

# Examining nursing practices for management of sepsis in low income countries: the case of Uganda



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## SUMMARY

- Examining nursing practice guidelines to improve quality of care for patients with sepsis in low income countries is required.
- A large amount of information about best practice standards in sepsis management is available for healthcare professionals; however, implementation and adherence to practice guidelines recommended by the Surviving Sepsis Campaign remains low in low income countries.
- A formal scope of practice for nursing and midwifery as a professional guideline is absent and national clinical guideline for Uganda remains unclear regarding the specific management of sepsis.
- Inadequate documentation of patient care in Uganda makes sepsis cases difficult to be early detected.
- Research evidence regarding sepsis management remains scarce in Uganda. Adopting SSC guidelines without appropriate adaptation for the local context contributes problems, especially in LICs where necessary resources are limited.

## INTRODUCTION

Sepsis is an infection of the blood stream and is a life-threatening disease. Sepsis is now defined as "life-threatening organ dysfunction caused by a dysregulated host response to infection" (Coopersmith & Deutschman, 2017). Over the past 40 years, the global incidence of sepsis was estimated as 288 cases per 100,000 people per year (Tillmann & Wunsch, 2018), and majority of these cases were from low income countries (LICs) where under-resourced healthcare system compromises quality of care. Diseases associated with development of sepsis syndrome in Uganda include malaria, pneumonia, HIV/AIDS and diarrhoea, and sepsis is commonly encountered by nurses when treating these diseases (Rudd et al., 2017; Jacob et al., 2009). Sepsis accounts for more than 40% of all hospital admissions (Jacob et al., 2009); furthermore, an observational study conducted in 2006 in Ugandan adults with severe sepsis syndromes found high mortality rate (43%) in this population (Jacob et al., 2009). Despite these facts, well-equipped intensive care units (ICUs), a requirement for treating patients with sepsis, are sparse in Uganda, with less than 40 ICU beds in the whole country (Kwizera et al., 2012). The high

mortality and admission rate related to sepsis pose strains on the undeveloped health systems in LICs, especially in Uganda (Marchant et al., 2014). In addition, the disparities in routine patient screening and poor regulation of antibiotic use, including self-prescription and over the counter purchase also contribute to the increasing concern of sepsis in Uganda (Rudd et al., 2017). Currently, sepsis is the focus of debate and research, including changing the definition of sepsis, re-examining screening criteria and sepsis management with emphasis on the importance of time-sensitive management.

Sepsis is easier to be detected, treated, and managed through a structured identification system. The regular assessment of patients could allow early identification and implement timely treatment for sepsis, thereby decreasing mortality rate as well as the associated cost (Yokota et al., 2014). A simple bedside sepsis screening tool has been found to be effective in early identification of sepsis, (Gyang et al., 2015). Therefore, the implementation of simple screening tools in hospital settings in LICs to closely monitor specific populations at greater risk for sepsis (e.g. children, frail older adults, people with multiple comorbidities) is paramount for adequate management of sepsis (Gyang et al., 2015).

Nurses play an important role in the early detection and treatment of sepsis, as they could closely monitor and assess health condition of patients and implement timely nursing care to prevent the deterioration of sepsis (Martin, 2012; Torsvik et al., 2016). This has been noted in some hospital settings internationally, where nurses play an important role in early identification, prompt diagnosis and timely treatment of patients presenting with sepsis, thereby decreasing the mortality rate and increasing patients' survival (Torsvik et al., 2016). For example, a study by Klinger et al. (2015) examined the effects of an integrated nurse leadership programme to reduce sepsis mortality in the United Kingdom and reported that the nurse-led sepsis management program could significantly reduce sepsis mortality rate and in a sustainable manner. In addition, implementation of guidelines or protocols for sepsis management in nursing practice could allow the effective management of sepsis and improve the survival rate (Kleinpell, 2017). Furthermore, nurses' skills in clinical assessment during triage and involvement in sepsis research may help ensure early diagnosis, accurate estimation of sepsis severity, and timely management of sepsis (Mackway-Jones et al., 2013).

