

Nail Bacteria: Impact of Gel Nails, Standard Nail Polish, and Unpolished Nails on Bacterial Growth in the Hospital Setting

Student Authors: Sydney Mindrum, BSN, Ella Pollard, BSN, Abigail Staley, BSN, Jenavieve Young, BSN
and Faculty Mentor: Jenna Dunnavan, MSN, RN

Identification of the Problem

Hospital-acquired infections (HAIs) are a persistent issue for hospitals, as they can complicate a patient's healing and carry legal ramifications for hospital systems (Hewlett et al., 2018). On average, one in 31 hospitalized patients acquired an infection during their hospital stay (Centers for Disease Control, 2025). Nurses provide direct patient care and are therefore subject to policies that specifically target the use of nail coatings such as standard and gel polishes (Blackburn et al., 2020; Dinu et al., 2022; Hedderwick et al., 2000; Hewlett et al., 2018; Moolenaar et al., 2000). Despite a thorough search of the evidence, there is a lack of consistent, current and rigorous research regarding nail coating type and the impact on bacterial growth on nurses' hands (Arreba et al., 2024; Fagernes & Lingaas, 2011; Hewlett et al., 2018).

Review of the Literature

An integrative review was conducted with OVID Synthesis using the following keywords: "artificial nails," "infection," "patients," "polish," "bacteria," and "nails." Eligibility criteria included studies comparing gel polish with unpolished nails, standard polish with unpolished nails, and gel polish with standard polish. This systematic review yielded eight studies consisting of three quasi-experimental, three observational, one qualitative, two non-randomized controlled trials, and one retrospective cohort/case-control study published within the last 20 years. Four European and four American studies were found. The articles were divided over



Abigail Staley BSN, Jenavieve Young BSN, Ella Pollard BSN, Sydney Mindrum BSN

the impact of artificial and natural nails on bacterial burden, with three studies (Hedderwick et al., 2000; Moolenaar et al., 2000; Walaszek et al., 2018) recommending the prohibition of gel polish, and two other studies (Arreba et al., 2024; Blackburn et al., 2020) recommending the prohibition of standard polish. Limitations to this literature review include low levels of evidence, small sample sizes, lack of random assignment and sampling, and the inclusion of international studies, decreasing the generalizability and rigor of the available evidence. Of note, four articles (Dinu et al., 2022; Fagernes & Lingaas, 2011; Moolenaar et al., 2000; Walaszek et al., 2018) analyzed nail length as well as coating, and found that nails greater than or equal to 2 mm in length posed a greater bacterial burden risk than nail coatings.

Recommended Intervention or Protocol

This review indicates a gap in consistent,

conclusive evidence supporting the removal of nurse nail coatings. Based on the divisive nature of the evidence reviewed, policies regarding nail coverings in hospital settings should be reviewed. Current hospital policies should be reviewed, and new policies should be suspended from implementation until conclusive evidence is available. Consideration of nail length should be included in all future policies, and accountability parameters with disciplinary action should be instilled to promote adherence.

Suggestions for Further Study

Future studies focusing on the impact of nail length, jewelry, and hand hygiene could provide further insight into the quantity of bacteria acquired and their transmission to patients. These studies must be conducted in the United States and utilize random sampling and blinding to improve the evidence base and generalizability of findings. This research is necessary to draw more accurate and

evidence-based conclusions regarding the multidimensional relationship between nail coatings and acquired bacteria to better prioritize the safety of both healthcare workers and patients. ■

Sydney Mindrum, Ella Pollard, Abigail Staley, and Jenavieve Young, graduated May 14th, 2026, with Bachelor of Science in Nursing degrees from the Fran and Earl Ziegler College of Nursing at the University of Oklahoma Health Sciences and will begin their careers in Ambulatory Oncology, Step Down ICU, ED, and Post-Surgical units, respectively. As part of their studies, they examined the impact of various nail coatings on bacterial growth in hospital settings, given the range of protocols and adherence levels observed in clinical practice.

