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EXCLUSIVE

# *Learning Lounge Viewpoints Series:* ENHANCING SEPSIS CARE ACROSS THE PATIENT JOURNEY

**Julien Textoris, MD, PhD**
Vice President, Medical Affairs – EMEA
bioMérieux

Sepsis is defined as a life-threatening condition arising from the body's dysregulated response to infection, leading to organ dysfunction and potential organ failure.[1] Despite widespread recognition of its severity, timely diagnosis and intervention often fall short in clinical settings. A survey conducted by bioMérieux and the UK Sepsis Trust found that while 95% of clinicians identify sepsis as a serious condition, 66% agree there is sometimes a delay in diagnosis in their hospital.[2]

Julien Textoris, MD, PhD, vice president, EMEA medical affairs at bioMérieux, shares insights on enhancing sepsis care across the patient journey in this Learning Lounge exclusive interview. His Viewpoints Series discussion is particularly relevant given the aforementioned survey which found that 75% of respondents believe faster diagnostic tools for confirming sepsis would improve the ability to manage it.[2]

Sepsis remains a critical global health challenge, annually causing 11 million deaths worldwide.[1] The key to improving patient outcomes lies in early intervention, particularly the timely administration of appropriate antimicrobials.[3] In this interview, Dr. Textoris highlights the intersection of clinical expertise and diagnostic technologies in the ongoing battle against this life-threatening condition.

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**bioMérieux: What are the biggest challenges clinicians face in recognizing sepsis early and in different care settings?**

**Dr. Textoris:** There are two slightly different challenges in identifying sepsis, an infection accompanied by organ failure, versus other infectious diseases. You want to diagnose those patients that are already in sepsis, but you also want to identify the patients that will quickly deteriorate into sepsis, which requires

consistent, active monitoring. This can look very different in various healthcare settings. For example, the emergency department (ED) can rely on some diagnostics, but often clinicians do not have the time to wait for lab results, forcing them to make a judgment call based on subjective symptoms. For inpatient wards, I would say most of the challenge is that there may only be one nurse for 10 or 20 patients, so it may be several hours before they notice a patient is in sepsis. And in the ICU, the challenge is that many situations mimic sepsis, so it's a question of determining if a patient's shock is from infectious origin rather than another condition like cardiogenic shock, for example.

I believe there is also an issue of awareness among the clinician community. We did a survey a few years back and found that while 78% of clinicians know sepsis treatment guidelines exist, only 53% are aware of all actions involved in managing sepsis.[2] We still have a lot of work to do to educate the clinical community in order to achieve sufficient awareness about sepsis if we really want to improve patient outcomes.

### bioMérieux: How can fast and accurate diagnostic tests and biomarkers be effectively integrated into clinical workflows to improve timely sepsis decisions?

**Dr. Textoris:** There are multiple unmet medical needs associated with sepsis because it is a severe infection plus organ failure, meaning you need multiple biomarkers to really manage a patient with sepsis properly. There is not only a need to have biomarkers that guide the management of organ failure but to also be able to quickly identify the pathogen that is responsible for the infection and understand the profile of susceptibility and resistance.

And, in a world where electronic health records are so common, integrated algorithms that could warn about deterioration and provide insights into the next steps in diagnosis or treatment can also have a huge impact on patient care — especially since we cannot expect that every clinician will have full expertise in treating sepsis patients.

### bioMérieux: How can antimicrobial stewardship principles be balanced with the need for early, broad-spectrum antibiotics in suspected sepsis patients?

**Dr. Textoris:** This is the challenge. When we speak about organ failure in sepsis patients, these are vital organs, meaning there is a risk of death, and typically no opportunity to discuss starting antibiotic treatment. It simply must be initiated. Evidence shows that time to appropriate antibiotic treatment in sepsis patients is associated with rate of survival.[3] But, from a societal point of view, increased antibiotic use is associated with increased antimicrobial resistance (AMR), and we don't want to elevate that for future generations.[4]

Around 2021, there was some discussion between intensive care and infectious disease scientific societies and the conclusion was that if the patient is experiencing septic shock, there is no question that antibiotics should be provided immediately; if there is a definitive diagnosis of sepsis, antibiotics also need to be provided very quickly. If sepsis is only suspected, clinicians can arguably take a few hours to confirm. Either way, it's also critical to review the initial prescription as soon as microbiology results are obtained and de-escalate if that's possible.

This discussion emphasizes the need to preserve antibiotics for the future and operate with an antimicrobial stewardship (AMS) mindset. So, empiric broad-spectrum antibiotics are only provided when it's truly necessary, and once this therapy is started, its validity should quickly be reassessed.

### bioMérieux: What are the most promising technologies or approaches for continuous patient monitoring to detect early signs of sepsis?

**Dr. Textoris:** Every machine learning (ML) and artificial intelligence (AI) algorithm that can analyze a continuous data stream will help in the future. Being able to integrate data coming in from the electronic health record with past medical history and even particular comorbidities would increase the chances of detecting sepsis. Looking at the recent boom of generative AI, I think that's something we underestimate the potential for, in terms of medical education and improved decision-making. It's also likely that we will one day have wearable technologies, such as the smart watches many people wear today, that could be interconnected with healthcare systems, allowing for continuous monitoring and early prediction of deterioration.

It's all about what technologies can benefit clinicians and contribute to improved patient outcomes – both now and in the future. Personally, I know that I can improve my clinical performance if I embrace working with tools like AI.

### bioMérieux: How can post-sepsis care and follow-up be optimized to reduce readmissions and long-term complications?

**Dr. Textoris:** When I look back 20 to 50 years, we must acknowledge that most patients died in the ICU, so we simply weren't as concerned about post-ICU care.[5] Because of all the medical innovations and progress we have made in recent decades, now we have more patients leaving the ICU.[5] However, there is still some research showing that patients who survive sepsis might not be in particularly good shape after being discharged, causing a huge toll on these patients and the rest of society.[6]

More research is needed to better understand these situations, but in the meantime, there are also some organizational improvements that can be made now. I stopped practicing intensive care medicine three years ago, but at that time, I noticed that very few patients would have a follow-up consultation after being discharged. Post-ICU and post-hospital care need to be reinvented and reorganized. Today, we are really at the beginning and are only just realizing this as a crucial need.

### bioMérieux: Do you have any final thoughts or actionable tips to share?

**Dr. Textoris:** Yes, if we truly want to improve in caring for patients at risk of sepsis, we need to find tools to identify the sub-phenotypes within the sepsis cohorts to determine which patients will benefit from specific care pathways. Being able to predict deterioration or integrate next-generation sequencing (NGS) data from the microbiology lab could aid in fast clinical decision-making and help improve patient outcomes.

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