Despite the documented evidence of effectiveness of nursing care

in sepsis management, nurses' knowledge, awareness, attitude regarding early detection and management of sepsis remains poor, resulting in many patients being under-diagnosed and poorly treated (Barbash et al., 2016). Additionally, nursing practice in sepsis management with the use of guideline or protocols is constrained in LICs due to the lack of a robust framework to develop local solutions to address prevailing care gaps in a sustainable manner (Bazos et al., 2015; Marchant et al., 2014). Although there are attempts to use guidelines in managing patients with sepsis in LICs, such as the well-known integrated management of childhood illnesses, the effectiveness of these guidelines is limited by the under-resourced health facilities in LICs (Mukonzo et al., 2013). In addition, implementing current sepsis guidelines may lead to increased ICU use without improvements in clinical outcomes (Angus et al., 2015), especially in Uganda where there are fewer than the recommended number of ICU beds (Kwizera et al., 2012). Other issues concerning sepsis management in LICs are the availability of the guidelines or protocols, effective implementation of management strategies, and adherence to nurses' scope of practice in identifying and treating sepsis (Jacob et al., 2009). The present article aimed to examine nursing practices in the management of patients with sepsis in Uganda.

## CURRENT NURSING PRACTICE FOR THE MANAGEMENT OF SEPSIS IN UGANDA

In Uganda, key documents relating to the nursing management of sepsis are: the nursing scope of practice, the Nurses and Midwives Act (1996), and national clinical guidelines.

### Nursing scope of practice

Every profession requires a scope of practice at a national level for individuals registered under that profession. In essence, a scope of practice is the provision of a framework for professional practice. Any activity that falls outside that scope is automatically left out of professional practice. Among healthcare professionals, there are a number of overlapping areas regarding the scope of practice; therefore, clear stipulation of a nurse's scope of practice is critically important. Currently, Ugandan nurses commonly refer to the Nurses and Midwives Act 1996 to direct their scope of practice. However, this legislation lacks updated implementation guidelines to operationalise the scope of practice for nurses in Uganda (Nurse & Act, 2009). A formal Ugandan nursing scope of practice as a professional guideline is currently absent.

Ugochukwu et al. (2013) noted that a nurse's role is always changing, and in countries such as the U.S, task analysis is frequently conducted to inform the scope of practice and educational standards for nurses and midwives. Such processes are rarely conducted in Uganda. In addition, the current roles and functions of nurses are dependent largely on the experience of nursing in the developed world, and no documentation on the roles or functions of nurses is available in most African health systems. Furthermore, although nurses form the majority of professionals in most healthcare settings and are referred to as the 'back bone' of health systems; politicians, policy makers and health administrators in Sub-Saharan Africa seldom endorse that statement with policies/guidelines to allow nurses' autonomy for quality care and maximum output.

### Practice guidelines for management of sepsis in Uganda

Sepsis management requires time-sensitive intervention by all healthcare team members. Nurses are in a unique position to identify the earliest signs of sepsis, and prevent the deterioration of the condition. To facilitate early recognition and management of sepsis by nurses, a relevant policy framework and guidelines should

be established to enable the assessment, diagnosis, and clinical judgement needed for patient care.

In Uganda, nursing and midwifery policies are derived from the Nurses and Midwives Act 1996, schemes of services for nurses. However, current nursing policy documents in Uganda related to the role of nurses in identifying and assessing patients with sepsis are unclear.

Current guidelines from the Global Sepsis Alliance recommend early goal-directed therapy to improve survival of patients with sepsis (Walters, 2017). This guideline-based standard of care stipulates specific actions for assessment, including quick sequential organ failure assessment, diagnosis using lactate levels, analysis and clinical judgment for patients suspected to have sepsis (Kalil et al., 2017). Quick sequential organ failure assessment is believed to be an effective way to detect suspected sepsis cases (Vincent et al., 2016); however, its use in clinical practice in Uganda is not well documented. Although previous studies have confirmed the role of lactate levels in diagnosing sepsis (Casserly et al., 2015; Kalil et al., 2017), such action is yet to be fully complemented in LICs due to the lack of resources at health facilities in these countries.

