

# CONCEPTIONS OF NURSES WHO WORK IN A GENERAL INTENSIVE CARE UNIT REGARDING SEPSIS\*

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**ABSTRACT:** This exploratory study aimed to ascertain the understanding of six nurses of a General Intensive Care Unit regarding sepsis. The data were collected in the months of April and May 2012 using a structured questionnaire, the Discourse of the Collective Subject technique being used for analyzing the data. The results revealed the nurses' knowledge regarding understanding of sepsis and the identification of clinical manifestations related to this in the professional practice, as well as the professional attitudes based in this knowledge, causing the emergence of intensive nursing care which is interlinked with the bundles of the Surviving Sepsis Campaign. The importance is emphasized of the nurse in the early recognition of the different clinical spectrums relating to sepsis – thus supporting a rapid definition of therapeutic plans and appropriate strategies for the monitoring and care of seriously ill patients.

**DESCRIPTORS:** Nursing; Sepsis; Intensive care units; Patient-centered care.

## CONCEPÇÕES DE ENFERMEIROS QUE ATUAM EM UNIDADE DE TERAPIA INTENSIVA GERAL SOBRE SEPSE

**RESUMO:** Pesquisa exploratória que visou verificar o entendimento de seis enfermeiros de uma Unidade de Terapia Intensiva Geral em relação à sepse. Os dados foram coletados nos meses de abril e maio de 2012 com um formulário estruturado, sendo utilizada a técnica do Discurso do Sujeito Coletivo para a análise dos dados. Os resultados revelaram conhecimento dos enfermeiros para o entendimento da sepse e a identificação de manifestações clínicas a ela relacionadas na prática profissional, bem como as atitudes profissionais embasadas nesse conhecimento, fazendo emergir cuidados intensivos de enfermagem que se entrelaçam com os bundles da Campanha de Sobrevivência à Sepse. Ressalta-se a importância do enfermeiro no reconhecimento precoce dos diferentes espectros clínicos relativos à sepse, subsidiando, dessa maneira, uma definição rápida de planos terapêuticos e estratégias adequadas de monitorização e cuidado dos pacientes graves.

**DESCRIPTORES:** Enfermagem; Sepse; Unidades de terapia intensiva; Cuidados críticos; Assistência centrada no paciente.

## CONCEPCIONES DE ENFERMEROS QUE ACTUAN EN UNIDAD DE TERAPIA INTENSIVA GENERAL ACERCA DE SEPSIS

**RESUMEN:** Investigación exploratoria cuyo propósito fue verificar el entendimiento de seis enfermeros de una Unidad de Terapia Intensiva General acerca de sepsis. Los datos fueron obtenidos en los meses de abril y mayo de 2012 con un formulario estructurado, siendo utilizada la técnica del Discurso del Sujeto Colectivo para el análisis de los datos. Los resultados revelaron conocimiento de los enfermeros para el entendimiento de la sepsis y la identificación de manifestaciones clínicas a ella relacionadas en la práctica profesional, así como las actitudes profesionales embasadas en ese conocimiento, haciendo emerger cuidados intensivos de enfermería que se entrelazan con los bundles de la Campaña de Supervivencia a la Sepsis. Se destaca la importancia del enfermero en el reconocimiento precoz de los distintos espectros clínicos referentes a la sepsis, subsidiando, de esa forma, una definición rápida de planes terapéuticos y estrategias adecuadas de monitorización y cuidado de los pacientes graves.

**DESCRIPTORES:** Enfermería; Sepsis; Unidades de Terapia Intensiva; Cuidados críticos; Asistencia centrada en paciente.

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## INTRODUCTION

Sepsis represents one of the largest causes of hospitalization and mortality in the Intensive Care Units (ICU) worldwide<sup>(1-2)</sup>, and is directly associated with the severe systemic inflammatory responses which are secondary to infection, thus characterizing a clinical syndrome related to the multiple possibilities of a complex interaction between the infecting microorganism and the immune, pro-inflammatory and pro-coagulant responses of the host<sup>(3)</sup>.

