

Early Recognition and Rapid Administration of Acute Condition in Intensive Care Unit: A Literature Review

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Keywords: Early Recognition, Vital Sign Monitor, Rapid Administration, Direct Therapy, Intensive Care Unit.

Abstract: The observation program is an attempt to determine the deterioration of the patient's condition and has an important role in improving patient safety. Critical care advantage patients whose near death through a series of detailed observation actions with or without invasive and restorative treatment. Early recognition and rapid administration is a prediction method for the successful treatment of acutely ill patients with a high risk of death and decrease sepsis mortality. The aim of this review is to explore concept early recognition and rapid administration method as the monitoring intervention in intensive care unit. This article used integratif literature review through the search for published and gray literature in the following databases: EBSCO (CINAHL & MEDLINE), Science Direct and PubMed. This review found 32 documents and selected 9 articles and 3 books literature for data extraction and analysis. Early recognition and rapid administration method can be applied in intensive care unit. Vital Sign Direct Therapy (VSDT) is considered to be suitable paper based protocol for early recognition and rapid administration method and used goal directed therapy approach for the patient in intensive care unit. VSDT protocol consist of monitoring and early intervention in danger sign in acute condition.

1 INTRODUCTION

Monitoring is basic intervention that is carried out routinely and continuously in intensive care. Monitoring is an effort to practice the forefront in an effort to optimize hemodynamics, ventilation, temperature, nutrition and metabolism in improving the survival of patients in critical care rooms. Monitoring also plays an important role in assessing the effects of treatment, detecting procedural complications and identifying early signs of clinical damage (M. R & Payen, 2005; Moreno, Rhodes, & Donchin, 2009).

Patients monitoring is carried out in detail with or without accompanying invasive care efforts that support the achievement of restorative care goals. The purpose of restorative care is an attempt to restore the physiological functions of critically ill patients and if not achieved, patients can experience a condition of organ failure which is the main cause of patient death in critical care rooms (Aslakson et al., 2012).

The knowledge insufficiency of monitoring practice and delayed in treatment is a prone to errors

in carrying process that can inhibit the benefits of restorative care in critical care. The goals of restorative care also constrained with the orientation of health care provider which is more attention in carrying form oriented than patients oriented, lack of access to support and standard decision according to the patient's condition and lack of efficient global facilities. The survey on critical care practices indicate that the majority of ICU rooms have limitations in acute resuscitation regulation resources, especially in an effort to assess conditions early and make decisions about giving immediate treatment to patients (Bracco et al., 2001; Pronovost et al., 2003).

The standard method to evaluate patient condition early and decision of treatment rapidly for critically ill patients are needed to overcome this obstacle in critical care unit. Health care providers must able perform clinical assessment to determine patient's condition through monitoring, identified patient clinical hazard conditions immediately and give appropriate intervention for patients. (Benner P, Tanner, & Chesla, 2009).

Acute patient had unstable condition and need

continuous monitoring and treatment until get stable. Patients with danger clinical conditions need to get rapid action, include the efforts to consult with another medical staff for the administration and provide resuscitation management. Delayed efforts to detect patient deterioration and the administration will affect the final patient outcome. Therefore, the effort need to improve monitoring as the clinical assessment and immediately management of patients with critical illness conditions in intensive care (Kipnis et al., 2012).

2 AIMS

This paper is a literature review that explore concept early recognition and rapid administration method as the monitoring intervention in intensive care unit.

3 METHOD

Literatur review was chosen because it contain broad integration of empirical and theoretical literature to explore concept of certain phenomenon. An extensive literature search was used in English, conducted from 2010 to 2017 and following databases Ebsco (CINAHL & MEDLINE), PubMed, Springer and text book literature. The included studies used all range of study designs with following keywords early recognition, rapid administration, critical care, intensive care unit. The combined database search was found 32 documents and selected 9 final articles and 3 books literature for data extraction and analysis. Most of the studies excluded were not in adult patient and not full text.

