NHS Ayrshire & Arran

Meeting:	**Ayrshire and Arran NHS Board**
Meeting date:	**Monday 23 May 2022**
Title:	**Healthcare Associated Infection Report**
Responsible Director:	**Jennifer Wilson, Nurse Director**
Report Author:	**Dr Chloe Keane, Infection Control Doctor**

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, with a specific focus on community associated *Escherichia coli* bacteraemias (ECBs).

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.

Exception Reports for Healthcare Associated (HCA) ECBs were received from ARHAI Scotland in Apr-Jun 2018 and Jul-Sep 2020 (see Figure 1 below).

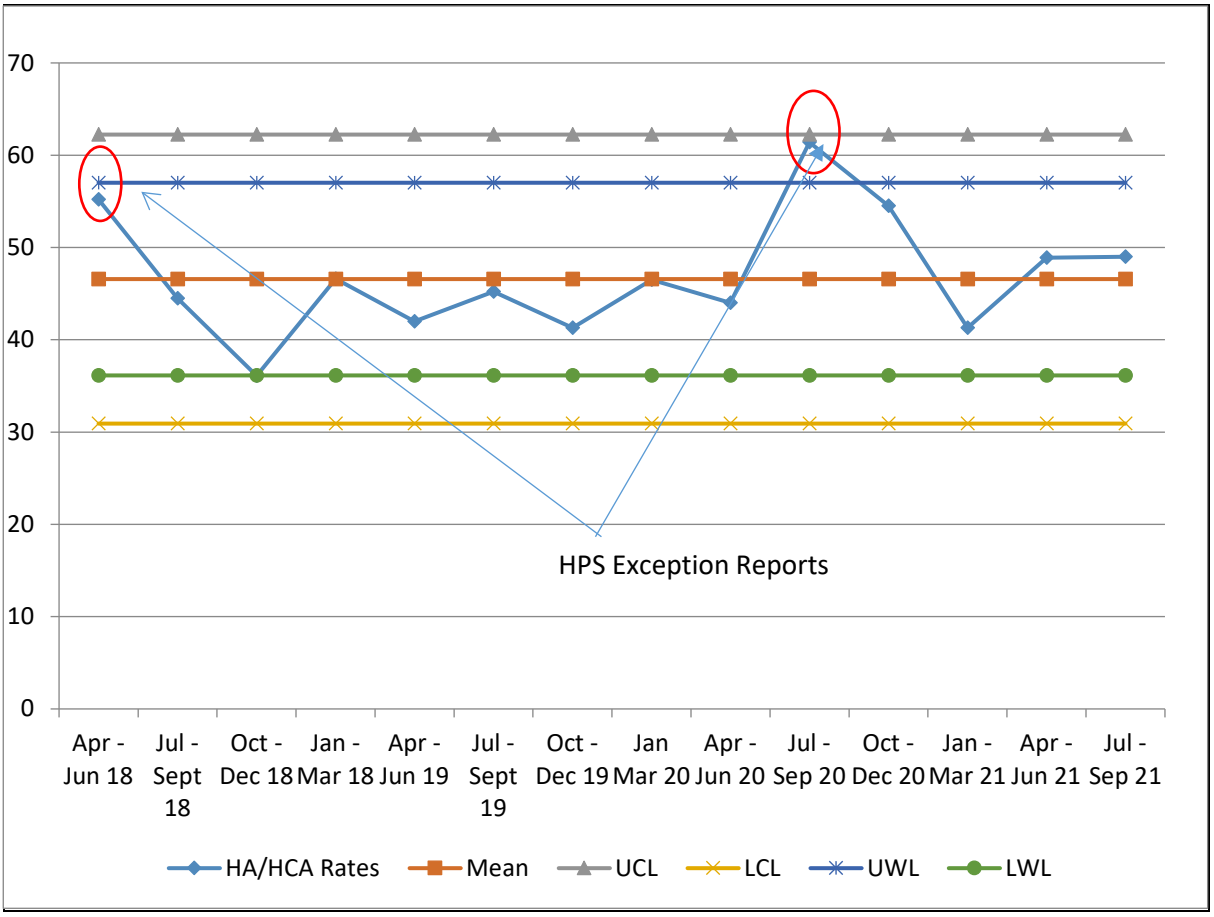


Figure 1 - Quarterly Healthcare Associated ECB Rate

However, the most recent Exception Reports have been for community associated ECBs.

