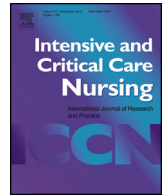




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Original article

The clinical surveillance process as carried out by expert nurses in a critical care context: A theoretical explanation

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ABSTRACT

Background: Nursing Science presents surveillance as an indispensable component of patient safety. Although the literature defines surveillance fully, its implementation is not well understood.

Aim: This research aims to formulate a theoretical explanation of the surveillance process that expert nurses employ in critical care.

Method: To develop the theoretical explanation for the surveillance process of critical care nurses, Strauss and Corbin's (1998) grounded theory approach and Think Aloud Method (Fonteyn et al., 1993) were used with fifteen expert critical care nurses ($n = 15$).

Results: Surveillance in critical care is a continual process of collaborative vigilance that starts with the thought process and behavior related to data collection, analysis, and interpretation. The surveillance process comprises five key elements: 1) Managing the risk of complications; 2) Collecting data; 3) Detecting a problem; 4) Making a decision; and 5) Working in synergy.

Conclusion: In developing a theoretical explanation, this research leads to an understanding of the surveillance process performed by expert nurses in a critical care context.

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Implications for clinical practice

- Critical care nurses must be vigilant in all of their actions in order to manage the risk of complications.
- Clinical surveillance is a collective process which is part of the work in synergy with the people of the nurse's entourage.
- The nurse's expertise is a determining factor to ensure safe clinical surveillance in critical care units.

Introduction

The patient hospitalized in a critical care unit often experiences many sources of stress, making his or her health condition unstable or at risk of instability (Curley, 1998; Morton and Fontaine, 2013). In addition to stresses caused by pain, sedation, surgical procedures, mechanical ventilation, and/or the severity of the disease, other physiological and psychological stressors can have an influence on the patient's condition (Wenham and Pittard, 2009). Sole et al. (2013) mention that stressors such as difficulty communicating, physical constraints, pain, or fear of dying are omnipresent in critical care. Critical care stressors therefore put the patient at

risk of developing complications that are not necessarily related to his or her initial condition and which, in some cases, may even jeopardize the person's survival. Through the clinical surveillance they carry out, critical care nurses aim to detect the development of these complications.

In the literature, clinical surveillance has been defined as an intervention, activity, or process. Dougherty (1999) mentions that clinical surveillance is a behavioral and cognitive process of systematically gathering information used to make a judgment on the health situation of a patient. Some authors (Bulechek et al., 2013; Dougherty, 1999) mention that it is during clinical surveillance that nurses recognize changes in the patient's health status and make a decision regarding these changes. Clinical surveillance is therefore considered as an essential component to ensure the patient's safety (OIIQ, 2016), especially in critical care when the patient is unstable or at risk of instability (Milhomme, 2016).

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Despite the importance given to it in nursing, clinical surveillance is very seldom addressed from an empirical point of view. Generally, writings instead converge on the importance of patient surveillance to ensure patient safety. Some authors have nevertheless focused their reflection on the concept of surveillance (Kutney-Lee et al., 2009; Shever, 2011) or have analyzed it (Dresser, 2012; Kelly, 2010) in order to better define it. Despite these studies, it is still difficult to explain how nurses carry out clinical surveillance when they take into care a patient who is unstable or at risk of instability.

Exploratory and descriptive studies related to data collection, clinical reasoning, and decision-making generally provide the best insight into the behavioral and cognitive process underpinning clinical surveillance. While authors such as Hedberg and Säterlund Larsson (2003), McKnight (2006), and Edwards and Donner (2007) describe the sources and means of information used by the nurse during data collection, others have addressed the characteristics of patients presenting a problem (Cioffi, 2000; Cioffi et al., 2009). Some researchers have also focused their reflection on the nurses' reasoning strategies when they detect a problem or make decisions (Aitken, 2003; Ramezani-Badr et al., 2009). Furthermore, several of these authors highlight the contribution of the nurses' experience or expertise in their clinical reasoning or decision-making when they detect a problem (Aitken et al., 2009; Hoffman et al., 2009).