4 RESULT

4.1 Early Recognition in Intensive Care

Early detection is an attempt to find a disorder or disease before developing into deteriorating conditions. Efforts to early detection in intensive nursing focus on the inability to identify earlier deterioration in the condition of patients who might benefit from the implementation of a series of actions and strategies that continue to evolve to improve treatment outcomes (Schultz, 2009).

Early detection of patient deterioration condition is carried out immediately and requires accuracy in assessing deterioration that occurs through patient

hemodynamic monitoring. Monitoring hemodynamic conditions aims to provide factual data in increasing the oxygenation needs of the body tissues that are the furthest and effective in dealing with hypoxia, shock and multiorgan failure. The condition of vital organ hypoperfusion that lasts a long time can cause multiple organ system dysfunction, organ failure and end with death (Rubinfeld, Aslin, & Rubinson, 2007; Pinsky & Payen, 2005).

Hemodynamic changes in acute care settings reflect the presence of cardiovascular insufficiency conditions and response to an intervention. Early monitoring of patients with unstable conditions is carried out by assessing changes in vital signs and specific organ perfusion markers such as capillary filling speed (CRT) and urine output (Schultz, 2009).

The initial compensation that occurs in acute care conditions is characterized by a mechanism for increased breathing and heart rate with or without a significant decrease in blood pressure and changes in oxygen saturation as a sign of the initial decline in the patient's condition. The effort of early detection and management of the decline in the condition of patients in acute conditions is carried out by conducting an assessment of the Airway approach, Breathing, Circulation, Disability, Exposure (ABCDE) (Thim *et al.*, 2015).

The ABCDE assesment is an approach for all emergencies clinical condition to conduct immediate assessment and management. This approach improves treatment outcomes by focusing on life-threatening clinical problems.

4.2 Early Administration in Intensive Care

Early management is the provision of early intervention carried out in medical emergencies conducted by various regulatory techniques such as the use of bundle methods and aggressive resuscitation efforts based on goals direct therapy. Goal-directed therapy (GDT) is a monitoring technique to help guide fluid therapy, vasopressors, inotropic and other treatments for patients in various clinical settings. Goal-directed therapy uses adjustments to heart activity which include preload, afterload and contractility in an effort to balance oxygen distribution with the body's oxygen needs (Glew, 2009; Thompson-hill *et al.*, 2009; O'Neal & Shaw, 2015; Rivers et al., 2001).

The application of GDT significantly reduces the duration of hospital stay and complications that arise

after treatment as a whole, especially kidney injury, respiratory failure and wound infection. GDT was originally developed in a critical care area to provide care for surgical patients at high risk of shock, but GDT has now been developed in the areas of general, orthopedic, cardiothoracic and vascular surgical treatments (Cecconi et al., 2013; Dunn, Grocott, & Mythen, 2016).

4.3 Institutional Systems Improve Earlier Recognition Rapid Administration in Acute Resusitasi

Early recognition and rapid administration is an effort to improve treatment success in patients with acute conditions with a high risk of death. This procedure is a key to the initial intervention that has been carried out by referring to the target period of the gold period as an achievement against safety from life-threatening conditions. Efforts to accelerate detection and treatment of patients have been shown to increase outcomes for various acute life-threatening emergency conditions, such as in cases of acute myocardial infarction (MI), stroke, shock or sepsis (Funk, Sebat and Kumar, 2009).

The strategy of aggressive early detection and resuscitation is carried out to achieve a balance between systemic oxygen delivery and demand for oxygen to be a more definite profitable strategy. This approach is also used in critical care areas as an effort to increase the aggressiveness of care, intervention and resuscitation by monitoring changes in hemodynamic values. Indicators of hemodynamic values and physiology will interact to obtain performance and physiological estimates that can be used as an effort to encourage early management (Moser, 2014; Xu et al., 2016).

The application of early recognition and rapid administration method in acute resuscitation critical patient has been carried out with development research program and produced several instruments that can be used, the are checklist for early recognition and treatment of acute illness (CERTAIN) dan vital sign direct therapy (VSDT).

CERTAIN is a web-based decision support tool that displays relevant clinical information and is filled with evidence-based knowledge of the best clinical practice, organized according to a systematic review of end-user data requirements and ergonomic workflows. The CERTAIN application on mobile devices was also developed with HTML-5 as a complementary part of availability and ease of use CERTAIN (Vukoja, 2015).

