Summary of literature identified for the National Policy Guidance & Evidence (NPGE) literature reviews – April to June 2023

Titles and abstracts are reviewed for subject relevance. Additional exclusion criteria are also applied, for instance exclusion of laboratory focussed studies such as molecular typing etc.

Literature review	Papers identified	Summary of Findings	Impact on Recommendations
Hand Hygiene Products	Lim K, Li WY, Dinata A, et al. Comparing the antibacterial efficacy and functionality of different commercial alcohol-based sanitizers. PLoS ONE. 2023;18(3).	This in vitro study carried out in Singapore investigated the bactericidal efficacy and functionalities of numerous alcohol-based hand rubs (ABHRs) (A. 70% Ethanol, B. 62% Ethanol, C. 70% Ethanol with Cetylpyridinium Chloride, D. 70% Ethanol with Chlorhexidine, and E. 70% Ethanol with bleach). A zone of inhibition assay was used to evaluate antimicrobial functionality of the ABHRs against bacterial strains *E. coli*, and *S. aureus.* Minimum bactericidal	Adds to evidence base for following objective: "How effective is alcohol-based hand rub (ABHR) at removing/killing microorganisms?" by providing evidence for the requirement for further research into the effectiveness of ABHR formulations with additional antimicrobial agents Conclusions of this study cannot be relied upon, and only add to the mixed evidence base, due to its in

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		concentration assay was also calculated using a broth microdilution procedure. Phosphate buffered saline (PBS) was used as a control. Only ABHRs C, D and E (70% Ethanol with Cetylpyridinium Chlorine, 70% Ethanol with Chlorhexidine, and 70% Ethanol with bleach, respectively) produced zone of inhibition against both *E. coli* and *S. aureus*. The largest zone of inhibition was around sanitiser D, 21.67±0.58mm against *E. coli* and 22.33±0.58mm against *S. aureus*. Dilution to minimum bactericidal concentration ranged from 8.00 x dilution for sanitiser: A; B; C and E (*E.coli* only), to ≥256.00 for sanitiser E and C (*S. aureus* only). This study suggests, alcohol-based sanitisers with 70% Ethanol may not possess	vitro nature and lack of statistical testing. No change to current recommendations.

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		antimicrobial functionality against *S. aureus*. And 62% Ethanol may not possess antimicrobial functionality against either *E. coli* or *S. aureus*. Sanitisers with 70% Ethanol and Chlorhexidine appear to be most effective against *E. coli* and *S. aureus.* This study did not implement a BS EN standard test to assess the ABHRs efficacy. The study is further limited by its potential lack of applicability due to its in vitro nature, and lack of statistical testing.	
PPE: Eye and Face Protection	Chao I, Lee S, Brenker J, et al. The effect of clinical face shields on aerosolized particle exposure Journal of 3D Printing in Medicine. 2023; 7(1)	This study, carried out at Monash University Australia, aimed to evaluate if face shields have an effect on the exposure of HCWs to aerosolized particles within a theatre environment and if there is any difference in particle concentrations behind	Adds to the evidence base of the following objectives: What type(s) of eye/face protection should be used for SICPs? When/where should eye/face protection be used for SICPs? When/where should eye/face protection be used for TBPs?

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		open-vented versus enclosed shields. This simulation study was performed in an operation room with 20 air changes per hour. A mannequin was positioned on the operating table and generated nebulised sterile 0.9% saline in particle sizes mainly from 0.3 to 5μm, and 5 to 10μm to a lesser degree. Two foam mannequin heads were positioned at distances/heights reflective of a laryngoscopist/anaesthetist (position 1 at 50cm from mannequin) and airway assistant's (position 2 at 100cm from mannequin) intubating positions. Particle counting was performed directly in front of the central upper lip at each site, measuring particles of sizes 0.3, 0.5, 1.0 and 2.5μm. Measurements were taken at position one in absence of a	The study demonstrates the mechanistic efficacy of face shields at reducing aerosol exposure at distances of 50cm and 100cm. However, findings cannot be relied upon as the study may not represent real life scenarios and is specific to procedures carried out in operating rooms with positive pressure laminar flow ventilation. No change to current recommendations.

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		face shield for five minutes. After sampling, the room was left for 20 minutes until baseline readings were reached. Tests were repeated with the application of an enclosed (face shield 1) and an open topped/vented face shield (face shield 2). In total, 21 measurements were taken in 15 second intervals. There was a significant reduction in aerosol exposure with the application of face shields in both positions across all four particle sizes (all $p<0.0001$, except for particle sizes 2.5μm at position 1 with open topped/vented face shield, where $p<0.0003$). No significant difference was found between the two types of face shield at either position. Limitations of this study include the potential lack of	

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		applicability to real life-scenarios with the use of mannequin's artificial sterile saline solution. Findings are also specific to procedures carried out in operating rooms with positive pressure laminar flow ventilation.	
Safe management of the care environment	Torres-Teran MM, Alhmidi H, Koganti S, et al. Dissemination of methicillin-resistant Staphylococcus aureus and bacteriophage MS2 from floors in long-term care facility resident rooms. Am J Infect Control. 2023;51(6):714-717. doi: 10.1016/j.ajic.2022.09.024	Experimental study investigating contamination from floors in resident rooms in a long-term care facility. 12 patients in a long-term care facility in America who were colonised or infected with MRSA were recruited. Samples were taken from the floors to classify patient rooms based on number of methicillin-resistant Staphylococcus aureus (MRSA) colony-forming units (CFUs). Floors of adjacent rooms and soles of participant shoes of were cleaned and disinfected. Research or facility staff walked into the	Adds to the evidence base of the following objective: What is the risk of Healthcare Associated Infection (HAI) from the care environment? No change to current recommendations.

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		MRSA patient room, and then into adjacent rooms. Floors were sampled after each simulation, with three or four simulations for each room. Heavily contaminated rooms were also trialled with wheelchairs. Of the 38 simulations, MRSA transfer occurred for 47.4% into the first adjacent room (n=18) and 31.6% of simulations into the second (n=12). Significantly larger numbers of MRSA were transferred from patient rooms which were heavily contaminated (>100CFU) compared to those with medium or light contamination (≤99CFU), p ≤.002. Contamination of adjacent rooms also occurred in four out of the six wheelchair simulations for heavily contaminated rooms (mean number of MRSA colonies =	

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		6.5, range 2-11). These findings suggest that contamination of MRSA can occur from floors of adjacent rooms in this long-term care facility from shoes and wheels of wheelchairs, particularly for heavily contaminated floors. In a second phase of the study, researchers inoculated 30x30cm of twelve infected patient room floors with 2mL of water containing 1x108 plaque-forming units of bacteriophage MS2 without informing staff or patients and investigated contamination in the following two days. Bacteriophage MS2 was found in more than half of the 171 samples collected from adjacent room floors, and 33 to 70% of the 155 high-touch surfaces sampled in index rooms, adjacent rooms and nursing stations, indicative that some contamination from	

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		floors to high-touch surfaces may also occur.	

Evidence table – Healthcare Infection Incidents, Outbreaks and Data Exceedance - literature identified

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	No literature identified.		