Summary of literature identified for the National Policy Guidance and Evidence (NPGE) and Infection Control in the Built Environment and Decontamination (ICBED) literature reviews – (April to June 2025)

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

Evidence Table: National Policy Guidance and Evidence (NPGE) literature reviews

Literature review	Papers identified	Summary of research and impact on ARHAI recommendations
Patient placement	Kim SH, Lee YJ, Park JH, Cheon S, Ryu JS, Shin JM, Hong NS, Jeong YR, Jeon CH, Wi YM. Effects of Cessation of Single-Room Isolation on Transmission of Vancomycin-Resistant *Enterococcus* in a Hospital. Journal of Korean Medical Science. 2024 Oct 15: 40(5).	An interrupted time series analysis was carried out at a Korean hospital. The study compared new-onset VRE colonisation and bacteraemia over two periods: one when patients with VRE were isolated in single rooms, and the other when they could be placed in multibed rooms with dedicated bathrooms, personal stethoscopes, and thermometers. New-onset VRE colonisation or bacteraemia was defined as VRE colonisation or bacteraemia occurring 48 hours or more after admission without prior documented VRE colonisation. This paper adds to the evidence base for the ARHAI Patient Placement, Isolation and Cohorting Review for the question

Literature review	Papers identified	Summary of research and impact on ARHAI recommendations
		'Under which circumstances should a patient be placed in a single-bed room?' The study found no significant difference in the incidence rate of new-onset VRE colonisation between the two periods, with rates of 0.452 vs 0.535 per 1,000 patient days (pre vs post intervention period), and p = 0.202. There was a slight upward trend post-intervention, with a monthly increase of 0.036 (95% CI: -0.002 to 0.074; p = 0.066). Similarly, there was no difference in the incidence rate of new-onset VRE bacteraemia, 0.060 vs 0.055 (p = 0.571). The study has limitations. No pre-admission VRE screening was done, hence patients may have been colonised before admission. Routine screening was absent, thus, new colonisation cases may have been missed. The study period was short, and the observed trend post-intervention may differ over a longer period. No change to current recommendations.

Evidence Table: Healthcare Infection Incidents, Outbreaks and Data Exceedance literature reviews

Literature review	Papers identified	Summary of research and impact on ARHAI recommendations
Healthcare infection incidents and outbreaks literature review	Şahin EA, Özgen Top Ö, Aysert Yildiz P, et al. Outbreak of bacteremia caused by *Ralstonia insidiosa* isolated from a contaminated blood gas syringe. Turk J Med Sci. 2024;55(1):265-270. Published 2024 Dec 23. doi:10.55730/1300-0144.5967	This study reports on the investigation of the source and clonal relationship of a bacteraemia outbreak caused by *Ralstonia insidiosa*, detected in 28 patients between August and December 2021 within a university hospital in Turkey. The study performed active prospective surveillance and took environmental samples from tap water, saline, hand soap, antiseptic and antibiotic solutions, injectors, and arterial blood gas syringes. Four patients were selected for clonal analysis to represent different hospital units using an Arbitrary Primed Polymerase Chain Reaction (AP-PCR) genotyping method. A total of seven *R. insidiosa* isolates (four isolates from patients and three isolates from contaminated syringes) were included in this study and it was observed that all were monoclonal and identical. The outbreak was controlled by stopping the use of arterial blood gas syringes with the determined lot number. No new cases were detected within five months following the last case. This study adds to the evidence base for the NIPCM Healthcare Infection Incidents and Outbreaks literature review within the research question **"How should healthcare infection incidents/outbreaks be investigated and managed?".** The study carried out active prospective surveillance, took environmental samples, and performed clonal analysis using AP-PCR to investigate and manage the outbreak.