In spite of the availability of modern diagnostic resources, the use of broad-spectrum antibiotics, bedside hemodynamic monitoring, intensive metabolic control and the new therapeutic approaches, sepsis is manifested in distinct spectrums of seriousness as time passes (sepsis, severe sepsis, septic shock and dysfunction of multiple organs and systems) which, if not promptly diagnosed and treated, represent high annual costs in its treatment<sup>(4-6)</sup>.

In the intensive care environment, there is an increased risk of developing this due to the various factors relevant for its triggering, such as the predisposing diseases of the critically-ill patient and the degree of severity; the prolonged and debilitating length of inpatient treatment, principally in elderly patients; the accentuated prevalence of bacterial resistance; the various invasive procedures, such as endotracheal intubation and the need for mechanical ventilation, intravascular access, catheterization and other interventions which cause the organism's natural barriers to be breached.

In the Brazilian scenario, epidemiological data regarding the characteristics of patients with sepsis in ICUs began with the Brazilian Sepsis Epidemiological Study, which evidenced the important incidence of the illness and the progressive increase in mortality according to stages of progression, with rates of 33.9% in critically-ill patients with sepsis; 46.9% among those with severe sepsis and 52.2% in patients with septic shock<sup>(7)</sup>. Subsequently, a multicentric study involving different regions of Brazil sought to better understand the epidemiology of sepsis and evidenced a rate of incidence of 16.7%, with global mortality of 46.6%; when separated into sepsis, severe sepsis and septic shock, these subgroups presented mortality rates of 16.7%, 34.4%, and 65.3%, respectively<sup>(8)</sup>.

In this context, it is understood that rapid and appropriate treatment is crucial for success

in approaching the septic patient, thus reducing the incidence of organ dysfunctions, through the important care role of each professional in the continuous search for the early detection of hospitalized patients in the initial phase of the syndrome<sup>(4)</sup>. However, in dealing with these seriously-ill patients for long periods of time each day, it falls to the nurse to plan, coordinate and implement actions which promote the early recognition of the different clinical spectrums relating to sepsis not only through the diagnosis, but also through the rapid defining of therapeutic plans and monitoring strategies, thus improving these patients' prognosis.

The interest in undertaking this study arose with the aim of emphasizing the important role of the intensive care nurse, who must continuously assess and identify unmet basic human needs by the bedside in ICU in order to guide the early provision of nursing care to septic patients, which still occurs *asystematically*<sup>(9)</sup> and reflects the scarcity of publications in this area of intensive care.

In the attempt to contribute to reflection on the importance of individualized and systemic nursing care for septic patients, which favors the reduction of their mortality in ICU, this study was structured with the objective of ascertaining the understanding of nurses of a General Intensive Care Unit regarding sepsis.

## METHOD

This is exploratory research with a qualitative character, undertaken with all the nurses working in a General ICU of the state public network in the municipality of João Pessoa in the Brazilian state of Paraíba, these being six participants identified using the letter N (Nurse), followed by the sequential number of inclusion in the study (N1, N2, N3, N4, N5 and N6).

Data collection took place in April and May 2012, the inclusion criteria being: to have worked professionally in the area of intensive care for a length of time equal or superior to six months. In accordance with the ethical precepts stipulated for research involving human beings<sup>(10)</sup>, the project was approved by the Research Ethics Committee of the Nova Esperança Faculties of Nursing and Medicine under CAAE N.01580412.5.00005179, receiving a favorable decision under Protocol N. 13/2012.

During the study, responses were requested for the following questions: In accordance with

your understanding, describe what sepsis is. Based on your care experience in ICU, what are the manifestations of septic syndrome which you identify in critically-ill patients? Considering your experience, describe the nursing interventions which you undertake when faced with a patient with sepsis.

The method of analysis was the Discourse of the Collective Subject (DCS), a methodological procedure which makes use of the discursive strategy in order to throw light on a given social representation of a specific phenomena<sup>(11)</sup>.

With the aim of promoting the collective account of the nurses of this study, three methodological figures were adopted: Key Expressions (KE); Central Ideas (CI) and, finally, the Discourse of the Collective Subject (DCS). The KE encompass excerpts or literal transcriptions of the discourse which reveal the essence of the thought of each individual, or, more precisely, of the discursive content of the segments into which the account is divided, which must be emphasized by the researcher. The CI are names or linguistic expressions which in summarized form, precisely and reliably reveal and describe the meaning of each one of the discourses analyzed and of each homogenous set of KE which, in their turn, give rise to the DCS<sup>(11)</sup>.

