Objection Handling Alcohol Wipes

Objection

“We clean with alcohol wipes between every patient.”

Example Conversation

Clinician: Our protocol is alcohol wipes between patients.
Rep: Understood. In real-world observation, correct cleaning happens in only a small fraction of encounters, and residual contamination often remains even after wiping.
Clinician: So how is this different?
Rep: DiskCover makes the outcome independent of time-pressure and technique wave, apply, and the contact surface is aseptic in under two seconds.
Clinician: We're busy; adding steps worries me.
Rep: This removes steps. No timing a 60-second wipe; no checking technique. It's faster, consistent, and easier to audit. We'll train the unit in 15 minutes and start measuring compliance immediately.

Objection 5:

- **"Our protocol is to clean with an alcohol wipe between every patient, so our staff already does this."**

Refutation:

Before going into clinical evidence, a very apparent issue with alcohol wipe cleaning of the stethoscope diaphragm is the time consumption. Suppose an ER doctor regularly sees 50 patients a day. If this doctor is to wipe their stethoscope for 60 seconds before each patient, that's 50 minutes a day allocated entirely to cleaning their stethoscope.

Data Point 1:

Stethoscope hygiene compliance by staff is difficult and often unenforced. In a direct observational study of a hospital's emergency, labor and delivery, and ICU departments, 400 healthcare provider-to-patient interactions were observed. **Only in 4% of these interactions was the stethoscope cleaned correctly per CDC guidelines.**[1]

Data Point 2:

Commonly used cleaning practices reduce contamination but are only partially effective.[2] A study found that immediately after cleaning with 65% isopropyl alcohol, the stethoscope diaphragm maintains a pathogen rate of 28%.[3]

Data Point 3:

Enforced training of healthcare workers on stethoscope hygiene and disinfection of the stethoscope diaphragm has been demonstrated to be ineffective.[4] Although disinfection habits improved and the overall bacterial loads of contamination were reduced after intervention, contamination rate by nosocomial pathogens and MDR bacteria did not decrease significantly.[4]

In Summary:

Stethoscope hygiene compliance is difficult to enforce, and even when staff correctly clean their stethoscopes as per CDC guidelines, a significant amount of stethoscope diaphragms are still infected with pathogens. **Therefore, cleaning with an alcohol wipe is both implausible and ineffective.**

Citations:

1. Vasudevan, Rajiv S., et al. "Observation of Stethoscope Sanitation Practices in an Emergency Department Setting." American Journal of Infection Control, vol. 47, no. 3, 2019, pp. 234–237., https://doi.org/10.1016/j.ajic.2018.08.028.
2. Knecht, Infection Control & Hospital Epidemiology (2018), 0,1-7 doi:10.1017/ice.2018.319
3. Parmar RC, Valvi CC, Sira P, Kamat JR. A prospective, randomised, double-blind study of comparative efficacy of immediate versus daily cleaning of stethoscope using 66% ethyl alcohol. Indian J Med Sci. 2004 Oct;58(10):423-30. PMID: 15523163.
4. Lee, Raeseok, et al. "A Quasi-Experimental Study on Stethoscopes Contamination with Multidrug-Resistant Bacteria: Its Role as a Vehicle of Transmission." PLOS ONE, vol. 16, no. 4, 2021, https://doi.org/10.1371/journal.pone.0250455.

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Observation of stethoscope sanitation practices in an emergency department setting

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Abstract

Background: Stethoscopes harbor pathogens that can be transferred to patients when proper sanitary measures are not taken. Our aim was to assess medical provider stethoscope cleaning and hand hygiene in an emergency department setting.

Methods: The frequency and methods of stethoscope cleaning during and after provider-patient encounters were observed anonymously in an emergency department of the VA San Diego Healthcare System.

