

Understanding Hospital-Onset Bacteremia (HOB): New Measures, Critical Insights

What is HOB? Hospital-Onset Bacteremia and Fungemia (HOB) refers to bloodstream infections caused by bacterial or fungal pathogens identified **on or after day 4 of hospital admission**.¹

The HOB metric, which has not yet been implemented, was developed by CDC and provides a **much broader perspective** than traditional infection surveillance targets. It offers a simplified, comprehensive measure of bloodstream infection (BSI) across all sources, regardless of procedure or device (e.g., peripheral lines, urinary tract, wounds, skin and soft tissue infections, surgical site infections (SSIs), and pneumonia).²

CDC Proposed Changes in Surveillance and Reporting:

- **Quality Metric:** HOB was endorsed by the National Quality Forum (NQF) in 2022 and is currently made available for **voluntary reporting** by CMS and CDC.^{2,3}
- **Structure & Automation:** HOB is structured similarly to NHSN LabID event reporting (e.g., MRSA bacteremia). It is designed as an **electronic quality measure (dCQM)** aimed to be objective, compatible with existing workflows, and time-efficient to monitor, eliminating the need for complex, manual abstraction.^{2,3}

Why HOB is a Critical Focus for Institutions:

- **Beyond the Subset:** The HOB metric is a broader indicator of total hospital-onset bloodstream infection (HOB SI) burden. Currently, the only BSIs required for NHSN/CMS reporting are those linked to central lines (CLABSIs) and hospital-onset MRSA bloodstream infections identified through LabID events.^{2,3}
 - **CLABSIs** typically account for only a small portion of HOB³. Data show approximately four non-CLABSI HOB cases for every NHSN-reportable CLABSI case, illustrating that CLABSIs are only the tip of the iceberg.⁴
- **Significant Patient Harm:** HOB is associated with substantial morbidity and 15-30% mortality.²
- **Increased Resource Burden:** HOBs lead to an increased length of stay (up to 12-17 additional days) and higher readmission rates (up to three-fold higher within 30 days).⁴
- **Avoidable Costs:** HOB events incur significant excess healthcare costs, estimated between \$25,000–\$50,000 per admission.⁴
- **Preventable:** A significant proportion of HOB events are considered preventable.^{3,5}

A Hidden Risk: Endogenous Microorganism Carriage

Many healthcare-associated infections, including HOBs, originate from **microorganisms colonizing the patient's own body**.^{6,7} The **anterior nares** (nose) are recognized as a frequent carriage site and a primary reservoir for these colonizing organisms.^{6,8} Studies indicate that invasive bloodstream infection strains are often **identical to those isolated from the anterior nares** of the affected patients, indicating an endogenous origin.^{6,9,10}

Patients carrying these microorganisms face a **heightened risk** of acquiring nosocomial bloodstream infections.⁹ In Intensive Care Units (ICUs), nasal colonization has been associated with a 2.5 to 4.7-fold increased risk of developing ICU-associated infections.^{6,11} Effectively addressing skin and nasal colonization is a crucial component for comprehensive HOB prevention.

Universal Decolonization: A Proactive Strategy

Universal decolonization offers a highly effective, comprehensive strategy, eliminating the need for pre-screening. This practice, which combines daily chlorhexidine gluconate (CHG) bathing with **nasal decolonization**, reduces the concentration of microorganisms on the patient's skin and nasal vestibule, thereby protecting patients from their own microbiota and reducing the environmental microbial burden.¹²

Nasal decolonization can be performed with antibiotics (e.g., mupirocin) or antiseptics (e.g., iodophor, or alcohol-based nasal antiseptic).

Evidence supporting universal decolonization:

Evidence supports the role of universal decolonization as an effective and efficient strategy to reduce the risk and incidence of HAIs across diverse settings and wide-ranging patient populations (e.g., critical care^{13,14,24,25}, surgical patients¹⁵, implants¹⁶, indwelling devices and catheters¹⁷, hemodialysis¹⁸, trauma and burn units¹⁹, post-discharge care²⁰, nursing homes²³, and pediatric wards²¹), and thus would support the new HOB metric. Previous studies of universal decolonization studied impact across broad categories of infection that are similar to the new HOB metric, including studies of mupirocin, iodophor, and an alcohol-based nasal antiseptic:

- A large-scale trial (REDUCE MRSA trial) across 43 hospitals and 74 ICUs demonstrated that universal decolonization (CHG plus **mupirocin**) was more effective than other strategies in reducing infections. It resulted in a 44% reduction in bloodstream infections from any pathogen. In this study, one bloodstream infection was prevented for every 99 patients who underwent decolonization.⁷
- Universal **iodophor** plus CHG decolonization in ICUs was shown to be effective for preventing all-pathogen bloodstream infections in a large cluster-randomized trial²². In nursing homes, a cluster-randomized trial showed universal decolonization with **iodophor**-CHG significantly reduced infection-related hospital transfers, consistent with findings from other healthcare settings.²³
- A study of universal decolonization with **alcohol-based nasal antiseptic** plus daily CHG bathing in ICUs demonstrated reduced target pathogen bacteremia and lower SIRs²⁴. Another study of multi-site ICUs also found significant reductions in target pathogen bacteremia (–57%) and CLABSI (–57%) following implementation of the same protocol, providing additional evidence on potential benefit across bloodstream infection outcomes.²⁵

Current status of HOB as an CDC/NHSN initiative (*as of mid-2025*)

- HOB is **not mandatory** for CMS reporting/reimbursement/penalties; it is still being tested/piloted.
- HOB is being made available to hospitals as an “**early adopter**” or **voluntary measure**.
- HOB remains under consideration by CMS for future inclusion among required quality measures. As of now, CMS has not finalized a rule making HOB mandatory.

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² National Quality Forum (NQF). Hospital Onset-Bacteremia and Fungemia Playbook. Washington, DC: NQF, 2024.

³ Schrank GM, Madaline T. Hospital onset bacteremia and fungemia should be a pay-for performance measure: a pro/con debate. *Infect Control Hosp Epidemiol.* Published online July 17, 2025. doi:10.1017/ice.2025.10216

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