CERTAIN consists of two modules namely the ELITE module (stabilizing the patient's condition that threatens an emergency during admission / resuscitation) and the CERTAIN round module (to help provide routine maintenance every day recommended). The CERTAIN module is regulated by considering how experts incorporate information into decision making models of clinical conditions. Assessment of this application begins with an effort to read each element from top to bottom which contains primary assessment (ABCDE) and secondary surveys and readings from left to right which contain the basic elements of determining clinical conditions for a list of patient problems, availability of interventions on the central panel status and proposed treatment and intervention (Vukoja, 2015).

VSDT is one of the regulation strategies for directed therapy through a series of efforts to monitor changes in the condition of the patient's vital signs which include airway, breathing and circulating accompanied by procedures for emergency conditions or hazard conditions that occur based on paper records. VSDT is modified from an EWS (early warning system) instrument by considering the limited time and availability of health resources (Baker, 2009).

The VSDT protocol is based on the limited time and availability of appropriate health resources provided by health workers, some of the activities that can be carried out by nurses without a doctor's direct presence, can be modified by the treating physician, not as a substitute for doctors and clinical assessment and openness is advanced therapy. The parameters of a single danger sign are sorted from several composite scores to create simplicity and efforts to activate the early and specific governance directions to be given. If a danger sign is found from one of the parameters, the exclusion protocol observations of vital signs are carried out more frequently, ie every 30 minutes and given acute acute resuscitation management for patients (Schell *et al.*, 2015).

5 DISCUSSION

Critical care provides restorative care to patients with critically ill conditions through a series of observation and management measures that are not obtained in the usual care room. The success of restorative efforts is able to restore the function of organs as they should, but failure can lead to the emergence of death.

The main cause of death in intensive care is the presence of acute and refractory multiple organ dysfunction syndrome, central nervous system failure and heart failure. Acute and refractory multiple organ dysfunction (MODS) syndrome is a developmental condition that has the potential to disturb the physiological body but is reversible, involving two or more organ systems due to worsening physiological conditions (Ramírez, 2013).

MODS management is carried out with several non-specific treatments in an effort to resolution and prevent worsening conditions. Important events that often appear before the occurrence of MODS is the emergence of hypotension or shock conditions that can often be predicted to occur within the first 24 hours of receipt. This condition is an important concern, because early detection and the provision of adequate initial resuscitation measures are the main therapeutic focus that can improve the patient's prognosis (Mizock, 2009; Khwannimit, 2008).

Implementation of patient management through early recognition and rapid administration approach in intensive care unit according to the principles of MODS management which is the main cause of death in critical patients. MODS occurs clearly within 24-48 hours after a threat of physiological conditions. The classic sequence of organ dysfunction usually begins with the discovery of signs of respiratory dysfunction and followed by liver or gastrointestinal system dysfunction, kidneys and other organs (Mohan, Harikrishna and Kumar, 2014).

Acute respiratory distress syndrome (ARDS) is an early manifestation of the emergence of respiratory system involvement in the condition of MODS. The involvement of the digestive system is characterized by an increase in transaminase liver enzymes, hyperbilirubinemia and synthetic dysfunction with an increase in international normalized ration (INR) that develops into severe liver failure or mild hyperbilirubinemia with or without cholestasis. Acute kidney injury is classified according to the RIFLE category.

Cardiovascular dysfunction is characterized by a vascular condition that experiences systemic and hypermetabolic inflammation. A decrease in the Glasgow coma scale indicates neurological dysfunction. Endocrine dysfunction is characterized by dysfunction of the hypothalamic-pituitary axis, impaired glucose and protein metabolism (Venkataraman and Kellum, 2007).

6 CONCLUSION

Early recognition and rapid administration can be applied in the intensive care unit. Vital Sign Direct Therapy (VSDT) is considered as paper-based protocol that is suitable for early recognition and fast administration methods using goal-directed therapy approach for patients in the intensive care unit. The VSDT protocol consists of monitoring and optional initial intervention in danger signs in acute conditions.

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