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Utilization of trauma guidelines by ER nurses in Thailand

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ABSTRACT

Objective: To improving trauma nursing practice in Thailand and other countries. **Methods:** As part of a larger study of 164 ER nurses, 83 nurses provided narrative responses to questions of CNPG utilization and barriers to implementation. Using a qualitative descriptive design and analysis, three major themes were identified: Guidelines reflect good practice; Nurses do not always follow guidelines; and System problems limit use. **Results:** The results suggest optimized guideline adherence would require using judgment in following CNPG; ensuring organized teamwork is essential; and providing maximum resources would promote optimal care. **Conclusion:** Clinical nursing practice guidelines (CNPG) have been developed in Thailand for resuscitation care of emergency room (ER) trauma patients. However, many nurses do not use guidelines effectively.

1. Introduction

Resuscitation of a critically injured patient in the emergency room (ER) is a crisis situation both for the injured patient who has a life-threatening condition, and the trauma team members who are responsible for timeliness of care. Since lives can be saved with optimal care and appropriate management (Simons and Kirkpatrick, 2002; Cothern et al, 2007), rapid resuscitation is critical (Rainer et al, 2007). Thirty-four percent of trauma deaths occur within 1-4 hours following injury. Many of these deaths are potentially preventable with early and appropriate intervention (Demetriades et al., 2004). Delay in treatment and errors in judgment are considered to be the leading causes of preventable deaths (Teixeira et al., 2007). Thus, clinical guidelines have been developed to reduce significant variations in practice and to improve quality of care.

A review of the literature about the management of life-threatening situations involving trauma patients in Thailand ERs found that there are treatment guidelines for physicians (The Trauma Association of Thailand, 2007), preliminary indicators for suggested trauma care (Suwaratchai et al., 2008), and studies of effective treatment for injuries (Prichayudh et al., 2009; Sriussadaporn et al., 2004; Sriussadaporn S, 2000; Phuenpathom et al., 2000; Mahaisavariya B, 2008). Many hospitals have developed internal policies for triage, ATLS in trauma care, activation of a trauma team, and inter- hospital trauma transfer.

In contrast, there is only one clinical nursing practice guideline (CNPG) to help guide the nursing management of life-threatening conditions of injured patients (Unhasuta & Trauma Nurses Network of Thailand, 2007). In 2007, implementation of these guidelines was initiated, beginning with 12 hospitals. Many ER nurses are not prepared for the demands of their role, due to the lack of any formal education programs in the country to prepare nurses for specialized work. The TNCC (Trauma Nursing Core Course) widely used and accepted internationally has not been fielded in this country. Therefore a need was indicated for action to improve the quality of trauma nursing care in Thailand.

In September 2008, the Thai Trauma Nurses Network's quarterly meeting focused on the quality of trauma care. It was discussed whether the CNPG could be the basis

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for an outcome measurement of nursing competency. The network is composed of head nurses of emergency facilities around the country. They brought daily observations to the meeting following the CNPG implementation in early 2007, and reached the conclusion that many ER nurses were not using the guidelines effectively. The nurses needed to improve their skills in assessing airways and monitoring evolving life-threatening conditions. Nurses appeared to lack general knowledge and clarity in their roles. They tended to make decisions based on familiar practices, not based on the guidelines. Their monitoring of injured patients was not continuous, although the CNPG required continuity. The influential factors or reasons why ER nurses were not implementing these guidelines were unknown. Addressing this problem was determined to be a matter of great urgency and importance. Thus, a major study of nursing competence was undertaken. Reported here are the results of a qualitative study undertaken as part of this larger research effort. The purpose of this study was to identify barriers associated with implementing the guidelines, and to explore whether the nurses perceived the CNPG to be useful in their daily work.

2. Materials and methods

In this qualitative descriptive study, open-ended questions sought the perceptions and opinions of the participants as part of a detailed self-evaluation of their own performance after using the CNPG for one month. Staff nurses were recruited from 12 hospitals across Thailand: 5 trauma center Level-I hospitals, 4 regional hospitals, 2 community hospitals, and 1 rural hospital. The research was approved by the Human Rights for Research on Human Beings committees at each participating hospital. Participants in the larger study were asked to complete two open-ended questions at the end of the competency survey. As described below, 83 nurses in these hospitals provided responses to the questions.

