NHS Ayrshire & Arran

Meeting:	**Ayrshire and Arran NHS Board**
Meeting date:	**Monday 31 January 2021**
Title:	**Healthcare Associated Infection Report**
Responsible Director:	**Professor Borland, Nurse Director and Deputy Chief Executive**
Report Author:	**Bob Wilson, Infection Control Manager**

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.

Appendix 1 describes an increase in cases of *Pseudomonas aeruginosa* across the Board's Intensive Care (ICU) settings between April 2020 and July 2021**.**

2.2 Background

The Scottish Government has established national HCAI Standards for:

- *Clostridium difficile* infection (CDI) - a reduction of 10% in the national rate of healthcare associated (HCA) CDI for the year ending March 2022, 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 2022, 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 2021-22. 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 June 2021 is:

Infection	**NHS A&A Annual Rate Year Ending June 2021** (number of cases per 100,000 Total Occupied Bed Days (TOBDs))	**2021-22 Target** (cases per 100,000 TOBDs)	**2023-24 Target** (cases per 100,000 TOBDs)
Clostridium difficile Infection	23.9	13.0	[redacted]
Staphylococcus aureus Bacteraemia	17.7	12.4	
Escherichia coli Bacteraemia	51.5	34.4	22.8

2.3.1 Quality/patient care

Attainment of the national HCAI standards will result in fewer infections in patients and improve patient outcome.

2.3.2 Workforce

Reductions in HCAI will reduce the exposure risk to staff from harmful infections

2.3.3 Financial

Reductions in HCAI will lead to reduced inpatient lengths of stay and associated treatment costs

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.

Current activity required in order to respond to COVID-19 has significantly impacted on the capacity of the IPCT to continue with routine IPC activity.

2.3.5 Equality and diversity, including health inequalities

An impact assessment has not been completed because this is an update report to Board.

2.3.6 Other impacts

No other impacts to note.

2.3.7 Communication, involvement, engagement and consultation

This is standing report to the NHS Board.

2.3.8 Route to the meeting

A paper on the increase in *Pseudomonas aeruginosa* in ICU settings was tabled at the Prevention and Control of Infection Committee on the 23 September 2021, the Corporate Management Team on 19 October 2021 and the Healthcare Governance Committee on the 11 November 2021.

Our performance with regard to the HCAI standards was also discussed at length at the Healthcare Governance Committee on 10 January 2022.

2.4 Recommendation

For discussion. This paper provides an update for Board members on the Board's current performance against the national HCAI standards and the management of an increase in *Pseudomonas aeruginosa* the ICU settings.

3. List of appendices

The following appendices are included with this report:

Appendix 1 – *Pseudomonas aeruginosa* in Intensive Care Units.

Subject:	Pseudomonas aeruginosa in Intensive Care Units
Author(s):	Bob Wilson – Infection Control Manager Chloe Keane – Infection Prevention and Control Doctor Sharon Leitch – Senior Nurse Infection Control

1.0	**SITUATION**

There was a significant increase in cases of *Pseudomonas aeruginosa* considered to have been acquired in the Board's Intensive Care Units (ICUs) between April 2020 and July 2021 with 25 cases identified. This compares with 3 cases in 2019-20.

2.0	**BACKGROUND**

Intensive Care provision has undergone significant and frequent changes as the Board has responded to the COVID-19 pandemic. This has been driven in part by an increased number of patients requiring intensive care and in part by the need to develop separate pathways for COVID and non-COVID patients. During the first pandemic wave, Theatres and Theatre Recovery in University Hospital Crosshouse (UHC) were utilised to supplement Intensive Care Unit (ICU) provision. In University Hospital Ayr (UHA) Station 15 was used to care for intensive care patients with COVID.

During the summer of 2020, the Day Surgery Unit (DSU) in UHC was converted into an intensive care unit as part of the Board's pandemic surge capacity with the intention of centralising on a single site the care of all COVID positive patients requiring ICU support. Due to the urgency of the work, the Board's Emergency Management Team sanctioned a number of derogations against the national standards for ICUs. Additional single rooms were also created in the ICU in University Hospital Ayr (UHA) to support the segregation of COVID patients pending transfer to UHC ICU.

The increase in ICU beds required additional nursing support. This support was drawn from a number of departments, primarily theatres. Although there was increased support, the normal expected ratio of ICU nurses to patients was reduced due to the increase in patient numbers. There was a national workforce derogation in place to support this necessity across NHS Scotland during the pandemic.

Infection prevention and control practice was also altered with the introduction of specific national COVID guidance. This led to changes in the use of personal protective equipment (PPE) including sessional use of long sleeved gowns. This often impacted in the ability to effectively undertake hand hygiene.

The ICU patient population also changed significantly as a result of the pandemic with patients having more complex conditions and longer lengths of stay.

Since the onset of the COVID-19 pandemic in March 2020 the Board has identified a number of outbreaks of gram negative organisms affecting our ICU areas. These outbreaks have been multi-organism and have included *Pseudomonas aeruginosa, Enterobacter aerogenes, Serratia marcescens* and *Stenotrophomonas maltophilia*. Similar incidents were reported across Scotland and the rest of the United Kingdom. A number of Problem Assessment Groups (PAGs) and Incident Management Teams (IMTs) were convened during that period with support from the national Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) Scotland team. Whilst the majority of outbreak organisms were brought under control, *Pseudomonas aeruginosa* continued to present in these areas on a regular basis.

