

# Routine procalcitonin screening reduces hospital stays and costs for patients with sepsis

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Each year, over \$20 billion dollars is spent on sepsis care, making it the most expensive condition managed in U.S. hospitals. Sepsis does not only carry a heavy economic cost, but a human one as well. A dangerous and often deadly condition, sepsis affects more than a million Americans every year and the cases continue to increase. A new study in the January issue of *Chest* examines whether procalcitonin (PCT) testing helps to more effectively manage sepsis care. Investigators found that the use of PCT screening on the first day of ICU admission was linked to significantly shorter hospital stays, as well as an overall decrease in cost of care.

Currently, there is not an accepted "gold standard" test for determining whether a patient has sepsis, so the disease presents a diagnostic challenge for practitioners. An incorrect sepsis diagnosis can result in poor patient outcomes linked to the unnecessary use of antibiotics, including increased length of hospital stay, *Clostridium difficile* infections, and higher than necessary [health care costs](#). In an effort to find novel approaches to diagnosing sepsis, PCT screening has recently gained momentum as a viable screening tool. PCT is a precursor of calcitonin.

"Despite the emergence of PCT as a diagnostic criterion for sepsis in the 2012 Surviving Sepsis Guidelines, PCT testing has not been uniformly adopted, in part because of cost considerations," explained lead

investigator Robert A. Balk, MD, J. Bailey Carter, MD, Professor of Medicine, and Director of the Division of Pulmonary and Critical Care Medicine, Rush Medical College and Rush University Medical Center, Chicago, IL. "This study demonstrated that the use of PCT testing on the first day of ICU care was associated with significantly lower hospital and ICU length of stay. There was also a significant difference in the total hospital, ICU and pharmacy costs when day one PCT testing was used in adult critically ill patients."

The retrospective study examined 15,041,827 patient cases from the Premier Healthcare database, of whom 730,088 had a potential sepsis, SIRS, septicemia, or shock-related diagnosis on admission or discharge. All patients included in the study were 18 years of age or older and admitted to the ICU. Patients were divided into two groups by whether they had received PCT screening on their first day in the ICU or not. Investigators discovered that PCT-guided care on day one was associated with a multitude of positive outcomes including significantly shorter hospital and ICU stays and significantly decreased total hospital, room and board, pharmacy, and antibiotic costs. Despite a slight increase in laboratory costs, they also found that among the PCT patients, antibiotic exposure was lower and they were less likely to be transferred to acute care, skilled nursing, intermediate care, or long-term care facilities.

In fact, the study revealed that patients receiving PCT testing on day one of ICU admission averaged 1.2 fewer hospital days than patients who were not screened and saved an average of \$2,759 on their total hospital costs.

"This study is important because it validates the ability of PCT testing to favorably impact outcomes of critically ill patients when used according to the FDA cleared guideline," said Dr. Balk. "The study population was quite large and extremely diverse. The use of procalcitonin was evaluated over nearly a 3.5-year period and in a variety of clinical

settings including academic and nonacademic institutions. The cost savings were real and consequential, exceeding the potential increased costs of laboratory testing associated with PCT testing on ICU admission."

According to this new analysis, PCT screening on the first day of ICU admission seems to be a promising diagnostic tool to help shorten hospital stays, as well as helping to make sepsis treatment more cost-effective. Early identification of [sepsis](#) patients can also help combat negative outcomes since proper treatment techniques can be implemented as soon as a diagnosis is made.

"The significance and mechanisms surrounding the observed clinical outcomes warrant additional evaluation," concluded Dr. Balk.

**More information:** Robert A. Balk et al, Effect of Procalcitonin Testing on Health-care Utilization and Costs in Critically Ill Patients in the United States, *Chest* (2017). [DOI: 10.1016/j.chest.2016.06.046](https://doi.org/10.1016/j.chest.2016.06.046)

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