NHS Ayrshire & Arran (NHSA&A) has been a Scottish outlier for community associated ECBs for three consecutive quarters (Q3-2020 to Q1-2021), plus a further quarter in Q3 2021. Exception Reports were received from Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) Scotland for each of these quarters.

Notably, there is no national target for reducing community associated ECBs, and there are no clearly identified healthcare interventions to reduce community acquired rates.

2.3 Assessment

The Board's current verified position against each HCAI standard for the year ending September 2021 is:

Infection	NHS A&A Annual Rate Year Ending September 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	25.4	13.0	
Staphylococcus aureus Bacteraemia	17.4	12.4	
Escherichia coli Bacteraemia	48.5	34.4	22.8

The Board's verified **annual** HCA rate for the year ending September 2021 was 48.5 down from 51.5 (Figure 1). This is well above the year 3 reduction target of 34.5:

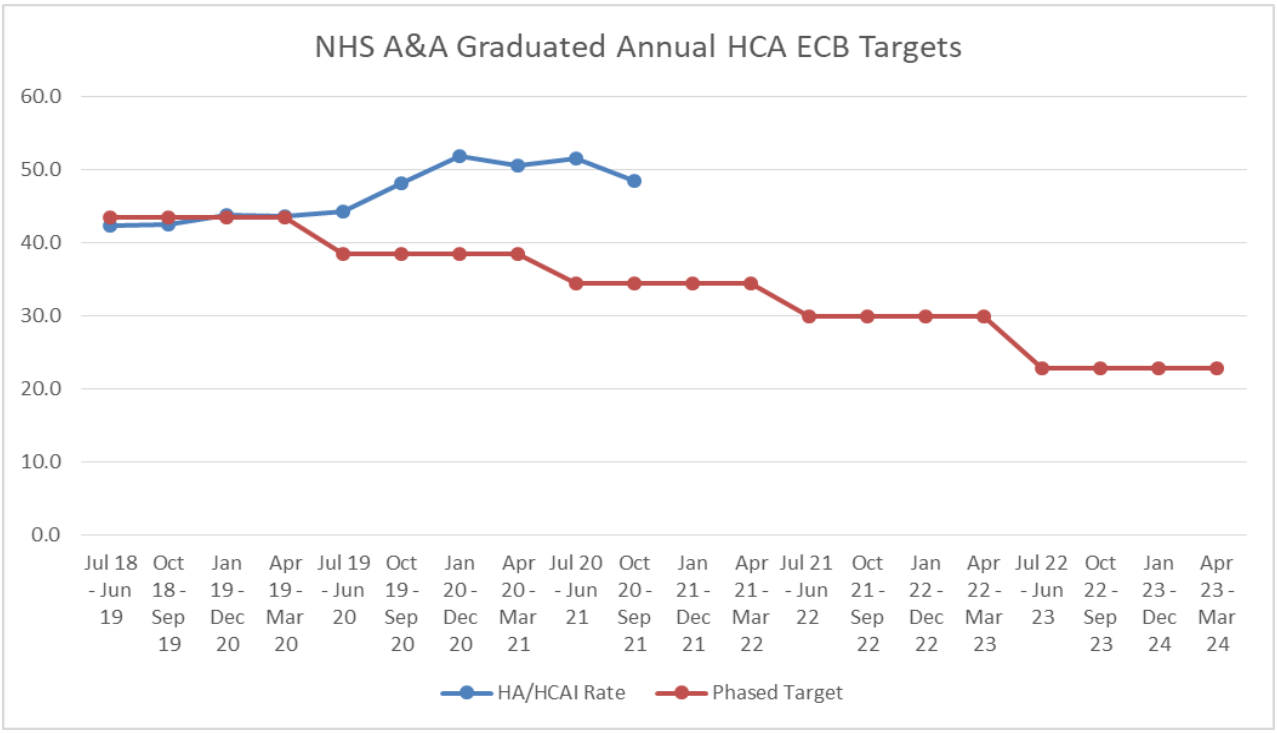


Figure 2 – NHS A&A Graduated Annual HCA ECB Targets

As previously reported, reducing urinary catheter related infections remains the Board's primary strategy for lowering the overall HCA ECB rate. However, the work of the Urinary Catheter Improvement Group remains paused as a result of resources diverted to support the organisational response to the COVID-19 pandemic. As a result, the Board will not meet the National Standard by year end March 2022.

