

NHS Ayrshire & Arran

Meeting:	Ayrshire and Arran NHS Board
Meeting date:	Monday 3 October 2022
Title:	Healthcare Associated Infection Report
Responsible Director:	Jennifer Wilson, Nurse Director
Report Author:	Sharon Leitch, Associate Nurse Director Infection Prevention and Control (Interim)

1. Purpose

This is presented to the Board for:

- Discussion

This paper relates to:

- Annual Operational Plan

This aligns to the following NHSScotland quality ambition(s):

- Safe

2. Report summary

2.1 Situation

This paper provides Board members with the current position against the national Healthcare Associated Infection (HCAI) Standards.

Board members are also asked to note the current position in terms of an incidental finding of *Pseudomonas* in a Neonatal Unit (NNU) water sample, and subsequent management of same as detailed in **Appendix 1**.

2.2 Background

The Scottish Government has established national HCAI Standards for:

- *Clostridioides difficile* infection (CDI) - a reduction of 10% in the national rate of HCA CDI for the year ending March 2023, with 2018-19 used as the baseline.
- *Staphylococcus aureus* bacteraemias (SABs) - a reduction of 10% in the national rate of HCA SAB by year end March 2023, with 2018-19 used as the baseline.
- *Escherichia coli* bacteraemias (ECBs) - a 50% reduction in HCA ECBs by 2023-24, with an initial reduction of 25% by March 2023. The baseline is the 2018-19 rate.

Each Board is required to contribute its own proportionate reduction to achieve the national standard

2.3 Assessment

The Board's current verified position against each HCAI standard for the year ending March 2022 is:

Infection	NHS A&A Annual Rate Year Ending March 2022 (number of cases per 100,000 Total Occupied Bed Days (TOBDs))	2022-23 Target (cases per 100,000 TOBDs)	2023-24 Target (cases per 100,000 TOBDs)
<i>Clostridium difficile</i> Infection	21.6	13.0	
<i>Staphylococcus aureus</i> Bacteraemia	15.9	12.4	
<i>Escherichia coli</i> Bacteraemia	47.6	34.3	22.8

Table 1 – NHS Ayrshire & Arran's verified position

This remains unchanged since 15 August 2022. April – June 2022 verified data will be presented at the Prevention and Control of Infection Committee on the 17 November 2022.

2.3.1 Quality/patient care

HCAIs are associated with higher levels of morbidity and mortality.

2.3.2 Workforce

There are no workforce implications.

2.3.3 Financial

There are no financial implications.

2.3.4 Risk assessment/management

The IPCT provide clinical teams and managers with risk assessed advice and guidance based on national policy and best practice.

As previously described to the Board, the IPC activity has primarily been focused on supporting the organisational response to COVID-19 and its remobilisation programme. This has significantly impacted on the capacity of the IPCT to continue with routine IPC activity. An interim Annual Planned Programme for 2022-23 has been developed and approved by the Prevention and Control of Infection Committee and the Healthcare Governance Committee. Progress is being monitored by the Prevention and Control of Infection Committee.

2.3.5 Equality and diversity, including health inequalities

An impact assessment has not been completed because this is an update report to Board members. Effective management of IPC cuts across all protected characteristics.

2.3.6 Other impacts

Nil to note

2.3.7 Communication, involvement, engagement and consultation

These topics are discussed regularly at the Prevention and Control of Infection Committee.

2.3.8 Route to the meeting

Information contained in this paper was previously submitted to the Prevention and Control of Infection Committee and the Healthcare Governance Committee (on 20 September 2022).

2.4 Recommendation

For discussion. This paper is for discussion and provides Board Members with the Board's current position against the national HCAI standards and the management of an incidental finding of *Pseudomonas* in a Neonatal Unit (NNU) water sample.

3. List of appendices

- Appendix 1 - *Pseudomonas aeruginosa* in Neonatal Unit (NNU) water sample

Appendix 1 - *Pseudomonas aeruginosa* in Neonatal Unit (NNU) water sample

1.0	SITUATION
<p>Water taken from a NNU clinical wash hand basin outlet on 22 June 2022 tested positive for <i>Pseudomonas aeruginosa</i> on 24 June 2022. This was of significant concern, as <i>Pseudomonas</i> can cause infections, particularly in vulnerable patients.</p>	
2.0	BACKGROUND
<p>Water testing had been initially arranged to rule out a clinical wash hand basin outlet in NNU as the source of <i>Serratia marcescens</i>, a coliform, in a neonatal patient.</p> <p>This water sample tested negative for coliforms and <i>Serratia</i>, but instead grew another suspicious colony, which ultimately identified as <i>Pseudomonas aeruginosa</i>. The count of <i>Pseudomonas aeruginosa</i> from this outlet came back at >100 cfu/100mL.</p> <p>No level of <i>Pseudomonas</i> from a water outlet is acceptable in high-risk units, such as NNU. 1-10 cfu/100mL is deemed as significant level of <i>Pseudomonas</i>, and >10 cfu/100ml is deemed highly significant. As such, further action was necessary.</p>	
3.0	ASSESSMENT
<p>Following this positive result for <i>Pseudomonas aeruginosa</i>, the NHS A&A Water Safety Plan control measures were implemented, in tandem with support from the Infection Prevention & Control Team.</p> <p><u>Actions undertaken by FES Estates team:</u></p> <p>On 24 June 2022, the positive wash hand basin (Neonatal HDU GC05-1 SCU WHB 1) had a new thermostatic mixing tap fitted by FES, and the pipework was disinfected.</p> <p>The following 12 outlets, which included the originally positive wash hand basin, had point of use filters fitted on 24 June 2022, and were then sampled on 28 June 2022:</p> <ul style="list-style-type: none"> • Room GC03 – ICU – 4 WHB appliance • Room GC04 – HDU – 2 WHB appliance • Room GC05 – Special Care – 4 WHB appliance • Room GC14 – Isolation 1 – 1 WHB appliance • Room GC15 – Isolation 2 – 1 WHB appliance <p>Please note that a point of use filter had already been attached earlier, as a precautionary measure, to the originally positive wash hand basin on 22 June 2022, whilst awaiting <i>Serratia</i>/coliform results.</p> <p>Sampling was limited to these 12 outlets as these were the high-risk outlets previously agreed for 6 monthly routine <i>Pseudomonas</i> water sampling in the NNU. The rationale for these outlet choices was outlined in a paper submitted to the Board Water Safety Group on 28 July 2021. Shower water is not used directly on babies, so it was decided not to sample these or attach point of use filters to them.</p> <p>These water outlets in the NNU had not previously been sampled for <i>Pseudomonas</i>. So, there were no historical results for comparison.</p>	

