, the numbers of nurses who had positive perceptions (believed that assessment was also a nurse responsibility) and had negative perceptions (believed that assessment was doctors' responsibility) were the same. Following the education session, most nurses had positive perceptions (they believed that assessment was also the nurse's responsibility). The results also showed that after the education session there was a statistically significant change regarding nurses' perceptions of the responsibility for patient assessment ($p = 0.029$).

Table 8:

Nurse perceptions of patient assessment responsibility	**Positive *n* (%)**	**Neutral *n* (%)**	**Negative *n* (%)**	**Test-statistic[a]**	
Pre-intervention	8 (47.1)	1 (5.9)	8 (47.1)	*Z*	–2.181[b]
Post-intervention	15 (88.2)	0 (0)	2 (11.8)	Asymp. Sig. (2-tailed)	0.029

[a]Wilcoxon signed rank test; [b]Based on negative rank

4.12 Nurses' Perception Regarding the Importance of Nursing Physical Assessment

As can be seen from Table 9, before intervention all nurses perceived that nursing physical assessment was important. Following the education session, most still had the same perception but one nurse indicated a neutral response.

Table 9:

Nurse perceptions of patient assessment responsibility	Positive *n* (%)	Neutral *n* (%)	Negative *n* (%)	Test-statistic[a]	
Pre-intervention	17 (100)	0 (0)	0 (0)	Z	–1.00[b]
Post-intervention	16 (94.1)	1 (5.9)	0 (0)	Asymp. Sig. (2-tailed)	0.317

[a]Based on positive rank; [b]Wilcoxon signed rank test

Nurse perceptions of patient assessment responsibility	**Positive *n* (%)**	**Neutral *n* (%)**	**Negative *n* (%)**	**Test-statistic[a]**	
Pre-intervention	17 (100)	0 (0)	0 (0)	Z	–1.00[b]
Post-intervention	16 (94.1)	1 (5.9)	0 (0)	Asymp. Sig. (2-tailed)	0.317

[a]Based on positive rank; [b]Wilcoxon signed rank test

4.13 Reliability

Reliability of the instrument for measuring ABCDE physical assessment methods in this study was assessed using Cronbach's alpha coefficient calculated in SPSS. The data were entered into an SPSS spread sheet by coding a respondent's answer as 1 if they conducted the assessment and 0 if they did not. All data were then analysed using Cronbach's alpha coefficient.

The statistical results (see Appendix 7) suggest that there may have been some confusion between assessment of respiratory rate and the chest movement items: when one item (chest movement) was removed, the reliability coefficient was 0.700. Likewise, for pulse strength assessment and pulse assessment with palpation, there appeared to be some confusion: when one item (assessment of pulse with palpation) was removed from the analysis the reliability coefficient was 0.724. This confusion may have occurred if nurses record respiratory rate by observing chest movement and by watching the ventilator; likewise they may have assessed the pulse rate by palpation, and at the same time assessing pulse strength.

4.14 Demographic Characteristics and ABCDE Physical Assessment Ability Before and After the Education Session

The statistical analysis (see Appendix 8) indicated that prior to the intervention, there was no significant effect on assessment practices of the initial nursing qualification, a nurse's position in ICU, their role as preceptor or clinical instructor and their highest ICU qualification. However, there was a significant difference in airway assessment (p = 0.049) between nurses who had not completed basic or advanced life support CNE and those who had. For overall assessment (other than airway assessment) there were no significant differences.

The results (see Appendix 9) indicate that following the intervention there was no significant relationship between any demographic factor and assessment activities.

4.15 Effect of the Education Session on ABCDE Physical Assessment

Wilcoxon matched pairs signed rank tests were used to measure the effect of the education session on ABCDE physical assessment. This test is designed for subjects measured under two conditions (Pallant 2013) and not only measures repeated *t*-tests but also converts scores to ranks and compares them at Time 1 and at Time 2 (Pallant 2013).

Table 10 demonstrates that before the education session, the mean for the dependent variables ranged between 1.88 and 3.76. However, after the education session, the mean was 3.82–8.94. Analysis of the effect of the education session on ABCDE physical assessment revealed that all dependent variables had $p < 0.05$: for airway and disability aspects, p = 0.001; for breathing, circulation, exposure and equipment aspects, $p < 0.0001$. These results suggest that the education session had a significant effect on ABCDE physical assessment in the ICU.

Table 10:

Dependent variables		Pre-intervention	Post-intervention	*p*-value
Airway	Mean	3.76	5.35	0.001
	Std. deviation	1.30	1.06	
Breathing	Mean	3.65	5.23	0.000
	Std. deviation	0.70	0.66	
Circulation	Mean	3.12	8.94	0.000
	Std. deviation	1.62	2.77	
Disability	Mean	1.94	3.82	0.001
	Std. deviation	0.66	0.81	
Exposure	Mean	1.88	4.18	0.000
	Std. deviation	0.60	0.81	
Equipment	Mean	2.00	3.94	0.000
	Std. deviation	0.35	0.97	

4.16 Content Analysis

Content analysis was conducted on the data gathered from four open-ended questions:

- During your last shift, when did you assess your patient (e.g., at handover)?
- During your last shift, did you note any important information during assessment?
- During your last shift, what factors influenced your ability to assess the patient with the ABCDE assessment method?
- What factors do you think affect whether nurses follow the ABCDE assessment method?

4.16.1 Time for Patient Assessment

To the first question (‘During your last shift, when did you assess your patient (e.g., at handover)?’), respondents indicated that they did their physical assessment before and

after handover, every hour, when there is a new patient, after administering drugs, and when the patient's condition changed. Particular responses were:

- minimum twice in a shift before and after handover (Respondents 01, 05)
- after handover (day and night shift) and after bathing patients (morning shift) (Respondents 02, 04, 06, 08, 09, 13, 14, 16)
- when there is elevation/drop in HR, BP, RR, CVP (Respondent 19)
- after administer (sic) emergency drugs/analgesics/sedation/muscle relaxant (Respondent 03)
- condition which need (sic) specific monitoring (Respondent 03)
- every hour (Respondents 02, 03, 04, 06, 07, 08, 10, 12)
- every shift handover (Respondents 01, 04, 06, 07, 08, 09, 10, 11, 13, 14).

4.16.2 Important Information Recorded During Physical Assessment

The second question was 'During your last shift, did you note any important information during assessment?'. The participants' responses to this question were varied, and were classified under specific headings: 'airway', 'breathing', 'circulation', 'disability', 'exposure' and 'equipment'.

4.16.2.1 Airway

In the airway section, the respondents mostly commented on the volume of sputum/secretion during their physical assessment. Particular responses were:

- there is sputum (Respondents 01, 03)
- secretion (Respondents 02, 04, 06, 08, 09).

4.16.2.2 Breathing

For the breathing section, some respondents reported abnormal lung sounds, low oxygen saturation (SpO_2) and abnormal blood gas results. Particular responses were:

- abnormal lung sounds (Respondent 01)
- abnormal blood gas result (Respondent 01)

- low saturation (Respondent 09).

4.16.2.3 Circulation

In the circulation section, respondents reported low BP, body temperature increase (febrile/hyperthermia), unstable hemodynamic status, unstable blood sugar and abnormal lab results as important findings. Particular responses were:

- blood pressure lower (Respondent 01)
- body temperature increase or hyperthermia (Respondent 03)
- abnormal lab results (Respondent 06).

4.16.2.4 Disability

In the disability section, respondents reported evidence of seizure activity and change in consciousness as being important findings. Particular responses were:

- decreased consciousness (Respondents 02, 03, 04, 06)
- seizure (Respondents 02, 03, 04, 09).

4.16.2.5 Exposure

Relating to exposure, respondents indicated their important findings were decubitus and phlebitis. Particular response were:

- there is wound/lesion in skin (decubitus) (Respondent 01)
- there is phlebitis (Respondents 02, 03, 08).

4.16.2.6 Equipment

With respect to equipment, only one respondent noted a finding:

- patient attached to syringe pump and infusion pump; functioning well (Respondent 05).

4.16.3 Factors that Affected Nurses' Ability to Assess Patients with the ABCDE Method

The third question was 'During your last shift, what factors influenced your ability to assess the patient with the ABCDE assessment method?' The responses indicated there are several factors that influenced nurses' ability to assess the patient with ABCDE method, including as time constraints, unfamiliarity with the method, patient and nurse ratios, availability of tools, and ABCDE physical assessment training. Particular responses were:

- not familiar (Respondents 02, 04, 07, 08, 09, 13, 14, 15)
- limited time (Respondents 02, 07, 08, 09, 14, 15)
- ratio of nursing personnel and patients is not balanced (Respondent 02)
- availability of time and facilities (Respondent 01)
- availability of guide/list to be checked (Respondent 05)
- need supporting tools for assessment/physical examination (Respondent 10)
- had been involved in ABCDE assessment training (Respondent 01).

4.16.4 Factors that Influence Whether Nurses Conduct the ABCDE Assessment Method

The final open-ended question was 'What factors do you think affect whether nurses follow the ABCDE assessment method?' The subjects' responses indicated there are several factors that influence whether nurses conduct the ABCDE assessment, including staffing levels, individual attitudes, availability of tools and the unit's policy. Particular responses were:

- too few nurses (Respondents 02, 04, 07, 08, 09, 13, 15)
- willingness and ability to do ABCDE assessment (Respondent 01)
- laziness (Respondent 02)
- individual attitudes (Respondent 06)
- caring attitude (Respondent 16)
- availability of time, facilities and infrastructure (Respondent 05)
- unit policy, agreement that must be executed (Respondent 05)

- availability of tools (Respondent 11)
- tools to perform physical assessment are limited (Respondent 15).

The following chapter will discuss the study results in relation to the literature. It will also discuss limitations and implications of the study, and recommendations for further research.

Chapter 5: Discussion

This final chapter will discuss the results of the study in relation to the literature. Limitations of the study, along with a conclusion and recommendations for further research will also be discussed.

5.1 Restatement of the Problem

One of the important clinical competencies for an ICU nurse to implement professional nursing practice is the ability to perform a comprehensive and accurate physical assessment (Anderson et al. 2014). However, Birks et al. (2013) found that the number of physical assessments regularly completed in the clinical setting is low.

An education session in ABCDE physical assessment was delivered and two questionnaires were formulated to assess the effect of the session on bedside nurses' physical assessment skills in the ICU. Specifically, the aim of this study was to answer the research question 'Will the implementation of the ABCDE assessment method and an education session affect bedside nurses' physical assessment skills and perceptions of this activity in the general ICU at Dr Sardjito Hospital in Special Region Yogyakarta, Indonesia?'.

This study was designed to explore and describe the practice of nursing physical assessment, and the effect of the ABCDE assessment methods and the educational session on nursing physical assessment; and to implement and evaluate the effectiveness of ABCDE assessment tools and the education session to improve physical assessment by bedside nurses in the ICU. The findings in this study have highlighted some issues and concerns. Some problems have been addressed as a result of the research having been conducted, but further improvements can be made.

5.2 Summary Description of Procedures

The study used a quantitative research methodology with a quasi-experimental design and two questionnaires for data collection. The design allowed the researcher to implement an education session on physical assessment using the ABCDE approach, and to explore and investigate the practice of nursing physical assessment in the general ICU before and after intervention.

5.3 Major Findings and Their Significance to Clinical Practice

The findings of this study indicated that the education session on physical assessment and in particular the ABCDE approach increased the practice of nursing physical assessment in the general ICU. There was some improvement in aspects of ABCDE assessment. The findings may not be generalisable to other settings, as ICU nursing practice in Indonesia as a developing nation differs from practice in Australia and other developed nations. Nurses work less autonomously, postgraduate education in the speciality of ICU is less accessible (due to expense and limited offerings) and resources are more limited. For example, the nurses did not have access to or training on the usage of capnography.

These results are similar to those of an Australian quantitative study by Guilhermino et al. (2014a), who reported that the education process within the ICU is essential to provide safe and effective practice for ICU bedside nurses. There are several methods that can be used for the continuing education of ICU nurses, such as with an educator-assisted orientation, bedside orientation, self-directed learning packages, the *Recognition in prior professional learning, experiences, and skills* program (RIPPLES), Tele-ICUs and in-service sessions (Guilhermino et al. 2014a; Pfrimmer & Roslien 2011). Guilhermino et al. (2014b) also suggested that continuing education in ICU should use a structured approach and be delivered frequently.

However, there were some aspects of assessment for which the frequency decreased and some assessments were not performed by the respondents at all. With respect to

airways, assessment of ETT humidification and the skin around the ETT were not conducted by ICU bedside nurses before the intervention. Assessment of airway humidification is crucial because inadequate airway humidification has a range of harmful effects, such as net loss of heat and water, hypothermia, disruption of the airway epithelium, bronchospasm, atelectasis, production of dry secretions, impaired mucous ciliary function, sputum retention and ETT occlusion (Doyle et al. 2011; Restrepo & Walsh 2012).

Assessment of skin around the ETT is important because there are some complications associated with ETT stabilisation, such as impaired facial skin and mucosa, which can cause patient discomfort and disfigurement. (Barnason et al. 1998; Gardner et al. 2005). ETT stabilisation techniques that can be employed use twill, cotton or adhesive tape, different tying tape and commercial tube holders (Gardner et al. 2005). Gardner et al. (2005) found it was not possible to identify conclusively which method of ETT stabilisation resulted in the least tube displacement and facial skin, lip or oral mucosa breakdown; or unplanned or accidental extubation. This is why oral assessments are a useful adjunct for nurses to determine changes in the oral cavity over time (Barnason et al. 1998; Gardner et al. 2005).

Assessment of respiratory volume was one of the breathing components that changed significantly after the intervention. Assessment of a patient's lung volume is crucial for monitoring and managing patients during mechanical ventilation intervention in the ICU, to prevent complications such as volu(baro)trauma, pleural effusion, intra-abdominal hypertension and atelectasis—especially for patients with acute respiratory distress syndrome (Chen & Brochard 2015).

Assessment of end-tidal CO_2 was one of the breathing components that nurses did not assess during their physical examination. The device used to measure end-tidal CO_2 is a capnograph. Capnography is defined as 'the continuous analysis and recording of the CO_2 concentration in respiratory gas' (Walsh, Crotwell & Restrepo 2011, p. 503). There are three main indications for capnography/capnometry: confirming artificial airway placement, assessing and monitoring pulmonary circulation and respiratory

status, and optimising mechanical ventilation effects (Walsh, Crotwell & Restrepo 2011). This study reports similar findings to those of Iyer, Koziel and Langhan (2015), that there are some barriers to use of capnography, such as lack of knowledge about equipment, availability of a monitor and cannulas, and lack of a policy for use of capnography during sedation. In this study setting, there is a limited number of capnographs and nurses lack of knowledge about capnograph waveforms.

Assessment pulse with palpation, patient ECG and patient CVP improved significantly after the intervention. It is essential that ICU bedside nurses conduct comprehensive cardiovascular assessments of patients to ensure adequacy of cardiac output and to detect complications associated with poor cardiac output (Couchman et al. 2007). Patients who require mechanical ventilation may experience changes in cardiovascular function because of the increase in intrathoracic pressure that results in reduction in preload as venous return decreases (Couchman et al. 2007).

Assessment of urinary output and hourly fluid balance improved significantly after the education session. These assessments are important because the reduction in cardiac output linked with positive pressure ventilation may result in reduced urinary output due to neural and hormonal mechanisms (i.e. antidiuretic hormone secretion and activation of the rennin–angiotensin–aldosterone system) (Couchman et al. 2007). An ICU bedside nurse should monitor the urinary output of a ventilated patient and ensure it is no less than 0.5 mL/kg/h; and maintain adequate cardiac output, mean arterial pressure and renal perfusion pressure to prevent acute renal failure (Couchman et al. 2007).

The assessment of blood results also improved significantly after the education session. This assessment is crucial because ICU patients have a high risk for electrolyte and blood chemical imbalance; therefore serial measurements of ABGs and electrolytes are essential (Razavi et al. 2010). Other blood results that are important to be monitored in ICU patients include sodium (associated with increased morbidity or mortality), potassium (a preventable cause of cardiac arrest), haemoglobin (because of the significant effect that anaemia can have on the patient's

oxygen-carrying capacity), white blood cell count, C-reactive protein, IL-6 and procalcitonin levels (markers of infection), blood glucose, serum levels of urea and creatinine (to detect renal impairment), phosphate (important in energy production and muscle functioning) and so on (Couchman et al. 2007; Razavi et al. 2010).

Temperature assessment was also significantly affected by the education session. Temperature assessment is important for management in the critically ill patient. Body temperature reflects the specific heat content of a particular area of body tissue, which is determined by vasomotor control; body temperature maintenance occurs through the integration of multiple body systems that interact to keep a balance between heat loss and production (Hooper & Andrews 2006). Changes in body temperature may indicate various disease processes, including infection, shock, bleeding and cardiac problems (Hooper & Andrews 2006). Assessment of temperature is critical for ICU bedside nurses because it is related to quality patient outcomes (Hooper & Andrews 2006).

Assessment of drug dosage was significantly affected by the education session; however assessment of the route and rate of administration remained low. It could be that nursing personnel are much more aware of drug doses than of drug rates or routes. In the Indonesian setting, nurses have limited ability to adjust rates. In addition, the rate and route of administration is not changed frequently. Any change is checked when the order is changed. Therefore, the nurses may not think it is necessary to assess these variables.

Level of consciousness and pupillary response are important in disability assessment because they can be indicators of a patient's neurological status. GCS provides much more accurate and reproducible assessment, and nurses should also document size and reactivity of pupils (Thompson, Kilroy & Tesfayohannes 2006).

Assessment of patient sedation levels improved after the education session. This assessment is important because over-sedation will increase morbidity by prolonging the duration of mechanical ventilation (MV), and under-sedation may risk life-

threatening events such as accidental extubation (Hashemi et al. 2008). Assessment and monitoring of the level of sedation will help detect over- and under-sedation and may ultimately improve outcomes for patients (Hashemi et al. 2008). Various scales to assess level of sedation in critically ill patients have been developed, including the Ramsay sedation scale, Richmond agitation–sedation scale (RASS), sedation agitation scale, Cook scale, and modified GCS and alertness sedation scale (Hashemi et al. 2008). In the study setting, use of a sedation scale has only recently been introduced, so many of the participants may not have been familiar with its use. The RASS has just been introduced into palliative care training, and during the ABCDE education session all nurses received refresher training regarding utilisation of RASS.

The assessment of skin integrity and mucous membranes also increased significantly after the education session. Patients who require MV are at increased risk of skin impairment because of their immobility associated with sedation and ventilation, and skin impairments such as decubitus (pressure ulcer) will affect a patient's length of ventilation and hospital stay (Couchman et al. 2007). Patient mobilisation during their admission in ICU is important because it can improve joint range of motion, and soft tissue and muscle strength and function, reduce the risk of thromboembolism and assist in restoring normal body fluid distribution through gravity (Coyer et al. 2007). There are some techniques to mobilise ICU patients, such as turning every two to four hours; limb exercises (passive, active assisted or active resisted); the patient actively moving in the bed; getting out of bed via mechanical lifting devices or slide transfers; sitting on the edge of the bed; standing; transfers from bed to chair; and walking (Coyer et al. 2007).

Assessment of a patient's position is very important. Patient positioning not only will prevent decubitus but also will reduce the incidence of VAP (Coyer et al. 2007). The degree of head of bed elevation and the time spent supine are identified as risk factors for aspiration of gastric contents, so will affect the development of VAP (Coyer et al. 2007). Evidence shows that semi-recumbent positioning with the head of the bed elevated by 30–45° will decrease the incidence of VAP (Coyer et al. 2007).

Assessment of monitor settings and monitor alarms also improved. Monitoring life support device functioning is fundamental for critically ill patients because monitoring with adequate thresholds appears to improve patient outcomes (Schmid, Goepfert & Reuter 2013).

Physical assessment with the ABCDE approach has been shown to provide a structured and systematic method for nursing physical assessment and to influence nurses' actions regarding physical assessment in ICU settings. This method has also shown considerable promise and can potentially contribute to improving the practice of assessment in various clinical settings.

