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Crossing the handover chasm: Clinicians' perceptions of barriers to the early detection and timely management of severe sepsis and septic shock

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ABSTRACT

Purpose: The purpose was to identify barriers to the early detection and timely management of severe sepsis throughout the emergency department (ED), general ward (GW), intermediate care unit (IMC), and the intensive care unit (ICU).
Materials and methods: Five multicenter focus group discussions with 29 clinicians were conducted. Discussions were based on a moderation guide were recorded and transcribed. Qualitative analysis was performed according to the principles of the concept mapping method and the framework approach.
Results: The major causes of the delayed detection and treatment could be summarized in a framework of communication errors and handover difficulties throughout patients' course of treatment, which can be divided into 5 core areas: inadequate histories before hospital admission; poorly coordinated handovers between the ambulance service and the ED; delayed patient transfer between the ED and the GW as well as delays in patient transfers between the GW and the ICU by, for example, a lack of bed capacity and a shortage of staff. Generally, participants from all wards mentioned that the urgency with which septic patients needed to be treated was not communicated.
Conclusions: Our study shows the need to improve intra- and interunit handover processes in hospital care, which would ensure a holistic treatment concept, thereby improving patient care.

1. Introduction

Severe sepsis and septic shock are serious medical conditions and are associated with a high risk of mortality [1]. Over the past years, the annual incidence of sepsis rose steadily [2,3]. Early recognition and prompt therapy are associated with improved outcomes [4-7]. The Surviving Sepsis Campaign guidelines recommend aiming for an effective antimicrobial therapy within the first hour after recognition of sepsis [8]. A number of studies have reported delays in antimicrobial therapy, with median times to an antimicrobial therapy in the range of 115 to 186 minutes after diagnosis [6,9-14]. In a Spanish multicenter trial, Ferrer et al [5] observed that only 18.4% of patients received their antimicrobial therapy within the first hour after diagnosis. Likewise, only 22.5% of patients received their antimicrobial therapy in the first hour after onset of organ dysfunction in a German study [14].

In light of these troubling findings, Burney et al [15] delivered insights into the barriers to sepsis guideline implementation in emergency departments (EDs): The authors identified knowledge gaps and procedural hurdles in sepsis identification and treatment, and concluded that both educational and process components are core elements in improving sepsis care in the ED. Data on nursing barriers to implementation are lacking and represent a large area of need regarding knowledge translation. Adding to this, Mearelli et al [16] reported that there is particular need for more awareness of the signs and symptoms of sepsis if septic patients are treated in general medical wards, as patients in these wards are mostly older and have higher rates of morbidity than patients in intensive care units (ICUs), making the identification of the typical signs and symptoms of sepsis difficult.

Different departments are responsible for diagnosis and treatment; patients will encounter a large number of staff, with teams changing several times each day. Prior studies have emphasized the need for effective collaboration between the ED and critical care services, as well as between administrators and health care providers; this is particularly true with regard to improving the detection and treatment of severe sepsis and septic shock [17-20]. Nevertheless, research in this area is insufficient and has mostly presented how isolated instances of problematic handovers have resulted in the fragmentation of care [21].

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The present study aims to identify barriers to the early identification and timely management of severe sepsis and septic shock throughout the ED, general wards (GWs), intermediate care units (IMCs), and ICUs, as well as their crossing points, using an interdisciplinary approach. A further goal is to develop solutions to improve the early detection and timely treatment of these medical conditions.

2. Material and methods

This exploratory study used interdisciplinary and interprofessional focus group discussions to investigate the causes of delays in the early detection and timely management of patients with severe sepsis and septic shock. Data were first analyzed through the concept mapping method during the focus group discussions [22]; the results of these focus groups were then analyzed according to the principles of the framework approach [23].

2.1. Background of the study

The present study was conducted within the second intervention period in a cluster randomized trial involving a total of 35 hospitals at that time (first intervention period: 20 hospitals; second intervention period: 15 hospitals). The Medical Education for Sepsis Source Control and Antibiotics (MEDUSA) study (ClinicalTrials.gov Identifier NCT01187134) aims to improve early sepsis recognition and therapy as well as to compare a multimodal educational program, which includes the establishment of quality improvement teams, to traditional Continuing Medical Education. In quality improvement teams, staff from different health care departments work together to identify best practices, consider change strategies, apply improvement methods, give feedback, and share information [24,25].