Results: Among the total of 426 encounters, 115 (26.9%) involved the use of a personal stethoscope. In 15 of these 115 encounters (13.0%), the provider placed a glove over the stethoscope before patient contact. In 13 of these 115 encounters (11.3%), the provider cleaned the stethoscope with an alcohol swab after patient interaction. Stethoscope hygiene with water and a hand towel before patient interaction was observed in 5 of these 115 encounters (4.3%). Hand sanitizer use or handwashing was observed in 213 of the 426 encounters (50.0%) before patient interaction. Gloves were used before patient interaction in 206 of these 426 encounters (48.4%). Hand sanitizer or handwashing was used in 332 of the 426 encounters (77.9%) after patient interaction.

Conclusions: Rates of stethoscope and hand hygiene performance were lower than expected. Further investigation of stethoscope contamination and the associated risk of nosocomial infection are needed. Perhaps clearer guidelines on proper stethoscope cleaning would reduce this risk.

Keywords: Emergency department; Hospital-acquired infection; Hygiene; Stethoscope.

Vasudevan, Rajiv S., et al. "Observation of Stethoscope Sanitation Practices in an Emergency Department Setting." American Journal of Infection Control, vol. 47, no. 3, 2019, pp. 234–237., https://doi.org/10.1016/j.ajic.2018.08.028.

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Original Article

Molecular analysis of bacterial contamination on stethoscopes in an intensive care unit

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Abstract

Background: Culture-based studies, which focus on individual organisms, have implicated stethoscopes as potential vectors of nosocomial bacterial transmission. However, the full bacterial communities that contaminate in-use stethoscopes have not been investigated.
Methods: We used bacterial 16S rRNA gene deep-sequencing, analysis, and quantification to profile entire bacterial populations on stethoscopes in use in an intensive care unit (ICU), including practitioner stethoscopes, individual-use patient-room stethoscopes, and clean unused individual-use stethoscopes. Two additional sets of practitioner stethoscopes were sampled before and after cleaning using standardized or practitioner-preferred methods.
Results: Bacterial contamination levels were highest on practitioner stethoscopes, followed by patient-room stethoscopes, whereas clean stethoscopes were indistinguishable from background controls. Bacterial communities on stethoscopes were complex, and community analysis by weighted UniFrac showed that physician and patient-room stethoscopes were indistinguishable and significantly different from clean stethoscopes and background controls. Genera relevant to healthcare-associated infections (HAIs) were common on practitioner stethoscopes, among which *Staphylococcus* was ubiquitous and had the highest relative abundance (6.8%–14% of contaminating bacterial sequences). Other HAI-related genera were also widespread although lower in abundance. Cleaning of practitioner stethoscopes resulted in a significant reduction in bacterial contamination levels, but these levels reached those of clean stethoscopes in only a few cases with either standardized or practitioner-preferred methods, and bacterial community composition did not significantly change.
Conclusions: Stethoscopes used in an ICU carry bacterial DNA reflecting complex microbial communities that include nosocomially important taxa. Commonly used cleaning practices reduce contamination but are only partially successful at modifying or eliminating these communities.

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Stethoscopes are frequently used on multiple patients, and they have been implicated as vectors for nosocomial transfer of bacteria responsible for healthcare-associated infections (HAIs). It is well documented that practitioner stethoscopes are not routinely disinfected,[1,2] and studies based on bacterial culture show that they may be contaminated with potential pathogens including methicillin-resistant and -sensitive *Staphylococcus* spp, multidrug-resistant *P. aeruginosa*, *Acinetobacter* spp, *Enterococcus* spp, *Escherichia coli*, *Klebsiella* spp, and *Streptococcus* spp.[3–5] Culture-based studies have also shown that thorough stethoscope decontamination can significantly reduce pathogen colony-forming units (CFUs),[6,7] although the impact of actual practitioner practices is less clear. Culture-based studies are limited, however, because culture can only identify agents of a priori interest but not entire microbial communities that may be present.

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In contrast to culture, which is focused on individual bacteria and is only semi-quantitative, emerging molecular approaches using next-generation sequencing can provide unbiased profiling of entire bacterial communities in a manner that is both comprehensive and highly quantitative.[8,9] These powerful approaches have revolutionized studies of the microbiome and of microbial ecology. Here, we used next-generation sequencing to investigate bacterial contamination on several types of stethoscopes in a medical intensive care unit (ICU), including stethoscopes carried by practitioners and used with multiple patients. We also investigated the effects of cleaning protocols that are used by practitioners in everyday practice.

