NHS Ayrshire & Arran

Meeting:	**Ayrshire and Arran NHS Board**
Meeting date:	**Monday 15 August 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 an update on the Board's performance against the national Healthcare Associated Infection (HCAI) Standards using the latest verified national data for the year ending March 2022.

2.2 Background

The Scottish Government has established national HCAI Standards for:

- *Clostridiodes 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.

It was recognised that the original target to reduce HCA for the year ending March 2022 would not be met, these targets have now been extended a further year to March 2023 as per DL (2022) 13.

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)
Clostridium difficile Infection	21.6	13.0	
Staphylococcus aureus Bacteraemia	15.9	12.4	
Escherichia coli Bacteraemia	47.6	34.3	22.8

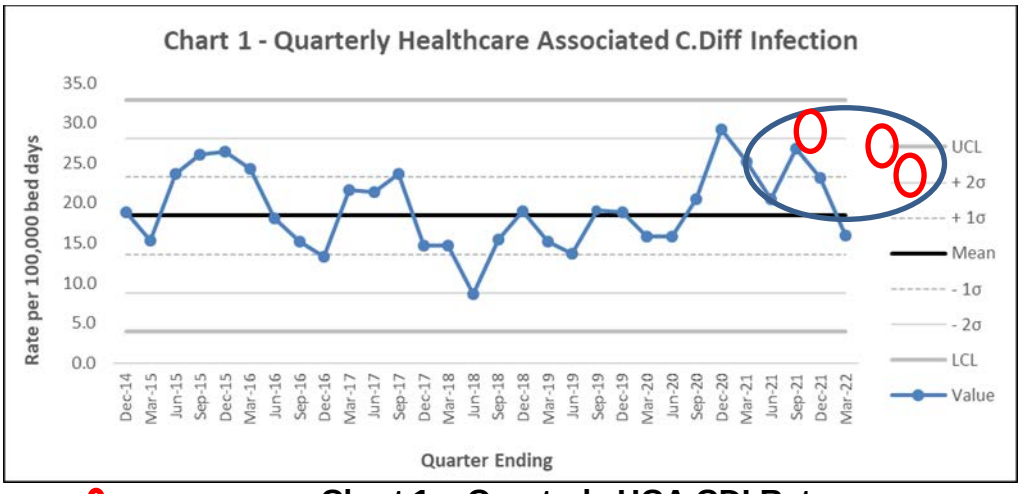
Table 1 – NHS Ayrshire and Arran's verified position

CDI Standard

The CDI target is a reduction of 10% in the national rate of HCA CDI for the year ending March 2023, with 2018-19 used as the baseline.

NHS Ayrshire and Arran's HCA rate for 2018-19 was 14.5 cases per 100,000 TOBDs therefore in order to deliver our contribution to the national standard we must have achieved a rate of no more than 13.0 for the year ending March 2023.

The Board's verified HCA CDI rate for January- March 2022 is 16.0 (Chart 1). This is a significant reduction from 23.2 (26 cases) the previous quarter.



O Exception reports **Chart 1 – Quarterly HCA CDI Rate**

The Antimicrobial Management Group (AMG) are currently carrying out work to improve prescribing in particular cephalosporins, the team have issued a bulletin to raise awareness (**Appendix 1**). It is anticipated that this work will have an impact on the boards HCA CDI rates. It is too early for this work to have had an impact on this quarter's data, it is unclear why the board has had such a reduction in cases, the board's unverified data for April – June 2022 would suggest that this reduction has not been sustained. The Infection Prevention and Control Team (IPCT) will continue to work closely with the antimicrobial pharmacists and microbiology to seek areas for improvement.

Of the 18 HCA cases identified locally, during the January – March 2022 quarter:

- 9 (50%) had their first positive specimen taken on or after day 3 of a hospital inpatient stay and were classed as Hospital Acquired (HAI) - 6 from University Hospital Crosshouse (UHC), 3 from University Hospital Ayr (UHA).

- 5 (28%) were not HAI but had been discharged from a healthcare facility within the previous 4 weeks. These cases are counted as Healthcare Associated (HCAI).

- 4 (22%) had their first positive specimen taken within 2 or less days of hospital admission and had been discharged from a hospital between 4 and 12 weeks before the positive specimen. These cases are counted as Unknown, which is included under the wider definition of healthcare associated CDI.

There were no outbreaks identified during this quarter.

The verified rolling annual rate for the year ending March 2022 was 21.6. This compares with a year ending rate of 23.1 for the year ending March 2021 (Chart 2). The Board did not meet the national target of 13.0.