Community Acquired ECB Rate

On 25 November 2021, NHS Ayrshire & Arran's Infection Control Manager and Infection Prevention & Control Doctor met with ARHAI Scotland to review NHS Ayrshire & Arran's data. It was noted that although there was no increasing trend in the incidence of community associated ECBs in NHS Ayrshire & Arran during these quarters, all other Health Boards in Scotland experienced a decrease during these time periods. It was therefore fluctuations in the Scottish rate which were mainly

determining whether NHS Ayrshire & Arran received an Exception Report. The meeting and data review on 25 November 2021 did not identify any areas for intervention.

However, ARHAI sent NHS Ayrshire & Arran supplementary data on community associated ECBs on 23 February 2022. This included additional information on co-morbidities (Charlson score), deprivation (SIMD (Scottish Index of Multiple Deprivation) quintile), gender, age groups, and location. This data was analysed by the Infection Prevention & Control Doctor, and the raw data and analysis was then shared with NHS Ayrshire & Arran's Public Health Team.

On the surface, it would seem that nothing can be done to reduce community acquired ECBs. The predominant causes of community associated ECBs are urinary tract infections and hepatobiliary sepsis. Furthermore, by definition, patients with community associated infections:

- have not been hospitalised overnight in the last 30 days
- have no long-term indwelling devices in situ (e.g. urinary catheter)
- do not reside in a nursing/residential home or long term care facility
- have not had any medical procedures in the last 30 days which broke the mucous/skin barrier, and
- have not required care for a chronic medical condition, or manipulation of a medical device, by a healthcare worker in the community in the last 30 days.

The supplementary data provided by ARHAI Scotland on 23 February 2022 has however allowed for some additional observations to be made including:

- Cases are rare in patients under 16 years of age.
- Most cases (32%) have a SIMD score of 1 = most deprived, and there is a positive association with increasing deprivation.
- In patients <65 years of age:
    - The highest incidence rates are seen in SIMD 1 patients (most deprived)
    - Hepatobiliary sepsis is the cause in 19% of SIMD 1 patients (most deprived), and 27.9% of SIMD 2 patients. Percentages are much lower for SIMD 3-5 patients.
    - Pneumonia is the cause in 2.5% of SIMD 1 patients (most deprived), and 1.6% of SIMD 2 patients. No SIMD 3-5 patients have pneumonia recorded as a cause.
    - There is no clear deprivation association with lower UTI or pyelonephritis.

- In patients ≥65 years of age:
    - The highest incidence rates are seen in SIMD 1 patients (most deprived).
    - Pneumonia is the cause in 4% of SIMD 1 patients (most deprived), and 3.9% of SIMD 2 patients. Percentages are lower for SIMD 3-5 patients.
    - There is no clear deprivation association with hepatobiliary sepsis, lower UTI, or pyelonephritis.

This information has been shared with Public Health, and it is hoped that this will lead to targeted improvement initiatives with the aim of reducing numbers of community associated ECB cases. Public Health colleagues plan to discuss this further at the next Infection Network Executive Group (INEG) meeting.

2.3.1 Quality/patient care

Attainment of the national HCAI standards will result in fewer infections in patients and improve patient outcomes. With regards to community E. coli bacteraemias, if suitable interventions can be found then it may also be possible to reduce infections and improve outcomes in this patient group.

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 Infection Prevention and Control Team (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 members.

2.3.6 Other impacts

No other impacts to note.

2.3.7 Communication, involvement, engagement and consultation

This is standing report to the Board.

2.3.8 Route to the meeting

The data contained within this report was discussed at the Prevention and Control of Infection Committee on 31 March 2022, and was presented to the Healthcare Governance Committee on 25 April 2022.