A national Oversight Board was convened to review Infection Prevention and Control Governance within Greater Glasgow and Clyde Health Board, following the well-publicised events in relation to similar infections in the newly built Queen Elizabeth University Hospital (QEUH) and the Royal Hospital for Children (RHC). A finding from the review was that there was no overview taken of connected but separate infection incidents. Mindful of this finding, the Infection Prevention and Control Team (IPCT) decided to undertake a wider review of the incidents and seek support from ARHAI Scotland. In order to trigger the necessary support, the incident was escalated as a data exceedance in line with the National Infection Prevention and Control Manual. This approach was supported by the Nurse Director as Executive HAI Lead.

3.0	ASSESSMENT

From April 2020 to July 2021 there were 25 cases of hospital acquired *Pseudomonas aeruginosa* infection associated with intensive care units, 19 in UHC and 6 in UHA. The cases have affected both permanent and temporary ICU accommodation in UHA and UHC. Cases occurred in both High Risk Pathway (COVID) ICUs and Medium Risk Pathway (Non-COVID) ICUs.

The frequency of isolates increased during 2021 (Chart 1).

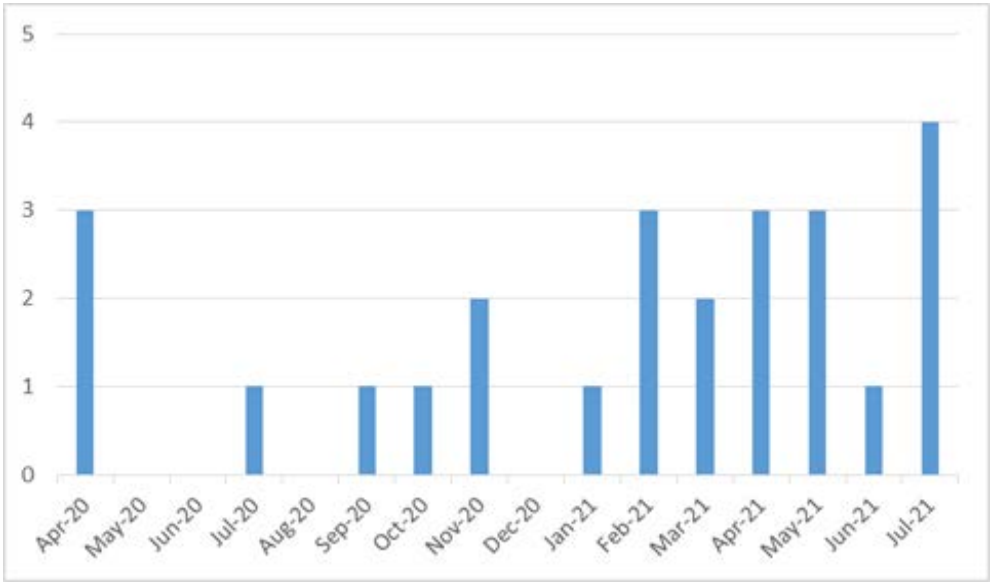

Chart 1 – Cases of *Pseudomonas aeruginosa* in ICU by month

A Problem Assessment Group (PAG) was convened on 3 August 2021 to discuss and review the increased incidence. Support was provided by ARHAI Scotland.

The outcome of the PAG concluded that the water supply was not the source of the infections. Repeated water sampling across the 3 existing ICU areas have been found to be negative for *Pseudomonas*. The only exception being a water cooler used for staff and visitors, which sat in the foyer outside HDU/ICU in Ayr. This was found to have very low level contamination with *Pseudomonas*. The water cooler was removed from service and decontaminated with subsequent negative test results. Typing of the isolate from the water cooler determined that it was a different strain from those that affected the patients and not responsible for the patient infections.

Patient to patient transmission was also ruled out. Based on the typing results available, with the exception of 2 patients, all have been infected with different strains. Investigations also excluded patient to patient transmission in this instance. The most likely hypothesis is an unidentified environmental source possibly a sink drain.

There are no national protocols for sampling drains nor are there any microbiology laboratories, NHS or private, which are accredited for processing such samples. Therefore it was not possible to undertake a programme of drain sampling.

All sinks were reviewed by the IPCT and Estates. This resulted in some sinks and/or taps being replaced; adjustment to water flow rates and water temperatures as precautionary measures.

Whilst the cleaning of the sinks was in line with the national specifications, domestic services increased the cleaning frequency for these sinks to 3 times a day. Additional training on sink cleaning procedure was also provided to domestic staff. Advice was given to staff about the importance of ensuring areas suffering from excessive splashing are regularly dried.

Advice was sought from ARHAI Scotland on a programme of drain disinfection. ARHAI Scotland provided a research paper by Public Health England (PHE) which concluded that there was little residual benefit in a drain disinfection programmes.

A further Incident Management Team was convened on 5 October 2021 to review an additional case. The Infection Control Manager held a subsequent meeting with a representative from ARHAI Scotland to review the latest developments. It was agreed that as there had been a demonstrable reduction in the frequency of cases, then the data exceedance incident could be closed off. The Board would manage any future cases in line with the national guidance and if an outbreak was identified, report this as per the requirements contained within the National Infection Prevention and Control Manual. At the time of writing (5 January 2022) there have no further cases since September 2021.

4.0	**RECOMMENDATION**

Board Members are asked to note the increased incidence of hospital acquired *Pseudomonas aeruginosa* across all of the ICUs in NHS Ayrshire and Arran between April 2020 and July 2021 and the actions taken to resolve the situation.