Materials and Methods

Sample collection method (set A)

Stethoscope samples were collected in the medical ICU at the Hospital of the University of Pennsylvania. Stethoscope diaphragms were swabbed for 60 seconds using a flocked swab

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A prospective, randomised, double-blind study of comparative efficacy of immediate versus daily cleaning of stethoscope using 66% ethyl alcohol

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PMID: 15523163

Abstract

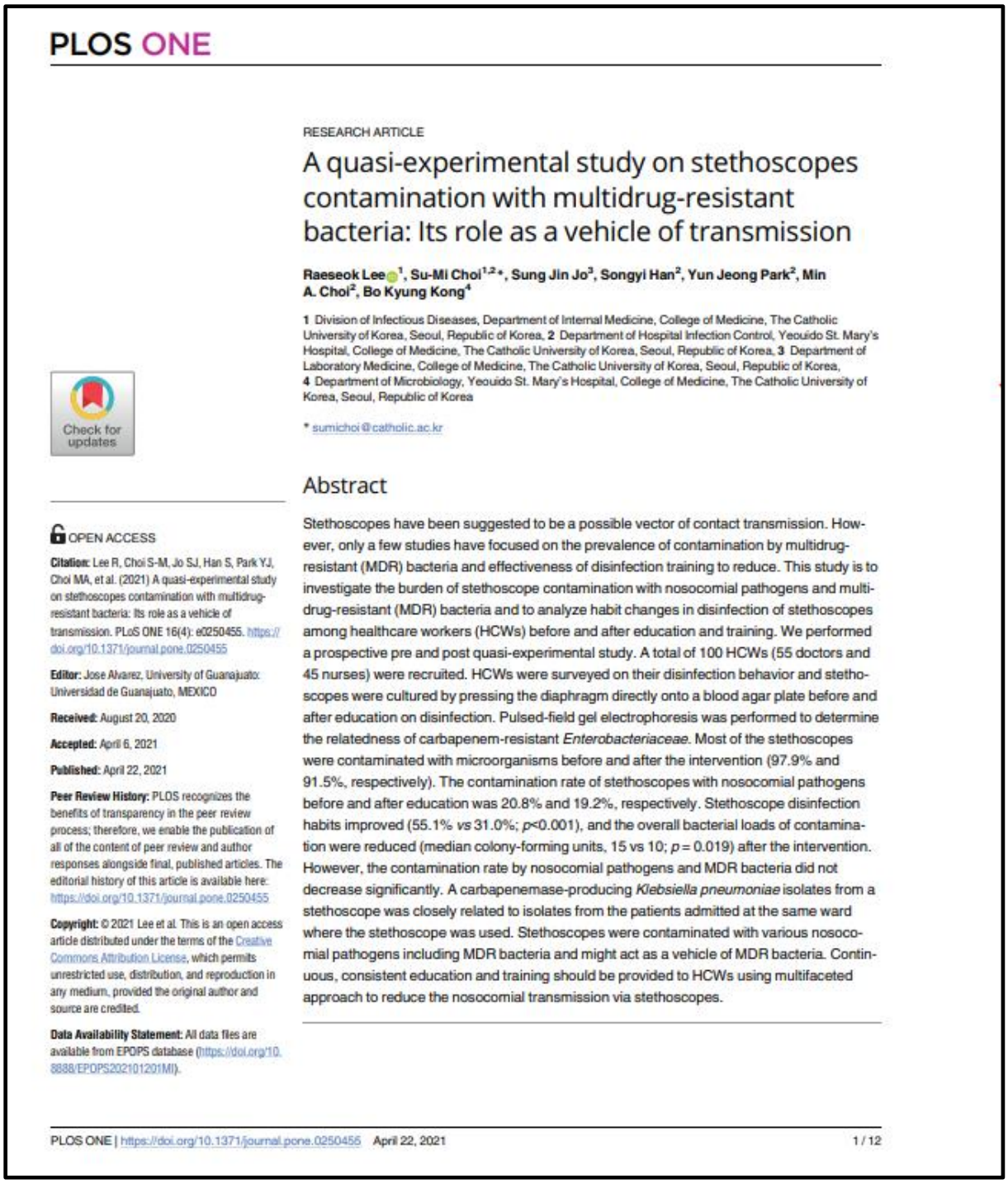
Objective: Studies have demonstrated frequent contamination of stethoscope and usefulness of different disinfectants. Albeit, studies on the precise mode of cleaning and frequency of cleaning are lacking. This study was carried out to determine efficacy of 66% ethyl alcohol as disinfectant, rate of recontamination without cleaning and benefits of daily versus immediate cleaning.