As a regulating instrument for nurses and midwives practice in Uganda, the Nurses and Midwives Act 1996 differs on certain roles pertaining to nurses in practice (Nurse & Act, 2009). For example, Nurses and midwives working at lower health facilities which are established to serve a population of 5000-20000 (referred to as health centres II and III respectively) can prescribe antibiotics to patients with limited supervision. Nevertheless, in the national clinical guidelines in Uganda, medical doctors and clinical officers are mandated to assess, diagnosis, and prescribe medication to patients, whereas the role of nurses is relegated to administration of prescribed drugs and monitoring the process of patient recovery (MoH, 2016). Such discrepancy between nursing practice and clinical guidelines in Uganda may result in the less effective management of sepsis in this country.

### Formulation of nursing practice guidelines for management of sepsis in Uganda

Sepsis management guidelines emphasise the use of early warnings to identify signs of organ failure in affected patients. Patients with sepsis usually present with 'derailed' vital signs, which are easy to identify with early warning scores (EWS). The EWS, which comprises a composite score of six bedside vital parameters: pulse rate, blood pressure, oxygen saturation, body temperature, respiratory rate, and mental state, can predict the risk of death when being used to routinely assess vital signs of patients. Thus, it can be used as a reliable tool to early detect suspected sepsis cases (Wongvibulsin et al., 2017). However, the use of EWS for screening and identifying patients with sepsis is inadequate in Uganda. Additionally, the vital signs are also often poorly documented in Uganda (Nakate et al., 2015) despite the fact that nurses are trained and are aware of the importance of recording vital signs. Such poor documentation practices may attribute to the lack of recording tools, limited space in patient files and lack of integrated documentation procedures (Nakate et al., 2015).

Evaluation of nurse-led interventions for sepsis care is constrained by the lack of a robust framework appropriate for Uganda, particularly as doctors are not readily available in clinical settings round the clock. Nurses make clinical decisions with limited authorised clinical guidelines or protocols when patients present with severe illnesses such as sepsis. The situation could be compounded by the high prevalence of HIV/AIDS which predisposes patients with risk of sepsis (Jacob et al., 2009). Therefore, developing nursing practice guidelines to ensure that nurses are empowered to assess and identify patients with sepsis, assess the severity of the illness, take

actions, and coordinate with other health professionals to manage sepsis is necessary for Uganda.

### The role of nurses in sepsis management

Globally, clinical research acts as a mechanism to increase healthcare professionals' awareness of and improve management of sepsis. A number of studies have established the effectiveness of nurse-led sepsis management programs to allow early identification and treatment of sepsis (Bruce et al., 2015; Kleinpell, 2017; Torsvik et al., 2016). In fact, a study conducted in England showed that nurse-led protocols related to sepsis identification were an effective, safe and sustainable method to manage sepsis, with positive patient outcomes such as reduced mortality (Kleinpell, 2017). In addition, a nurse-driven sepsis management protocol resulted in increased SSC compliance (Dellinger et al., 2013). Reductions of sepsis-associated death in hospitalised patients have also been reported in a study in which an early sepsis screening tool was integrated with training for nurses (Jones et al., 2015).

However, most of the studies on sepsis management by nurses are conducted in developed countries, and the findings may not be applicable in LICs due to the culture difference such as the limited healthcare resource in LICs (Jacob et al., 2009). Additionally, few researches on sepsis has been conducted in African countries including in Uganda, and the available studies only focus on the medical treatment of sepsis with no emphasis on the role of nurses in the management of sepsis (Jacob et al., 2009), leaving gaps between healthcare needs and unavailability of service to effectively address these needs in LICs (Sun et al., 2016). Additionally, the lack of research on nursing management of sepsis presents a challenge for formulating evidence-based nursing practice in sepsis identification and management in Uganda. Evidence-based practice is important for daily nursing practice, and has been demonstrated to improve patient care and outcomes (Friesen-Storms et al., 2015). However, this is not well performed in clinical practice in Uganda.