2.2. Data acquisition

In the period April to June 2014, we conducted a qualitative study using focus group discussions involving the staff of hospitals that are participating in the second intervention period of the MEDUSA trial, with the goal of getting information about barriers to the early detection and timely management of severe sepsis and septic shock. A *focus group* is defined as a group organized around a common characteristic, which aims to explore a specific issue. The distinguishing feature of such groups is that the interaction between participants is an essential part of the research data and can serve as a catalyst [26]. We used the qualitative data collection method of focus group discussions to generate unique insights and to understand differences in perspectives between hospital wards [27]. Focus groups were recruited until data saturation was achieved. Data saturation point is reached when the participating researchers jointly decide "that there is enough information to replicate the study, when the ability to obtain additional new information has been attained, and when further coding is no longer feasible" [28].

2.3. Characteristics and setting

A focus group moderator guide was developed according to the concept mapping approach [29], which serves as a useful participatory method for health researchers interested in both generating hypotheses and developing theory [22]. First, participants were told to address "Barriers to the early identification and timely management of severe sepsis and septic shock." Timely management include "early quantitative resuscitation of the septic patient during the first 6 hours after recognition; blood cultures before antibiotic therapy; imaging studies performed promptly to confirm a potential source of infection, and administration of broad-spectrum antimicrobials therapy within 1 hour of recognition of septic shock and severe sepsis without septic shock" [8]. Subsequently, the guide focused on 5 major steps: (1) the generation of statements regarding the focus of the discussion (ie, identifying the causes of delays in the early detection and timely management of severe sepsis and septic shock); (2) the description and sorting of causes; (3) the interpretation of sorted statements and the naming of clusters of barriers and solutions; (4) the prioritization and scaling of clusters according to both their importance and their solvability into a 2-dimensional plot, and (5) the use of high-ranking clusters and collection of proposed solutions for them (Supplementary Material 1; tables). The focus group moderation guide was pretested twice in 2 independent hospitals within the first intervention period of the MEDUSA study.

Focus group discussions were moderated by different teams, with each team consisting of 2 trained employees of the MEDUSA study (social scientists and physicians). The participants consisted of staff purposefully recruited from different wards of the hospital by quality improvement team members. In selecting employees who were suitable for participation, we examined benchmark data for the different participating wards and selected employees who worked in wards that had been identified as problematic. With the aid of the benchmark data, responsible employees of the MEDUSA study and the QI team jointly decided which wards were considered problematic. Selected wards were defined as critical if their benchmark data showed higher needs for improvement activities than other wards of their hospital. All 15 hospitals of the second intervention period of the MEDUSA trial were eligible for participation. We recruited hospitals for participation until data saturation was achieved. The researchers reviewed the transcripts after each session, examined whether new themes had been identified, and decided whether they needed to conduct more focus groups or to terminate recruiting.

There was no prior contact between the moderators and the focus group participants. All discussions were audio recorded and transcribed, with prior participant consent, and remained confidential. Focus group discussions were conducted at each participating hospital, with only the moderators and focus group participants present.

2.4. Data analysis

Data analysis consisted of 2 steps. In the first step, participants structured and analyzed their results themselves during the focus group discussion according to the above-mentioned principles of the concept mapping approach. In this way, the results were dialogically validated by the participants. Validation in qualitative research typically refers to the process of establishing the trustworthiness of a study [30]. Dialogical validation is described as a method "where the dialogue refers to something outside a strict linguistic sense of language namely to an unfolding conversation about the meaning of utterances" [30]. In the second step, the final data analysis was conducted by a social scientist (CTM-K; credential: MA in educational science, psychology, and sociology) who had extensive experience in conducting and analyzing interviews and focus group discussions in different settings (eg, process evaluations of social organizations, network research) according to the principles of the framework approach [23]. The framework approach consists of 5 stages: (1) familiarization with the data, (2) identifying a thematic framework of the focus group discussions, (3) applying the thematic framework to the data, (4) forming charts, and (5) defining concepts and finding associations [31].

All data were analyzed using the software MAXQDA (VERBI Software Consult Berlin; version 11). Definitions and excerpts from the focus group discussions are presented in Supplementary Material 2 (tables). Methods are analyzed and reported according to the consolidated criteria for reporting qualitative research checklist [32]. This was an observational qualitative analysis to identify barriers in the early detection and timely treatment of severe sepsis and septic shock and not an experimental manipulation; as a result, this work met criteria for exemption from ethics review.

3. Results

In total, 29 participants—11 physicians and 18 nurses—took part in 5 focus groups within 5 independent hospitals. Characteristics of participating and nonparticipating hospitals are shown in Table 1.