Methodology: Prospective, randomised, double blind study of 100 stethoscopes. Four cultures were obtained: before cleaning (Group A), immediately after cleaning with 66% ethyl alcohol (Group B), at the end of 4 days without cleaning (Group C) and at the end of 4 days after cleaning once a day (Group D). Samples were analysed using standard microbiological methods and Colony-forming unit (CFU) count and residual microorganism was computed for all the positive cultures. Medical staff was asked about the cleaning practices. Statistical analysis was carried out using 95% confidence interval and Chi-square test.

Results: 90% of the stethoscopes were contaminated with one or more microorganisms. Immediate cleaning and daily cleaning were associated with a significant reduction in the rate of contamination to 28% and 25% respectively. CFU count in groups B and D dropped to less than 10 in 75% and 84.7%, while the mean residual rates were 5.2% and 3.65% respectively. Groups B and D showed no statistically significant difference in terms of efficacy of disinfection.

Conclusions: 66% ethyl alcohol is an effective disinfectant. The effects of immediate cleaning and cleaning once a day on residual flora on the diaphragm of stethoscope is comparable.

Parmar RC, Valvi CC, Sira P, Kamat JR. A prospective, randomised, double-blind study of comparative efficacy of immediate versus daily cleaning of stethoscope using 66% ethyl alcohol. Indian J Med Sci. 2004 Oct;58(10):423-30. PMID: 15523163.



PLOS ONE

RESEARCH ARTICLE

A quasi-experimental study on stethoscopes contamination with multidrug-resistant bacteria: Its role as a vehicle of transmission

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Abstract

Stethoscopes have been suggested to be a possible vector of contact transmission. However, only a few studies have focused on the prevalence of contamination by multidrug-resistant (MDR) bacteria and effectiveness of disinfection training to reduce. This study is to investigate the burden of stethoscope contamination with nosocomial pathogens and multidrug-resistant (MDR) bacteria and to analyze habit changes in disinfection of stethoscopes among healthcare workers (HCWs) before and after education and training. We performed a prospective pre and post quasi-experimental study. A total of 100 HCWs (55 doctors and 45 nurses) were recruited. HCWs were surveyed on their disinfection behavior and stethoscopes were cultured by pressing the diaphragm directly onto a blood agar plate before and after education on disinfection. Pulsed-field gel electrophoresis was performed to determine the relatedness of carbapenem-resistant *Enterobacteriaceae*. Most of the stethoscopes were contaminated with microorganisms before and after the intervention (97.9% and 91.5%, respectively). The contamination rate of stethoscopes with nosocomial pathogens before and after education was 20.8% and 19.2%, respectively. Stethoscope disinfection habits improved (55.1% *vs* 31.0%; $p<0.001$), and the overall bacterial loads of contamination were reduced (median colony-forming units, 15 vs 10; $p = 0.019$) after the intervention. However, the contamination rate by nosocomial pathogens and MDR bacteria did not decrease significantly. A carbapenemase-producing *Klebsiella pneumoniae* isolates from a stethoscope was closely related to isolates from the patients admitted at the same ward where the stethoscope was used. Stethoscopes were contaminated with various nosocomial pathogens including MDR bacteria and might act as a vehicle of MDR bacteria. Continuous, consistent education and training should be provided to HCWs using multifaceted approach to reduce the nosocomial transmission via stethoscopes.

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