In addition to the importance of experience or expertise, Simmons (2010) and Tanner (2006) point out that context plays a significant role in nurses' reasoning. Given the mission of critical care units, nurses receive patients with a high risk of complications, requiring close clinical surveillance by attending nurses. Nurses who work in Critical Care are expected to make higher levels of clinical decisions because of the levels of patient acuity. Subsequently, they develop an ability to reason from a hypo-deductive perspective using different forms of knowledge and data. Finally, there are few studies related to data collection, clinical reasoning, and decision-making conducted in critical care and they do not provide satisfactory answers, an important reason why this study was carried out.

Aim

The aim of this study is to develop a theoretical explanation of the clinical surveillance process by expert nurses in a critical care context in order to understand how the process unfolds.

Method

Research design

The Strauss and Corbin (1998) grounded theory approach was used to provide a theoretical understanding of the unfolding of the clinical surveillance process and to achieve the study's goal. Grounded theory is a qualitative approach of inductive research in which a researcher provides theoretical explanations in connection with a social process, action, or interaction (Creswell, 2013). It is justified when the goal of the research is to provide a framework or theory explaining human behavior within a given context (Glaser and Strauss, 1967).

Ethical considerations

This project was submitted to and accepted by the ethics and research committee of the hospital center where the research took place (Certificate C14-06-2046). Authorization to carry out the study was received from the Direction of nursing and from the heads of the ICU. All participants received both oral and written

Table 1
Profile of Study Participants (n = 15).

Characteristics		n
Gender	Men	3
	Women	12
Age (years)	25 to 30	5
	31 to 40	5
	41 to 50	4
	51 and +	1
Nursing experience (years)	5 to 10	5
	11 to 15	5
	16 to 20	3
	21 and +	2
Critical care nursing experience (years)	Less than 5	1
	5 to 10	10
	11 to 15	1
	16 to 20	2
	21 and +	1

Table 2
Areas of specialization of participants (n = 15).

Medical and surgical intensive care/Areas of specialization	Participants ^{ab}
Vascular surgery	02, 04, 05, 06, 08
Neurology and traumatology	03, 07, 09, 10
Nephrology and oncology	11, 13, 14, 15
Various issues/without a specialization	01, 12

^a Observed participants are presented in bold.

information about the study and gave their informed consent to participate. Confidentiality and anonymity were ensured by assigning code numbers to the participants. The data was stored and locked safely in an area accessible to the researchers only.

Setting and participants

Participants were recruited in four medical and surgical intensive care units of a Canadian university health center. In total, 15 nurses, all holding an undergraduate degree in nursing, agreed to participate in the study (Table 1). Among them, 14 nurses had at least 5 years of recent experience in a medical and surgical intensive care unit or in specialized intensive care (Table 2), and a single nurse had only 3 years of experience in intensive care. Although the latter did not specifically meet the expert criteria as described by Benner (1984), this participant was included in the study as she had 10 years of experience in critical care, including 7 years in the field of emergency care.

Data collection

Data collection took place between August 2014 and October 2015. Each nurse was invited to participate in three interviews lasting 30–45 min per interview. Two interviews consisted of a semi-directed individual interview (interviews 1 and 3), and the other was based on the Think Aloud Method (TAM) (interview 2). In order to provide an overview of the context in which the participants carried out clinical surveillance, observation periods were also planned in each care unit. In total, four participant observation periods of eight hours each were carried out, i.e. one per care setting.

An initial 10-question interview guide was developed for purposes of collecting data. Two vignettes, representing case histories encountered in critical care, were used for the Think Aloud Method. Widely used in the literature studies, the think aloud method has enriched and confirmed the data collected by other data collection methods for the cognitive aspect of the clinical surveillance process. Although it could be performed in clinical settings, or in real-life situations, this method could also be carried out using simulations

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