Literature review	Papers identified	Summary of research and impact on ARHAI recommendations
		A bundle of IPC measures were applied to control the outbreak, therefore it was not possible to determine the effectiveness of any one measure in isolation. Furthermore, applicability to Scottish health and care settings may be limited. No change to current recommendations.
Healthcare infection incidents and outbreaks literature review	Aytaç Ö, Tanrıverdi ES, Gündağ Ö, Şenol FF, Karlıdağ GE, Otlu B. An Intensive Care Outbreak Caused by *Burkholderia cepacia* from Bacterial Filters. Pathogens. 2025;14(3):266. Published 2025 Mar 8. doi:10.3390/pathogens14030266	This study reports an outbreak caused by *Burkholderia cepacia* in ICU patients within a hospital in Turkey. The outbreak investigation was initiated on 23 March 2024, four days after *B. cepacia* was detected in four different patients through clinical and active surveillance. Environmental samples were collected to identify the source of the outbreak. Arbitrarily Primed Polymerase Chain Reaction (AP-PCR) was performed to determine the genetic relationship between environmental and patient samples. One isolate from a respirator bacterial filter was identified, this was in the same cluster as the isolate obtained from 17 patient samples, resulting in a dominant clustering rate of 94.4%. A bundle of measures were implemented to control the outbreak, including changing of respiratory circuits when the patients had excessive secretions and wiping these three times a day. The last case with *B. cepacia* colonisation was detected 38 days after the start of the outbreak, and it is stated no further clusters were detected after respirators were maintained and bacterial filters replaced. This study adds to the evidence base for the NIPCM Healthcare Infection Incidents and Outbreaks literature review within the research question **"How should healthcare infection**

Literature review	Papers identified	Summary of research and impact on ARHAI recommendations
		incidents/outbreaks be investigated and managed?". The study carried out clinical and active surveillance, performed environmental sampling and clonal analysis using AP-PCR to investigate and manage the outbreak. The findings of this study should be interpreted with caution. The source was not clearly identified as only one isolate from environmental sampling was found. Furthermore, a bundle of control measures were applied and therefore the effectiveness of individual measures cannot be determined. Applicability to Scottish health and care settings may be limited. No change to current recommendations.
Healthcare infection incidents and outbreaks literature review	Nguyen ATK, Phuong Linh VK, Huong DT, et al. Real-time investigation of a *Burkholderia cenocepacia* bacteraemia outbreak in a Vietnamese intensive care unit. J Hosp Infect. Published online April 18, 2025. doi:10.1016/j.jhin.2025.04.003	This study reports on an outbreak of *Burkholderia cepacia* complex (Bcc) in an ICU in Vietnam between 29 May and 1 June 2023. This study adds to the evidence base for the NIPCM Healthcare Infection Incidents and Outbreaks literature review research question **"How should healthcare infection incidents/outbreaks be investigated and managed?".** The study provides methods for investigating an outbreak involving epidemiological investigation with whole genome sequencing performed on environmental and clinical samples. A bundle of IPC measures were implemented, including comprehensive cleaning and disinfection, environmental decontamination and cases placed on contact precautions. While IPC measures were implemented, three further cases of Bcc-positive blood cultures

Literature review	Papers identified	Summary of research and impact on ARHAI recommendations
		were reported. Following identification of three syringes contaminated with *B. cenocepacia*, the ICU implemented stricter control on the preparation and delivery of intravenous solutions and no positive cultures of *B. cenocepacia* were detected. Limitations of the study include that no definitive source of the outbreak was determined. Additionally, a bundle of IPC measures was applied to control the outbreak, and therefore the effectiveness of individual measures cannot be determined. Furthermore, applicability to Scottish health and care settings may be limited. No change to current recommendations.
Healthcare infection incidents and outbreaks literature review	Yashar M, Basarir KE, Tanriverdi ES, et al. *Stenotrophomonas maltophilia* outbreak originating from a pull-out faucet in a paediatric intensive care unit in Turkey: Insights from clinical records and molecular typing. Am J Infect Control. 2024;52(5):605-610. doi:10.1016/j.ajic.2023.11.018	This study reports on an outbreak of *Stenotrophomonas maltophilia* in a paediatric intensive care unit (PICU) in Turkey between 6 August and 2 December 2021. This study adds to the evidence base for the NIPCM Healthcare Infection Incidents and Outbreaks literature review research question **"How should healthcare infection incidents/outbreaks be investigated and managed?".** The study provides methods for investigating an outbreak, the study took environmental and clinical samples and carried out Pulse Field Gel Electrophoresis. Clustering of patient samples and one environmental sample from a pull-out faucet suggested this as the source of the outbreak. The pull-out faucet was replaced in December 2021, and it is stated the outbreak then ceased.