In order to elucidate this study's central ideas, the use was made of the construction of a conceptual map in order to demonstrate the conceptions and intensive nursing care for the septic patient. To this end, Cmap Tools version 5.03 was used, software developed and distributed free of charge by the Institute for Human Machine Cognition of the University of West Florida<sup>(12)</sup>, which allows the user to construct conceptual relationship models, represented by diagrams of meanings and significant relationships between concepts, the aim of which is to demonstrate the organization of the knowledge.

## RESULTS

Regarding the six nurses who participated in the study, age varied between 20 and 40 years old, with a predominance of females and length of service between one and 10 years. Among these nurses, furthermore, five had a length of service which was significantly recent in the area of intensive care, not exceeding five years, which reflects the situation that only one nurse had a speciality related to care for the seriously-ill patient (Urgent and Emergency Nursing).

In the analysis of the accounts, the methodological figures of language were used, with the KE of each question being identified and underlined; the CI with the same meaning, equivalent meaning or even complementary meanings were identified and grouped, in order to construct the DCS itself. Thus, the themes and CI which emerged from the nurses' accounts are presented in Table 1. With the aim of demonstrating the conceptions and intensive nursing care for the septic patient, a conceptual map was developed, presented in Figure 1.

Based on the initial theme and the guiding question "In accordance with your understanding, describe what sepsis is", CI1 allowed the construction of DCS1:

*Sepsis is an inflammatory response to infection, caused by pathogenic germs, and compromises various organs of the human body.* (DCS1)

In the sequence of the analysis of the accounts of this same theme in relation to the guiding question: "Based on your care experience in ICU, what are the manifestations of septic syndrome which you identify in the critically-ill patients?" CI2 emerged, which evidenced the nurses' perception in DCS2:

*Hypothermia or hyperthermia, tachycardia, hypotension, respiratory discomfort, alteration*

Table 01 – Themes and central ideas. João Pessoa, PB, Brazil, 2012

THEMES	CI
Knowledge required in the professional practice	1: Understanding regarding sepsis
	2: Identification of clinical manifestations related to sepsis
Care attitudes required in the professional practice	3: Intensive nursing care for the septic patient

