Evidence summary tables: NIPCM literature identified July to September 2019

Titles and abstracts are reviewed for subject relevance. Additional exclusion criteria are also applied as per the NIPCM methodology.

Standard Infection Control Precautions:

Literature review	Papers identified	Summary of scientific findings	Impact on recommendations
Hand Hygiene: Hand Washing	Deposition of Bacteria and Bacterial Spores by Bathroom Hot-Air Hand Dryers. del Carmen Huesca-Espitia L, Aslanzadeh J, Feinn R, Joseph G, Murray TS and Setlow P. *Public and Environmental Health Microbiology* 84: e00044-18, 2018	This study was carried out in bathrooms of three buildings of the scientific research area of the University of Connecticut Medical School. Agar plates were exposed to the air in 36 bathrooms without the hand dryers in operation for 2 minutes and were compared with plates exposed to air from the hand dryers in those bathrooms. Deposition of total bacteria, and kanamycin-resistant *Bacillus subtilis* strain, PS533 (spores were produced in large quantities in one of the laboratories in the buildings) were measured. For the plates not exposed to air from the dryers, an average of 0 to 1 colony per plate was observed. When plates were exposed to air from the hand dryers (~12 in from the nozzle of the dryer) for 30s, there was an average of 18, 24 and 60 colonies per plate (range 3 to 254 colonies/plate) in the three buildings sampled in two experiments separated by 3 to 4 weeks. *B. subtilis* comprised ~2.5 – 5% of the bacteria identified in samples. Interior hand dryer nozzle surfaces had minimal bacterial levels. This study found that hot air dryers dispersed bacteria and spores. The introduction of HEPA filters reduced the deposition of bacteria ~4-fold.	None. Adds to evidence base.
Hand Hygiene: Use of Alcohol Based Hand Rubs	Do wearable alcohol-based handrub dispensers increase hand hygiene compliance? – A mixed-methods study. Keller J, Wolfensberger A, Clack L, Kuster SP, Dunic M, Eis D, Flammer Y, Keller DI and Sax H. *Antimicrobial Resistance & Infection Control* 7: 143, 2018.	This study was conducted in the Emergency Department of the University Hospital Zurich in Switzerland. Compliance with hand hygiene was monitored according to the WHO 'My 5 moments for hand hygiene' for five weeks prior to and for seven weeks following the intervention. Wearable dispensers of alcohol-based hand rub (ABHR) were introduced into the department, and the number and positions of wall mounted dispensers remained unchanged throughout the study period. A total of 811 hand hygiene opportunities were observed. During baseline compliance was 56% (95% CI 51-	None.

		62%) and during intervention period compliance was 64% (95% CI 59-68%). Multivariable analysis adjusting for sex, profession and WHO HH moment revealed no difference in compliance between baseline and intervention period (odds ratio: 1.22 (0.89-1.66), p=0.22). Additionally, interviews were conducted and no significant difference was observed in consumption and perceived availability of ABHR. During the intervention period 7.5% of ABHR consumed was dispensed from the wearable dispensers.	

Transmission Based Precautions:

Literature review	Papers identified	Summary of scientific findings	Impact on recommendations
Personal Protective Equipment (PPE) for Infectious Diseases of High Consequence (IDHC)	Personal protective equipment for preventing highly infectious diseases due to exposure to contaminated body fluids in healthcare staff. Verbeek JH, Ijaz S, Mischke C, Ruotsalainen JH, Mäkelä E, Neuvonen K, Edmond MB, Sauni R, Kilinc Balci FS and Mihalache RC. *Cochrane Database of Systematic Reviews* 7: 2019.	This is an update to a 2016 Cochrane systematic review. The authors found very low quality evidence that more breathable types of PPE may not lead to more contamination, but may have greater user satisfaction. There was also very low quality evidence that double gloving and Centers for Disease Control and Prevention (CDC) doffing guidance appear to decrease the risk of contamination and that more active training in PPE use may reduce PPE and doffing errors more than passive training. These findings are the same as those published in the 2016 review.	None. Adds to evidence base.
Personal Protective Equipment (PPE) for Infectious Diseases of High Consequence (IDHC)	Risk of self-contamination during doffing of personal protective equipment. Chughtai AA, Chen X and Macintyre CR. *American Journal of Infection Control* 46(12): 1329-1334, 2018.	This study tested 30 different PPE sequences, and ten different donning and doffing protocols in ten volunteers who were randomly assigned to three PPE protocols. The external surfaces of the PPE were artificially contaminated with a fluorescent lotion transfer to skin was assessed after doffing. PPE sequences with powered air-purifying respirators (PAPRs) and assisted doffing were generally associated with fewer problems.	None. Adds to evidence base.

Management of incidents and outbreaks in a neonatal unit (NNUs):

Literature review	Papers identified	Summary of scientific findings	Impact on recommendations
Management of Incidents and Outbreaks in a Neonatal Unit (NNU)	Outbreak investigation of Pseudomonas aeruginosa infections in a neonatal intensive care unit. Weng MK, Brooks RB, Glowicz J, Keckler MS, Christensen BE, Tsai V, Mitchell CS, Wilson LE, Laxton R, Moulton-Meissner H and Fagan R. *American Journal of Infection Control* 47(9): 1148-1150, 2019.	This article describes the investigation of an outbreak of *Pseudomonas aeruginosa* in a neonatal unit. It was found that contaminated tap water had been used for filling humidifier reservoirs, neonatal bathing, and nutritional preparation.	None. Adds to evidence base.
	Extended spectrum beta-lactamase-producing Klebsiella pneumoniae outbreak reveals incubators as pathogen reservoir in neonatal care center. Cadot L, Bruguiere H, Jumas-Bilak E, Didelot MN, Masnou A, de Barry G, Cambonie G, Parer S and Romano-Bertrand S. *European Journal of Pediatrics* 178(4): 505-513, 2019.	This paper describes the investigation of an outbreak of extended-spectrum beta lactamase producing Klebsiella pneumoniae in a neonatal unit over 3 months. The investigation identified incubators and mattresses as important reservoirs of infection.	None. Adds to evidence base.