2.1. Sample and data collection procedures

The larger study sample included 164 registered nurses with at least one year of experience in resuscitation of injured patients, and who worked in pre-set resuscitation teams in their hospitals (Table 1). Every member of the team had to volunteer for the study in order for that hospital site to be included in the study. Staff nurses were provided with information about the purpose and method of the study, the fact that participation was voluntary, and that they had the right to withdraw from the research at any time. Written consent was obtained, which clarified that results were confidential and not to be shared with management. The participants received a two-hour lecture detailing the key components of the guidelines, including: (1) airway, breathing, and circulation assessment; (2) ineffective airway and circulation management; (3) trauma resuscitation principles; (4) assisting in endotracheal intubation; (5) chest drainage systems; and (6) the critical role of continuous monitoring and recording. Every participant received a copy of the CNPG.

Each resuscitation team completed a group evaluation of their resuscitation management performance as soon as possible after at least one trauma patient event during a three-month window from November 2007 to January 2008. Some teams completed several forms, leading to a total of 221 patient encounters evaluated. As part of the evaluation, nurses were invited to respond to two open-ended questions which explored the barriers and usefulness of the CNPG. Nurses completed these open-ended comments voluntarily on their own. Participants placed their completed surveys into sealed envelopes. When everyone on the team had completed the forms, all were mailed directly to the primary author. Participant anonymity was assured through de-identified coding. Of the 221 evaluation surveys returned, 83 had comments. Thus, the sample for this qualitative descriptive study was 83 nurse surveys with 1-2 narrative comments on each, for a total of 167 discrete comments.

2.2. Methods

Qualitative content analysis was used to analyze the transcripts of the written responses to the open-ended questions. These transcripts were separated from the associated evaluation surveys. In doing so, the researcher could gain an understanding of what the participants wanted to express, while preserving their anonymity. With concern for trustworthiness, the researchers reviewed and recognized the comments from participants as recorded research findings (Graneheim and Lundman, 2004). No comments were deleted (Endacott et al., 2008). The content meaning derived from two questions seeking staff nurses' input on the usefulness of the CNPG and the issues concerning implementation were uncovered by the authors during several reviews of the data as a team. Responses were originally written in Thai language. All responses were translated into English by the primary author for analysis by all three authors, one of whom is an expert in qualitative research, and two of whom are experts in ER trauma care. Thus the researchers possessed the background necessary to interpret the content of participant responses (Speziale and Carpenter, 2003).

2.3. Data analysis

Data analysis was a hands-on process (Speziale and Carpenter, 2003; Graneheim and Lundman, 2004) that included four steps: (1) reading and rereading the written

responses for discernment of meaning; (2) reviewing the transcripts to identify the essence of meaning; (3) grouping of themes; and (4) refinement of the groups to identify redundant themes. Results are reported in the following discussion, illustrated by brief quotations from actual data. Most responses were brief but contained information essential to understanding the experiences and ideas of Thai trauma nurses regarding the new practice guidelines.

3. Results

Demographic analysis of the larger study is helpful in placing the qualitative analysis in context. Overall, a total of 164 nurses from 12 hospitals participated, including trauma nurse coordinators (n = 5; 3%), and staff nurses (n = 159; 97%). Sixty-four percent (n = 105) of the participants had more than 5 years of ER trauma experience (Table 1). During the study period, 221 injured patients with life-threatening conditions were treated by these nurses and their teams. The average CRAMS (circulation, respiration, abdominal/thoracic, motor and speech) score was 7.0, indicating that all were major trauma patients (Champion, 2002).

The mean age was 33.5 years for all patients, of whom 83% were male. Head trauma was the most prevalent injury (48.8%), followed by head trauma combined with chest and abdominal trauma (32.6%), and multiple traumas (18.6%). Most of the resuscitation teams had three nurses per patient, but ranged from 1-6 nurses. Rural hospitals averaged one RN in the resuscitation area, while trauma centers at level-I hospitals had 6. The average trauma resuscitation time was 67.11 min.