In addition, most healthcare researches in LICs focus on infectious diseases such Ebola, HIV/AIDs and malaria which tend to attract external support, researches on sepsis is scarce despite its high burden on the under-resourced healthcare system (Sun et al., 2016). Researches based on the local context and available resources in developing countries will contribute to the development of a framework for sepsis management by nurses in these countries. Therefore, more researches on sepsis care by nurses in LICs are recommended.

### CONCLUSION

Inadequate documentation exist regarding nursing practice in the assessment and management of sepsis in Uganda. Local evidence on the management of sepsis in Uganda is scarce. Guidelines for sepsis management adopted from high income countries have demonstrated a disparity in its effectiveness (Andrews et al., 2017; Perner & Singer, 2017; Silversides et al., 2017). There is inadequate investment in culturally specific sepsis management guidelines that are applicable in resource-constrained countries. Nursing practice evaluations are not routinely performed in LICs.

Guidelines specific to individual categories of patients with sepsis are informed by research conducted in well-resourced countries, and may not be practically applicable in low resource areas such as Uganda, in which comorbid conditions are strongly associated with sepsis (Borloz & Hamden, 2017; Pulia et al., 2017; Schultz et al., 2017). Currently, there is little support and motivation for the use and implementation of evidence-based practice in Uganda. Improving sepsis treatment is particularly challenging due to the increased antibiotic drug resistance contributed by the less effective management on antibiotic prescription practices (Borloz & Hamden,

2017; Kiguba et al., 2016; Mbonye et al., 2016; Pulia et al., 2017; Sekikubo et al., 2017). Despite the fact, efforts made through nursing care may strengthen sepsis management and improve outcomes of patients with sepsis. In addition, an effective nursing practice based on well-established research and guidelines that are locally adapted should be adopted when managing sepsis. .

### RECOMMENDATIONS

Based on the discussion in this article, we make the following recommendations for nursing policy, education, research and practice in terms of nursing scope of practice, practice guidelines and the role of nurses in managing sepsis.

1. Nursing policy in Uganda requires significant review and integration of current global moves toward using evidence to improve practice. Relevant amendments to the Nurses and Midwives Act 1996 are needed, along with development of clear nursing practice guidelines that meet the demands of the current disease burden. The scope of practice should reflect autonomy over nursing practice.
2. Nursing education needs to ensure that nurses and midwives develop innovative skills and an ability to screen patients who are potentially at risk of developing organ failure due to sepsis. Emphasis should be on the importance of routine screening of patients using strong practice guidelines that promote goal-directed patient management.
3. Nursing research requires deliberate support directed towards problematic areas such as sepsis management to generate local innovations in settings where resources are limited. Emphasis on generating evidence before implementing recommendations generated from rich resource settings will improve integration of global practice into the local context. In addition, nurses need to address the problem of research scarcity on sepsis in Sub-Saharan Africa.
4. Nurses in Uganda currently practice in a legal framework that regulates their practice. The Nurses & Midwives Act 1996 prohibits nurses performing certain roles (such as antibiotic prescriptions); however, nurses continue to perform these restricted roles because of the prevailing shortage of doctors. Tasks are shifted from doctors and other healthcare professionals to nurses who are not expertise in that area and with limited guidance, resulting in the increased risk of adverse medical events and threatening patients' lives. Thus, it is necessary to develop guidelines for each category of healthcare professionals and to ensure their adherence to these guidelines
5. As the difference in epidemiological characteristics of sepsis between high-income counties and LICs, management of sepsis in LICs should be implemented in a contextual manner to maximize the benefits of the actions. , Therefore, consideration of five actions is recommended:
  - a) Development of sepsis management guidelines for LICs directed towards specific categories of patients (e.g., children, adults and older adults)
  - b) Regularly evaluating nursing practice and performance is required for healthcare facilities to ensure existing guidelines are fitting for the less resourced areas.
  - c) Screening patients with sepsis using EWS that requires minimal resources and provides opportunity for early identification and initiation of appropriate treatment modalities should be adopted.
  - d) Conducting clinical research on sepsis management to support local decision-making on management of sepsis in Uganda.

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