The current results showed that there was no effect of having a Diploma of Nursing and Bachelor of Nursing with respect to practice of the ABCDE physical assessment method. This result is similar to that of Giddens (2006). There are several possible reasons why there were no differences between these two groups. First, it is possible that an educational difference actually exists but does not translate as a significant difference in clinical practice (Giddens 2006). Second, it may be because the unit in this study concerned is in a teaching hospital with interns, nursing students and residents who conduct physical assessment; therefore the bedside nurses did not think they needed to undertake this activity (Giddens 2006). Some international literature also acknowledges that any change to the nurse's role in health assessment generally requires strategies that involve the regulatory, educational and practice aspects of nursing, not just local policy (Lesa & Dixon 2007).

Prior to the education session, some of the nurses perceived that physical assessment is not their responsibility; however they still thought that physical assessment was very important. Following the education session, nurses perceived that physical assessment was their responsibility. This finding was similar to that of Edmunds, Ward and Barnes (2010), who reported that participants had different views regarding who should conduct a physical assessment. Some nurses thought physical assessment would be more appropriate in a nurse-led or critical care area; others thought that it was appropriate for all nurses to conduct physical assessment because it enhanced

patient care, and could complement and lead to better cooperation and respect between health professions (Edmunds, Ward & Barnes 2010).

From the content analysis, some similarities can be found with other studies with respect to factors affecting nurses' ability to assess patients and factors that influence whether they conduct physical assessment. The results indicate that factors that affect nurses' ability to conduct physical assessment are time constraints, unfamiliarity with the method, patient and nurse ratios, ABCDE physical assessment training, individual attitude, availability of tools and unit policy. These factors are similar to those reported by Lesa and Dixon (2007), who found that barriers to nurses conducting physical assessment include lack of competence, confidence, role models, time, resources, support from nursing supervisors, not using the skills regularly, not doing enough assessments, and high workloads.

5.4 Study Limitations

The findings of this study cannot be generalised to all bedside ICU nurses because of the small sample size and the setting: most respondents, even though they only held a Diploma of Nursing, had considerable clinical experience because the hospital is a tertiary-level teaching and referral hospital with many resident doctors. This may have influenced the nurses' clinical interpretation, and levels of skill and clinical decision making. Moreover, a self-filled questionnaire probably cannot describe the real practice of nursing physical assessment activities. Another factor to be considered is the Hawthorne effect, which is 'a motivational response to the interest, care, and attention received through observation and assessment' (Sedgwick 2012, p. 1). In this study, it is difficult to differentiate whether the results were influenced by the intervention (the education session) or by the interest, care and attention given to nursing staff during the study.

5.5 Recommendations for Further Investigation

Recommendations for future study include:

- Research should be conducted to investigate the real practice of nursing physical assessment with a prospective method used to observe actual practice regarding ABCDE physical assessment methods.
- Further research should be conducted after a period of time to assess knowledge retention from the education session among the bedside ICU nurses.
- A further study could include qualitative research on factors that influenced nurses to implement ABCDE physical assessment, to support this quantitative study.
- There is a need for replicating this study in larger and different settings such as non-teaching hospitals, to ensure that physical assessment with the ABCDE approach method has the same effect as in a teaching hospital.

5.6 Conclusions

This chapter has discussed all study findings in the context of the literature. A brief summary of the description of the procedure and restatement of the problem was also included in this chapter.

References

Altman, G 2004, *Delmar's fundamental and advanced nursing skills*, Cengage Learning.

AACCN 2015, *About critical care nursing*, American Association of Critical-Care Nurses, viewed 5 November 2015, <http://www.aacn.org/wd/publishing/content/pressroom/aboutcriticalcarenursing.pcms?menu>.

Anderson, B, Nix, E, Norman, B & McPike, HD 2014, 'An evidence based approach to undergraduate physical assessment practicum course development', *Nurse Education in Practice*, vol. 14, no. 3, pp. 242–246.

ACCCN 2015, *Practice standards for specialist critical care nurses*, Cambridge Media, Perth, Western Australia.

Baid, H 2006, 'The process of conducting a physical assessment: a nursing perspective', *British Journal of Nursing*, vol. 15, no. 13, pp. 710–714.

Barnason, S, Graham, J, Wild, MC, Jensen, LB, Rasmussen, D, Schulz, P, Woods, S & Carder, B 1998, 'Comparison of two endotracheal tube securement techniques on unplanned extubation, oral mucosa, and facial skin integrity', *Heart & Lung: The Journal of Acute & Critical Care*, vol. 27, no. 6, pp. 409–417.

Birks, M, Cant, R, James, A, Chung, C & Davis, J 2013, 'The use of physical assessment skills by registered nurses in Australia: issues for nursing education', *Collegian*, vol. 20, no. 1, pp. 27–33.

Burns, N, Gray, J & Grove, SK 2011, *Understanding nursing research: building an evidence-based practice*, Saunders/Elsevier, St. Louis, MO.

Campbell, EJ & Lynn, CK 1990, *Chapter 4 The physical examination*, Butterworths, Boston, MA, <http://www.ncbi.nlm.nih.gov/books/NBK361/>.

Carrington, M & Down, J 2010, 'Recognition and assessment of critical illness', *Anaesthesia & Intensive Care Medicine*, vol. 11, no. 1, pp. 6–8.

Chen, L & Brochard, L 2015, 'Lung volume assessment in acute respiratory distress syndrome', *Current Opinion in Critical Care*, vol. 21, no. 3, pp. 259–264.

College of Intensive Care Medicine 2010, *Minimum standards for intensive care units*, College of Intensive Care Medicine of Australia and New Zealand, Victoria, viewed 29 June 2015, <http://www.cicm.org.au/CICM_Media/CICMSite/CICM-Website/Resources/Professional Documents/IC-1-Minimum-Standards-for-Intensive-Care-Units.pdf>.

Couchman, BA, Wetzig, SM, Coyer, FM & Wheeler, MK 2007, 'Nursing care of the mechanically ventilated patient: What does the evidence say?: Part one', *Intensive & Critical Care Nursing*, vol. 23, no. 1, pp. 4–14.

Coyer, FM, Wheeler, MK, Wetzig, SM & Couchman, BA 2007, 'Nursing care of the mechanically ventilated patient: What does the evidence say?: Part two', *Intensive & Critical Care Nursing*, vol. 23, no. 2, pp. 71–80.

Douglas, C, Windsor, CA & Lewis, PA 2015, 'Too much knowledge for a nurse? Use of physical assessment by final-semester nursing students', *Nursing & Health Sciences*.

Doyle, A, Joshi, M, Frank, P, Craven, T, Moondi, P & Young, P 2011, 'A change in humidification system can eliminate endotracheal tube occlusion', *Journal of Critical Care*, vol. 26, no. 6, pp. 637. e631–637. e634.

Edmunds, L, Ward, S & Barnes, R 2010, 'The use of advanced physical assessment skills by cardiac nurses', *British Journal of Nursing*, vol. 19, no. 5, pp. 282–287.

Edwards, PA & Davis, CR 2005, 'Internationally educated nurses' perceptions of their clinical competence', *Journal of Continuing Education in Nursing*, vol. 37, no. 6, pp. 265–269.

Engelter, S, Amort, M, Jax, F, Weisskopf, F, Katan, M, Burow, A, Bonati, L, Hatz, F, Wetzel, S & Fluri, F 2012, 'Optimizing the risk estimation after a transient ischaemic attack–The ABCDE⊕ score', *European Journal of Neurology*, vol. 19, no. 1, pp. 55–61.

Gardner, A, Hughes, D, Cook, R, Henson, R, Osborne, S & Gardner, G 2005, 'Best practice in stabilisation of oral endotracheal tubes: a systematic review', *Australian Critical Care*, vol. 18, no. 4, pp. 158–165.

Giddens, J 2006, 'Comparing the frequency of physical examination techniques performed by associate and baccalaureate degree prepared nurses in clinical practice: does education make a difference?', *Journal of Nursing Education*, vol. 45, no. 3, p. 136.

Guilhermino, MC, Inder, KJ, Sundin, D & Kuzmiuk, L 2014a, 'Education of ICU nurses regarding invasive mechanical ventilation: findings from a cross-sectional survey', *Australian Critical Care*, vol. 27, no. 3, pp. 126–132.

Guilhermino, MC, Inder, KJ, Sundin, D & Kuzmiuk, L 2014b, 'Nurses' perceptions of education on invasive mechanical ventilation', *Journal of Continuing Education in Nursing*, vol. 45, no. 5, pp. 225–232.

Harris, D & Chaboyer, W 2002, 'The expanded role of the critical care nurse: a review of the current position', *Australian Critical Care*, vol. 15, no. 4, p. 133.

Harris, R, Wilson-Barnett, J, Griffiths, P & Evans, A 1998, 'Patient assessment: validation of a nursing instrument', *International Journal of Nursing Studies*, vol. 35, no. 6, pp. 303–313.

Hashemi, SJ, Soltani, H, Talakoub, R, Soleymani, B, Zeraatkari, K & Shahin, S 2008, 'Assessment of sedation level in critically ill mechanically ventilated patients: is bispectral index correlated with Richmond agitation–sedation scale?', *Journal of Research in Medical Sciences*, vol. 13, no. 4, pp. 181–185.

Hassan, A & Tesfayohannes, B 2006, 'Clinical assessment of major injuries', *Surgery (Oxford)*, vol. 24, no. 6, pp. 185–189.

Hooper, VD & Andrews, JO 2006, 'Accuracy of noninvasive core temperature measurement in acutely Ill adults: The state of the science', *Biological Research for Nursing*, vol. 8, no. 1, pp. 24–34.

Iyer, NS, Koziel, JR & Langhan, ML 2015, 'A qualitative evaluation of capnography use in paediatric sedation: perceptions, practice and barriers', *Journal of Clinical Nursing*, vol. 24, no. 15–16, pp. 2231–2238.

Jensen, JD & Elewski, BE 2015, 'The ABCDEF rule: combining the "ABCDE rule" and the "ugly duckling sign" in an effort to improve patient self-screening examinations', *Journal of Clinical and Aesthetic Dermatology*, vol. 8, no. 2, p. 15.

Kram, SL, DiBartolo, MC, Hinderer, K & Jones, RA 2015, 'Implementation of the ABCDE bundle to improve patient outcomes in the intensive care unit in a rural community hospital', *Dimensions of Critical Care Nursing*, vol. 34, no. 5, pp. 250–258.

Lakanmaa, RL, Suominen, T, Perttilä, J, Ritmala-Castrén, M, Vahlberg, T & Leino-Kilpi, H 2014, ''Basic competence in intensive and critical care nursing: development

and psychometric testing of a competence scale', *Journal of Clinical Nursing*, vol. 23, no. 5-6, pp. 799–810.

Lesa, R & Dixon, A 2007, 'Physical assessment: Implications for nurse educators and nursing practice', *International Nursing Review*, vol. 54, no. 2, pp. 166–172.

Loiselle, CG, Lippincott, W & Wilkins 2011, *Canadian essentials of nursing research*, Wolters Kluwer/Lippincott Williams & Wilkins, Philadelphia, PA.

Masson, M 1985, *A pictorial history of nursing*, Hamlyn.

McKenna, L, Innes, K, French, J, Streitberg, S & Gilmour, C 2011, 'Is history taking a dying skill? An exploration using a simulated learning environment', *Nurse Education in Practice*, vol. 11, no. 4, pp. 234–238.

Nimmo, GR & Singer, M 2011, *ABC of intensive care*, vol. 180, John Wiley & Sons.

Pallant, J 2013, *SPSS survival manual*, McGraw-Hill Education (UK).

Pfrimmer, DM & Roslien, JJ 2011, 'The tele-ICU: a new dimension in critical care nursing education and practice', *Journal of Continuing Education in Nursing*, vol. 42, no. 8, p. 342.

Polit, OHD & Beck, CT 2006, 'Essentials of nursing research methods, appraisal, and utilization', Lippincott Williams & Wilkins, Philadelphia, London.

Pope, C & Mays, N 2013, *Qualitative research in health care*, John Wiley & Sons.

Razavi, S, Jafari, A, Zaker, H & Sadeghi, A 2010, 'Plasma and serum electrolyte levels correlation in the pediatric ICU', *Tanaffos*, vol. 9, no. 4, pp. 34–38.

Restrepo, RD & Walsh, BK 2012, 'Humidification during invasive and noninvasive mechanical ventilation: 2012', *Respiratory Care*, vol. 57, no. 5, pp. 782–788.

Sarkar, M, Madabhavi, I, Niranjan, N & Dogra, M 2015, 'Auscultation of the respiratory system', *Annals of Thoracic Medicine*, vol. 10, no. 3, p. 158.

Schmid, F, Goepfert, MS & Reuter, DA 2013, 'Patient monitoring alarms in the ICU and in the operating room', *Critical Care*, vol. 17, no. 2, p. 216.

Schneider, Z & Whitehead, D 2013, *Nursing and midwifery research: methods and appraisal for evidence-based practice*, Elsevier, Australia.

Secrest, JA, Norwood, BR & Dumont, PM 2005, 'Physical assessment skills: a descriptive study of what is taught and what is practiced', *Journal of Professional Nursing*, vol. 21, no. 2, pp. 114–118.

Sedgwick, P 2012, 'The Hawthorne effect', *BMJ (Online)*, vol. 344, no. 7838.

Shirey, MR 2008, 'Nursing practice models for acute and critical care: overview of care delivery models', *Critical care nursing clinics of North America*, vol. 20, no. 4, pp. 365–373.

Simel, D 2011, 'Approach to the patient: history and physical examination', *Goldman's cecil medicine*, 24th edn. Elsevier Saunders, Philadelphia, PA.

Søreide, K 2008, 'Three decades (1978–2008) of Advanced Trauma Life Support (ATLS) practice revised and evidence revisited', *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*.

Talley, NJ & O'Connor, S 2010, *Clinical Examination: A Systematic Guide to Physical Diagnosis*, Elsevier, Australia.

Thim, T, Krarup, NHV, Grove, EL, Rohde, CV & Løfgren, B 2012, 'Initial assessment and treatment with the airway, breathing, circulation, disability, exposure (ABCDE) approach', *International Journal of General Medicine*, vol. 5, p. 117.

Thomas, R & Deakin, CD 2007, 'Assessment of acute trauma patient', *Foundation Years*, vol. 3, no. 1, pp. 1–3.

Thompson, C, Kilroy, D & Tesfayohannes, B 2006, 'Assessing a patient with major injuries', *Foundation Years*, vol. 2, no. 2, pp. 76–79.

Van den Berghe, G, Wilmer, A, Hermans, G, Meersseman, W, Wouters, PJ, Milants, I, Van Wijngaerden, E, Bobbaers, H & Bouillon, R 2006, 'Intensive insulin therapy in the medical ICU', *New England Journal of Medicine*, vol. 354, no. 5, p. 449.

Venes, D & Taber, CW 2005, *Taber's cyclopedic medical dictionary*, FA Davis Co., Philadelphia, PA.

Walker, HK, Hall, WD, Hurst, JW & Walker, HK 1990, ''The origins of the history and physical examination'.

Walsh, BK, Crotwell, DN & Restrepo, RD 2011, 'Capnography/capnometry during mechanical ventilation: 2011', *Respiratory Care*, vol. 56, no. 4, pp. 503–509.

Williams, LS & Hopper, PD 2010, *Understanding medical surgical nursing*, FA Davis.

Wood, I & Garner, M 2012, 'Initial management of acute medical patients. A guide for nurses and healthcare practitioners'.

Yudkowsky, R, Downing, S, Klamen, D, Valaski, M, Eulenberg, B & Popa, M 2004, 'Assessing the head-to-toe physical examination skills of medical students', *Medical teacher*, vol. 26, no. 5, pp. 415–419.

APPENDIX 1 Booklet Physical assessment with the ABCDE approach in ICU

Physical assessment with the ABCDE approach (Airway, Breathing, Circulation, Disability, Exposure and Equipment) in ICU

Preface

Physical assessment is the basic and crucial in the care of patients, especially patients in intensive care units who go to fast once the conditions change. Physical assessment can also be a means to detect changes in the patient so that it can be recognized and addressed. However, physical examination sometimes a scourge for nurses because many nurses who do not feel confident with the abilities and also with the shadow of a complicated physical assessment.

Thank God I had the opportunity to undergo a clinical placement in the intensive care unit in Adelaide, South Australia. I saw and also working directly with ICU nurses in Australia. I saw how physical assessment capabilities and the ability to collaborate with other health professionals is essential in patient care.

Through this training module I expect it to be useful and beneficial for ICU nurses Hospital Dr. Sardjito in particular and ICU nurses throughout Indonesia in general.

Nothing is perfect in this world. I'm sure this book many shortcomings so that input and suggestions so I look forward to.

Author

Table of Content

BAB I
Physical Assessment and Goal-Directed Care Plan

After reading this chapter, nurses are expected to:
- Understand the definition of ABCDE physical assessment
- Understand the basic principles of ABCDE physical assessment
- Understand the goal-directed care plan
- Understand things that you need to know in a goal-directed care plan

A. ABCDE physical assessment

"Physical assessment", we often hear that word. However, how often does nurse conduct physical assessment in ICU? Who are responsible for conducting physical assessment? What are the implications?

Rapid and effective physical assessment is essential to determine clinical decision related to patient management. Physical assessment process should be systematic (Wood and Garner 2012).

Physical assessment using ABCDE systematic approach helps to identify quickly the serious and life-threatening complications and save lives. Identification and management of airway problems before breathing problems are important because airway problem could be the cause of breathing problems (Wood and Garner 2012).

There are some basic principles that must be considered in the ABCDE assessment such as:

1. Always use a systematic approach to assess and manage patients.
2. Perform the complete initial assessment and always re-assess on a regular basis.
3. Always assess the results / effects of interventions or treatments.
4. Always treat life-threatening condition before moving to other assessments.
5. Identify the condition that is required additional help and immediately ask for help if needed.
6. Always engage in a multidisciplinary team.
7. Communicate effectively.
8. The initial goal of intervention is to maintain the patient's life and improve patient's clinical condition, if necessary, immediately give definitive treatment.
9. Keep in mind that the effects of resuscitation take time. (Resuscitation Council 2010).

B. *Goal-directed* care plan

Health care practitioners often use different terms for patient's care plan. This often causes confusion, difficulty in communicating and sharing information.

Goal-directed care plan aims to provide a clear summary of the latest condition of the patient, the planned therapeutic outcome as well as how to achieve that results. The treatment plan should always be updated and relevant to the latest condition of the patient. All team members that are involved in patients care should know the treatment plan with patient's family.

There are several things to note in the implementation of goal-directed care of this plan are:

1. The condition of the patient's current or most recent
2. The results / objectives
3. Action required
4. The health worker involved
5. The time required to achieve results (could be based on clinical pathways)
6. Implementation of the action
7. The results of the action

All the above aspects should be communicated between health professionals involved in patient care could even involve the patient or family if required to determine the results to be achieved in patient care.

Question:

"Did you know your patient's care plan both in terms of your profession or in terms of other professions?"

- If you have, whether you are carrying out actions to achieve planned results?
- If not, what would you do to determine your patient's care plan?

BAB II
Physical Assessment: Airway

After reading this chapter, nurses are expected to:
- Understand the definition Airway
- Understand the things that need to be done in the physical assessment Airway
- Able to demonstrate skills that must be mastered in airway assessment in ICU

A. Airway Definition

Airway is (1) the way in which air in and out of the lungs; (2) a mechanical device used to secure the road so as not clogged breathing when the patient is not breathing spontaneously or is not able to maintain airway clearance.

Assessment airways (airway) play a very important role in patient care in the ICU.

B. Things that need to be done in the physical assessment Airway

Here are a few things you need to do in the physical assessment related to airway such as:

1. Is the patient's airway patent and safe?
- Listen to the air movement
- Observation rise and fall of the chest
- In patients who mounted tube, always check the tube securely in position and length are always appropriate to the time of initial installation.

2. Jalan Nafas Buatan (*Artificial Airway)*

Artificial airway include Endotracheal Tube (ETT), nasopharyngeal tube, LMA, Tracheostomy Tube (TT) and others.

There are a few things you should examine in patients with artificial airway are:

- Tube Position

There are several strategies to verify the position of the tube is still safe or not ie auscultation, monitoring end-tidal carbon dioxide (EtCO2) and radiological (X-ray).

- Tube Security

Security This tube helps in maintaining the position of the tube in order to stay safe and minimize injury to the airway caused by excessive movement.

