Brief Review of the Literature Regarding the Use of Overshoes Before Entering ICUs

1. *Hambraeus A, Malmborg AS. The influence of different footwear on floor contamination. Scand J Infect Dis. 1979;11(3):243-6. doi: 10.3109/inf.1979.11.issue-3.12. PMID: 524071.*

    a. No significant difference in floor contamination could be seen with different footwear (ordinary shoes, clean shoes, shoe covers).

2. *Daschner F, Rabbenstein G, Langmaack H et al. [Surface decontamination in the control of hospital infections: comparison of different methods (author's transl)]. Dtsch Med Wochenschr. 1980 Mar 7;105(10):325-9. German. doi: 10.1055/s-2008-1070659. PMID: 7363766.*

    a. Disinfectant mats did not decrease bacterial count on the surface behind them. Plastic overshoes did not influence floor contamination.

3. *Humphreys H, Marshall RJ, Ricketts VE, Russell AJ, Reeves DS. Theatre over-shoes do not reduce operating theatre floor bacterial counts. J Hosp Infect. 1991 Feb;17(2):117-23. doi: 10.1016/0195-6701(91)90175-8. PMID: 1674257.*

    a. As in Intensive Therapy units, over-shoes should no longer be used in general operating theatres.

4. *World Health Organization. Practical Guidelines for Infection Control in Health Care Facilities. 2004.*

    a. Wear caps and boots/shoe covers where there is a likelihood the patient's blood, body fluids, secretions or excretions may splash, spill or leak onto the hair or shoes. (WHO does not mention the need to wear overshoes in ICUs).

5. *Santos AM, Lacerda RA, Graziano KU. Evidência de eficácia de cobertura de sapatos e sapatos privativos no controle e prevenção de infecção do sítio cirúrgico: revisão sistemática de literatura [Evidence of control and prevention of surgical site infection by shoe covers and private shoes: a systematic literature review]. Rev Lat Am Enfermagem. 2005 Jan-Feb;13(1):86-92. Portuguese. doi: 10.1590/s0104-11692005000100014. Epub 2005 Mar 3. PMID: 15761585.*

    a. Results do not suggest direct evidence on their efficacy (of shoe covers) …

6. *Gupta A, Anand AC, Chumber SK, Sashindran VK, Patrikar SR. Impact of Protective Footwear on Floor and Air Contamination of Intensive Care Units. Med J Armed Forces India. 2007;63(4):334–336.*

    a. Floor and air colony counts showed no significant difference in the two phases with and without protective footwear. Protective footwear had no significant impact on bacterial contamination of floors.

7. *Ali Z, Qadeer A, Akhtar A. To determine the effect of wearing shoe covers by medical staff and visitors on infection rates, mortality and length of stay in Intensive Care Unit. Pak J Med Sci. 2014 Mar;30(2):272-5.*

    a. Use of shoe covers in critical care area is not helpful in preventing infections of common ICU pathogens and length of stay in ICU patients; nor has it decreased the mortality.

8. *Emine Alp, Nizam Damani. Healthcare-associated infections in Intensive Care Units: epidemiology and infection control in low-to-middle income countries. J Infect Dev Ctries 2015; 9(10):1040-1045. doi:10.3855/jidc.6832*

    a. Another issue in these countries is unnecessary applications of and wasteful practices in infection control (routine environmental cultures, overuse of surface disinfectants, application of HEPA filters in ICUs, fumigation of rooms, use of sticky mat and overshoes, gowning for visitors, etc.), failure to properly separate and dispose of waste, misuse of PPEs (gloves, masks, shoe covers), or inappropriate and overuse of antibiotics.

9. *Galvin J, Almatroudi A, Vickery K, Deva A, Lopes LK, Costa DM, Hu H. Patient shoe covers: Transferring bacteria from the floor onto surgical bedsheets. Am J Infect Control. 2016 Nov 1;44(11):1417-1419. doi: 10.1016/j.ajic.2016.03.020. Epub 2016 May 5. PMID: 27158087.*

    a. Bacteria, including pathogens from contaminated shoe covers, can be transferred to surgical bedsheets.

    b. Yet, this study does not report on any increase in infections among patients.