Pre and post-flush water samples were obtained.

Hot and cold water temperatures were checked by FES, and were within control limits.

FES provided assurance that the newly attached point of use filters were not causing increased splashing from any of the outlets, and they were not causing tap water to directly hit the drain. All point of use filters were changed, following obtaining of water samples for testing.

As point of use filters reduce the flow rate of water from taps, FES arranged for extra flushes of outlets with point of use filters attached, including an extra flush at night.

Thankfully, all water samples obtained on 28 June 2022 returned at 0 cfu/100ml for *Pseudomonas aeruginosa* on 30 June 2022. Following this result, all point of use filters were removed from the taps in NNU, except for the originally positive wash hand basin (Neonatal HDU GC05-1 SCU WHB 1).

The pre- and post-flush water samples obtained on 5 July 2022 from the originally positive wash hand basin (2nd retest sample – one week after 1st retest sample) returned at 0 cfu/100ml for *Pseudomonas aeruginosa* on 8 July 2022.

A further pre- and post-flush water sample from the originally positive wash hand basin (3rd retest sample – 2 weeks after 2nd retest sample) will be obtained on 19 July 2022. If this also returns as negative, then the outlet will be considered safe and the point of use filter will be removed.

Actions undertaken by Infection Control:

Following review by the ICNs, it was noted that clinical wash hand basins are located very close to neonatal bed spaces. Outlets of concern are placed within the Special Care and Intensive Care rooms. It has also been highlighted in previous IPCT Environmental Audits that there are some infrequently used outlets, as well as outlets that are non-compliant with current design guidance. The most recent Safe Management of Care Environment audit was carried out in March 2022 and Senior Midwives have been supported in developing appropriate action plans.

At the time the *Serratia marcescens* infection was identified, midwives reported that water is drawn from the clinical hand wash sinks for carrying out personal cares. Whilst the use of tap water is appropriate for this activity, it is important that clinical hand wash sinks are used only for this designated purpose. Due to the distance from the ward utility room, it was previously agreed that NNU would use bottled / sterile water for personal cares. This could be stored within the patient care areas.

There is no evidence that water is disposed of in the clinical hand wash sinks, however, this cannot be ruled out. NNU staff have been directed to the [National Guidance for neonatal units \(NNUs\) \(levels 1, 2 & 3\), adult and paediatric intensive care units \(ICUs\) in Scotland to minimise the risk of *Pseudomonas aeruginosa* infection from water](#) to support review of current water safety practice.

Daily flushing of outlets was confirmed as being in place within this area, which is deemed to be a high risk area. There is an agreement in place for Domestic staff to carry this out within NNU. ICNs carry out monthly audits of water flushing records within this high risk area, which are consistently between 95-100% compliant. The ICNs linked with the domestic supervisors

to review outlet flushing and cleaning processes for the unit; no concerns raised at this time. Supervisor agreed to meet with staff in the unit to discuss the outlet cleaning protocol and ensure this is still being followed.

Issues in relation to water testing laboratories

Westfield Caledonian (the lab used by NHS A&A's Estates Team) have highlighted that, although the lab used by FES (Express Micro Science) is accredited for Legionella, their method differs with regard to Westfield's Caledonian's method and may be less sensitive. FES will seek more advice from both labs, to make an informed decision on which lab to use for ongoing testing. Apparently Express Micro Science opt to process Legionella samples via 'assumption of water quality', and therefore cut down the analysed sample by two thirds (cutting out the heat and acid treatments unless overgrowth found on the untreated plate). This could possibly lead to false negative results.

Helen Jones, Authorising Engineer, has retrospectively advised that the repeat water samples should have ideally gone to the same laboratory as the one that had the original positive count (Westfield Caledonian). Although both labs are accredited for Pseudomonas water testing, their methods differ. Head of Estates, will discuss further with PFI colleagues to establish whether there is an appetite for standardisation across the sites for a single source of external laboratory analysis to be used by both FES and A&A Estates Department from the start of next year.

4.0	RECOMMENDATIONS
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- If the pre- and post-flush water samples on 19 July test negative, then this outlet can be declared safe, and the single remaining point of use filter will be permanently removed.
- Proximity of neonatal beds to sinks will be investigated further by the Estates team, with a view to removing any unnecessary outlets.
- The selection of water outlets picked for 6 monthly routine testing in the NNU will be subject to annual review at the Board Water Safety Group.
- FES will seek advice from Westfield Caledonian and Express Micro Science, to allow an informed decision on which lab to use for ongoing Legionella testing.
- NNU team to review current water safety practices in line with *Pseudomonas aeruginosa* guidance above.