Data analyzed for the qualitative descriptive study (included as described earlier) were received from 83 participants. Three major themes were identified from the analysis: (1) Using the guidelines reflects good practice; (2) Nurses do not always follow the guidelines; and (3) System problems limit use.

3.1. Theme one: Using the guidelines reflects good practice

ER nurses showed a strong positive response to the intent of the CNPG. They believed the guidelines foster good practice. The CNPG directs holistic resuscitation practices, and were thought by these nurses to be essential to save patients in life-threatening situations. Two supportive subthemes were evident: (1) the guidelines help standardize care; and (2) improve outcomes.

The guidelines help standardize care. Nurses across all levels of hospitals reported that the CNPG help standardize care. Resuscitation of injured patients involves two core competencies: resuscitating the patient during an acute life-threatening situation, and solving problems that arise during and after the stabilization efforts. ER nurses believed that using the guidelines encouraged them to raise their skill levels in assessment and documentation. Many nurses identified that they could better personally assess signs and symptoms. The nurses referred to monitoring patients systematically and continuously. One nurse concluded: "(I now)…can record inclusively and completely." The nurses understood that the guidelines help standardize care and facilitated their reaching a higher standard of practice. They commented on their ability to keep patients safe, and believed patients received quality care without experiencing complications. Nurses reported the guidelines helped them manage life-threatening injuries better than before. One nurse stated: "The patient receives continuous and complete monitoring and nursing care." Finally, nurses pointed to the use of evidence-based practice, stating that with CNPG: "We can use evidence-based practice in resuscitation management."

Improve outcomes. Many participants raised the issue of improved outcomes of trauma nursing care. Some participants linked the mortality rate and timeliness of resuscitation as indicators of their quality of care. According to the responses of nurses from trauma center level-I, regional, and community hospitals, nurses using the CNPG perceived that the mortality rate in their units had decreased in relation to "timely" and "rapid" rescue. One nurse expressed: "(My team)… can save the injured patient from a life-threatening situation, assess the patient inclusively and completely, and can consult the physician on time."

Another participant reported a difference in patient transfers: "(We)… can rapidly transfer the patient to the OR (operating room) within 40 minutes." Transfer is a frequent occurrence in trauma care; thus this comment was especially pertinent. No comments on this situation were received from nurses practicing in rural hospitals. It is unknown whether the absence of comments had any particular significance, or whether it is due to the 100% transfer rate from rural to regional or trauma center level-I hospitals.

ER nurses who worked in trauma center level-I and regional hospitals expressed that the guidelines facilitated working with the multidisciplinary team. Typically community and rural nurses do not routinely work in multidisciplinary teams. The CNPG allowed nurses to follow the guidelines in resuscitation management, such as following ATLS within a multiple disciplinary team. One nurse commented that in using the guidelines her team: "… can provide appropriate care at the appropriate place and time." Some comments were worded to indicate the entire team of nurses were responding, not just an individual nurse. In these cases, the team concluded that the guidelines were worthwhile because they pushed them forward, giving them greater awareness of patient outcomes.

Various aspects of training were considered to be important. ER nurses believed basic and continuing education in their specialty could further develop the trauma

system. Standardized training in trauma care would improve collaboration. These trauma nurses echoed the comments previously made by the ER head nurse in the Trauma Nurses Network regarding the general lack of training. The participants indicated a need for a training course on the guidelines, saying: "(We)… need to learn how to optimize patient care."

ER nurses felt that they needed specialty courses to enhance their working not only in their unit, but also within their network. They believed the courses should be provided in a same trauma care at every level of hospital. This would especially help in the case of transferring an injured patient for higher care. An example was a nurse who, in referring to goals of nursing care, commented: "(We)… perform nursing care with the same goal: to manage a life-threatened injured patient."

The comments grouped under the first theme showed a need for achieving improved practices. They desired to work with a multidisciplinary team. ER nurses recognized that they needed to attain a higher standard of nursing knowledge and skills. They wished those skills to be taught using a common set of communication phrases and terminology across every level of hospital care. The participants perceived that the guidelines helped them to provide timely, definitive and appropriate care to the critically injured patient; moreover, they could apply evidence-based practice, which is the standard of trauma nursing care worldwide.