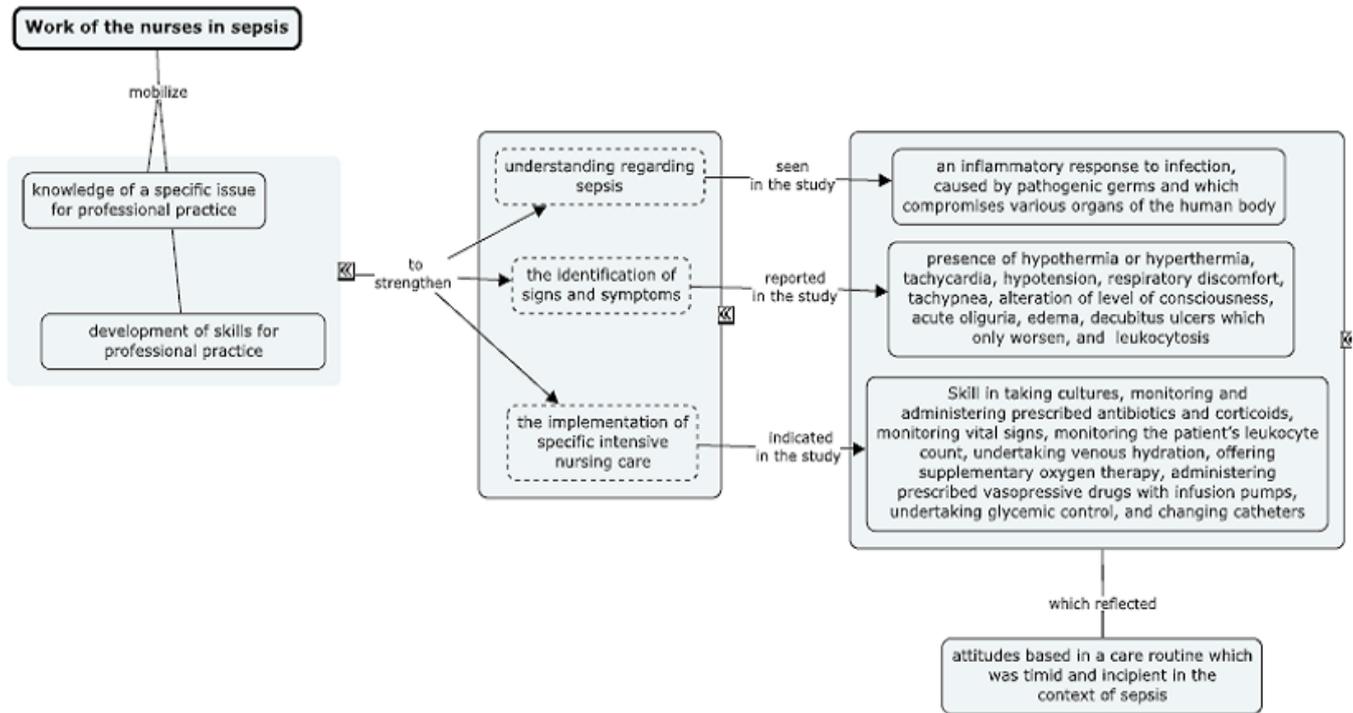


Figure 1 - Work of the intensive care nurses in sepsis. João Pessoa, 2012

*in level of consciousness, acute oliguria, edema, decubitus bedsores which only worsen and leukocytosis. (DCS2)*

Finally, regarding the responses of the intensive care nurses to the question "Considering your experience, describe the nursing interventions that you want to take when faced with a patient with sepsis", CI3 pointed to an attitudinal dimension evidenced in the construction of DCS3:

*It is necessary to take cultures, monitor the administration of prescribed antibiotics and corticoids, monitor vital signs, monitor the patient's leukocyte count, undertake venous hydration, offer supplementary oxygen therapy, administer the prescribed vasopressive drugs using infusion pumps, undertake glycemic control, and change catheters. (DCS3)*

## DISCUSSION

As evidenced in the results, the nurses understand sepsis as a complex syndrome developed by the human being in response to the invasion of pathogenic microorganisms. However, unlike the conception of generalized infection, found in two of the accounts, it truly is caused by a systemic inflammatory response, without effective control, of the organism of an individual, triggered by bacterial, viral, fungal or parasite-caused infection, characterized

by multiple manifestations and which can dysfunction or failure of one or more organs, or even death<sup>(2,13)</sup>.

Although the compromising of the relationship between oxygen available and that taken up is one of the main mechanisms of dysfunction in sepsis<sup>(14)</sup>, this clinical entity is not limited only to the initial place of infection. Its progression varies according to the time since diagnosis and the weakness in the state of health of the patient, who may develop organ dysfunction in the different body systems, such as the cardiovascular, respiratory, neurological, renal, digestive, hematological and endocrine systems. Besides this, there is no linear progression of all the phases of septic syndrome (sepsis, severe sepsis, septic shock and dysfunction of multiple organs and systems), bearing in mind that in the routine practice in ICU one can observe the rapid and progressive installation of the situation of septic shock without prior identification of signs of sepsis.

In this context, there may still be late diagnoses due to sepsis not being suspected, and the clinical symptoms and the laboratory signs currently used for diagnosis, such as fever, tachycardia, tachypnea or alterations in the leukocyte count not being specific for sepsis<sup>(15)</sup>.

The skill which emerges in CI2 regarding the professional practice of Nursing in effectively recognizing clinical manifestations

of sepsis in seriously-ill patients, and knowingly understanding that the existence of possible focuses of infection, such as pressure ulcers, can positively influence the triggering of the same, can result from experience based in the care routine of these nurses who are just starting in the area and who lack confidence.