- Cuff Status

Regular assessment of the cuff makes effective management to minimize the risk of aspiration due to underinflation (development cuff less) and also on the tracheal mucosal injury due to overinflation (development of excessive cuff). There are two main techniques used in the clinical setting is measured with a manometer cuff and technical blockages and minimal leakage. Manometer cuff is the easiest technique is to measure the pressure cuff with manometer apparatus and ensure that the pressure is at or below 25 mmHg. Blockage and minimal leakage technique is a way that can be used if no manometer cuff on your unit. Consider the cuff pressure, the

movement of the patient's head and the ratio of the diameter of the airway tube if there are leaks or seal is not achieved.

3. *Airway Patency*

Patency of airway obstruction associated with whether there is or is not in the patient's airway. There are several things you can do in the assessment of airway patency are:

- **Assessment of lung secretions**

Lung secretions (discharge) must be assessed from the color, consistency and volume. An endotracheal suctioning secretion provide an opportunity to assess the patient's lungs and also helps patients by removing secretions. However, suctioning can be quite dangerous for the patient and should be done with caution.

Physical assessment includes auscultation of the patient, the patient's chest palpation, observation

airway pressure, pulse oximetry trend, a reading of EtCO2 and a review of the product secretions of patients would indicate the need for suctioning the patient.

There are several things that need to be considered in performing endotracheal suctioning namely:

1. Suctioning is only carried out if necessary to avoid complications.
2. Do not forget to provide additional oxygenation for suctioning procedure.
3. Theory of NaCl administration to soften the secretions still questionable even be dangerous for patients.
4. The suction catheters must reach carina then drawn 1 cm before suctioning
5. The suction catheter size should be <1.5 times the diameter of the tube to minimize the risk of Ateletaksis
6. Duration suctioning should be <10-15 seconds to reduce the risk of hypoxemia and ateletaksis

- Adequacy assessment humidification

Inadequate humidification will cause airway obstruction and partial or complete damage respiratory tissues of the patient. There are two systems, namely Heated humidification Humidification (HH) and Heat and Moisture Exchanger (HME).

This humidification adequacy assessment can be done by looking at whether or not viscous sputum of patients, whether or not the patient's crust in the

tube, the water that was in the circuit, and also changes in airway pressure (airway pressure). Sputum thick, crust on the tube, excessive amounts of water in the circuit, the increase in airway pressure could indicate a humidification are inadequate.

C. Skills needed

There are some skills that you must master in order to facilitate the physical assessment Airway namely:

- ✓ Inspection
- ✓ Auscultation
- ✓ Palpation
- ✓ Reading EtCO2 graphs, pulse oximetry, airway pressure
- ✓ X-ray interpretation
- ✓ Secure the position of ETT
- ✓ Check the pressure cuff
- ✓ Suctioning
- ✓ Humidifier setting

BAB III
Physical Assessment: Breathing

After reading this chapter, nurses are expected to:
- Understand the definition Breathing
- Understand the things that need to be done in the physical assessment Breathing
- Able to demonstrate skills that must be mastered in the assessment of breathing in ICU

A. Breathing Definition

Breathing (breathing) is (1) the process of breathing air and remove the air from the lungs; (2) take in oxygen and remove carbon dioxide through natural processes. The breathing process involves the exchange of gases in the blood and lungs.

B. Things that need to be done in the physical assessment Breathing

Here are a few things you need to do in the physical assessment related to breathing such as:

1. Whether the patient is breathing or not?
- Observe the movement of the patient's chest
- Observe the color or appearance of the patient

2. Auscultation

There are several things that you can examine in respiratory auscultation are:

a) Posterior

Normally auscultation performed side-to-side and top-to-bottom without doing in the area covered scapula. However in the elderly, or patients who have difficulty breathing bis considered to start from the basal. Compare left and right to see the symmetry of sound and record the quality and location of sound is heard.

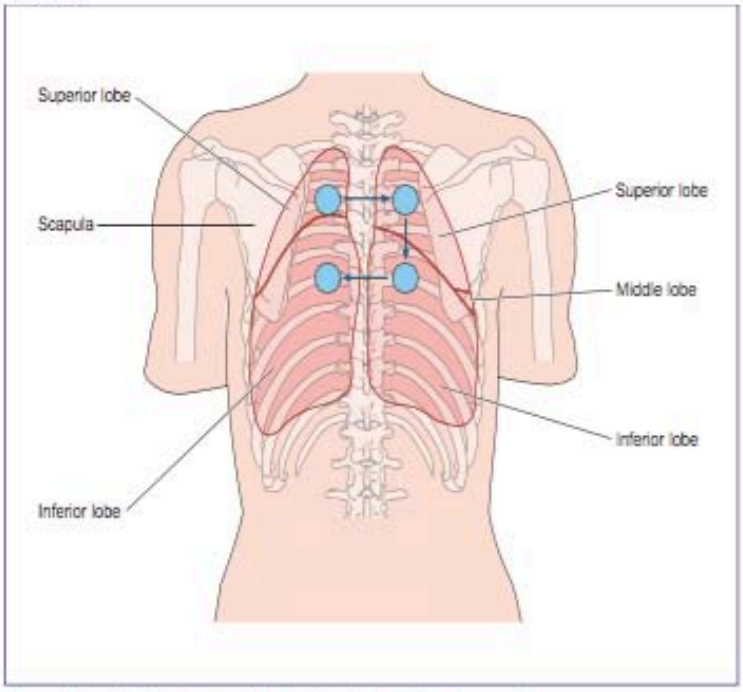


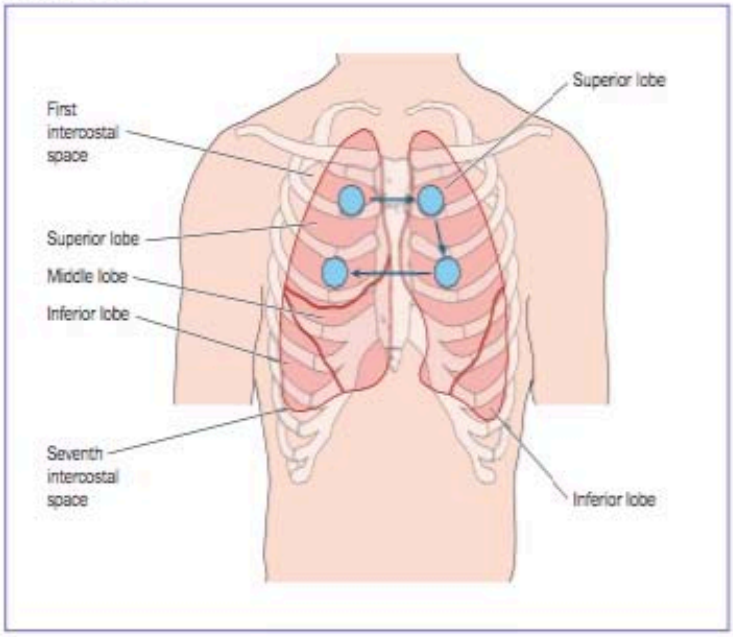
Figure 1. Auscultating the posterior chest from side-to-side and top-to-bottom.

b) Anterior

Auscultation of the side-to-side and top-to-bottom in SIC 1 to SIC 7. Compare the right-left to see the symmetry of sound and record the quality and

location of sound is heard.

Figure 2. Auscultating the anterior chest from side-to-side and top-to-bottom in the first to seventh intercostals spaces.

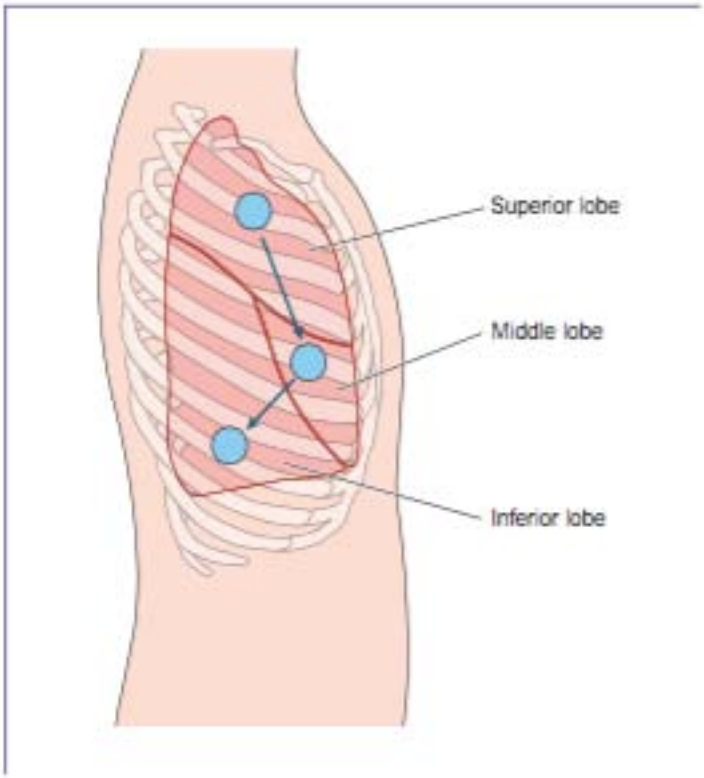


c) lateral

Auscultation of the top-to-bottom in the upper lobes. Note that this will be different on the right and left sides. Compare left and right to see the symmetry of sound and record the quality and location of sound is

heard.

Figure 3. Auscultating the lateral chest from top-to-bottom over the underlying lobes.



Some things you should consider are as follows:

- Sound intensity increases: if there is an increase in air flow due to narrowing of the airway or increased ventilation
- The intensity of the sound is lost: the collapse area is quite large, mass consolidation or obstruction.

- The intensity of sound is reduced: if depressed by air (emphysema or pneumothorax), or pressured fluid (pleural effusion).
- The intensity of the sound shifted from vesicular to bronchial if there is fluid in the lungs (pneumonia).

3. Respiratory rate (RR), breathing volume and airway pressure

Monitoring data from the ventilator is also very helpful in helping to understand the patient's respiratory status and compliance with the ventilator settings. Respiratory rate (RR), Tidal Volume, Minute Volume and Airway Pressure is a value that helps breathing reflect assistance given, the status of lung function and respiratory effort of the patient.

4. Blood gas analysis, Pulse oximetry and capnography

Monitoring of gas exchange is a routine aspect of patient care in the ICU, especially ones with a mechanical ventilator. Analysis of blood gasa is the primary standard (gold standard) to determine the levels of O2 and CO2 in arterial blood.

Complications and the amount of expenses incurred during the examination AGD repeatedly supported the use of non-invasive monitoring techniques. Pulse oximetry and capnometry is a tool that is relatively easy and effective way to monitor the gas exchange.

Read blood gas analysis are basic skills that you must master as an ICU nurse. Below is a table that

will facilitate you in performing blood gas analysis.

Test	Normal	↓ Value	↑ Value
pH	7.35-7.45	Acidosis	Alkalosis
pCO2	35-45	Alkalosis	Acidosis
HCO3	22-26	Acidosis	Alkalosis
pO2	80-100	Hypoxemia	O2 Therapy
SaO2	95-100%	Hypoxemia	———

C. Skills needed

There are some skills that you must master in order to facilitate the physical assessment Breathing namely:

- Inspection
- Monitoring ventilator (RR, TV, MV, Airway pressure)
- Blood Gas Analysis, Pulse Oxymetri and capnography

BAB IV
Physical Assessment: Circulation

After reading this chapter, nurses are expected to:
- Understand the definition Circulation
- Understand the things that need to be done in the physical assessment Circulation
- Able to demonstrate skills that must be mastered in circulation assessment in ICU

A. Circulation Definition

Circulation means the movement of blood through the blood vessels in the body caused by the pumping action of the heart and serves to distribute nutrients and oxygen to and remove waste products from the body. So in this process some important things are the heart, blood and blood vessels.

B. Things that need to be done in the physical assessment Circulation

Here are a few things you need to do in the physical assessment related to circulation such as:

1. Does the patient have adequate circulation?
- Check pulse by palpation
- Check the strength of the pulse
- Observe the color of the patient

2. The basic assessment bassociated with the circulation in the body

Perform assessment of heart rate (heart rate) and rhythm, blood pressure, pressure central venous (CVP), urine output, perfusion peripherals and radiological thoracic and also serum electrolytes particularly those associated with the heart (Na, Mg, K, Ca, Cl, phosphate).
Patients with ventilator should be continuous EKG to provide an overview and management can be done immediately in case of arrhythmias or ischemia. Assessment of hemoglobin is also important because it affects the ability of blood to carry oxygen.

A decrease in cardiac output (CO) associated with positive pressure ventilation (positive pressure ventilation) will cause a decrease in urine output through neural and hormonal mechanisms. Therefore, it is important to monitor urine output in patients with ventilator and also serum urea and creatinine levels to detect the presence of renal impairment. Ensuring urine output> 0.5 mL / kg / h is one of the easiest ways to assess the patient's renal system.

Another important thing is to maintain cardiac output (CO), mean arterial pressure (MAP) and renal perfusion pressure to prevent acute renal failure.

3. Assess the patient's nutritional and blood sugar levels of patients

Obey the feeding protocol in patients and assess the adequacy of nutrition in patients. Some preliminary research shows that a gradual increase in dose feeding and administration of a prokinetic agent

showed good results. The provision of adequate nutrition is important in the process of weaning from the ventilator.

It needs to be assessed for nutritional patient is muscle mass, physical strength and weight will indicate the nutritional needs of the patient. Serum phosphate especially phosphate electrolyte is important for the formation of energy and if necessary can be added to the phosphate supplements to improve muscle function.

Monitoring blood sugar and blood sugar control is not a new concept but this result is important. Research evidence shows that keeping blood sugars within the limits (4.4 - 6.1 mmol / L or 80-110 mg / dl) are associated with decreased mortality. The 'Surviving Sepsis Guidelines' recommend patients with severe sepsis blood sugar levels should be maintained less than 8.3 mmol / L or less than 150 mg / dl.

4. Liver Function Test and Blood Clotting Time

Another very important thing is to examine the liver function of patients as well as study the clotting time of blood for the presence of hepatic disorders.

5. Temperature Assess Patients and Patient Lab Results

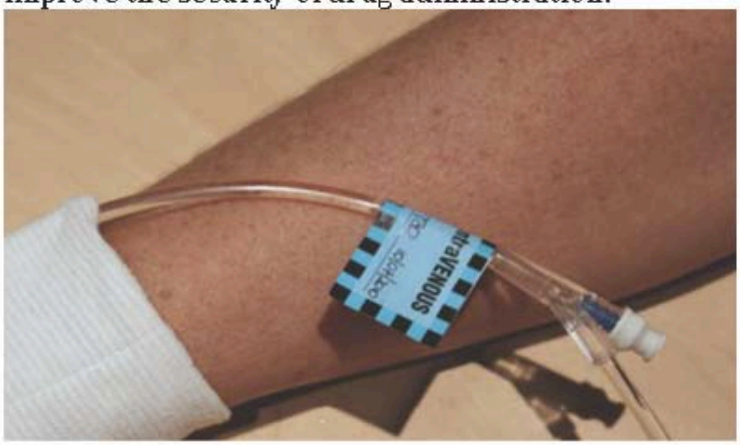
Temperature measurement is important and very rough due to the temperature rise or the patient's body temperature can be a sign of a patient's response to infection. Patients with ventilator are at

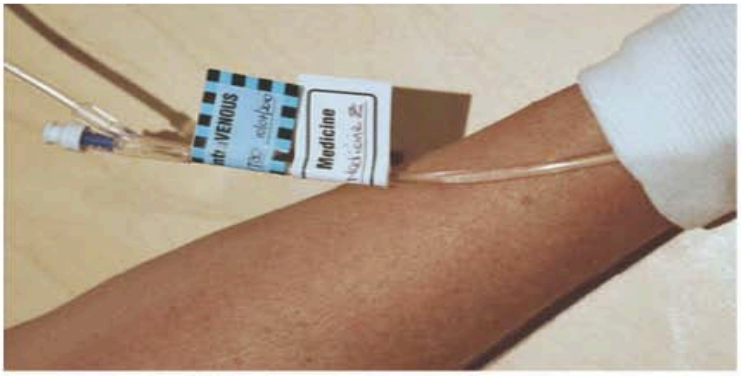
great risk for nosocomial infections due to immune disorders and the number of invasive tool. Lab results are to be seen is jumalah white blood cells (white blood cell count / WBC), the level of C-reactive protein (CRP), IL-6 and procalcitonin (PCT).

6. Assess dose, Rate and Line IV fluid administration

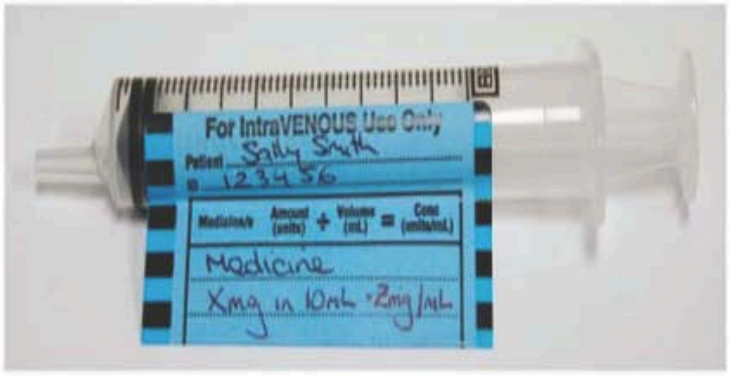
Intravenous fluids should be checked for compliance with the medical order, the correct rate, the composition of which is true, time expired, routes of administration and others.

Identification of drug injection and intravenous fluids, and equipment used to deliver the drug can improve the security of drug administration.




Medicine


For IntraVENOUS Use Only
Sally Smith
123456
D Plastipak


For IntraVENOUS Use Only
Patient Sally Smith
ID 123456
Medicine
Amount (units)
Volume (mL)
Conc (units/mL)
Medicine
Xmg in 10mL = 2mg/mL

C. Skills needed

There are some skills that you must master in order to facilitate the physical assessment Circulation namely:

- Palpation
- Inspection
- Monitoring vital signs (HR, BP, MAP, JVP, U / O, WPK / CRT, ECG, etc.)
- Chest X-Ray (CTR)
- Calculating fluid balance
- Monitoring of laboratory results (WBC, creatinine, urea, liver function tests, etc.)
- Labelling

BAB V
Physical Assessment: Disability

After reading this chapter, nurses are expected to:
- Understand the definition of Disability
- Understand the things that need to be done in the assessment of physical disability
- Able to demonstrate skills that must be mastered in the assessment of disability in ICU

A. Disability Definition

Disability in the physical assessment is different from the literally meaning of disability. Disability is the patient's level of consciousness.

B. Things that need to be done in the physical assessment Disability

Here are a few things you need to do in the physical assessment related to disability assessment such as:

1. Assessing the level of consciousness of the patient

The level of awareness of this patient can be assessed by several methods such as:

a. AVPU (Alert, Verbal, Pain dan Unresponsive)

A = Alert
V = Verbal
P = Pain
U = Unresponsive

b. Quality of consciousness

- Compos mentis (conscious) is normal of consciousness, fully conscious, able to answer all the questions about the circumstances surrounding.
- Apathy, that state of consciousness hesitate to get in touch with the surrounding, indifferent attitude.
- Delirium is restlessness, disorientation (person, place, time), rebelled, screaming, and hallucinations, sometimes to fancy.
- Somnolence (Obtunds, Lethargy), which reduced alertness, psychomotor responses are slow, easy to fall asleep, but the consciousness can be recovered when stimulated (easily awakened) but fell asleep again, able to give a verbal answer.
- Stupor (soporo comma), which is a state as fast asleep, but no response to pain.
- Coma (comatose), which cannot be woken up, no response to any stimulation (no response to the corneal reflex and vomiting, may also no pupillary response to light).

c. Glasgow Coma Scale

* Reflex Opening Eyes (Eyes)
4: open spontaneously
3: open with the sound stimuli
2: open to painful stimuli
1: no response

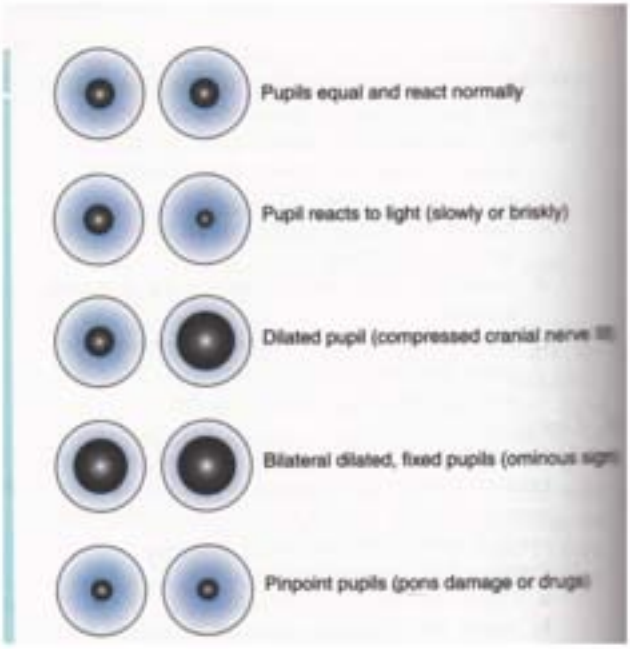
* Verbal reflex (Verbal)
5: Good orientation
4: good words, good words, but the content is confusing

3: the words are good but not good sentence
2: only moan
1: no response

* Reflex Motor (Motoric)
6: do a command correctly.
5: localize pain.
4: avoid stimuli.
3: can only do flexion
2: can only extension
1: no response

2. Reviewing the patients' pupils

It is important in the assessment of disability is the pupil size, equality and pupil reactions as one focus of the study. In patients who sedated, early signs of neurological damage such as decreased level of consciousness that gives signs at the end, such as changes in the pupil, as one of several indications of a change in the neurological condition of the patient. Normal pupil size is 2-6 mm, if <2 mm is called meiosis, if> 6 mm called dilation.