3.2. Theme two: Nurses do not always follow the guidelines

Although ER nurses consistently noted that using the CNPG was good practice and desirable for improving patient care outcomes, many nurses nevertheless indicated they did not follow the guidelines! The comments were clustered into two subthemes: (1) we are not doing it; and (2) patient factors interfere.

We are not doing it. Nurses do not always follow the guidelines. Their reasons included: they assumed someone else will do it; it is not always perceived to be their responsibility; or, following the CNPG is a repetitious activity.

Someone else will do it. Many personnel participate on a resuscitation team: physicians, nurses, and allied health care providers working together to provide optimal care with timeliness. The responses of some ER nurses for not following the guidelines indicated reliance on the larger team. For example, one stated: "There are many nurses; someone else may do it (assess and monitor)."Another nurse pointed to previous care received by the patient, stating: "The patient was transferred from another hospital … someone else may have done it (assess and manage)." These comments demonstrated apparent overlap, confusion, or misconception by ER nurses. They implied that treatment was linear, and viewed the guidelines in this way. In spite of assessment and reassessment, initial and essential care for the critically injured patient who experienced resuscitation was inconsistent, and guidelines here were not followed.

It is not always perceived to be their responsibility. Working with the multidisciplinary team was inconsistent and guidelines were not followed. Specific roles and responsibilities were assigned to the nurses who worked in the resuscitation team. Complete recording of nursing activities and providing information to the patient's family was always done by the charge nurse or trauma nurse coordinator. ER nurses thought that one reason they did not always follow the guidelines was because of this part of the process (recording). One nurse commented: "It is the charge nurse's responsibility…or the trauma nurse coordinator's responsibility (to record or provide information), not my responsibility." Others mentioned that tasks such as assessment and monitoring were actions expected of another team member: "It is not my responsibility; the physician does it (assess breath sounds)." Another reported: "Someone may do it (assess airway, or monitor signs of hypoxemia or hypovolemic shock). …It is not my responsibility." The piece meal tasks did not always add up to a full adherence to the CNPG. The CNPG stresses early identification and rapid definite care measures for saving the life of the patient. These nurses apparently intended to work only at the specific tasks considered to be their immediate responsibility. They did not work as a unified team. They did not recognize the assignment of roles among members of the resuscitation team also came with a collective accountability.

"It is repetitious activity." ER nurses perceived that the CNPG were only for use in initial trauma assessment and intervention. Once a plan of resuscitation was initiated, maintaining the prescribed protocol for continuous evaluation was considered repetitive and unnecessary. A few nurses felt that it was not always appropriate to use the guidelines in atypical or unusual cases. They believed that the guidelines were not prescriptive, but rather provided only general directives. This perception, however, was rare. Others looked upon the guidelines as restrictive to their practice, as illustrated by the comments of one nurse who stated: "It is repeated assessment. If BP (blood pressure) has not dropped it should not be monitored every 15 minutes." Another commented about the many expected tasks of ER nurses, saying: "There is repetition of activities (monitoring)… (We) have a lot of work…doing other tasks."

These comments lead one to believe these nurses did not recognize that situations can change after initial measures are taken, even when the patient appears stable. This misperception underscores the lack of training and knowledge concerning evolving medical situations. Because ER visits are short and episodic, these ER nurses might fail to appreciate that a patient's condition typically changes over time, and that continuous follow-up assessments are

required.

Patient factors interfere. In a second subtheme to not following through with CNPG, patient factors were identified as interfering. Certain patient characteristics (these were major trauma patients) such as being uncooperative, or poorly educated, were identified as resulting in patients failing to contribute important details to assist nurses in patient care. Also, some critically injured patients may have initially received optimal care and hence their condition was considered to have stabilized. A physiologically compensated state with subtle yet-undetected life-threatening issues sometimes leads untrained personal to believe everything is OK. Some ER nurses perceived this compensated state of the patient with complacency, which dissuaded them from following the guidelines. One nurse reported: "The patient is conscious… can breathe… has patent airway… O_2 saturation is 96%... and he has no problem." Therefore, she implied, no further action was indicated.