They would like to give a special thanks to both Dr. Fisher and Professor Dunnnavan for their guidance and consistent support throughout their nursing school journey. Professor Jenna Dunnnavan, MSN, RN, is an instructor at the Fran and Earl Ziegler College of Nursing and brings her experience from Medical-Surgical, Postpartum, and Pre-Operative settings into the classroom. Dr. Mark Fisher, PhD, RN, CNE, is an assistant professor at the Fran and Earl Ziegler College of Nursing with over 20 years

of nursing experience focused on pediatric clinical education, parent-advocacy, and student advocacy in nursing education.

References

- Arreba, P. et al. (2024). Gel nail polish does not have a negative impact on the nail bacterial burden nor on the quality of hand hygiene with an alcohol-based hand rub. *Journal of Hospital Infection*, 157(2025), 40-44. <https://www.doi.org/10.1016/j.jhin.2024.12.006>
- Blackburn, L. et al. (2020). Microbial growth on the nails of direct patient care nurses wearing nail polish. *Oncology Nursing Forum*, 47(2), 155-164. <https://doi.org/10.1188/20.onf.155-164>
- Centers for Disease Control and Prevention. (2025, June 27). About HAI. *Healthcare Associated Infections (HAIs)*. <https://www.cdc.gov/healthcare-associated-infections/about/index.html>
- Dinu, E., Repanovici, A., Nemet, C. (2022) Study about using of polymeric materials for improving hand hygiene quality for healthcare staff. *Macromolecular Symposia*, 404(1), 1-4. <https://doi.org/10.1002/masy.202100426>
- Fagernes, M. & Lingaas, E. (2011). Factors interfering with the microflora on hands: A regression analysis

of samples from 465 healthcare workers. *Journal of Advanced Nursing* 67(2), 297-307. <https://doi.org/10.1111/j.1365-2648.2010.05462.x>

Hedderwick, S. A. et al. (2000). Pathogenic organisms associated with artificial fingernails worn by healthcare workers. *Infection Control and Hospital Epidemiology*, 21(8), 505-509. <https://doi.org/10.1086/501794>

Hewlett, A. L. et al. (2018). Evaluation of the bacterial burden of gel nails, standard nail polish, and natural nails on the hands of health care workers. *American Journal of Infection Control*, 46(12), 1356-1359. <https://doi.org/10.1016/j.ajic.2018.05.022>

Moolenaar, R. L. et al. (2000). A prolonged outbreak of *Pseudomonas aeruginosa* in a neonatal intensive care unit: Did staff fingernails play a role in disease transmission?. *Infection control and hospital epidemiology* 21(2), 80-85. <https://doi.org/10.1086/501739>

Walaszek, M. Z. et al. (2018). Nail microbial colonization following hand disinfection: A qualitative pilot study. *Journal of Hospital Infection*, 100(2), 207-210. <https://doi.org/10.1016/j.jhin.2018.06.023>

Role of School Nurses in Improving Childhood Vaccination Rates

Student Authors: Leah North, BSN, Katelyn Quijano, BSN, Amanda Miller, BSN, Hailey Ratlief, BSN



Identification of Problem:

Childhood vaccination rates have declined in recent years due to increasing vaccine hesitancy and limited access to reliable health education. As coverage decreases, outbreaks of preventable diseases have

reemerged, increasing pediatric morbidity (Kiang et al, 2025). School nurses, who maintain contact with students and parents, are uniquely positioned to provide vaccine education, address concerns, and support immunization compliance within

school settings. Our research question asks: How does providing vaccine education through school nurses affect childhood vaccination rates compared to children who do not receive regular primary care? The objective is to determine whether school-based vaccine education is more effective in increasing immunization rates and decreasing parental vaccine hesitancy. Identifying the most effective setting for parent-focused vaccine education is essential to improving public health outcomes and protecting children from transmissible diseases.

Review of Literature:

Literature was gathered from OVID, the OUHSC Bird Library, and Google Scholar. Keywords in the literature search included vaccine, school nurse, parent, vaccination