In this regard, it is worth emphasizing that the early identification of signs of sepsis by the nurse constitutes a highly significant factor in reducing mortality, very much although the guidelines of the Surviving Sepsis Campaign<sup>(16)</sup> have argued for a wide-reaching review of contacts directed towards septic patients, and have certainly silenced the nursing care which is extremely essential for these patients' final prognosis<sup>(17)</sup>.

Even so, acute changes caused by the incipient or actual infection can be monitored through the evaluation of potential changes in general clinical variables, such as fever or hypothermia, cardiac frequency >90 beats/minute, tachypnea, altered mental status, significant edema or positive fluid balance and hyperglycemia in the absence of diabetes; in inflammatory variables, such as leukocytosis or leukopenia, presence >10% of immature neutrophils, rise in levels of C-reactive protein and/or of procalcitonin; in hemodynamic variables, such as arterial hypotension, central venous saturation >70% and cardiac rate >3.5 L/min/m<sup>2</sup>; in variables of organ dysfunctions, such as arterial hypoxemia, urinary output <0.5 mL/kg/hour for at least two hours, increase in creatinine, alterations in coagulation, absent bowel sounds, thrombocytopenia or hyperbilirubinemia; and, finally, in variables of tissue perfusion, such as hyperlactatemia and decreased capillary refill time or mottling<sup>(16-17)</sup>.

Regarding the attitudinal field reported in CI3, it may be noted that the nurses' attitudes intertwine with the bundles of the Surviving Sepsis Campaign<sup>(16)</sup>, which stipulates that in the first three hours it is necessary to measure the level of lactate, collect blood cultures prior to administering antibiotics, implement early broad spectrum antibiotic therapy, and administer crystalloid fluids in those patients with arterial hypertension or lactate  $\geq 4$  mmol/L. After this first phase and up to the sixth hour, the need for further interventions is ascertained in accordance with the clinical progression of the septic patients, with use of vasopressive drugs to maintain mean arterial pressure of  $\geq 65$  mmHg in situations of refractory hypotensions in relation to initial fluid resuscitation; the measuring of central venous pressure and of central venous oxygen saturation.

Sepsis, in its breadth, deserves a detailed view on the part of the multi-professional team, mainly of the nurse, who is the closest to the patient for long periods throughout the day, bearing in mind that the complex processes inherent to it contribute decisively to the mortality of the seriously-ill patients, and result in high economic and social impact. Hence, the adoption of strategies geared towards the early identification of patients at risk of sepsis improves their chances of survival and impedes the syndrome's progression to more severe stages, such as septic shock.

## CONCLUSION

According to analysis of the discourses, it is understood that the objectives were achieved, as they revealed the understanding and the conduct undertaken by the nurses in relation to the septic syndrome which are in line with the bundles emphasized by the Surviving Sepsis Campaign, protocols which aim to facilitate and assist the work of those professionals who work in direct patient care.

This being the case, the task of caring for the seriously-ill patient in ICU requires specialized nursing knowledge, due to the different and complex care needs, which are necessary for identifying both the signs of sepsis and the potential indications of the clinical deterioration of the septic patient.

Taking into account that intensive care has absorbed important changes over recent decades, one can perceive the importance of the nurse in the early recognition of the different clinical spectrums relating to sepsis, not only through diagnosis, but also such that the nurse may outline rapid definitions of the therapeutic nursing plans and the appropriate strategies for monitoring when faced with this critical situation, which is so complex, and whose manifestations are so broad.

## REFERENCES

1. Kleinpell R, Aitken L, Schorr CA. Implications of the new international sepsis guidelines for nursing care. *Am J Crit Care*. [Internet] 2013; 22(3) [acesso em 02 jun 2015]. Disponível: <http://dx.doi.org/10.4037/ajcc2013158>.
2. Siqueira BF, Rosanelli CS, Stumm EMF, Loro MM, Piovesan SMS, Hildebrandt LM, et al. Nurses' conceptions regards to sepsis in patients in intensive care. *J. Nurs. UFPE on line*. [Internet] 2011; 5(1) [acesso