2.4 Recommendation

For discussion. Board Members are asked to receive the update and discuss the Board's current performance against the national HCAI standards, in addition to recent information now being considered by Public Health in relation to community associated ECB cases.

3. List of appendices

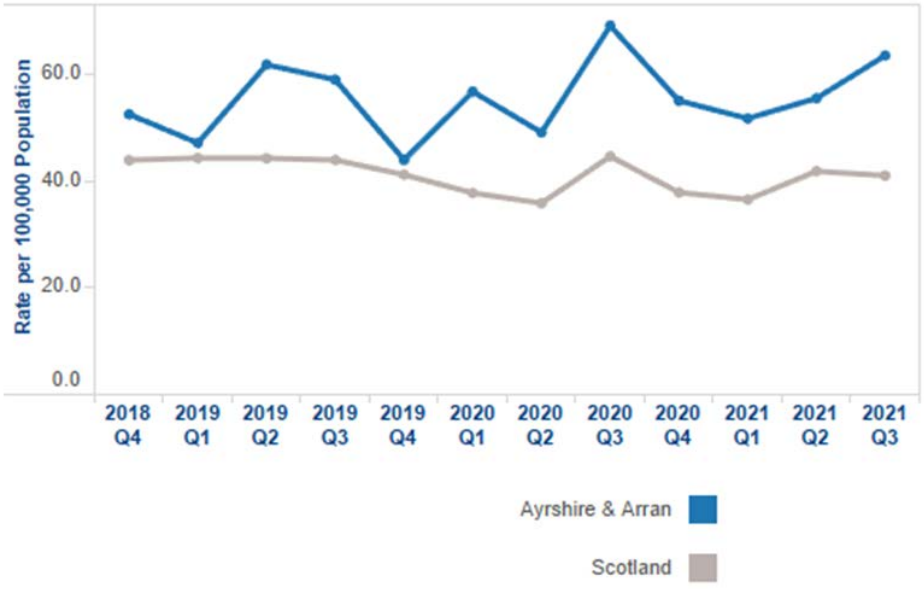
Appendix 1 – Board Response to the ARHAI Scotland community associated ECB Exception Reports, sent back to ARHAI on 24th January 2022.

Title: Report and action plan in response to *Escherichia coli* bacteraemia (ECB) exception

Report: The commentary on quarterly epidemiological data on *Clostridium difficile* infection, *Escherichia coli* bacteraemias, *Staphylococcus aureus* bacteraemias and surgical site infection in Scotland Q3-2021

Author: NHS Ayrshire & Arran

Date of Issue: 24/01/2022

Situation	NHS Ayrshire & Arran has been highlighted as an exception in **community associated ECB** this quarter in the funnel plot analysis.
Background	IPCT resources continue to be primarily directed to supporting the organisational response to the COVID-19 pandemic.
Assessment	Analysis of data There were 112 cases of ECB reported by NHS Ayrshire & Arran in Q3-2021. Of these, there were 59 cases (52.7%) of community associated ECB. In Q2-2021 there were 51 (50.1%) community associated ECB cases. Rates have gone from 55.6 per 100,000 population in Q2-2021 to 63.6 per 100,000 population in Q3-2021 (Figure 1). Overall community associated rates over the last 3 years have been stable (Figure 2). 27 (45.8%) community associated infections (CA) cases were male. Cases aged 65 and over accounted for 76.3% (n = 45) of all CA cases. Pyelonephritis (n = 21, 35.6%) and Hepatobiliary (n = 17, 28.8%) were the most commonly reported primary infections in Q3-2021 for CA (Figure 3). **Figure 1** – Rates of community associated ECB in NHS Ayrshire & Arran by quarter, Q4-2018 to Q3-2021  **Figure 2** – Trends in rates of community associated ECB in NHS Ayrshire and Arran by quarter, Q4-2018 to Q3-2021