10. *Rui Hai SONG; Chao WANG; song Zhu LI. Effect of disposable shoe covers on the culture result of airborne bacteria in intensive care unit. Chinese Journal of Infection Control ; (4): 963-965, 2017.*

    a. The use of disposable shoe covers cannot improve ICU air quality.

11. *Sharma P D, Kaur N, Jitender, Kaur M. Effect of Wearing Shoes by Medical and Nursing Staff in PICU/NICU and Bacterial Contamination of Floors. International Journal of Science and Research (IJSR). ISSN (Online): 2319-7064 (May 2018).*

    a. Earlier studies have proved that protective footwear (shoes and shoe covers) do not significantly affect floor contamination. This study further strengthens the same view point.

12. *Dondorp, A.M., Limmathurotsakul, D. & Ashley, E.A. What's wrong in the control of antimicrobial resistance in critically ill patients from low- and middle-income countries?. Intensive Care Med 44, 79–82 (2018). https://doi.org/10.1007/s00134-017-4795-z*

    a. Instead of an emphasis on hand washing and other simple hygiene measures, emphasis can be on less relevant measures such as wearing reusable overshoes.

13. *M-C Roy, Michael Stevens. GUIDE TO INFECTION CONTROL IN THE HOSPITAL CHAPTER 22: The Operating Room. International Society for Infectious Diseases; February 2018.*

    a. … because no significant difference was found in floor contamination whether personnel wear shoe covers or ordinary shoes.

14. *Frederick, David J., "Hospital Footwear as a Vector for Organism Transmission" (2020). Honors Undergraduate Theses. 706.*

    a. After reviewing the selected research, it can be concluded that hospital footwear serves as a vector of organism transmission. In addition, the intervention of shoe covers appeared to be ineffective in lowering organism transmission.

    b. Shoe covers are unnecessarily used to keep the hospitals floor clean.

15. *National Institute of Health, Pakistan. National Guidelines Infection Prevention & Control. 2020.*

    a. The use of sticky mat at the entrance door and overshoes is not necessary as putting it on and removing it contaminates hands.

16. *Department of Health of South Africa. Practical Manual for Implementation of the National Infection Prevention and Control Strategic Framework. March 2020.*

    a. Overshoes/shoe covers should not be used in the general healthcare environment. By touching the shoes when putting on overshoes, hands become contaminated. Overshoes can result in creating an aerosol while walking and can transmit microbes from the floor to the environment and patient surrounding area.

17. *Wolpaw JT, Adair KC. Shoe Covers but Not Burnout? Making Burnout Reduction a Criteria for Centers for Medicare and Medicaid Services Funding Would Protect Patients. J Patient Saf. 2021 Jan 1;17(1):68-70. doi: 10.1097/PTS.0000000000000681. PMID: 32217936.*

    a. Hospitals are frequently cited for items such as inadequate wearing of boot covers or covering of facial hair in the operating rooms. There are very little, if any, data to support an improvement in patient safety when these items are complied with.

18. *National Services Scotland, ARHAI. Standard Infection Control Precautions Literature review. Footwear: Personal Protective Equipment (PPE) Footwear. 5 August 2021.*

    a. The evidence-base for this topic is very limited, focusing predominantly on the use of overshoes in theatre settings. The Association of Perioperative Registered Nurses (AORN) and the American Association of Nurse Anaesthetists (AANA) have recommended that they should be worn when a high risk of splash contamination is anticipated.

    b. The remaining guidelines identified for this review advise against their use, citing shortcomings including lack of traction underfoot, potential increased risk of bacterial contamination on floors, and cross-contamination to hands when overshoes are doffed.

19. *Ministry of Health and Wellness, Mauritius. National Guidelines on Infection Prevention and Control. Page 42. 27 December 2021.*

    a. Studies do not support the use of shoe covers before entering intensive care unit (ICU) or the operating theater – they do not reduce the risk of acquiring HAI.

20. *Health Service Executive, Ireland. NCEC Draft Guidance on Infection Prevention and Control. January 2022.*

    a. Disposable shoe covers are generally not appropriate for IPC purposes. Use of disposable shoe covers may contaminate hands when putting on or taking off.

Based on the current scientific evidence which are displayed above, it is not recommended for healthcare workers (or visitors) to wear overshoes or shoe covers before entering the intensive care units in Mauritius.

National IPC Focal Point (Mauritius) on 8 May 2022