In the case of patients transferred from another hospital, ER nurses recognized that the patient had received appropriate care enabling them to become stable enough for transport. Some ER nurses subsequently did not follow the guidelines upon receipt of such a patient. One nurse reflected: "The patient does not need treatment (endotracheal tube insertion, or intercostal chest drainage)… he received trauma treatment from a community hospital." They see no need to repeat an assessment or to start the protocol if it had been done elsewhere. In other situations nurses reported finding evidence from the patients to support their reasons for not following the guidelines. These reported situations indicated a serious lack of compliance with CNPG and a potentially high risk for stabilized trauma patients to become decompensate before anyone recognizes their changing status.

3.3. Theme three: System problems limit use

The final theme was identification of system problems that prevented ER nurses from using the CNPG. Errors in ER care occurred when the system was stressed or overloaded. The nurses among all levels of hospitals raised the issue of insufficiency of resources - staff and supplies - which prevented them from following the guidelines completely. The nurses noted that the number of nurses was fixed, a situation which led to not following the guidelines, especially the timelines for intervention. One nurse noted: "There are a lot of patients, so (we) cannot provide care as fast as is needed."

ER nurses described strategies they used to try to follow the guidelines in their work. Insufficiency of staffing and supplies could block guideline implementation due to critically injured patients arriving at unpredictable times, or often arriving in the ER at the same time. Equipment and supplies were limited in these situations. Insufficient equipment was a frequently cited reason for not following the guidelines completely. For example, one nurse commented: "There are no blankets… The machine is out of order."

Communication was also a factor in guideline implementation problems. This situation generally reflected work overload. Additionally, inattentiveness because of distraction or exhaustion contributed to nurses' failure to follow the practices. ER nurses expressed several reasons for not following the guidelines completely: non-urgent patients; arrival of both trauma and non-trauma patients at the same time; and a need to "speed up work." The ER nurses indicated that they were routinely quite busy during their hours of duty; expectations outpaced ability to meet all demands. There was often pressure to complete their work swiftly, so they skipped steps. These constraints can adversely affect performance and ultimately lead to team failure.

An effective system of resuscitation care is dynamic. Guidelines facilitate ER nurses in assessing, managing, and monitoring trauma patients. The CNPG enable nurses to optimally treat patients with life-threatening conditions. However, good organization and communication among team members is an important factor in the treatment of injured patients and ability to implement the guidelines. When teamwork fails, the outcomes are worse. Good outcomes are also impeded by staff and supply issues. The results of this analysis of narrative comments on utilization and barriers demonstrate the struggles experienced by ER nurses in their work.

4. Discussion

This research used open-ended questions to identify the factors influencing how staff nurses perceived the CNPG and why ER nurses were not consistently implementing these guidelines. While the opinions from administrators have value, in this research the responses of the staff nurses are deeply insightful, and somewhat unanticipated. Their truthful answers provide a deeper understanding of their experiences, not perceived by the managers who attend the Trauma Network meetings. It is important to note that in Thai society, the typical workplace practice and culture dictates that employees often tell the ER head nurse/supervisor what the ER head nurse/supervisor wants to hear. This situation may influence the credibility of the study, as it could preclude member checking (Sandelowski, 1998). The power relationship can could impair the ability of a staff nurse to answer truthfully in the presence of her/his ER head nurse/supervisor. Traditional member checking to help establish credibility (Sandelowski, 1998) cannot occur in this context and situation. Comments and responses cannot be linked back to a specific hospital or nurse, due to the

potential backlash associated with negative responses being attributed to particular nurses or facilities. Because these staff nurses felt their de-identified responses would be kept confidential, they were empowered to share their true opinions. A sense of trust was established by the primary author in the consenting process. Therefore, these responses ring true as very credible.

As shown in Table 2, 167 responses were divided into two categories which typified the usefulness and barriers of using the CNPG. Half of the comments stated that the guidelines were useful. An unstable, traumatically injured patient often presents with an incomplete history. The guidelines were said to be useful in daily work since they were easy to use and systematically assisted in assessing and monitoring a patient. This finding is consistent with the literature showing that guidelines are considered to be effective, and a basis for good practice in trauma care through evidence-based practice (Manchikanti, 2008).