3. Assessing the level of sedation and the patient's pain

Pain management and sedation are two things that always associated. Administration of intravenous sedation extend the use of a ventilator. Discontinuation of sedation each day to assess needs sedation ventilator patients lose time, lose time in ICU and decrease complications such as VAP.

Assessment of the level of sedation in the ICU there are a lot of tools that can be used as *Richmond Agitation-Sedation Scale (RASS), Riker Sedation-Agitation Scale (SAS), Comfort Scale, Minnesota Sedation Assessment Tool, Adaptation to the Intensive*

Care, Motor Activity Assessment Scale, Adaptation to the Intensive Care Environment instrument and the Vancouver Interactive and Calmness Scale.

Whatever tools you use in your unit, the most important is that you understand and are able to use the assessment level of sedation on your patient care in your unit.

4. Assessment of patients delirium

Delirium is variously referred to as ICU psychosis and ICU syndrome are rarely monitored in the intensive care unit and may be a cause of distress associated with the length of time in the ICU, morbidity and mortality.

Delirium assessment which is common in ICU setting are *the Cognitive Test for Delirium (CTD), the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) and the Intensive Care Delirium Screening Checklist (ICDSC).* For CTD and CAM-ICU only in patients who can comply with the order or can nod / shake your head in response to questions. To ICDSC can be implemented in patients who are not responsive.

Whatever tools you use in your unit, the most important is that you understand and are able to use the assessment of the level of delirium in patients that you care in your unit.

C. Skills needed

There are some skills that you must master in order to facilitate the physical assessment Disability namely:

- ✓ Assess the patient's level of consciousness (AVPU, GCS, quality of consciousness)
- ✓ Assess the response, equalitas and pupil size
- ✓ Assess the patient's level of sedation and pain
- ✓ Assess the patient's level of delirium.

BAB VI
Physical Assessment: Exposure

After reading this chapter, nurses are expected to:
- Understand the definition of Exposure
- Understand the things that need to be done in the physical assessment of Exposure
- Able to demonstrate skills that must be mastered in the exposure assessment in the ICU

A. Exposure Definition

Exposure (exposure) aims to confirm to complete the assessment. Exposure may include assessing the skin or wound and assess the environment around the patient.

B. Things that need to be done in the physical assessment Exposure

Here are a few things you need to do in the physical assessment related to exposure such as:

1. Assessing the patient's skin

Patients with ventilator have an increased risk of damage to skin integrity due to immobilization associated with sedation and ventilation. Effective prevention of pressure sores is important to reduce the duration of time the ventilator and the hospital stay.

There are several things that need to be examined, namely the integrity of the skin, skin and mucosal skin turgor. Decubitus risk assessment is also very

important that preventive measures could be done immediately.

2. Assessing patients invasive devices

Invasive tools mounted on a patient in the ICU can be a source of nosocomial infections. Nurses are responsible for conducting assessments on this invasive tool.

a. Peripheral line and midline

- No needs to replace peripheral catheters are often for less than 72-96 hours to reduce the risk of infection and phlebitis in adults.
- No recommendation is made regarding replacement of peripheral catheters in adults only when clinically indicated.
- Replace peripheral catheters in children only when clinically indicated
- Replace midline catheters only when there are certain indications

b. Central line

- Educate and train health workers to care for lethal and central line catheters.
- Using a precaution using maximal sterile barriers during insertion of central venous catheter
- Using chlorhexidine> 0.5% alcohol for antisepsis
- Avoid routine replacement of central venous catheters as a strategy to prevent infection

- Using a central venous catheters coated with antiseptic / antibiotic short term and coated with chlorhexidine sponge dressing is not lower infection rates than adherence to other strategies (i.e. education and training, sterile barrier precautions with, and chlorhexidine> 0.5% and alcohol for antisepsis skin)

c. Replacement of administration sets

- In patients who did not receive blood, blood products or fat emulsions, replace administration sets are continuously used, including secondary sets and add-on devices, not often at 96 hour intervals, but at least every 7 days.
- No recommendations were made regarding the frequency for replacing intermittently administration sets.
- No recommendations were made regarding the frequency for replacing needles to access implantable ports.
- Replace tubing used to administer blood, blood products, or lipid emulsions (combined with amino acids and glucose in a mixture of 3-in-1 or a separate infusion) within 24 hours after infusion of the drug is given.
- Replace tubing used to administer propofol infusions every 6 or 12 hours, the replacement of the bottle changed according to the recommendations.

- No recommendation is made regarding the length of time a needle used to access implantable ports.

3. Assessing the patient's position

Semi-recumbent position is more recommended than the supine position in an effort to reduce the risk of ventilator-associated-pneumonia (VAP). Mobility may be increased in patients with ventilator via the patient seated during certain period of time it can increase lung expansion and reduce the risk of ventilator-associated-pneumonia (VAP).

4. Assessing the patient's environment

Assess the environment around the patient and see if the privacy and dignity of patients is maintained.

C. Skills needed

There are some skills that you must master in order to facilitate the physical assessment Exposure namely:

- ✓ Inspection
- ✓ Assessment of skin
- ✓ Changing patients position
- ✓ Hand hygiene
- ✓ Aseptic technique

BAB VII
Physical Assessment: Equipment

After reading this chapter, nurses are expected to:
- Understand the definition Equipment
- Understand the things that need to be done in the physical assessment Equipment
- Able to demonstrate skills that must be mastered in the assessment of equipment in the ICU

A. Equipment Definition

Equipment is medical equipment that is used for the purposes of diagnosis and treatment of disease or rehabilitation after illness or injury; can be used either alone or in combination. This equipment does not include equipment implants and disposable equipment.

Some essential equipment required at the patient's bedside is as follows:

- Bag-valve mask or manual resuscitator with the face mask that is appropriate
- *High Flow suction* with Yankeur sucker and catheter suction for endotracheal.

Additional equipment that is important to check are:

- Equipment intubation
- Portable Oxygen
- Portable Suction

B. Things that need to be done in the physical assessment Equipment

Here are a few things you need to do in the physical assessment related to equipment such as:

1. Ventilator

Some things you should examine when checking the mechanical ventilator is as follows:

- Make sure the ventilator is connected to uninterrupted power supply such as UPS.
- Identify ventilator at your facility; not all features or ventilators have the same security mechanisms including alarm.
- Follow the protocols that exist at your facility to ensure the ventilator setting information to be communicated to other staff members, especially when changing shifts, receive or transfer the patient.
- At the beginning of the shift and according to clinical indication, make sure that the ventilator settings are correct (as prescribed by the medical) and the appropriate alarm has also been set.
- Ensure that the alarm sound can be heard in your unit.
- Adjust the alarm sounds only when clinically necessary and in accordance with the policies of your facility.
- When you hear the alarm ventilator, immediately responded by going to the patient's bedside.
- If possible, rapid identification of the cause of the alarm sounds and intervene appropriately.

- Immediately examine the patient to identify the decline in clinical status due to a dangerous situation, such as a change in consciousness, respiratory distress, drop in SpO2, bradycardia, or hypotension.
- If the patient is identified at risk, enable rapid response teams and ventilate the patient manually with a manual resuscitation.
- If the patient is unresponsive, apnea, and pulseless, code blue switch and started basic life support.
- Follow your facility protocol to report errors or events ventilator hardly expected (*near-miss*).

2. Other equipment

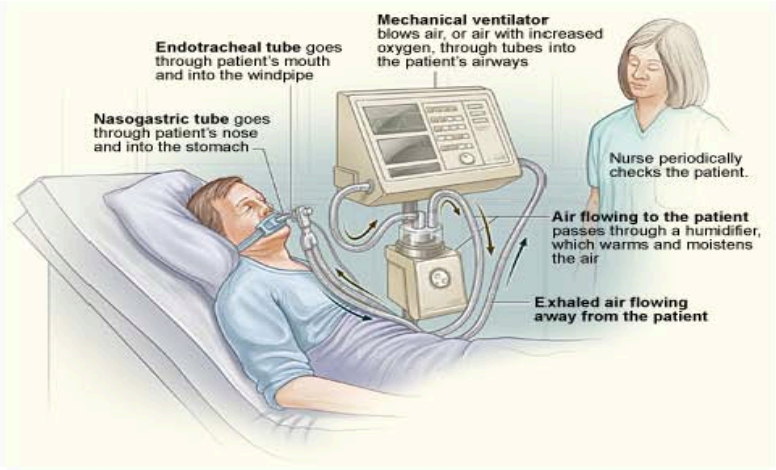
A lot of equipment used in the ICU such as syringe pumps, monitors and other equipment. As for some assessment you can do about this related equipment:

- Make sure your equipment, ready to use and can work.
- Make sure the infusion equipment used was appropriate setting such as a true rate, composition, time expired drugs, the path used.
- Make sure the equipment used function properly and an alarm is set within safe limits
- Monitoring equipment is properly connected and secure alarm limit corresponding protocol or medical orders.

C. Skills needed

There are some skills that you must master in order to facilitate the physical assessment Equipment namely:

- ✓ Inspection
- ✓ Ventilator setting, monitoring and alarm
- ✓ Device Setting
- ✓ Hand hygiene
- ✓ Aseptic technique



REFERENCE:

Couchman, BA, Wetzig, SM, Coyer, FM & Wheeler, MK 2007, 'Nursing care of the mechanically ventilated patient: What does the evidence say?. Part one', *Intensive and Critical Care Nursing*, vol. 23, no. 1, pp. 4-14.

Coyer, FM, Wheeler, MK, Wetzig, SM & Couchman, BA 2007, 'Nursing care of the mechanically ventilated patient: What does the evidence say?. Part two', *Intensive and Critical Care Nursing*, vol. 23, no. 2, pp. 71-80.

Lamba, S 2009, 'Early goal-directed palliative therapy in the emergency department: A step to move palliative care upstream', *Journal of Palliative Medicine*, vol. 12, no. 9, p. 767.

Pedersen, CM, Rosendahl-Nielsen, M, Hjermind, J & Egerod, I 2009, 'Endotracheal suctioning of the adult intubated patient-What is the evidence?', Intensive and Critical Care Nursing, vol. 25, no. 1, pp. 21-30.

https://www.resus.org.uk/resuscitation-guidelines/a-systematic-approach-to-the-acutely-ill-patient-abcde/

http://www.bayside.vic.gov.au/documents/Goal_Directed_Care_Plan_participant_handouts.pdf

http://www.oehcsa.org.au/sites/default/files/Goal%20Directed%20Care%20Planning%20Toolkit.pdf

http://www.carefusion.com/pdf/Center_for_Safety/Documents/RC1706-L3017-Capnography-Handbook.final.pdf

http://mechandz.blogspot.com/2009/12/ventilation-mechanical.html

http://respiratorytherapycave.blogspot.com/2007/01/rt-cheat-sheets-protocols.html

https://learningcentral.cf.ac.uk/bbcswebdav/institution/Medic/Undergraduate/Clinical%20Skills/ABCDE%20Sim%20Session.pdf

http://www.mdsr.ecri.org/summary/detail.aspx?doc_id=8305

http://mdnsw.org.au/wp-content/uploads/sites/2/2014/07/Ventilator-Safety-Check.pdf

http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/TipsandArticlesonDeviceSafety/ucm270894.htm

APPENDIX 2 Research Proposals

1. Title

The effect of the ABCDE (Airway, Breathing, Circulation, Disability, and Exposure/Equipment) assessment method and an educational session on nursing physical assessment in general ICU Dr. Sardjito Hospital in Special Region Yogyakarta, Indonesia

2. Investigator(s) and *qualifications*

E Sunaryo BSN, Master of Nursing Science (Intensive Care) candidature, Nurse educator in School of Nursing, Faculty of Medicine, Universitas Gadjah Mada

J Magarey RN CCRN. DipN, BN, MNurs. (Research), DNurs.

S Millington RN, RM CCRN, BA, MN (Cardiac) Cert IV (Workplace Training & Assessment) PhD candidature

3. Purpose of the study (general) and aims (specific)

The purpose of this study is to implement and evaluate effectiveness of the assessment tools the *ABCDE* assessment method and an educational session on nursing physical assessment by ICU bedside nurses in general ICU Dr. Sardjito Hospital in Special Region Yogyakarta, Indonesia.

The independent variable from this study is *ABCDE* assessment method and an educational session. The dependent variable in this study is nursing physical assessment. The aim of this study is examine the effect of ABCDE initial assessment methods and educational session on nursing physical assessment in general ICU Dr. Sardjito Hospital Yogyakarta. The objectives guiding for this study are:

- To explore and describe practice of nursing physical assessment in general ICU Dr. Sardjito hospital Yogyakarta,
- To explore and describe the effect of *ABCDE* assessment methods and educational session on nursing physical assessment in general ICU Dr. Sardjito hospital Yogyakarta.
- To implement and evaluate the effectiveness of assessment tools *ABCDE* assessment methods and educational session to improve physical assessment by bedside nurses in ICU in three eight-hourly shifts (morning, afternoon and night shift).

4. Statement of the research question or hypothesis

The question for this study is "Will the implementation of the *ABCDE* assessment methods and an educational session improve the bedside nurses' physical assessment skills in general ICU Dr. Sardjito Hospital in Special Region Yogyakarta, Indonesia?"

5. Background and preliminary studies

Nurses are the largest healthcare professionals working in the Intensive Care Unit (ICU) and they work at the front line in patient care (Anderson et al. 2014; Lakanmaa et al. 2014). Intensive care nursing is one area of specialty in nursing area, which is different from general nursing area (Lakanmaa et al. 2014). High-level qualification and competencies are some of the requirements of the intensive care nurse (Ääri, Tarja & Helena 2008).

One of the important clinical competencies for an intensive care nurse to implement professional nursing practice is the ability to perform a comprehensive and accurate

physical assessment (Anderson et al. 2014). Nursing physical assessment is now part of the university programs or nursing education to prepare nursing student to achieve the necessary competences in physical assessment skills (Birks et al. 2013; Lesa & Dixon 2007). In 1960s, physical assessment was introduced as a part of the nursing assessment with the development of Nurse Practitioner (NP) programs in the USA (Lesa & Dixon 2007). However, a study by Birks et al. (2013) found that the number of physical assessment regularly practiced in the clinical setting is small. There are several factors that are barriers for nurses to undertaking physical assessment in clinical setting such as time constraints; scope of practice; professional boundaries; area of nursing practices; role and responsibilities (different perspectives i.e. that physical examination is a medical role); clinical role models (preceptor, mentor and educator); and also the nurse's self confidence in physical assessment skills (Birks et al. 2013).

There are a small amount of recent studies in nursing physical assessment particularly in ICU setting. A study by Coombs and Moorse (2002) revealed that there were differences in physical assessment skills valued by nurse educators compared to bedside nurses in daily practices. However, there were some limitations in their study: a small sample size; non-random sampling; and physical assessment list in this study used typical medical approach rather than nursing approach. Another study by Wheeldon (2005) identified that physical assessment for nurses can be considered to be nurse role expansion and/or nurse role extension. This particular study limitation was the limited scope i.e. in the clinical setting of the respiratory unit. A review from Lesa and Dixon (2007) found that physical assessment as nurse role expansion would improve health outcomes for the population but there is not sufficient evidence to

support this and a limitation of this review is that it was not specific to the ICU setting.

A study from Birks et al. (2013) stated that there is a need to identify what is the crucial or essential physical assessment skills which is relevant to current general nursing practice. Moreover, a review from Munroe et al. (2013) found that structured patient assessment frameworks would improve performance of physical assessment by clinicians and potentially will improve patient care and outcomes. The limitations from both studies are the reference to general nursing practice not being specific for the ICU setting. Thus, this study will research is physical assessment with *ABCDE* assessment structured approach and an education session to investigate if the approach will improve nursing physical assessment in general ICU Dr. Sardjito Hospital in Special Region Yogyakarta, Indonesia.

6. Subjects—inclusion and exclusion criteria

The population in this study is nurses from general ICU in Dr. Sardjito Hospital in Special Region Yogyakarta, Indonesia.

The following inclusion criteria will be applied:

- All ICU bedside nurses who;
- Have been working in ICU more than 6 months because already completed the induction program;
- With or without any ICU qualification.
- Subjects in this research will be determined by total sampling.

The following exclusion criteria will be applied:

- All non bedside nurses (nurse manager, nurse educator and nurses without any clinical role or not involved in clinical practice at bedside)
- ICU nurses who are not rostered during this study periods such as nurses in annual leave, monthly leave, maternity leave and retired during this study periods.

7. Study plan and design

A quantitative research methodology will be undertaken in this study. In quantitative study, validity and accuracy of the results will influence the results (Polit-O'Hara & Beck 2006). Quantitative research methodology will be utilised in this study because quantitative research can be used to describes new situations, events or concepts; examine relationships between variables; and determine effectiveness of treatment (Burns, Gray & Grove 2011). The research design for this study is quasi-experimental. Quasi experimental also is widely known as non-equivalent control group pretest-posttest design (Polit-O'Hara & Beck 2006). This study will involve comparing ICU nurses before and after implementing the *ABCDE* physical assessment education session. It is proposed in this study that total sample will be approximately 28 ICU bedside nurses/participants. Before the process of data collection, the researcher will hold an information session for the Head of ICU, Director of nursing, and nurses in ICU. Afterwards, those who are willing to participate in this research could contact the Head of the ICU. All participants will be given an information sheet consisting the explanation on how the research going to be conducted. A week after the information session, all participants who meet inclusion criteria will be assessed using pre-intervention physical assessment questionnaire.

Completion of the questionnaires will be viewed as consent to participate in this component of the study. If participants want to participate in the education session, they will need to sign a consent form. Next, the researcher will invite participants to join an education session with practical session voluntary, participants who participate in this session will be told not to share information regarding content in the educational session to participants that do not participate in the session to avoid research contamination (bias). A week after the education session, all participants will be assessed using post-intervention physical assessment questionnaire. Because of the researcher is a nurse educator in that ICU, thus, in order to avoid participants feel being coerced, the researcher will recruit one research assistant. The research assistant will be responsible for collecting research instrument form from all participants.

The research instrument in this study will be developed in English version at the University of Adelaide and will be implemented in Bahasa Indonesia for data collection because Bahasa Indonesia is the national language and required in place of clinical practice. Translation and back translation will be utilised in this study. A back translations is "… when a translated document is translated (back) into the original language"(Adriesen 2008, p. 18). Translations and back translations are important to avoid valuable data becoming useless (Adriesen 2008).

The research instrument in this study will be developed by the researcher through synthesis of peer reviewed articles and standard core curriculum texts on the topic of physical assessment together with the supervisors. The research instrument will be sent to a panel of experts to assess validity. The research instrument will evaluate and

compare any differences bedside nurses physical assessment before and after an education session.

