

CLINICAL SUMMARY

Cleaned, ready-to-use, reusable electrocardiographic lead wires as a source of pathogenic microorganisms.

Citation

Albert NM, Hancock K, Murray T, Karafa M, Runner JC, Fowler SB, Nadeau CA, Rice KL, Krajewski S. Cleaned, ready-to-use, reusable electrocardiographic lead wires as a source of pathogenic microorganisms. *Am J Crit Care*. 2010;19(6):e73-80. doi: 10.4037/ajcc2010304. <http://ajcc.aacnjournals.org/content/19/6/e73.full>

Introduction and purpose

- Electrocardiographic (ECG) lead wires may have pathogens that could be dispersed to patients with open wounds or otherwise immunocompromised patients, potentially resulting in hospital-acquired infections.
- Prior research linked a 21-patient VRE outbreak in a burn ICU to microbial growth on reusable ECG lead wires.¹
- The prevalence, types, and antibiotic-sensitivity of bacteria present in ECG lead wires remain unclear.
- The primary aims of this multicenter study were to determine the presence and number of bacterial and fungal species on cleaned, reusable ECG lead wires from multiple hospitals.

Methods

A descriptive, cross-sectional study was performed, involving 4 Magnet hospitals from different parts of the country (Northeast, Midwest, West and South). A total of 320 swabbings for bacterial and fungi were collected (80 per hospital).

Swabbing procedures were carried out in 1 day at each hospital, and all samples were shipped to a central, independent and accredited laboratory within 24 hours. Isolates were identified using standard microbiological and biochemical laboratory techniques.

Analysis

The independent laboratory provided a written report of the number and type of bacteria and fungi identified on each ECG lead wire, and microorganisms were grouped by species for risk for human infection.

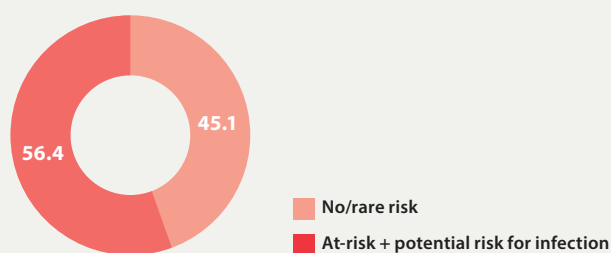
Results

A total of 226 cultures of specimens with bacterial growth were identified from 201 of the 320 ECG lead wires (62.8%); 127 species were identified as posing risk or potential risk for human infection (56.2%). Of the 320 cultures, only 2 (0.6%) were positive for the presence of fungi.

Discussion and conclusion

The presence of bacteria on ECG lead wires was common. 56.4% of the bacteria species found were at-risk or potential-risk for human infection. This study provides important insights on the frequency of growth of at-risk and potential-risk species of bacteria on cleaned, reusable ECG lead wires that may lead to cross-contamination between patients, thereby increasing the risk of healthcare-associated infection (HAI) transmission.

Proportion of reusable ECG lead wires contaminated with potentially harmful pathogens



References

1. Falk PS, Winnike J, Woodmansee C, Desai M, Mayhall CG. Outbreak of vancomycin-resistant enterococci in a burn unit. *Infect Control Hosp Epidemiol*. 2000;21:575-582.