Guidelines are reported to facilitate nurses working together throughout their networks (Cothern et al., 2007), another finding supported by this study. Furthermore, both in this research and in the literature, guidelines were shown to be useful in providing a basis for transfer to higher-level care (Markovchick and Moore, 2007; Culica and Aday, 2008). The current study findings are in accordance with standardized trauma care of the World Health Organization (2004), the American College of Surgeons (2006), and a variety of other studies worldwide (Westhoff et al., 2003; Blackwell et al., 2003; Mashiko, 2005; Mock et al., 2006).

As a result of implementation of the CNPG, it is hoped that patient mortality will be reduced in Thailand. This study, however, did not measure those outcomes. The barriers to guideline implementation revealed that ER nurses lacked knowledge and awareness of basic trauma care. A gap existed between "knowing" and "doing," presenting a barrier to optimal care (Cochrane et al., 2007). Sometimes ER nurses did not adhere to evidence-based practices. This evidence-based practice gap has the potential to adversely affect patient outcomes, as demonstrated in the literature (Currey and Botti, 2006).

The CNPG are recognized as having been implemented in early 2007 without adequate orientation and education. Lessons learned include the need for additional training courses on the guidelines beyond the two hours provided during the study plus reinforcing updates. That is to say, ER nurses should take basic and refresher courses on specialized skills in caring for trauma patients, and should undergo team training at least every four years, as Casey et al. have suggested (2008). Thai nurses must be given an adequate educational background to understand the complexities of trauma care and the subtleties of assessments that herald changing patient conditions.

Critically injured patients will certainly benefit from the care of experienced, knowledgeable and competent nurses on a trauma resuscitation team (Gunnels and Gunnels, 2001). Trauma nurse training is very important for the proper care of trauma patients, in order to ensure organized care (Edlich et al., 2004) and facilitate collaboration (Markovchick and Moore, 2007). Previous research has shown that trained trauma teams are associated with improved rates of survival (Lu et al., 2000), and that utilizing evidence-based guidelines ensures effective and efficient systems of care in level-I and -II trauma centers (MacKenzie et al., 2003).

A systematic review indicates that unlimited ER patient volume, lack of staff, and insufficient supplies are the primary systemic barriers to implementation of guidelines (Cochrane et al., 2007), a finding repeated in this study. These factors could lead to distraction or work overload, which are among the major causes of teamwork failure (Cosby, 2003). Additionally, systemic issues of insufficient staff, unlimited patients, and inadequate supplies should be addressed. Optimal outcomes cannot occur without appropriate resources.

Clearly, Thai ER nurses' compliance with the guidelines must be improved. Since nurses tend to make decisions based on practices with which they are familiar, they require professional development and support to ensure that their practices are based on current information; however, they must also be given the supplies and resources to implement quality care.

5. Implications and Recommendations

This descriptive qualitative analysis of narrative data provided by 83 Thai ER nurses revealed a variety of barriers limiting CNPG adherence. Many reasons were cited for not following the guidelines: someone else will do it; it is not my responsibility; the patient received it already; or the patient does not need it. A plan to correct these issues involves two important stages: (1) achieving the goal of disseminating guideline information; and (2) reinforcing the guidelines in the practice setting. First, a standardized training course with the objective of showing how the guidelines can provide better trauma care is necessary for the successful use of the guidelines in the trauma system in Thailand. Every nurse must understand it is his or her responsibility to work toward the guideline goals of better patient outcomes. After this training the trauma team leaders may encourage the team not to follow the guidelines rigidly, but to use their judgment in following the steps of the guidelines. Second, the trauma team leader must ensure effective communication and organized teamwork among the care team members. This will require practice and a culture of open sharing with constructive criticism, but also frequent recognition of a job well done. Every member needs to understand their individual job, but must also validate that the guidelines are completed. Thirdly, the trauma team must be provided resources in order to provide optimal care. This may include plans to call in extra staff, caches of supplies to use in large volume scenarios, and establishing higher levels of typical staff on duty. Nurses should be provided the time and opportunity to provide quality care, not just hasty and inadequate, partial attempts to follow the guidelines. Consideration of these implementation strategies are of critical importance, and would have a positive impact on ER

nurses' performance and allow better outcomes of care.

Conflict of interest statement

We declare that we have no conflict of interest.

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