8. Outcomes

The importance of this research is related to health/nursing practice are: (a) this research has the potential to improve the quality of nursing care in Intensive Care Unit (ICU) by exploring, describing and changing practice of nursing physical assessment in general ICU; (b) it will give a new perspective for nursing practice about *ABCDE* initial assessment methods and educational program for bedside nurses in ICU; (c) it may assist in the development of strategies for ICU nurses to improve physical assessment in ICU.

9. Ethical considerations

Protection of human subjects in nursing research is critical (Wood & Kerr 2011). The values of respect, research merit and integrity, justice, and beneficence have become prominent in the ethics of human research, and they provide a substantial and flexible framework for principles to guide the design, review and conduct of such research (The National Health and Medical Research Council, The Australian Research Council & The Australian Vice-Chancellors' Committee 2014).

This proposed research will be submitted to the Human Research Ethics Committee the University of Adelaide, the Ethical Committee of Faculty of Medicine, Universitas Gadjah Mada and also the Ethical Committee of Dr. Sardjito Hospital in Special Region Yogyakarta, Indonesia. This research according to the Human Research Ethics Committee website is categorised as a research that requires full

review because it involves people in other countries (NS 4.8) (Office of Research Ethics Compliance and Integrity 2014).

Participants in this study will be informed regarding the objectives of this research. According to Francis (2009), to ensure that participation in health research is voluntary, the researcher must provide a written explanatory or information sheet. In this research, participants who meet the inclusion criteria will be invited to information session along with the head of ICU. The researcher will provide an information sheets, consent form for an education session and participants' personal responsibility together with their rights. Participants will be informed about their rights and they also will get an opportunity to ask questions related to study in the information session presentation. If each participant is satisfied with the requirements of this research, an information sheets is given and signed by participant. This information sheets outlines the purpose of the study and also provides an assurance that all information provided will be treated in a non-identifiable, confidential manner, and anonymous. The Head of ICU and Director of Nursing Dr. Sardjito Hospital supports this research. No information that may identify any individual will be recorded in this study.

10. Drugs used in the study

Not applicable because no drugs will be used in this study.

11. Specific safety considerations

Not applicable.

12. Analysis and reporting of results

Data from all questionnaires (pre-post) will be entered to computer statistical software called *Statistical Package for the Social Sciences* (SPSS). SPSS (Statistical Package for the Social Sciences) is one of the oldest statistical programs on the market and recently used by multidiscipline researchers for analysing data automatically (Rajathi & Chandran 2010). Descriptive and interferential statistic will be utilized in this study. Descriptive statistics will be utilized to summarise descriptive data; and interferential statistic will be utilized to examine is there any correlation between *ABCDE* physical assessment method and education program and the nurses physical assessment process (Loiselle, Lippincott & Wilkins 2011). The results of this study will then be used to inform clinicians, educators and nursing management regarding to nursing physical assessment in ICU particularly.

This study results will be presented in School of Nursing, the University of Adelaide, Faculty of Medicine Universitas Gadjah Mada and also in Dr. Sardjito Hospital in Special Region Yogyakarta, Indonesia. The researcher also will publish the results in peer-reviewed nursing journal to disseminate and enrich nursing literature regarding physical assessment in ICU.

13. References

Ääri, RL, Tarja, S & Helena, LK 2008, 'Competence in intensive and critical care nursing: A literature review', *Intensive and Critical Care Nursing*, vol. 24, no. 2, pp. 78-89.

Adriesen, S 2008, *Benefiting from back translations*, viewed 19 April 2015, <http://www.medilingua.com/pdf/BackTranslationsICTSummer 2008.pdf%3E.

Anderson, B, Nix, E, Norman, B & McPike, HD 2014, 'An evidence based approach to undergraduate physical assessment practicum course development', *Nurse Education in Practice*, vol. 14, no. 3, pp. 242-246.

Birks, M, Cant, R, James, A, Chung, C & Davis, J 2013, 'The use of physical assessment skills by registered nurses in Australia: Issues for nursing education', *Collegian*, vol. 20, no. 1, pp. 27-33.

Burns, N, Gray, J & Grove, SK 2011, *Understanding nursing research : building an evidence-based practice*, Saunders/Elsevier, St. Louis, MO.

Coombs, MA & Moorse, SE 2002, 'Physical assessment skills: A developing dimension of clinical nursing practice', *Intensive and Critical Care Nursing*, vol. 18, no. 4, pp. 200-210.

Francis, RD 2009, 'Research Ethics', *Ethics for Psychologists*, BPS Blackwell, pp. 148-161.

Lakanmaa, RL, Suominen, T, Perttilä, J, Ritmala-Castrén, M, Vahlberg, T & Leino-Kilpi, H 2014, 'Basic competence in intensive and critical care nursing: Development and psychometric testing of a competence scale', *Journal of Clinical Nursing*, vol. 23, no. 5-6, pp. 799-810.

Lesa, R & Dixon, A 2007, 'Physical assessment: Implications for nurse educators and nursing practice: Original Article', *International Nursing Review*, vol. 54, no. 2, pp. 166-172.

Loiselle, CG, Lippincott, W & Wilkins 2011, *Canadian essentials of nursing research*, Wolters Kluwer/Lippincott Williams & Wilkins, Philadelphia [etc.].

Munroe, B, Curtis, K, Considine, J & Buckley, T 2013, 'The impact structured patient assessment frameworks have on patient care: An integrative review', *Journal of Clinical Nursing*, vol. 22, no. 21-22, pp. 2991-3005.

Office of Research Ethics Compliance and Integrity 2014, *Levels of Ethical Review*, viewed 10 June 2014, <https://http://www.adelaide.edu.au/ethics/human/guidelines/levels/ - low>.

Polit-O'Hara, D & Beck, CT 2006, 'Essentials of nursing research methods, appraisal, and utilization', Lippincott Williams & Wilkins, Philadelphia; London.

Rajathi, A & Chandran, P 2010, 'SPSS for You', MJP Publisher.

The National Health and Medical Research Council, The Australian Research Council & The Australian Vice-Chancellors' Committee 2014, *National Statement on Ethical Conduct in Human Research 2007 (Updated March 2014)*, Canberra.

Werner, T 2015, viewed 01 May 2015, <https://itunes.apple.com/us/app/iauscult/id349456948?mt=8>.

Wheeldon, A 2005, 'Respiratory assessment. Exploring nursing roles: using physical assessment in the respiratory unit', *British Journal of Nursing*, vol. 14, no. 10, pp. 571-574.

Wood, MJ & Kerr, JC 2011, *Basic steps in planning nursing research from question to proposal*, Jones and Bartlett, Sudbury, Mass.

14. Other relevant information

There is no other relevant information in this study.

15. Other Ethics Committees to which the proposal has been submitted

This study also submitted to Medical and Health Research Ethics Committee (MHREC) Faculty of Medicine Universitas Gadjah Mada and Medical and Health Research Ethics Committee (MHREC) Dr. Sardjito Hospital in Special Region Yogyakarta, Indonesia.

16. Date of proposed commencement

This study will be commenced following the ethics approval

17. Resource considerations

There are some resources will be utilizing in this study.

- Wulandari, S.S

  Wulandari, S.S is a professional writer, translator, proofreader Indonesian-English. She was graduated from *English Language and Literature, Translation Concentration*, 2014 Yogyakarta State University (UNY), Yogyakarta, Indonesia. She was attaining *Cum Laude* predicate with 3.55 GPA of 4.0 scales. She will involve in translation and back translation in this study.

- Iauscult ™ apps.

  Iauscult™ apps for iphone and ipad will be used in this study especially in the education session for auscultation training. Iauscult™ is an auscultation, heart-(cardiac) and lung-, bowel- sound application for learning or as refresher for medical team such as doctors, nurses, medical and nursing students, EMTs, paramedics and anybody, who interested in. This apps is the only auscultation app which was proofed and quality checked, certified by working medical doctors (Werner 2015).

There are some expenses related to this study.

- Ethical committee fee (Australia and Indonesia)
- Printing and binding
- Translation and back translation
- Editing and Proofreading
- Data collection fee (for research assistant and gifts)
- Education session fee (lunch, snacks, photocopy, buy apps)
- Conference fee (registration fee)

18. Financial statement

This study will be self-funded study by the researcher.

APPENDIX 3 Ethical Approvals

THE UNIVERSITY of ADELAIDE

RESEARCH BRANCH
OFFICE OF RESEARCH ETHICS, COMPLIANCE AND INTEGRITY

LEVEL 7, 115 GRENFELL STREET
THE UNIVERSITY OF ADELAIDE
SA 5005 AUSTRALIA

TELEPHONE +61 8 8313 5137
FACSIMILE +61 8 8313 3700
EMAIL hrec@adelaide.edu.au

CRICOS Provider Number 00123M

12 August 2015

Associate Professor J Magarey
School: School of Nursing

Dear Associate Professor Magarey

ETHICS APPROVAL No: **H-2015-182**

PROJECT TITLE: **The effect of the ABCDE (Airway, Breathing, Circulation, Disability and Exposure/Equipment) assessment method and an educational session on nursing physical assessment in general ICU Dr Sardjito Hospital in Special Region Yogyakarta, Indonesia**

The ethics application for the above project has been reviewed by the Low Risk Human Research Ethics Review Group (Faculty of Health Sciences) and is deemed to meet the requirements of the *National Statement on Ethical Conduct in Human Research (2007)* involving no more than low risk for research participants. You are authorised to commence your research on **12 Aug 2015**.

Ethics approval is granted for three years and is subject to satisfactory annual reporting. The form titled *Annual Report on Project Status* is to be used when reporting annual progress and project completion and can be downloaded at http://www.adelaide.edu.au/ethics/human/guidelines/reporting. Prior to expiry, ethics approval may be extended for a further period.

Participants in the study are to be given a copy of the Information Sheet and the signed Consent Form to retain. It is also a condition of approval that you **immediately report** anything which might warrant review of ethical approval including:

- serious or unexpected adverse effects on participants,
- previously unforeseen events which might affect continued ethical acceptability of the project,
- proposed changes to the protocol; and
- the project is discontinued before the expected date of completion.

Please refer to the following ethics approval document for any additional conditions that may apply to this project.

Yours sincerely,

Sabine Schreiber
Secretary, Human Research Ethics Committee
Office of Research Ethics, Compliance and Integrity

THE UNIVERSITY of ADELAIDE

RESEARCH BRANCH
OFFICE OF RESEARCH ETHICS, COMPLIANCE AND INTEGRITY

LEVEL 7, 115 GRENFELL STREET
THE UNIVERSITY OF ADELAIDE
SA 5005 AUSTRALIA

TELEPHONE +61 8 8313 5137
FACSIMILE +61 8 8313 3700
EMAIL hrec@adelaide.edu.au

CRICOS Provider Number 00123M

Applicant: **Associate Professor J Magarey**

School: **School of Nursing**

Project Title: **The effect of the ABCDE (Airway, Breathing, Circulation, Disability and Exposure/Equipment) assessment method and an educational session on nursing physical assessment in general ICU Dr Sardjito Hospital in Special Region Yogyakarta, Indonesia**

The University of Adelaide Human Research Ethics Committee
Low Risk Human Research Ethics Review Group (Faculty of Health Sciences)

ETHICS APPROVAL No: **H-2015-182** **App. No.: 0000020743**

APPROVED for the period: **12 Aug 2015 to 31 Aug 2018**

Thank you for the response dated 3.8.15 to the matters raised. It is noted that this study will be conducted by Eri Yanuar Akhmad Budi Sunaryo, Masters student.

Sabine Schreiber
Secretary, Human Research Ethics Committee
Office of Research Ethics, Compliance and Integrity

MEDICAL AND HEALTH RESEARCH ETHICS COMMITTEE (MHREC)
FACULTY OF MEDICINE GADJAH MADA UNIVERSITY
– DR. SARDJITO GENERAL HOSPITAL

ETHICS COMMITTEE APPROVAL

Ref : KE/FK/1031 /EC/2015

Title of the Research Protocol	:	The Effectiveness of the of the ABCDE (Airway, Breathing, Circulation, Disability and Exposure/Equipment) Assessment Method in ICU
Documents Approved	:	1. Study Protocol versi 02 2015 2. Information for Subjects versi 02 2015 3. Informed consent form versi 02 2015
Principle Investigator	:	Eri Yanuar Akhmad Budi Sunary
Name of supervisor	:	Judy Magerey RN CCRN. DipN, BN, Mnurs. (Research), Dnurs
Date of Approval	:	13 AUG 2015 (Valid for one year beginning from the date of approval)
Institution(s)/place(s) of research	:	RSUP Dr. Sardjito

The Medical and Health Research Ethics Committee (MHREC) states that the above protocol meets the ethical principle outlined in the Declaration of Helsinki 2008 and therefore can be carried out.

The Medical and Health Research Ethics Committee (MHREC) has the right to monitor the research activities at any time.

The investigator(s) is/are obliged to submit:
□ Progress report as a continuing review : Annually
□ Report of any serious adverse events (SAE)
☑ Final report upon the completion of the study

Prof. dr. Mohammad Hakimi, Sp.OG(K)., Ph.D
Chairman

dr. Endy Paryanto, MPH., Sp.A(K)
Secretary

Attachments:
□ Continuing review submission form (AF 4.3.01-014.2013-03)
□ Serious adverse events (SAE) report form (AF 6.1.01- 019.2013-03)

Recognized by Forum for Ethical Review Committees in Asia and the Western Pacific (FERCAP)
7-Aug-15

APPENDIX 4 Pre Intervention Questionnaires

PROJECT TITLE:

The effectiveness of the ABCDE (Airway, Breathing, Circulation, Disability, and Exposure/Equipment) assessment method in ICU.

PRE-INTERVENTION QUESTIONNAIRE

1

PARTICIPANT INFORMATION SHEET – Pre Intervention

PROJECT TITLE: The effectiveness of the *ABCDE* (Airway, Breathing, Circulation, Disability, and Exposure/Equipment) assessment method in ICU
HUMAN RESEARCH ETHICS COMMITTEE APPROVAL NUMBER: H-2015-182
PRINCIPAL INVESTIGATOR: Eri Yanuar Akhmad Budi Sunaryo, BSN

Dear Nurse,

You are invited to participate in the research project described below.

This project is about an evaluation of the effectiveness of the use of the ABCDE assessment method and an educational session to improve physical assessment by Intensive Care Unit (ICU) bedside nurses in the general ICU Dr. Sardjito Hospital in Special Region Yogyakarta, Indonesia.

I, Eri Yanuar Akhmad B S., BSN, will be conducting this project. This research is a component of the Master of Nursing Science (Intensive Care Nursing) degree at the University of Adelaide Australia under the supervision of Associate Professor Judith Magarey and Academic lecturer Sindy Millington.

You are invited to participate in this study if you are a bedside nurse who has been working in the ICU for more than 6 months.

This study will involve comparing assessment by ICU nurses before and after the implementation of the ABCDE physical assessment method and education session. Before the process of data collection, I will hold an information session for the Head of ICU, Director of nursing, and nurses in ICU, information sheets regarding the study will be distributed at this time. You will be given an anonymous questionnaire to complete after one shift. Completion of the pre-intervention questionnaires will be viewed as consent to participate in this component of the study. If you want to participate in the education session, you will need to sign a consent form. Next, you will be invited to attend an education and practical session on the ABCDE physical assessment method conducted by me.

The pre-Intervention questionnaire will take about 15 minutes to complete. The education session and practical will take about two hours. This will be conducted in the unit. There is no reimbursement in this study.

There are no foreseeable risks that have been identified. The research may result in the improvement of the quality of nursing care in the Intensive Care Unit (ICU) by enhancing the physical assessment skills of nurses. The ABCDE assessment tool facilitates a systematic approach to the comprehensive assessment of critically ill patients in the Intensive Care Unit (ICU) setting and therefore has the potential to improve patient care. Your participation in this

project is completely voluntary. However, if you agree to participate, you can withdraw from the study at any time and this will not affect your employment, study and career.

The information and project records will be treated in a confidential manner, and no data will be collected which may identify any individual. Data in this research will only accessible to the researcher, supervisors, and data analyser. Data in this study will be kept in a secure location for 12 months after the result published. Information from this study will be used and reported to School of Nursing the University of Adelaide Australia; Faculty of Medicine Universitas Gadjah Mada; and Dr. Sardjito Hospital Nursing Department. I will publish the results of this study in peer-reviewed nursing journal to disseminate nursing knowledge regarding clinical practice of nurses' physical assessment particularly in ICU.

If there is any enquiry for this research, you can contact us at:
Eri Yanuar Akhmad Budi Sunaryo
E-mail : eri.yanuar02@gmail.com
Phone : +62-274-545674 (PSIK FK UGM)
HP : +62-8113318626

Judy Magarey RN CCRN. DipN, BN, MNurs. (Research), DNurs.
E-mail : judy.magarey@adelaide.edu.au
Phone : +61-8-831-36055 (the University of Adelaide Australia)

Sindy Millington RN, RM CCRN, BA, MN (Cardiac) Cert IV
E-mail : sindy.millington@adelaide.edu.au
Phone : +61-8-822-24387 (the University of Adelaide Australia)

The study has been approved by the Human Research Ethics Committee at the University of Adelaide (approval number H-2015-182). If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the Principal Investigator. Contact the Human Research Ethics Committee's Secretariat on phone +61 8 8313 6028 or by email to hrec@adelaide.edu.au. if you wish to speak with an independent person regarding concerns or a complaint, the University's policy on research involving human participants, or your rights as a participant. Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

If you want to participate in the education session you will need to sign a consent form, completion of the questionnaires will be viewed as consent to participate in this component of the study.

Yours sincerely,
ERI YANUAR AKHMAD BUDI SUNARYO, BSN

LEMBAR INFORMASI PESERTA – Pre Intervensi

JUDUL PENELITIAN: Efektivitas metode pengkajian ABCDE (Airway, Breathing, Circulation, Disability dan Exposure/Equipment) di ICU
PERSETUJUAN KOMITE ETIK UNTUK PENELITIAN PADA MANUSIA NOMOR: H-2015-182
PENELITI UTAMA: Eri Yanuar Akhmad Budi Sunaryo, BSN

Rekan perawat yang terhormat,

Anda diundang untuk berpartisipasi dalam proyek penelitian yang akan dijelaskan di bawah ini.

Proyek ini adalah tentang evaluasi efektivitas penggunaan metode penilaian ABCDE dan sesi pendidikan untuk meningkatkan penilaian fisik oleh perawat Intensive Care Unit (ICU) di ICU Rumah Sakit Dr. Sardjito umum di Daerah Istimewa Yogyakarta, Indonesia.

Eri Yanuar Akhmad B S., S.Kep. Ns., yang akan melakukan penelitian ini. Penelitian ini adalah komponen untuk memperoleh gelar Master of Nursing Science (Intensive Care Nursing) di Universitas Adelaide di bawah pengawasan Associate Professor Judith Magarey dan dosen akademik Sindy Millington.

Anda diharapkan untuk berpartisipasi dalam penelitian ini jika Anda seorang perawat yang telah bekerja di ICU selama lebih dari 6 bulan.

Penelitian ini akan membandingkan pengkajian fisik oleh perawat ICU sebelum dan setelah pelaksanaan sesi edukasi pemeriksaan fisik ABCDE. Sebelum proses pengumpulan data, saya akan mengadakan sesi informasi untuk Kepala ICU, Direktur keperawatan, dan perawat di ICU, lembar informasi mengenai studi akan didistribusikan saat ini. Anda akan diberikan kuesioner anonim untuk diisi setelah satu shift. Pengisian kuesioner pra-intervensi akan dipandang sebagai persetujuan untuk berpartisipasi dalam komponen penelitian ini. Jika Anda ingin berpartisipasi dalam sesi pendidikan, Anda harus menandatangani formulir persetujuan. Berikutnya, Anda akan diundang untuk menghadiri pendidikan dan sesi praktek tentang metode penilaian fisik ABCDE yang saya lakukan.

Kuesioner pra-Intervensi akan memakan waktu sekitar 15 menit untuk diselesaikan. Sesi pendidikan dan praktek akan memakan waktu sekitar dua jam. Ini akan dilakukan di unit. Tidak ada insentif dalam penelitian ini.

Tidak ada risiko yang ditemukan yang mungkin akan terjadi di masa mendatang. Penelitian ini diharapkan dapat meningkatkan kualitas asuhan keperawatan di Unit Perawatan Intensif (ICU) dengan meningkatkan keterampilan pengkajian fisik perawat. Partisipasi Anda dalam proyek ini benar-benar sukarela. Namun, jika Anda setuju untuk berpartisipasi, Anda dapat

mengundurkan diri dari penelitian ini setiap saat dan ini tidak akan mempengaruhi pekerjaan Anda, studi dan karir.

