

# Early Antibiotics in Septic Shock: A Desirable Goal but “Curb Your Enthusiasm”

Ashit Hegde 

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It seems only logical that the earlier an antibiotic is administered in patients with severe infection, the better the outcome would be. There is some evidence that delays in the administration of antibiotics to patients with septic shock may be associated with worse outcomes.<sup>1,2</sup> The Surviving Sepsis Guidelines (SSG)<sup>3</sup> recommend that in patients with septic shock, antibiotics should be administered within 1 hour. “Time to antibiotic” has therefore become a quality indicator in the intensive care unit (ICU).

There are however several potential obstacles to the early delivery of antibiotics especially in ICUs in low and middle-income countries (LMIC). Even within these LMIC, the challenges faced by the public hospitals are much greater.<sup>4,5</sup>

Therefore, Haas et al.<sup>6</sup> need to be complimented for introducing several measures which decreased the mean time to administration of antibiotics to patients with sepsis or septic shock from approximately 6 hours to 1.7 hours, and 60% of these patients received antibiotics within 1 hour. The measures that they initiated included – Introduction of a Rapid Response Team, better coordination with the pharmacy, education of the staff in better recognition of sepsis, and antimicrobial stewardship and establishment of quality initiatives in the emergency areas.

The ICUs in India should consider adopting some of these initiatives if they are lacking in their institutions. However, in addition to the problems faced by the authors, there are several other challenges to the delivery of early antibiotics in our country. Relatives of the patients are often sent to purchase antibiotics from outside the hospital, culture media are not available in the ICU leading to a delay in the collection of cultures, and therefore a delay in the administration of antibiotics, affordability of high-end antibiotics also an issue, and overworked nursing staff and residents might easily miss the early signs of sepsis and early administration of antibiotics may not be a high priority on their list. Intensivists in India must therefore try to find solutions to the problems unique to their environment.

It is concerning to note that in the study by Haas et al., 837 of 2,513 patients received antibiotics before meeting the criteria for sepsis or septic shock. While every effort must be made to deliver antibiotics early to patients with proven infection or with a high likelihood of infection, an excess of enthusiasm might not necessarily be a good thing. Health systems across the world are facing the terrible consequences of antibiotic misuse and indiscriminate early administration of antibiotics to every sick patient will magnify these dangers. Many associations including

Department of Critical Care and Medicine, P.D. Hinduja Hospital, Mumbai, Maharashtra, India

**Corresponding Author:** Ashit Hegde, Department of Critical Care and Medicine, P.D. Hinduja Hospital, Mumbai, Maharashtra, India, Phone: +91 22 24462250, e-mail: ahegde1957@gmail.com

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the IDSA objected to the 1 hour bundle proposed by the SSG for this reason.<sup>7</sup>

It must also be understood that though the SSG strongly recommend that antibiotics be administered within 1 hour to patients with septic shock, the evidence for this recommendation is of low quality. In response to objections, the latest SSG have also toned down their recommendation. The 2016 guidelines recommended that antibiotics be administered within 1 hour to patients with sepsis whether or not they had a shock. The 2021 guidelines confine their recommendation to patients with shock and with a high likelihood of infection. For patients without shock, they recommend the administration of antibiotics within 3 hours.

Timely administration of antibiotics in septic shock is a challenge. In LMIC, there are impediments to early recognition of sepsis, logistical challenges, resource limitations, and systemic barriers. Several efforts are needed to overcome these hurdles. This includes greater allocation of resources to healthcare, better education and training of intensive care professionals, and improved communication and coordination within an institution.

It is equally important however to make these very same efforts to limit the misuse of antibiotics in sick patients without infection. Antibiotics should certainly be administered early to very sick patients in whom infection is certain or highly likely. In less sick patients in whom the diagnosis of infection is not clear, time is better spent in investigating to confirm or rule out infection instead of injudicious administration of antibiotics.

## ORCID

Ashit Hegde  <https://orcid.org/0000-0003-4342-122X>

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