

Universal Use of Heating Devices in Sink Drainpipes Reduced Clinical bacteremia in a Real-world Intensive Care Unit

Itaru Nakamura¹, Asami Okugawa¹, Tomohide Shimodaira¹, Yuri Miura¹, Tetsuo Yamaguchi²

¹ Department of Infection Prevention and Control, Tokyo Medical University Hospital, Tokyo ² Department of Microbiology and Infectious Diseases, Toho University Faculty of Medicine, Tokyo

Highlight

- Contamination of handwashing sinks and drains can facilitate pathogen transmission
- Heating devices were installed in all sink drainpipes in the intensive care unit.
- The monthly occurrence of bacteremia was 6.1 cases and 3.5 cases before and after the intervention, respectively ($p < 0.05$).
- The universal installation of heaters in sink drainpipes had been experimentally effective.

Objectives

Environmental contamination of handwashing sinks and drains can negatively impact hand hygiene practices and facilitate pathogen transmission, resulting in healthcare-associated bacteremia. The heating of sink drainpipes was found to regulate sink contamination under experimental conditions. This study aimed to determine **whether implementing a sink drainpipe heater effectively mitigates healthcare-associated bacteremia in a real-world hospital setting.**

Disclosures

None

Study Design

The study period: from January 2020 to March 2024.

pre-intervention period (Jan 2020 to Mar 2023), post-intervention period (Apr 2023 to Mar 2024)

Intervention: Heating devices were installed in all ($n=22$) sink drainpipes in the intensive care unit (ICU) in March 2023. The sink basins were cleaned daily with detergent, while the sink drainpipes were automatically heated to $> 100\text{ }^{\circ}\text{C}$ for 20 minutes twice daily.

Outcome: the difference in the incidence of bacteremia in the ICU before and after the intervention. As the main method of preventing bacterial transmission, hand hygiene was measured as the hand hygiene index (HHI) based on the total amount of alcohol-based hand sanitizer used and the total number of inpatient days.

Results

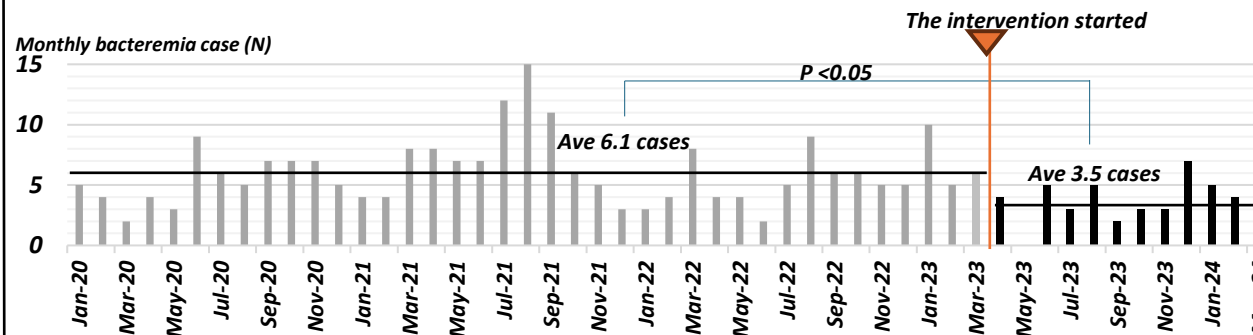
-The occurrence of bacteremia averaged 6.1 cases and 3.5 cases per month before and after the intervention, respectively ($p < 0.05$).

-Before the intervention; a total of 56, 71, 55, and 16 cases of bacteremia occurred in 2020, 2021, 2022, and January–March 2023, respectively.

-Post-intervention; 42 cases occurred from April 2023 to March 2024.

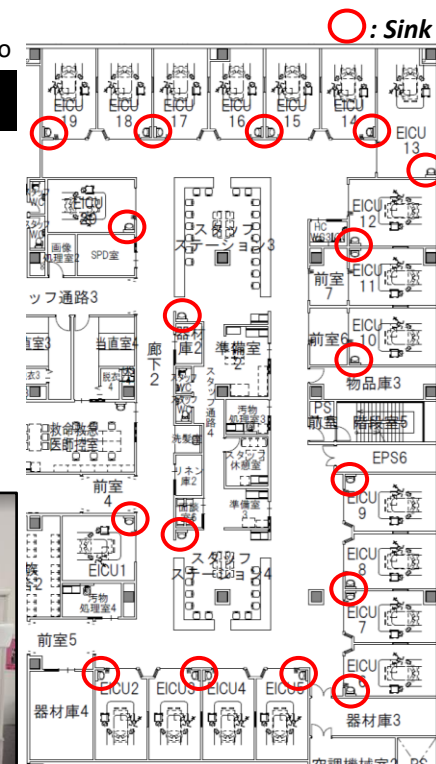
-The monthly number of blood culture bottles was 131 and 122.1 before and after intervention.

-The monthly HHI was 123.6 and 102.4 before and after the intervention.



Intervention

1. Heating device in all sink drainpipe
2. Daily cleaning with detergent



Conclusion

Although hand hygiene practices and obtaining blood culture practice did not change during the study period, **the universal installation of heaters in sink drainpipes, which had been experimentally effective, also significantly reduced the occurrence of clinical bacteremia in an ICU in a real-world setting.**