Informasi dan catatan penelitian ini akan diperlakukan secara rahasia, dan data yang akan dikumpulkan tidak dapat mengidentifikasi setiap individu. Data dalam penelitian ini hanya akan diakses oleh peneliti, pembimbing, dan penganalisa data. Data dalam penelitian ini akan disimpan di tempat yang aman selama 2 tahun setelah pengumpulan data. Informasi dari penelitian ini akan digunakan dan dilaporkan ke *School of Nursing the University of Adelaide*; Fakultas Kedokteran Universitas Gadjah Mada; dan Bidang Keperawatan RSUP Dr. Sardjito. Peneliti akan mempublikasikan hasil studi ini dalam jurnal keperawatan yang di-*peer-review* untuk menyebarluaskan pengetahuan keperawatan mengenai praktek klinis dari pengkajian fisik perawat khususnya di ICU.

Jika ada pertanyaan untuk penelitian ini, Anda dapat menghubungi saya di:
Eri Yanuar Akhmad Budi Sunaryo
E-mail: eri.yanuar02@gmail.com
Telepon: + 62-274-545674 (PSIK FK UGM)
HP: + 62-8113318626

Judy Magarey RN CCRN. DipN, BN, MNurs. (Research), DNurs.
E-mail : judy.magarey@adelaide.edu.au
Phone : +61-8-831-36055 (the University of Adelaide Australia)

Sindy Millington RN, RM CCRN, BA, MN (Cardiac) Cert IV
E-mail : sindy.millington@adelaide.edu.au
Phone : +61-8-822-24387 (the University of Adelaide Australia)

Penelitian ini telah disetujui oleh Komite Etika untuk Penelitian pada Manusia di Universitas Adelaide (persetujuan nomor H-2015-182). Jika Anda memiliki pertanyaan atau masalah yang terkait dengan aspek-aspek praktis dari partisipasi Anda dalam penelitian ini, atau ingin mengetahui tentang kekhawatiran atau keluhan tentang penelitian ini, maka Anda dapat berkonsultasi dengan Investigator Utama. Anda bisa menghubungi Sekretariat Komite Etika untuk Penelitian pada Manusia di telepon +61 8 8313 6028 atau melalui email ke hrec@adelaide.edu.au. jika Anda ingin berbicara dengan orang yang independen mengenai masalah atau keluhan, kebijakan penelitian Universitas yang melibatkan peserta manusia, atau hak-hak Anda sebagai peserta. Keluhan atau kekhawatiran anda akan diperlakukan secara rahasia dan sepenuhnya diselidiki. Anda akan diberitahu hasilnya.

Jika Anda ingin berpartisipasi dalam sesi pendidikan, Anda perlu untuk menandatangani formulir persetujuan, melengkapi kuesioner akan dianggap sebagai persetujuan untuk berpartisipasi dalam penelitian ini.

Hormat saya,
ERI YANUAR AKHMAD BUDI SUNARYO, S.KEP., NS

THE UNIVERSITY of ADELAIDE

Please read following items and put a check mark ☑ next to those your answer.

(Bacalah pertanyaan berikut dan berikan tanda cek ☑ pada jawaban anda)

1. Please indicate your gender? *(Apakah jenis kelamin Anda?)*

   ☐ Male *(Pria)* ☐ Female (*Wanita)*

2. What is your age (years)? *(Berapakah umur Anda?(dalam tahun))*

   ☐ Years (*Tahun)*

3. How long have you been worked in Intensive Care Unit (ICU)?
   (Sudah berapa lamakah anda bekerja di Unit Keperawatan Intensif?)

   ☐ Years (*Tahun)*

4. What is your initial nursing qualification?
   (*Apakah kualifikasi pendidikan keperawatan Anda?*)

   ☐ Diploma of Nursing/*Diploma-III Keperawatan* ☐ Bachelor of Nursing/*S1-Ners*

5. What is your position in ICU?
   (*Apa posisi Anda di ICU*)

   ☐ Primary Nurse/*Perawat Primer* ☐ Associate Nurse/*Perawat Pelaksana*

6. Do you have a role as a preceptor or clinical instructor?
   (*Apakah Anda berperan sebagai perseptor atau instruktur klinik?*)

   ☐ Yes / *Ya* ☐ No/*Tidak*

7. What is the highest ICU qualification you have?
(Apakah kualifikasi ICU tertinggi Anda?)

☐ Induction only/*hanya training induksi*

☐ Basic ICU training/*Pelatihan ICU Dasar*

☐ Advanced ICU training/*Pelatihan ICU lanjutan*

☐ Other, specify/*lainnya, sebutkan:*

_____

_____

_____

_____

8. What continuing nursing education (CNE) (i.e training, seminar, workshop, etc) spesific in critical care are have you had completed in the last 2 years?
(Sebutkan pendidikan keperawatan lanjutan (contoh: pelatihan, seminar, workshop) yang spesifik di area keperawatan kritis yang telah anda ikuti selama 2 tahun terakhir?)

☐ Basic Trauma and Cardiac Life Support (BTCLS)

☐ Advanced Cardiac Life Support (ACLS)

☐ Advanced Trauma Life Support (ATLS)

☐ Other, specify:/*lainnya , sebutkan:*

_____

_____

_____

_____

The following question related to *ABCDE* (Airway, Breathing, Circulation, Disability and Exposure/Equipment) assessment methods.
(Pertanyaan di bawah ini berhubungan dengan metode pengkajian ABCDE (Airway, Breathing, Circulation, Disability and Exposure/Equipment)

1. During your last shift, for the patient that you have cared for, list **your assessment activities** (not your findings) relating to Airway (*Selama shift terakhir Anda, pada pasien yang Anda rawat, tuliskan **aktivitas pengkajian** yang Anda lakukan yang berhubungan dengan Jalan Nafas)*

- - - - - - -

2. In the last shift, for the patient that you have cared for, list **your assessment activities** (not your finding) relating to Breathing (*Selama shift terakhir Anda, pada pasien yang Anda rawat, tuliskan **aktivitas pengkajian** yang Anda lakukan yang berhubungan dengan Pernafasan)*

- - - - -

8

3. In the last shift, for the patient that you have cared for, list **your assessment activities** (not your findings) relating to Circulation (*Selama shift terakhir anda, pada pasien yang Anda rawat, tuliskan **aktivitas pengkajian** yang Anda lakukan yang berhubungan dengan Sirkulasi)*

-
-
-
-
-
-
-

4. In the last shift, for the patient that you have cared for, list **your assessment activities** (not your findings) relating to Disability (*Selama shift terakhir Anda, pada pasien yang Anda rawat, tuliskan **aktivitas pengkajian** yang Anda lakukan yang berhubungan dengan Disabilitas)*

-
-
-
-
-
-
-
-

5. In the last shift, for the patient that you have cared for, list **your assessment activities** (not your findings) relating to Exposure (*Selama shift terakhir Anda, pada pasien yang Anda rawat, tuliskan **aktivitas pengkajian** yang Anda lakukan yang berhubungan dengan Eksposure)*

-
-
-
-
-
-
-
-

6. In the last shift, for the patient that you have cared for, list **your assessment activities** (not your findings) relating to Equipment (*Selama shift terakhir Anda, pada pasien yang Anda rawat, tuliskan **aktivitas pengkajian** yang Anda lakukan yang berhubungan dengan Peralatan)*

-
-
-
-
-
-
-
-
-

7. During your last shift, when did you assess your patient (for example: handover) ?
(Selama shift, kapan Anda melakukan pengkajian kepada pasien (sebagai contoh: saat operan jaga)?)

- - - - - - - -

8. During your last shift, please list any important information that you found during your assessment?
(Selama shift, silahkan Anda tuliskan informasi penting yang anda temukan selama pengkajian?)

- - - - - - - - -

Please indicate your level of agreement with the following statement by put a check mark in your choice. (*Tolong berikan tingkat persetujuan anda dengan pernyataan dibawah ini dengan memberi tanda cek pada pilihan anda*)

9. Patients' assessment in ICU is **ONLY** the responsibility of the doctor?

☐Strongly agree *(Sangat setuju)*	☐Agree *(Setuju)*	☐Undecided *(Tidak memilih)*	☐Disagree *(Tidak setuju)*	☐Strongly disagree *(Sangat tidak setuju)*

10. How important do you think it is that nurses assess the patient they are caring for in ICU?
(Seberapa penting perawat mengkaji pasien yang mereka rawat selama dirawat di ICU?)

☐Very important *(Sangat penting)*	☐Important *(Penting)*	☐Neither important or unimportant *(Antara penting atau tidak penting)*	☐Unimportant *(Tidak penting)*	☐Very unimportant *(Sangat tidak penting)*

11. Any other comment? (*Apakah ada komentar lain?*):

Thank you for your participation in this study. When you have completed the questionnaire, please returns it to the questionnaire box located at the nurse station or my research assistant will be collect this questionnaire from you.
(Terimakasih atas partisipasi anda dalam penelitian ini. Jika anda sudah mengisi kuesioner ini secara lengkap, silahkan kembalikan ke kotak kuesioner yang terletak di ruang jaga perawat atau asisten penelitian saya yang akan mengumpulkan kuesioner ini dari anda.)

APPENDIX 5 Consent Form

THE UNIVERSITY of ADELAIDE

Human Research Ethics Committee (HREC)

CONSENT FORM

1. I have read the attached Information Sheet and agree to take part in the following research project:

Title:	**The effectiveness of the of the *ABCDE* (Airway, Breathing, Circulation, Disability, and Exposure/Equipment) assessment method in ICU.**
Ethics Approval Number:	**H-2015-182**

2. I have had the project, so far as it affects me, fully explained to my satisfaction by the research worker. My consent is given freely.

3. I have been given the opportunity to have a member of my family or a friend present while the project was explained to me.

4. Although I understand that the purpose of this research project is to improve the quality of nursing care, it has also been explained that my involvement may not be of any benefit to me.

5. I have been informed that, while information gained during the study may be published, I will not be identified and my personal results will not be divulged.

6. I understand that I am free to withdraw from the project at any time and that will not affect my employment, study and career.

7. I am aware that I should keep a copy of this Consent Form, when completed, and the attached Information Sheet.

Participant to complete:

Name: _____ Signature: _____ Date: _____

Researcher/Witness to complete:

I have described the nature of the research to _____
(print name of participant)

and in my opinion she/he understood the explanation.

Signature: _____ Position: _____ Date: _____

2013_consent_form_health_medical.docx

APPENDIX 6 Post Intervention Questionnaires

PROJECT TITLE:

The effectiveness of the ABCDE (Airway, Breathing, Circulation, Disability, and Exposure/Equipment) assessment method in ICU.

POST-INTERVENTION QUESTIONNAIRE

PARTICIPANT INFORMATION SHEET –Post Intervention

PROJECT TITLE: The effectiveness of the *ABCDE* (Airway, Breathing, Circulation, Disability, and Exposure/Equipment) assessment method in ICU.
HUMAN RESEARCH ETHICS COMMITTEE APPROVAL NUMBER: H-2015-***
PRINCIPAL INVESTIGATOR: Eri Yanuar Akhmad Budi Sunaryo, BSN

Dear Nurse,

You are invited to participate in the research project described below.

This project is about an evaluation of the effectiveness of the use of the ABCDE assessment method and an educational session to improve physical assessment by Intensive Care Unit (ICU) bedside nurses in the general ICU Dr. Sardjito Hospital in Special Region Yogyakarta, Indonesia.

I, Eri Yanuar Akhmad B S., BSN, will be conducting this project. This research is a component of the Master of Nursing Science (Intensive Care Nursing) degree at the University of Adelaide Australia under the supervision of Associate Professor Judith Magarey and Academic lecturer Sindy Millington.

You are invited to participate in this study if you are a bedside nurse who has been working in the ICU for more than 6 months.

This study involves comparing assessment by ICU nurses before and after the implementation of the ABCDE physical assessment method and education session. You are invited to complete the post Intervention questionnaire even if you were not able to complete the pre-intervention questionnaire or the education session. Before the process of data collection, I held an information session for the Head of ICU, Director of nursing, and nurses in ICU, information sheets regarding the study were distributed at this time. You will be given an anonymous questionnaire to complete after one shift. Completion of the questionnaire will be viewed as consent to participate in this component of the study.

The questionnaire will take about 15 minutes to complete. There is no reimbursement in this study.

There are no foreseeable risks that have been identified. The research may result in the improvement of the quality of nursing care in the Intensive Care Unit (ICU) by enhancing the physical assessment skills of nurses. The ABCDE assessment tool facilitates a systematic approach to the comprehensive assessment of critically ill patients in the Intensive Care Unit (ICU) setting and therefore has the potential to improve patient care. Your participation in this project is completely voluntary. However, if you agree to participate, you can withdraw from the study at any time and this will not affect your employment, study and career.

The information and project records will be treated in a confidential manner, and no data will be collected which may identify any individual. Data in this research will only accessible to the researcher, supervisors, and data analyser. Data in this study will be kept in a secure location for 12 months after the result published. Information from this study will be used and reported to School of Nursing the University of Adelaide Australia; Faculty of Medicine Universitas Gadjah Mada; and Dr. Sardjito Hospital Nursing Department. I will publish the results of this study in peer-reviewed nursing journal to disseminate nursing knowledge regarding clinical practice of nurses' physical assessment particularly in ICU.

If there is any enquiry for this research, you can contact us at:
Eri Yanuar Akhmad Budi Sunaryo
E-mail : eri.yanuar02@gmail.com
Phone : +62-274-545674 (PSIK FK UGM)
HP : +62-8113318626

Judy Magarey RN CCRN. DipN, BN, MNurs. (Research), DNurs.
E-mail : judy.magarey@adelaide.edu.au
Phone : +61-8-831-36055 (the University of Adelaide Australia)

Sindy Millington RN, RM CCRN, BA, MN (Cardiac) Cert IV
E-mail : sindy.millington@adelaide.edu.au
Phone : +61-8-822-24387 (the University of Adelaide Australia)

The study has been approved by the Human Research Ethics Committee at the University of Adelaide (approval number H-2015-xxx). If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the Principal Investigator. Contact the Human Research Ethics Committee's Secretariat on phone +61 8 8313 6028 or by email to hrec@adelaide.edu.au. if you wish to speak with an independent person regarding concerns or a complaint, the University's policy on research involving human participants, or your rights as a participant. Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

If you want to participate in the education session you will need to sign a consent form, completion of the questionnaires will be viewed as consent to participate in this component of the study.

Yours sincerely,
ERI YANUAR AKHMAD BUDI SUNARYO, BSN

LEMBAR INFORMASI PESERTA – Post Intervensi

JUDUL PENELITIAN: Efektivitas metode pengkajian ABCDE (Airway, Breathing, Circulation, Disability dan Exposure/Equipment) di ICU
PERSETUJUAN KOMITE ETIK UNTUK PENELITIAN PADA MANUSIA NOMOR: H-2015 - *
PENELITI UTAMA: Eri Yanuar Akhmad Budi Sunaryo, BSN

Rekan perawat yang terhormat,

Anda diundang untuk berpartisipasi dalam proyek penelitian yang akan dijelaskan di bawah ini.

Proyek ini adalah tentang evaluasi efektivitas penggunaan metode penilaian ABCDE dan sesi pendidikan untuk meningkatkan penilaian fisik oleh perawat Intensive Care Unit (ICU) di ICU Rumah Sakit Dr. Sardjito umum di Daerah Istimewa Yogyakarta, Indonesia.

Eri Yanuar Akhmad B S., S.Kep. Ns., yang akan melakukan penelitian ini. Penelitian ini adalah komponen untuk memperoleh gelar Master of Nursing Science (Intensive Care Nursing) di Universitas Adelaide di bawah pengawasan Associate Professor Judith Magarey dan dosen akademik Sindy Millington.

Anda diundang untuk berpartisipasi dalam penelitian ini jika Anda seorang perawat yang telah bekerja di ICU selama lebih dari 6 bulan.

Penelitian ini melibatkan membandingkan pengkajian oleh perawat ICU sebelum dan sesudah pelaksanaan sesi pendidikan metode pengkajian fisik ABCDE. Anda diundang untuk melengkapi kuesioner pasca Intervensi bahkan walau Anda tidak mengisi kuesioner pra-intervensi atau mengikuti sesi pendidikan. Sebelum proses pengumpulan data, saya mengadakan sesi informasi untuk Kepala ICU, Direktur keperawatan, dan perawat di ICU, lembar informasi mengenai studi dibagikan pada saat ini. Anda akan diberikan kuesioner anonim untuk diisi setelah satu shift. Penyelesaian kuesioner akan dipandang sebagai persetujuan untuk berpartisipasi dalam komponen ini penelitian.

Kuesioner ini akan memakan waktu sekitar 15 menit untuk diselesaikan. Tidak ada insentif dalam penelitian ini.

Tidak ada risiko yang telah diidentifikasi di masa mendatang. Penelitian ini diharapkan dapat meningkatkan kualitas asuhan keperawatan di Unit Perawatan Intensif (ICU) dengan meningkatkan keterampilan pengkajian fisik perawat. Partisipasi Anda dalam proyek ini benar-benar sukarela. Namun, jika Anda setuju untuk berpartisipasi, Anda dapat menarik diri dari penelitian ini setiap saat dan ini tidak akan mempengaruhi pekerjaan Anda, studi dan karir.

Informasi dan catatan penelitian ini akan diperlakukan secara rahasia, dan data yang akan dikumpulkan tidak dapat mengidentifikasi setiap individu. Data dalam penelitian ini hanya akan diakses oleh peneliti, pembimbing, dan penganalisa data. Data dalam penelitian ini akan disimpan di tempat yang aman selama 2 tahun setelah pengumpulan data. Informasi dari penelitian ini akan digunakan dan dilaporkan ke *School of Nursing the University of Adelaide*; Fakultas Kedokteran Universitas Gadjah Mada; dan Bidang Keperawatan RSUP Dr. Sardjito. Peneliti akan mempublikasikan hasil studi ini dalam jurnal keperawatan yang di-*peer-review* untuk menyebarluaskan pengetahuan keperawatan mengenai praktek klinis dari pengkajian fisik perawat khususnya di ICU.

Jika ada pertanyaan untuk penelitian ini, Anda dapat menghubungi saya di:
Eri Yanuar Akhmad Budi Sunaryo
E-mail: eri.yanuar02@gmail.com
Telepon: + 62-274-545674 (PSIK FK UGM)
HP: + 62-8113318626

Judy Magarey RN CCRN. DipN, BN, MNurs. (Research), DNurs.
E-mail : judy.magarey@adelaide.edu.au
Phone : +61-8-831-36055 (the University of Adelaide Australia)

Sindy Millington RN, RM CCRN, BA, MN (Cardiac) Cert IV
E-mail : sindy.millington@adelaide.edu.au
Phone : +61-8-822-24387 (the University of Adelaide Australia)

Penelitian ini telah disetujui oleh Komite Etika untuk Penelitian pada Manusia di Universitas Adelaide (persetujuan nomor H-2015-xxx). Jika Anda memiliki pertanyaan atau masalah yang terkait dengan aspek-aspek praktis dari partisipasi Anda dalam penelitian ini, atau ingin mengetahui tentang kekhawatiran atau keluhan tentang penelitian ini, maka Anda dapat berkonsultasi dengan Investigator Utama. Anda bisa menghubungi Sekretariat Komite Etika untuk Penelitian pada Manusia di telepon +61 8 8313 6028 atau melalui email ke hrec@adelaide.edu.au. jika Anda ingin berbicara dengan orang yang independen mengenai masalah atau keluhan, kebijakan penelitian Universitas yang melibatkan peserta manusia, atau hak-hak Anda sebagai peserta. Keluhan atau kekhawatiran anda akan diperlakukan secara rahasia dan sepenuhnya diselidiki. Anda akan diberitahu hasilnya.

Jika Anda ingin berpartisipasi dalam sesi pendidikan, Anda perlu untuk menandatangani formulir persetujuan, melengkapi kuesioner akan dianggap sebagai persetujuan untuk berpartisipasi dalam penelitian ini.