Literature review	Papers identified	Summary of research and impact on ARHAI recommendations
		Limitations of this study include that other potential unidentified sources may have contributed to this outbreak. Control measures were not stated within the paper and applicability to Scottish health and care settings may be limited. No change to current recommendations.
Healthcare infection incidents and outbreaks literature review	Kong Y, Liu T, Zhang Y, Wang H, Lin H. Investigation of an outbreak of carbapenem-resistant *Acinetobacter baumannii* in an intensive care unit during the COVID-19 epidemic. Antimicrob Resist Infect Control. 2025;14(1):30. Published 2025 Apr 12. doi:10.1186/s13756-025-01547-0	This study reports on an outbreak of carbapenem-resistant *Acinetobacter baumannii* (CRAB) infection in an ICU at a hospital in China during the COVID-19 pandemic (from December 2022 to April 2023). This study adds to the evidence base for the NIPCM Healthcare Infection Incidents and Outbreaks literature review research question **"How should healthcare infection incidents/outbreaks be investigated and managed?".** The study provides methods for investigating an outbreak involving epidemiological investigation with whole genome sequencing performed on environmental and clinical samples. A bundle of MDRO IPC measures were implemented, including termination of COVID-19 IPC measures and implementation of a three-step cleaning and disinfection method. Following the intervention the CRAB detection rate declined, with no positive samples found in the ICU environment. Limitations of this study include that no definitive source of the outbreak was determined. In addition, there may have been undetected patients with CRAB infection or colonisation as only the respiratory tract was selected as the screening site.

Literature review	Papers identified	Summary of research and impact on ARHAI recommendations
		A bundle of IPC measures was applied to control the outbreak, and therefore the effectiveness of individual measures cannot be determined. Furthermore, applicability to Scottish health and care settings may be limited. No change to current recommendations.

Evidence Table: Infection Control in the Built Environment and Decontamination (ICBED) literature reviews

Literature review	Papers identified	Summary of research and impact on ARHAI recommendations
Infection Prevention and Control (IPC) for Safe Healthcare Water Systems	Meda M, Weinbren M, Nagy C et al. Polymicrobial outbreak of carbapenemase producing Enterobacterales managed using universal admission and discharge screening and water-safe built environment. J Hosp Infect. 2025: 156:1-12. doi:10.1016/j.jhin.2024.11.016	This observational outbreak report details the investigation of a hospital-wide CPE outbreak in an English hospital. The incidence of CPE increased in 2022-2023 with small clusters of cases with the same species. The cases were epidemiologically linked in terms of time and patient location, and whole-genome sequencing results revealed that the clinical strains were identical. Environmental sampling was performed, and CPE was detected in the majority of swabs from clinical hand wash basins and drains; however, more detailed results were not reported. A common environmental source of infection was only hypothesised. This paper adds to the evidence base for the NIPCM Infection Prevention and Control (IPC) for safe healthcare water systems literature review. This paper adds to the following research questions "**Which organisms associated with healthcare water systems are responsible for colonisation/infection of patients?"** and **"What actions can be undertaken to reduce the risk of infection/colonisation associated with indirect water usage?"**. This study reported on the actions that were taken to reduce the risk of water usage. Reinforcement of SICPs did not reduce the CPE cases. Data was requested from estates on wastewater blockages (the amount, location and likely causative factors).

Literature review	Papers identified	Summary of research and impact on ARHAI recommendations
		Water and wastewater risk assessment were performed by external independent assessors, which were followed by targeted 'water-safe' interventions. These included the removal of numerous clinical hand wash basins (CHWBs) in a variety of areas (patient rooms, outpatient areas, treatment rooms and drug-preparation rooms, in the haemato-oncology ward and its outpatient area, ICU). Other measures included the use of sterile water for wound washing, disinfectant wipes for cleaning patient equipment and washing patients in the ICU, promoting the use of alcohol-based hand sanitiser after handwashing, and providing education and training. Removal of the CHWBs and limiting the use of tap water were associated with a reduction of the CPE cases. During the outbreak, 21 patients (out of 782 patient admission episodes) were either colonised or infected. In contrast, only one case (out of 277 patient admission episodes) was identified in the six months post-CHWB removal (P = 0.0196, 95% CI 0.4353%-3.7472%). No change to current recommendations.