- em 02 jun 2015]. Disponível: <http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/view/1479>.
3. Gauer RL. Early recognition and management of sepsis in adults: the first six hours. *Am Fam Physician*. [Internet] 2013; 88(1) [acesso em 13 ago 2015]. Disponível: <http://www.aafp.org/afp/2013/0701/p44.html>.
  4. Westphal GA, Feijó J, Andrade PS, Trindade L, Suchard C, Monteiro MAG, et al. Estratégia de detecção precoce e redução de mortalidade na sepse grave. *Rev. bras. ter. intensiva*. 2009; 21(2):113-23.
  5. Picard KM, O'Donoghue SC, Young-Kershaw DA, Russell KJ. Development and implementation of a multidisciplinary sepsis protocol. *Crit. care nurse*. [Internet] 2006; 26(3) [acesso em 18 mai 2015]. Disponível: <http://ccn.aacnjournals.org/content/26/3/43.full.pdf+html>.
  6. Siqueira-Batista R, Gomes AP, Calixto-Lima L, Vitorino RR, Perez MCA, Mendonça EG, et al. Sepse: atualidades e perspectivas. *Rev. bras. ter. intensiva*. 2011; 23(2):207-16.
  7. Silva E, Pedro MA, Sogayar AC, Mohovic T, Silva CL, Janiszewski M, et al. Brazilian Sepsis Epidemiological Study (BASES study). *Crit Care* [Internet]. 2004; 8(4) [acesso em 18 mai 2015]. Disponível: <http://dx.doi.org/10.1186/cc2892>.
  8. Sales Júnior JAL, David CM, Hatum R, Souza PCSP, Japiassú A, Pinheiro CTS, et al. Sepse Brasil: estudo epidemiológico da sepse em unidades de terapia intensiva brasileiras. *Rev. bras. ter. intensiva*. 2006;18(1):09-17.
  9. Ramalho Neto JM, Fontes WD, Nóbrega MML. Instrumento de coleta de dados de enfermagem em Unidade de Terapia Intensiva Geral. *Rev. bras. enferm*. 2013; 66(4):535-42.
  10. Ministério da Saúde (BR). Conselho Nacional de Saúde. Aprova diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Resolução n. 196, de 10 de outubro de 1996. Brasília; 1996.
  11. Lefèvre F, Lefèvre AMC. O discurso do sujeito coletivo: um novo enfoque em pesquisa qualitativa (desdobramentos). 2ª ed. Caxias do Sul: EDUCS; 2005.
  12. Institute for Human and Machine Cognition - Cmap Tools [Internet]. Florida: University of West Florida; 2014 [acesso em 25 jun 2015]. Disponível: <http://cmap.ihmc.us/cmaptools/>.
  13. Valerio TA, Cancelier AC, Constantino L, Petronilho F, Ritter C, Dal-Pizzol F. Marcadores inflamatórios e oxidativos em sangue de cordão umbilical como preditores de gravidade em sepse neonatal. *Rev. bras. ter. intensiva*. 2012; 24(1):30-4.
  14. Westphal GA, Gonçalves AR, Caldeira Filho M, Silva E, Salomão R, Bernardo WM, et al. Diretrizes para tratamento da sepse grave/choque séptico - avaliação da perfusão tecidual. *Rev. bras. ter. intensiva*. 2011; 23(1):6-12.
  15. Reinhart K, Daniels R, Machado FR. O ônus da sepse: uma chamada em apoio ao Dia Mundial da Sepse 2013. *Rev. bras. ter. intensiva*. 2013; 25(1):3-5.
  16. Dellinger RP, Levy MM, Rhodes A, Annane D, Gerlach H, Opal SM, et al. Surviving sepsis campaign: international guidelines for management of severe sepsis and septic shock, 2012. *Intensive Care Med*. [Internet] 2013; 39(2) [acesso em 14 jun 2015]. Disponível: <http://health.springer.com/article/10.1007/s00134-012-2769-8/fulltext.html>.
  17. Aitken LM, Williams G, Harvey M, Blot S, Kleinpell R, Labeau S, et al. Nursing considerations to complement the Surviving Sepsis Campaign guidelines. *Crit Care Med*. [Internet] 2011; 39(7) [acesso em 13 ago 2015]. Disponível: <https://dx.doi.org/10.1097/CCM.0b013e31821867cc>.