Hormat saya,
ERI YANUAR AKHMAD BUDI SUNARYO, S.KEP., NS

Please read following items and put a check mark ☑ next to those your answer.
(Bacalah pertanyaan berikut dan berikan tanda cek ☑ pada jawaban anda)

1. Have you participated in *ABCDE* (Airway, Breathing, Circulation, Disability, and Exposure/Equipment) assessment method education session? *(Apakah anda mengikuti sesi edukasi metode pengkajian ABCDE(Airway, breathing, Circulation dan Exposure/Equipment)*

   ☐ Yes *(Ya)* ☐ No (*Tidak)*

2. Please indicate your gender? *(Apakah jenis kelamin anda?)*

   ☐ Male *(Pria)* ☐ Female (*Wanita)*

3. What is your age (years)? *(Berapakah umur anda?(dalam tahun))*

   ☐ Years (*Tahun)*

4. How long have you been working in Intensive Care Unit (ICU)?
   (Sudah berapa lamakah anda bekerja di Unit Keperawatan Intensif?)

   ☐ Years (*Tahun)*

5. What is your initial nursing qualification?
   (*Apakah kualifikasi pendidikan keperawatan anda?*)

   ☐ Diploma of Nursing/*Diploma-III Keperawatan* ☐ Bachelor of Nursing/*S1-Ners*

6. What is your position in ICU?
   (Apa posisi anda di ICU)

   ☐ Primary Nurse/*Perawat Primer* ☐ Associate Nurse/*Perawat Pelaksana*

7. Do you have a role as a preceptor or a clinical instructor?
(*Apakah anda berperan sebagai perseptor atau instruktur klinik?*)

☐ Yes / *Ya* ☐ No/*Tidak*

8. What is the highest ICU qualification you have?
(Apakah kualifikasi ICU tertinggi anda?)

☐ Induction only/*hanya training induksi*

☐ Advanced ICU training/*Pelatihan ICU lanjutan*

☐ Basic ICU training/*Pelatihan ICU Dasar*

☐ Other, specify/*lainnya, sebutkan:*

_____

_____

_____

_____

9. What continuing nursing education (CNE) (i.e training, seminar, workshop, etc) spesific in critical care area have you had completed in the last 2 years?
(Sebutkan pendidikan keperawatan lanjutan (contoh: pelatihan, seminar, workshop) yang spesifik di area keperawatan kritis yang anda ikuti selama 2 tahun terakhir?)

☐ Basic Trauma and Cardiac Life Support (BTCLS)

☐ Advanced Trauma Life Support (ATLS)

☐ Advanced Cardiac Life Support (ACLS)

☐ Other, specify:/*lainnya , sebutkan:*

_____

_____

_____

_____

The following questions are related to *ABCDE* (Airway, Breathing, Circulation, Disability and Exposure/Equipment) assessment methods.
(Pertanyaan di bawah ini berhubungan dengan metode pengkajian ABCDE (Airway, Breathing, Circulation, Disability and Exposure/Equipment)

1. During your last shift, for the patient that you have cared for, list **your assessment activities** (not your findings) relating to Airway *(Selama shift terakhir anda, pada pasien yang anda rawat, list **aktivitas pengkajian** (bukan hasilnya) yang berhubungan dengan Jalan Nafas)*

- - - - - - - -

2. In the last shift, for the patient that you have cared for, list **your assessment activities** (not your findings) relating to Breathing *(Selama shift terakhir anda, pada pasien yang anda rawat, list **aktivitas pengkajian** (bukan hasilnya) yang berhubungan dengan Pernafasan)*

- - - - - - - - -

3. In the last shift, for the patient that you have cared for, list **your assessment activities** (not your findings) relating to Circulation (*Selama shift terakhir anda, pada pasien yang anda rawat, list **aktivitas pengkajian** (bukan hasilnya) yang berhubungan dengan Sirkulasi)*

-
-
-
-
-
-
-
-
-

4. *In the last shift, for the patient that you have cared for, list **your assessment activities** (not your findings) relating to Disability (Selama shift terakhir anda, pada pasien yang anda rawat, list **aktivitas pengkajian** (bukan hasilnya) yang berhubungan dengan Disabilitas)*

-
-
-
-
-
-

5. *In the last shift, for the patient that you have cared for, list **your assessment activities** (not your finding) relating to Exposure (Selama shift terakhir anda, pada pasien yang anda rawat, list **aktivitas pengkajian** (bukan hasilnya) yang berhubungan dengan Eksposure)*

-
-
-
-
-

6. In the last shift, for the patient that you have cared for, list **your assessment activities** (not your findings) relating to Equipment (*Selama shift terakhir anda, pada pasien yang anda rawat, list* ***aktivitas pengkajian*** *(bukan hasilnya) yang berhubungan dengan Peralatan)*

-
-
-
-
-
-
-

7. During your last shift, when did you assess your patient (for example: handover) ?
(Selama shift, kapan anda melakukan pengkajian kepada pasien (sebagai contoh: saat operan jaga)?)

-
-
-
-
-
-
-
-
-

8. During your last shift, please list any important information that you found during your assessment?
(Selama shift, silahkan anda list informasi penting yang anda temukan selama pengkajian?)

-
-
-
-
-
-
-
-
-

9. During your last shift, what factors impacted on your ability to assess the patient with ABCDE assessment method?
(Selama shift, faktor-faktor apa yang mempengaruhi kemampuan anda dalam melakukan pengkajian ke pasien dengan metode pengkajian ABCDE?)

- - - - - - - - -

10. What factors do you think impact whether nurses conduct ABCDE assessment method?
(Menurut anda, faktor-faktor apa yang mempengaruhi perawat dalam melakukan pengkajian dengan metode pengkajian ABCDE?)

- - - - - - - - -

Please indicate your level of agreement with the following statement by put a check mark in your choice. (*Tolong berikan tingkat persetujuan anda dengan pernyataan dibawah ini dengan memberi tanda cek pada pilihan anda*)

11. Patients' assessment in ICU is **ONLY** the responsibility of the doctor?
(*Pengkajian pasien di ICU adalah **HANYA** tanggung jawab dokter*)

☐Strongly agree *(Sangat setuju)*	☐Agree *(Setuju)*	☐Undecided *(Tidak memilih)*	☐Disagree *(Tidak setuju)*	☐Strongly disagree *(Sangat tidak setuju)*

12. How important do you think it is that nurses assess the patient they are caring for in ICU?
(Seberapa penting perawat mengkaji pasien yang mereka rawat selama dirawat di ICU?)

☐Very important *(Sangat penting)*	☐Important *(Penting)*	☐Neither important or unimportant *(Antara penting atau tidak penting)*	☐Unimportant *(Tidak penting)*	☐Very unimportant *(Sangat tidak penting)*

13. Any other comment (*Apakah ada komentar lain?*):

Thank you for your participation in this study. When you have completed the questionnaire, please returns it to the questionnaire box located at the nurse station or my research assistant will be collect this questionnaire from you.
(Terimakasih atas partisipasi anda dalam penelitian ini. Jika anda sudah mengisi kuesioner ini secara lengkap, silahkan kembalikan ke kotak kuesioner yang terletak di ruang jaga perawat atau asisten penelitian saya yang akan mengumpulkan kuesioner ini dari anda.)