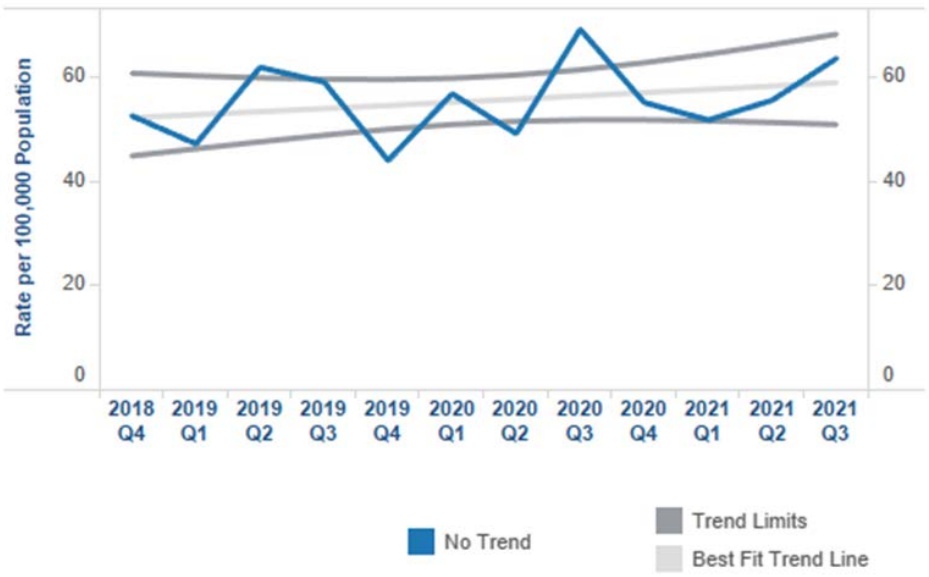
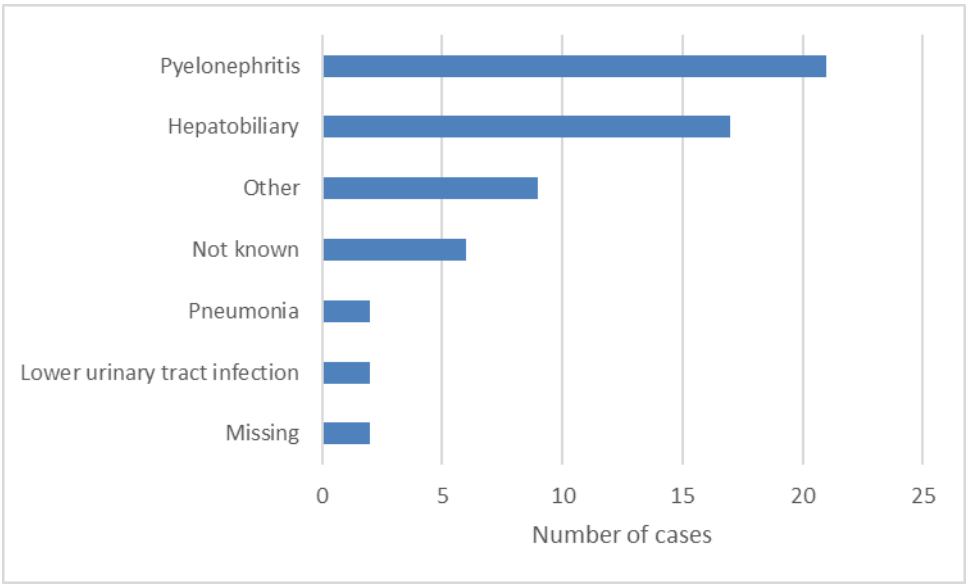


Figure 3 – Primary infections of community associated ECB in NHS Ayrshire & Arran (Q3-2021)



Prior to the onset of the COVID-19 pandemic the Board agreed that the primary focus in reducing E. coli bacteraemias would be those which were healthcare associated and amenable to healthcare interventions. In particular the focus would be on urinary catheters. This work was suspended at the outset of the Pandemic and has not resumed.

A meeting between the Board and ARHAI was held on the 25/11/21 to review the Board's community acquired ECB data in response to previous Exception Reports and the triggering of the CNO algorithm. No infection prevention and control interventions were identified by the review.

Whilst the board acknowledges that its community acquired E. coli bacteraemia rate is high when compared with the Scottish rate we have to date been unable to identify any interventions at a Board level which will impact on this rate.

Recommendations (action plan)	Once resources become available the primary focus will be on healthcare associated bacteraemias as part of the Board's Remobilisation Plan.