APPENDIX 7 Reliability Statistics

```
 GET
  FILE='/Users/user/Semester 1 2015/Research Files/SPSS FIle/Post Selection/Eri Pre Interv Post
DATASET NAME DataSet1 WINDOW=FRONT.
RELIABILITY
  /VARIABLES=Airway_01 Airway_02 Airway_03 Airway_04 Airway_05 Airway_06 Airway_07 Breathing_01
Exposure_03 Exposure_04 Exposure_05 Equipment_01 Equipment_02 Equipment_03 Equipment_04 Equipmer
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created		20-OCT-2015 19:47:13
Comments		
Input	Data	/Users/user/Semester 1 2015/Research Files/SPSS File/Post Selection/Eri Pre Interv Post Select.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	17
	Matrix Input	/Users/user/Semester 1 2015/Research Files/SPSS File/Post Selection/Eri Pre Interv Post Select.sav
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.

Notes

Syntax		RELIABILITY /VARIABLES=Airway_01 Airway_02 Airway_03 Airway_04 Airway_05 Airway_06 Airway_07 Breathing_01 Breathing_02 Breathing_03 Breathing_04 Breathing_05 Breathing_06 Breathing_07 Circulation_01 Circulation_02 Circulation_03 Circulation_04 Circulation_05 Circulation_06 Circulation_07 Circulation_08 Circulation_09 Circulation_10 Circulation_11 Circulation_12 Circulation_13 Circulation_14 Circulation_15 Circulation_16 Disability_01 Disability_02 Disability_03 Disability_04 Disability_05 Exposure_01 Exposure_02 Exposure_03 Exposure_04 Exposure_05 Equipment_01 Equipment_02 Equipment_03 Equipment_04 Equipment_05 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTI VE SCALE CORR /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.00

[DataSet1] /Users/user/Semester 1 2015/Research Files/SPSS FIle/Post Selection/Eri Pre Interv Post Select.sav

Warnings

Each of the following component variables has zero variance and is removed from the scale: Assess ET humidification, Assess skin around ET, Assess respiratory rate, Assess TV, MV and Airway Pressure, Assess end-tidal CO2, Assess pulse strength, Assess hourly fluid balance, Assess chest x-ray, Assess intravenous drug's rate, Assess intravenous drug's route, Assess patient's delirium, Assess patient's position, Assess patient's ventilator setting, Assess patient's monitor setting, Assess patient's monitor alarm The determinant of the covariance matrix is zero or approximately zero. Statistics based on its inverse matrix cannot be computed and they are displayed as system missing values.	

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	17	100.0
	Excluded[a]	0	.0
	Total	17	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.659	.596	30

Item Statistics

	Mean	Std. Deviation	N
Check airway patency	.8824	.33211	17
Assess ET position	.5882	.50730	17
Assess ET security	.7059	.46967	17
Assess ET cuff pressure	.7647	.43724	17
Check secretion	.8235	.39295	17
Asess chest movement	.9412	.24254	17
Assess patient's breath sound	.7059	.46967	17
Assess blood gas analysis	.1765	.39295	17
Assess pulse oximetry	.8824	.33211	17
Assess pulse with palpation	.1176	.33211	17
Assess patients colour	.6471	.49259	17
Assess patient's heart rate	.8235	.39295	17
Assess patient's blood pressure	.9412	.24254	17
Assess patient's CVP	.0588	.24254	17
Assess urine output	.1176	.33211	17
Check capillary refill time	.1176	.33211	17
Assess lab results	.0588	.24254	17
Assess the ECG	.1176	.33211	17
Assess patient's temperature	.1176	.33211	17
Assess intravenous drug's dose	.1176	.33211	17
Assess patient's conciousness	.9412	.24254	17
Assess patient's pupillary response	.0588	.24254	17
Assess patient's sedation	.1176	.33211	17
Assess patient's pain level	.9412	.24254	17
Assess patient's skin integrity	.9412	.24254	17
Assess patient's mucous	.1176	.33211	17
Assess patient's insersion site	.7647	.43724	17
Assess patient's environment	.0588	.24254	17
Assess patient's ventilator alarm	.0588	.24254	17
Assess patient's device setting	.9412	.24254	17

Inter-Item Correlation Matrix

	Check airway patency	Assess ET position	Assess ET security	Assess ET cuff pressure	Check secretion	Asess chest movement
Check airway patency	1.000	.065	-.236	.228	.310	-.091
Assess ET position	.065	1.000	.247	.663	.240	-.209
Assess ET security	-.236	.247	1.000	.251	.040	.387
Assess ET cuff pressure	.228	.663	.251	1.000	.107	-.139
Check secretion	.310	.240	.040	.107	1.000	-.116
Asess chest movement	-.091	-.209	.387	-.139	-.116	1.000
Assess patient's breath sound	.165	.509	.433	.555	.040	.387
Assess blood gas analysis	-.310	.074	-.378	-.107	.214	-.540
Assess pulse oximetry	-.133	.065	.566	.228	-.169	-.091
Assess pulse with palpation	.133	-.436	-.566	-.658	-.310	.091
Assess patients colour	.112	.383	.604	.461	-.019	-.185
Assess patient's heart rate	-.169	.240	.717	.471	.190	-.116
Assess patient's blood pressure	-.091	-.209	.387	-.139	-.116	-.063
Assess patient's CVP	.091	.209	-.387	.139	.116	.063
Assess urine output	.133	.306	-.566	.203	.169	-.685
Check capillary refill time	.133	.306	-.566	.203	.169	-.685
Assess lab results	.091	.209	-.387	.139	.116	.063
Assess the ECG	.133	-.065	-.566	.203	.169	-.685
Assess patient's temperature	.133	-.065	-.566	.203	.169	-.685
Assess intravenous drug's dose	.133	.306	-.566	.203	.169	-.685
Assess patient's conciousness	-.091	.299	.387	.451	-.116	-.063
Assess patient's pupillary response	.091	.209	-.387	.139	.116	.063
Assess patient's sedation	.133	.306	-.566	.203	.169	-.685
Assess patient's pain level	-.091	-.209	.387	-.139	-.116	-.063
Assess patient's skin integrity	-.091	-.209	-.161	-.139	-.116	-.063
Assess patient's mucous	.133	-.065	-.566	.203	.169	-.685
Assess patient's insersion site	-.203	.099	.555	.346	.107	-.139
Assess patient's environment	.091	.209	.161	.139	.116	.063
Assess patient's ventilator alarm	.091	.209	-.387	.139	.116	-1.000
Assess patient's device setting	-.091	-.209	-.161	-.139	-.116	-.063

Inter-Item Correlation Matrix

	Assess patient's breath sound	Assess blood gas analysis	Assess pulse oximetry	Assess pulse with palpation	Assess patients colour	Assess patient's heart rate
Check airway patency	.165	-.310	-.133	.133	.112	-.169
Assess ET position	.509	.074	.065	-.436	.383	.240
Assess ET security	.433	-.378	.566	-.566	.604	.717
Assess ET cuff pressure	.555	-.107	.228	-.658	.461	.471
Check secretion	.040	.214	-.169	-.310	-.019	.190
Asess chest movement	.387	-.540	-.091	.091	-.185	-.116
Assess patient's breath sound	1.000	-.378	.165	-.566	.334	.378
Assess blood gas analysis	-.378	1.000	-.310	-.169	-.304	-.190
Assess pulse oximetry	.165	-.310	1.000	-.433	.494	.789
Assess pulse with palpation	-.566	-.169	-.433	1.000	-.494	-.789
Assess patients colour	.334	-.304	.494	-.494	1.000	.627
Assess patient's heart rate	.378	-.190	.789	-.789	.627	1.000
Assess patient's blood pressure	-.161	-.540	.685	.091	.339	.540
Assess patient's CVP	.161	.540	-.685	-.091	-.339	-.540
Assess urine output	-.165	.789	-.433	-.133	-.112	-.310
Check capillary refill time	-.165	.789	-.433	-.133	-.112	-.310
Assess lab results	.161	.540	-.685	-.091	-.339	-.540
Assess the ECG	-.165	.310	.133	-.133	-.112	.169
Assess patient's temperature	-.165	.310	.133	-.133	-.112	.169
Assess intravenous drug's dose	-.165	.789	-.433	-.133	-.112	-.310
Assess patient's conciousness	.387	.116	.685	-.685	.339	.540
Assess patient's pupillary response	.161	.540	-.685	-.091	-.339	-.540
Assess patient's sedation	-.165	.789	-.433	-.133	-.112	-.310
Assess patient's pain level	-.161	-.540	.685	.091	.339	.540
Assess patient's skin integrity	-.161	.116	-.091	.091	-.185	-.116
Assess patient's mucous	-.165	.310	.133	-.133	-.112	.169
Assess patient's insersion site	.251	-.107	.658	-.658	.751	.835
Assess patient's environment	.161	-.116	.091	-.091	.185	.116
Assess patient's ventilator alarm	-.387	.540	.091	-.091	.185	.116
Assess patient's device setting	-.161	.116	-.091	.091	-.185	-.116

Inter-Item Correlation Matrix

	Assess patient's blood pressure	Assess patient's CVP	Assess urine output	Check capillary refill time	Assess lab results	Assess the ECG
Check airway patency	-.091	.091	.133	.133	.091	.133
Assess ET position	-.209	.209	.306	.306	.209	-.065
Assess ET security	.387	-.387	-.566	-.566	-.387	-.566
Assess ET cuff pressure	-.139	.139	.203	.203	.139	.203
Check secretion	-.116	.116	.169	.169	.116	.169
Asess chest movement	-.063	.063	-.685	-.685	.063	-.685
Assess patient's breath sound	-.161	.161	-.165	-.165	.161	-.165
Assess blood gas analysis	-.540	.540	.789	.789	.540	.310
Assess pulse oximetry	.685	-.685	-.433	-.433	-.685	.133
Assess pulse with palpation	.091	-.091	-.133	-.133	-.091	-.133
Assess patients colour	.339	-.339	-.112	-.112	-.339	-.112
Assess patient's heart rate	.540	-.540	-.310	-.310	-.540	.169
Assess patient's blood pressure	1.000	-1.000	-.685	-.685	-1.000	.091
Assess patient's CVP	-1.000	1.000	.685	.685	1.000	-.091
Assess urine output	-.685	.685	1.000	1.000	.685	.433
Check capillary refill time	-.685	.685	1.000	1.000	.685	.433
Assess lab results	-1.000	1.000	.685	.685	1.000	-.091
Assess the ECG	.091	-.091	.433	.433	-.091	1.000
Assess patient's temperature	.091	-.091	.433	.433	-.091	1.000
Assess intravenous drug's dose	-.685	.685	1.000	1.000	.685	.433
Assess patient's conciousness	-.063	.063	.091	.091	.063	.091
Assess patient's pupillary response	-1.000	1.000	.685	.685	1.000	-.091
Assess patient's sedation	-.685	.685	1.000	1.000	.685	.433
Assess patient's pain level	1.000	-1.000	-.685	-.685	-1.000	.091
Assess patient's skin integrity	-.063	.063	.091	.091	.063	.091
Assess patient's mucous	.091	-.091	.433	.433	-.091	1.000
Assess patient's insersion site	.451	-.451	-.228	-.228	-.451	.203
Assess patient's environment	.063	-.063	-.091	-.091	-.063	-.091
Assess patient's ventilator alarm	.063	-.063	.685	.685	-.063	.685
Assess patient's device setting	-.063	.063	.091	.091	.063	.091

Inter-Item Correlation Matrix

	Assess patient's temperature	Assess intravenous drug's dose	Assess patient's conciousness	Assess patient's pupillary response	Assess patient's sedation	Assess patient's pain level
Check airway patency	.133	.133	-.091	.091	.133	-.091
Assess ET position	-.065	.306	.299	.209	.306	-.209
Assess ET security	-.566	-.566	.387	-.387	-.566	.387
Assess ET cuff pressure	.203	.203	.451	.139	.203	-.139
Check secretion	.169	.169	-.116	.116	.169	-.116
Asess chest movement	-.685	-.685	-.063	.063	-.685	-.063
Assess patient's breath sound	-.165	-.165	.387	.161	-.165	-.161
Assess blood gas analysis	.310	.789	.116	.540	.789	-.540
Assess pulse oximetry	.133	-.433	.685	-.685	-.433	.685
Assess pulse with palpation	-.133	-.133	-.685	-.091	-.133	.091
Assess patients colour	-.112	-.112	.339	-.339	-.112	.339
Assess patient's heart rate	.169	-.310	.540	-.540	-.310	.540
Assess patient's blood pressure	.091	-.685	-.063	-1.000	-.685	1.000
Assess patient's CVP	-.091	.685	.063	1.000	.685	-1.000
Assess urine output	.433	1.000	.091	.685	1.000	-.685
Check capillary refill time	.433	1.000	.091	.685	1.000	-.685
Assess lab results	-.091	.685	.063	1.000	.685	-1.000
Assess the ECG	1.000	.433	.091	-.091	.433	.091
Assess patient's temperature	1.000	.433	.091	-.091	.433	.091
Assess intravenous drug's dose	.433	1.000	.091	.685	1.000	-.685
Assess patient's conciousness	.091	.091	1.000	.063	.091	-.063
Assess patient's pupillary response	-.091	.685	.063	1.000	.685	-1.000
Assess patient's sedation	.433	1.000	.091	.685	1.000	-.685
Assess patient's pain level	.091	-.685	-.063	-1.000	-.685	1.000
Assess patient's skin integrity	.091	.091	-.063	.063	.091	-.063
Assess patient's mucous	1.000	.433	.091	-.091	.433	.091
Assess patient's insersion site	.203	-.228	.451	-.451	-.228	.451
Assess patient's environment	-.091	-.091	.063	-.063	-.091	.063
Assess patient's ventilator alarm	.685	.685	.063	-.063	.685	.063
Assess patient's device setting	.091	.091	-.063	.063	.091	-.063

Inter-Item Correlation Matrix

	Assess patient's skin integrity	Assess patient's mucous	Assess patient's insersion site	Assess patient's environment	Assess patient's ventilator alarm	Assess patient's device setting
Check airway patency	-.091	.133	-.203	.091	.091	-.091
Assess ET position	-.209	-.065	.099	.209	.209	-.209
Assess ET security	-.161	-.566	.555	.161	-.387	-.161
Assess ET cuff pressure	-.139	.203	.346	.139	.139	-.139
Check secretion	-.116	.169	.107	.116	.116	-.116
Asess chest movement	-.063	-.685	-.139	.063	-1.000	-.063
Assess patient's breath sound	-.161	-.165	.251	.161	-.387	-.161
Assess blood gas analysis	.116	.310	-.107	-.116	.540	.116
Assess pulse oximetry	-.091	.133	.658	.091	.091	-.091
Assess pulse with palpation	.091	-.133	-.658	-.091	-.091	.091
Assess patients colour	-.185	-.112	.751	.185	.185	-.185
Assess patient's heart rate	-.116	.169	.835	.116	.116	-.116
Assess patient's blood pressure	-.063	.091	.451	.063	.063	-.063
Assess patient's CVP	.063	-.091	-.451	-.063	-.063	.063
Assess urine output	.091	.433	-.228	-.091	.685	.091
Check capillary refill time	.091	.433	-.228	-.091	.685	.091
Assess lab results	.063	-.091	-.451	-.063	-.063	.063
Assess the ECG	.091	1.000	.203	-.091	.685	.091
Assess patient's temperature	.091	1.000	.203	-.091	.685	.091
Assess intravenous drug's dose	.091	.433	-.228	-.091	.685	.091
Assess patient's conciousness	-.063	.091	.451	.063	.063	-.063
Assess patient's pupillary response	.063	-.091	-.451	-.063	-.063	.063
Assess patient's sedation	.091	.433	-.228	-.091	.685	.091
Assess patient's pain level	-.063	.091	.451	.063	.063	-.063
Assess patient's skin integrity	1.000	.091	-.139	-1.000	.063	-.063
Assess patient's mucous	.091	1.000	.203	-.091	.685	.091
Assess patient's insersion site	-.139	.203	1.000	.139	.139	-.139
Assess patient's environment	-1.000	-.091	.139	1.000	-.063	.063
Assess patient's ventilator alarm	.063	.685	.139	-.063	1.000	.063
Assess patient's device setting	-.063	.091	-.139	.063	.063	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Check airway patency	13.7647	9.441	.094	.	.660
Assess ET position	14.0588	8.059	.495	.	.614
Assess ET security	13.9412	9.809	-.097	.	.686
Assess ET cuff pressure	13.8824	7.985	.634	.	.602
Check secretion	13.8235	9.029	.237	.	.648
Asess chest movement	13.7059	10.721	-.653	.	.700
Assess patient's breath sound	13.9412	8.934	.210	.	.651
Assess blood gas analysis	14.4706	9.015	.243	.	.647
Assess pulse oximetry	13.7647	9.316	.156	.	.655
Assess pulse with palpation	14.5294	11.390	-.784	.	.724
Assess patients colour	14.0000	8.500	.348	.	.634
Assess patient's heart rate	13.8235	8.654	.404	.	.631
Assess patient's blood pressure	13.7059	10.096	-.267	.	.679
Assess patient's CVP	14.5882	9.507	.118	.	.657
Assess urine output	14.5294	8.640	.508	.	.625
Check capillary refill time	14.5294	8.640	.508	.	.625
Assess lab results	14.5882	9.507	.118	.	.657
Assess the ECG	14.5294	8.765	.441	.	.631
Assess patient's temperature	14.5294	8.765	.441	.	.631
Assess intravenous drug's dose	14.5294	8.640	.508	.	.625
Assess patient's conciousness	13.7059	8.971	.491	.	.634
Assess patient's pupillary response	14.5882	9.507	.118	.	.657
Assess patient's sedation	14.5294	8.640	.508	.	.625
Assess patient's pain level	13.7059	10.096	-.267	.	.679
Assess patient's skin integrity	13.7059	9.971	-.187	.	.674
Assess patient's mucous	14.5294	8.765	.441	.	.631
Assess patient's insersion site	13.8824	8.610	.367	.	.633
Assess patient's environment	14.5882	9.632	.034	.	.662
Assess patient's ventilator alarm	14.5882	8.882	.554	.	.630
Assess patient's device setting	13.7059	9.846	-.106	.	.670

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
14.6471	9.743	3.12132	30

APPENDIX 8 Pre Intervention Statistics

Initial ICU Qualification	Characteristics		Pre	p
AIRWAY	Diploma	Mean	3.86	0.432
		Std. Deviation	1.41	
	Bachelor	Mean	3.33	
		Std. Deviation	0.58	
BREATHING	Diploma	Mean	3.57	0.509
		Std. Deviation	0.76	
	Bachelor	Mean	4.00	
		Std. Deviation		
CIRCULATION	Diploma	Mean	2.93	0.091
		Std. Deviation	1.68	
	Bachelor	Mean	4.00	
		Std. Deviation	1.00	
DISABILITY	Diploma	Mean	1.86	0.362
		Std. Deviation	0.66	
	Bachelor	Mean	2.33	
		Std. Deviation	0.58	
EXPOSURE	Diploma	Mean	1.86	0.859
		Std. Deviation	0.53	
	Bachelor	Mean	2.00	
		Std. Deviation	1.00	
EQUIPMENT	Diploma	Mean	2.00	1.000
		Std. Deviation	0.39	
	Bachelor	Mean	2.00	
		Std. Deviation		
TOTAL ABCDE	Diploma	Mean	16.07	0.362
		Std. Deviation	4.16	
	Bachelor	Mean	17.67	
		Std. Deviation	1.53	

Perceptor role	Characteristics		Pre	p
AIRWAY	No	Mean	3.80	0.618
		Std. Deviation	1.37	
	Yes	Mean	3.50	
		Std. Deviation	0.71	
BREATHING	No	Mean	3.60	0.618
		Std. Deviation	0.74	
	Yes	Mean	4.00	
		Std. Deviation		
CIRCULATION	No	Mean	3.00	0.294
		Std. Deviation	1.65	
	Yes	Mean	4.00	
		Std. Deviation	1.41	
DISABILITY	No	Mean	1.87	0.294
		Std. Deviation	0.64	
	Yes	Mean	2.50	
		Std. Deviation	0.71	
EXPOSURE	No	Mean	1.93	0.441
		Std. Deviation	0.59	
	Yes	Mean	1.50	
		Std. Deviation	0.71	
EQUIPMENT	No	Mean	4.00	1.000
		Std. Deviation	1.00	
	Yes	Mean	3.50	
		Std. Deviation	0.71	
TOTAL ABCDE	No	Mean	16.20	0.618
		Std. Deviation	4.04	
	Yes	Mean	17.5	
		Std. Deviation	2.12	

Position in ICU	Characteristics		Pre	p
AIRWAY	Associate Nurse	Mean	3.77	0.871
		Std. Deviation	1.42	
	Primary Nurse	Mean	3.75	
		Std. Deviation	0.96	
BREATHING	Associate Nurse	Mean	3.53	0.412
		Std. Deviation	0.78	
	Primary Nurse	Mean	4.00	
		Std. Deviation		
CIRCULATION	Associate Nurse	Mean	2.92	0.130
		Std. Deviation	1.75	
	Primary Nurse	Mean	3.75	
		Std. Deviation	0.96	
DISABILITY	Associate Nurse	Mean	1.85	0.412
		Std. Deviation	0.69	
	Primary Nurse	Mean	2.25	
		Std. Deviation	0.50	
EXPOSURE	Associate Nurse	Mean	1.85	0.785
		Std. Deviation	0.55	
	Primary Nurse	Mean	2.00	
		Std. Deviation	0.82	
EQUIPMENT	Associate Nurse	Mean	2.00	1.000
		Std. Deviation	0.41	
	Primary Nurse	Mean	2.00	
		Std. Deviation		
TOTAL ABCDE	Associate Nurse	Mean	15.92	0.423
		Std. Deviation	4.29	
	Primary Nurse	Mean	17.75	
		Std. Deviation	1.26	

Highest ICU qualification	Characteristics		Pre	p
AIRWAY	Induction Only	Mean	3.50	0.964
		Std. Deviation	2.12	
	Basic ICU training	Mean	3.73	
		Std. Deviation	1.42	
	Advance ICU training	Mean	4.00	
		Std. Deviation	0.82	
BREATHING	Induction Only	Mean	4.00	0.703
		Std. Deviation		
	Basic ICU training	Mean	3.55	
		Std. Deviation	0.82	
	Advance ICU training	Mean	3.75	
		Std. Deviation	0.50	
CIRCULATION	Induction Only	Mean	2.50	0.110
		Std. Deviation	0.71	
	Basic ICU training	Mean	2.64	
		Std. Deviation	1.03	
	Advance ICU training	Mean	4.75	
		Std. Deviation	2.36	
DISABILITY	Induction Only	Mean	2.00	0.066
		Std. Deviation		
	Basic ICU training	Mean	1.73	
		Std. Deviation	0.65	
	Advance ICU training	Mean	2.50	
		Std. Deviation	0.58	
EXPOSURE	Induction Only	Mean	2.00	0.837
		Std. Deviation		
	Basic ICU training	Mean	1.82	
		Std. Deviation	0.60	
	Advance ICU training	Mean	2.00	
		Std. Deviation	0.82	
EQUIPMENT	Induction Only	Mean	2.00	0.256
		Std. Deviation		
	Basic ICU training	Mean	1.91	
		Std. Deviation	0.30	
	Advance ICU training	Mean	2.25	
		Std. Deviation	0.50	
TOTAL ABCDE	Induction Only	Mean	16.00	0.192
		Std. Deviation	2.83	
	Basic ICU training	Mean	15.36	
		Std. Deviation	3.85	

Highest ICU qualification	Characteristics		Pre	p
	Advance ICU training	Mean	19.25	
		Std. Deviation	3.40	

Last CNE in 2 years	Characteristics		Pre	p
AIRWAY	No CNE	Mean	3.33	0.049
		Std. Deviation	2.08	
	BTCLS	Mean	2.00	
		Std. Deviation		
	ACLS	Mean	4.00	
		Std. Deviation		
	OTHER	Mean	4.18	
		Std. Deviation	0.98	
BREATHING	No CNE	Mean	3.00	0.081
		Std. Deviation	1.00	
	BTCLS	Mean	3.00	
		Std. Deviation	1.41	
	ACLS	Mean	4.00	
		Std. Deviation		
	OTHER	Mean	3.90	
		Std. Deviation	0.30	
CIRCULATION	No CNE	Mean	3.67	0.132
		Std. Deviation	4.04	
	BTCLS	Mean	2.00	
		Std. Deviation		
	ACLS	Mean	5.00	
		Std. Deviation		
	OTHER	Mean	3.00	
		Std. Deviation	0.45	
DISABILITY	No CNE	Mean	1.67	0.204
		Std. Deviation	1.53	
	BTCLS	Mean	1.50	
		Std. Deviation	0.71	
	ACLS	Mean	3.00	
		Std. Deviation		
	OTHER	Mean	2.00	
		Std. Deviation		
EXPOSURE	No CNE	Mean	2.00	0.610
		Std. Deviation	1.00	
	BTCLS	Mean	1.50	
		Std. Deviation	0.71	
	ACLS	Mean	1.00	
		Std. Deviation		
	OTHER	Mean	2.00	

Last CNE in 2 years	Characteristics		Pre	p
		Std. Deviation	0.45	
EQUIPMENT	No CNE	Mean	2.33	0.282
		Std. Deviation	0.58	
	BTCLS	Mean	2.00	
		Std. Deviation		
	ACLS	Mean	2.00	
		Std. Deviation		
	OTHER	Mean	1.91	
		Std. Deviation	0.30	
TOTAL ABCDE	No CNE	Mean	16.00	0.122
		Std. Deviation	9.17	
	BTCLS	Mean	12.00	
		Std. Deviation	2.83	
	ACLS	Mean	19.00	
		Std. Deviation		
	OTHER	Mean	17.00	
		Std. Deviation	1.00	

APPENDIX 9 Post Intervention Statistics

Initial ICU Qualification	Characteristics		Post	p
AIRWAY	Diploma	Mean	5.36	0.591
		Std. Deviation	1.15	
	Bachelor	Mean	5.33	
		Std. Deviation	0.58	
BREATHING	Diploma	Mean	5.21	0.859
		Std. Deviation	0.69	
	Bachelor	Mean	5.33	
		Std. Deviation	0.58	
CIRCULATION	Diploma	Mean	8.50	0.163
		Std. Deviation	2.77	
	Bachelor	Mean	11.00	
		Std. Deviation	2.00	
DISABILITY	Diploma	Mean	3.93	0.300
		Std. Deviation	0.83	
	Bachelor	Mean	3.33	
		Std. Deviation	0.58	
EXPOSURE	Diploma	Mean	4.21	0.768
		Std. Deviation	0.80	
	Bachelor	Mean	4.00	
		Std. Deviation	1.00	
EQUIPMENT	Diploma	Mean	4.07	0.244
		Std. Deviation	0.99	
	Bachelor	Mean	3.33	
		Std. Deviation	0.58	
TOTAL ABCDE	Diploma	Mean	31.29	0.787
		Std. Deviation	6.09	
	Bachelor	Mean	32.33	
		Std. Deviation	5.13	

Perceptor role	Characteristics		Post	p
AIRWAY	No	Mean	5.33	0.941
		Std. Deviation	1.11	
	Yes	Mean	5.55	
		Std. Deviation	0.71	
BREATHING	No	Mean	5.20	0.618
		Std. Deviation	0.68	
	Yes	Mean	5.50	
		Std. Deviation	0.71	
CIRCULATION	No	Mean	8.53	0.088
		Std. Deviation	2.67	
	Yes	Mean	12.00	
		Std. Deviation	1.41	
DISABILITY	No	Mean	3.87	0.618
		Std. Deviation	0.83	
	Yes	Mean	3.50	
		Std. Deviation	0.71	
EXPOSURE	No	Mean	4.13	0.618
		Std. Deviation	0.83	
	Yes	Mean	4.50	
		Std. Deviation	0.71	
EQUIPMENT	No	Mean	7.13	0.529
		Std. Deviation	1.36	
	Yes	Mean	8.87	
		Std. Deviation	1.19	
TOTAL ABCDE	No	Mean	31.07	0.529
		Std. Deviation	5.93	
	Yes	Mean	34.50	
		Std. Deviation	4.95	

Position in ICU	Characteristics		Post	p
AIRWAY	Associate Nurse	Mean	5.31	0.956
		Std. Deviation	1.18	
	Primary Nurse	Mean	5.50	
		Std. Deviation	0.58	
BREATHING	Associate Nurse	Mean	5.15	0.477
		Std. Deviation	0.69	
	Primary Nurse	Mean	5.50	
		Std. Deviation	0.58	
CIRCULATION	Associate Nurse	Mean	8.15	0.029
		Std. Deviation	2.54	
	Primary Nurse	Mean	11.50	
		Std. Deviation	1.91	
DISABILITY	Associate Nurse	Mean	3.85	0.871
		Std. Deviation	0.80	
	Primary Nurse	Mean	3.75	
		Std. Deviation	0.96	
EXPOSURE	Associate Nurse	Mean	4.15	0.871
		Std. Deviation	0.80	
	Primary Nurse	Mean	4.25	
		Std. Deviation	0.96	
EQUIPMENT	Associate Nurse	Mean	4.00	0.624
		Std. Deviation	1.00	
	Primary Nurse	Mean	3.75	
		Std. Deviation	0.96	
TOTAL ABCDE	Associate Nurse	Mean	30.61	0.287
		Std. Deviation	5.78	
	Primary Nurse	Mean	34.25	
		Std. Deviation	5.68	

Highest ICU qualification	Characteristics		Post	p
AIRWAY	Induction Only	Mean	4.00	0.717
		Std. Deviation	2.83	
	Basic ICU training	Mean	5.55	
		Std. Deviation	0.69	
	Advance ICU training	Mean	5.50	
		Std. Deviation	0.58	
BREATHING	Induction Only	Mean	4.50	0.245
		Std. Deviation	0.71	
	Basic ICU training	Mean	5.27	
		Std. Deviation	0.65	
	Advance ICU training	Mean	5.50	
		Std. Deviation	0.58	
CIRCULATION	Induction Only	Mean	5.00	0.051
		Std. Deviation		
	Basic ICU training	Mean	8.82	
		Std. Deviation	2.32	
	Advance ICU training	Mean	11.25	
		Std. Deviation	2.36	
DISABILITY	Induction Only	Mean	4.00	0.953
		Std. Deviation	1.41	
	Basic ICU training	Mean	3.82	
		Std. Deviation	0.75	
	Advance ICU training	Mean	3.75	
		Std. Deviation	0.96	
EXPOSURE	Induction Only	Mean	3.00	0.107
		Std. Deviation		
	Basic ICU training	Mean	4.27	
		Std. Deviation	0.78	
	Advance ICU training	Mean	4.50	
		Std. Deviation	0.58	
EQUIPMENT	Induction Only	Mean	3.50	0.415
		Std. Deviation	0.71	
	Basic ICU training	Mean	4.18	
		Std. Deviation	0.87	
	Advance ICU training	Mean	3.50	
		Std. Deviation	1.29	
TOTAL ABCDE	Induction Only	Mean	24.00	0.242
		Std. Deviation	5.65	
	Basic ICU training	Mean	31.91	
		Std. Deviation	5.07	
	Advance ICU training	Mean	34.00	
		Std. Deviation	6.06	

Last CNE in 2 years	Characteristics		Post	p
AIRWAY	No CNE	Mean	5.67	0.190
		Std. Deviation	0.58	
	BTCLS	Mean	3.00	
		Std. Deviation	1.41	
	ACLS	Mean	5.00	
		Std. Deviation		
	OTHER	Mean	5.73	
		Std. Deviation	0.47	
BREATHING	No CNE	Mean	5.33	0.134
		Std. Deviation	0.58	
	BTCLS	Mean	4.00	
		Std. Deviation		
	ACLS	Mean	5.00	
		Std. Deviation		
	OTHER	Mean	5.45	
		Std. Deviation	0.52	
CIRCULATION	No CNE	Mean	8.67	0.108
		Std. Deviation	0.58	
	BTCLS	Mean	4.50	
		Std. Deviation	0.71	
	ACLS	Mean	11.00	
		Std. Deviation		
	OTHER	Mean	9.64	
		Std. Deviation	2.69	
DISABILITY	No CNE	Mean	3.67	0.125
		Std. Deviation	0.58	
	BTCLS	Mean	3.00	
		Std. Deviation		
	ACLS	Mean	3.00	
		Std. Deviation		
	OTHER	Mean	4.09	
		Std. Deviation	0.83	
EXPOSURE	No CNE	Mean	4.33	0.295
		Std. Deviation	0.58	
	BTCLS	Mean	3.50	
		Std. Deviation	0.71	
	ACLS	Mean	4.00	
		Std. Deviation		
	OTHER	Mean	4.27	
		Std. Deviation	0.90	
EQUIPMENT	No CNE	Mean	3.33	0.335
		Std. Deviation	1.15	
	BTCLS	Mean	3.50	
		Std. Deviation	0.71	

Last CNE in 2 years	Characteristics		Post	p
	ACLS	Mean	3.00	
		Std. Deviation		
	OTHER	Mean	4.27	
		Std. Deviation	0.90	
TOTAL ABCDE	No CNE	Mean	31.00	0.121
		Std. Deviation	3.61	
	BTCLS	Mean	21.50	
		Std. Deviation	2.12	
	ACLS	Mean	31.00	
		Std. Deviation		
	OTHER	Mean	33.45	
		Std. Deviation	5.15	