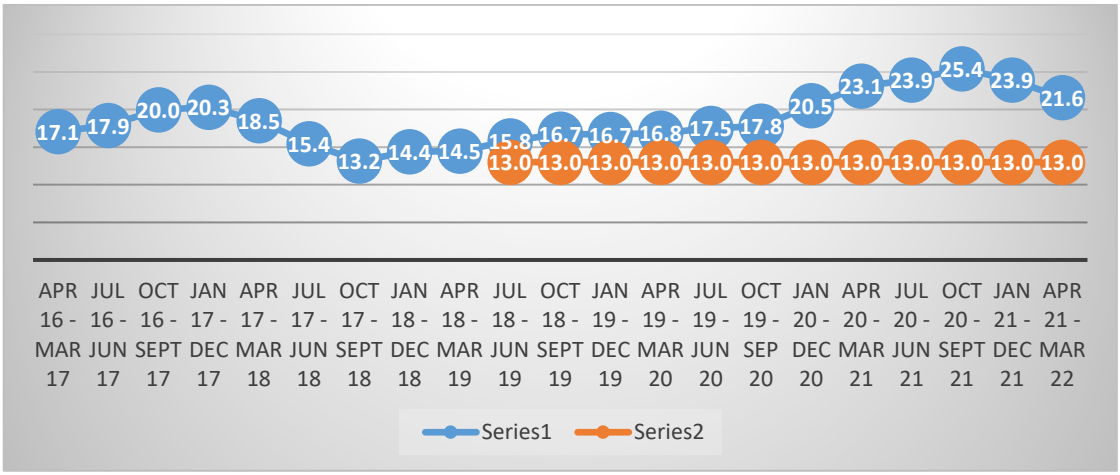
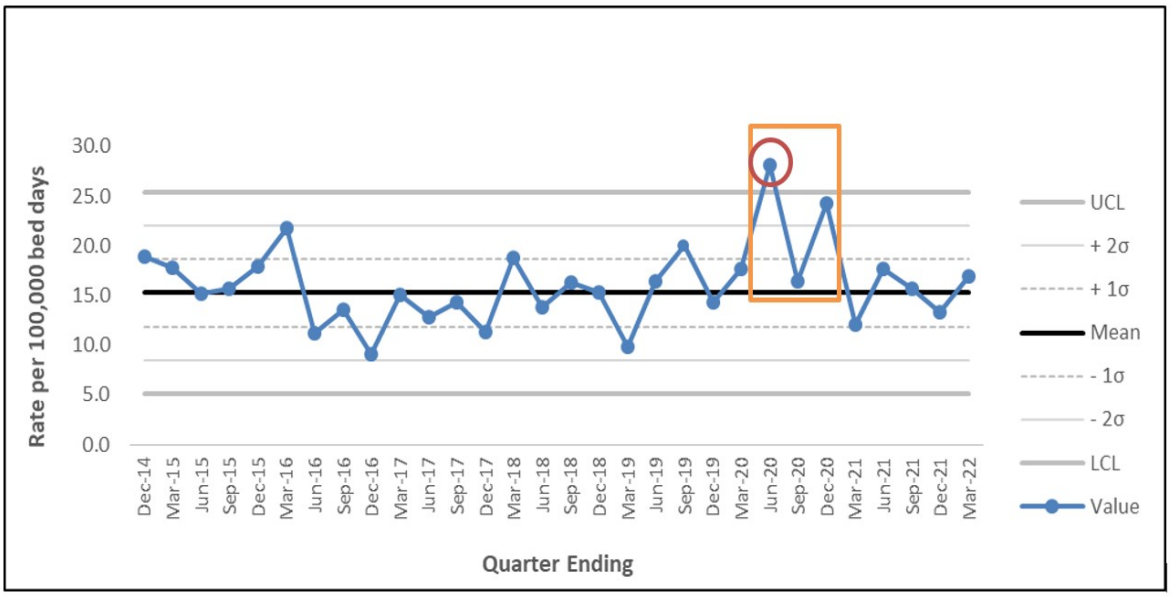


Chart 2 – Rolling Annual HCA Rate vs National Standard

The SAB standard is a reduction of 10% in the national rate of HCA SABs by year end March 2022 which has now been extended to year ending March 2023, with 2018-19 used as the baseline.

NHS Ayrshire and Arran's HCA rate for 2018-19 was 13.8 cases per 100,000 TOBDs therefore in order to deliver our contribution to the national standard we must have achieve a rate of no more than 12.4 by March 2023.

The Board's verified rate for the January – March 2022 quarter was 16.9, up from 13.4 the previous quarter (Chart 3). The number of individual cases increased from 15 to 19 (14 hospital acquired and 5 healthcare associated).



Exception reports

Chart 3 – SABs Quarterly HCA Rate

It can be seen that the HCA SAB rate in quarter ending June 2020 (circled in red) was beyond the upper control limit and so signals a special cause of variation. Furthermore, two of the three consecutive data points between quarter ending June 2020 and quarter ending December 2020 (outlined in orange) lie beyond the two-sigma line, i.e. in the outer one-third of the chart. This further signals a special cause of variation during this period. This was between the first and second wave of the COVID-19 pandemic.

The Board's verified rolling annual rate has decreased to 15.9 for the year ending March 2022 from 19.9 in the year ending March 2021. The Board did not meet the National Standard for year ending March 2022 of 12.4 (Chart 4).

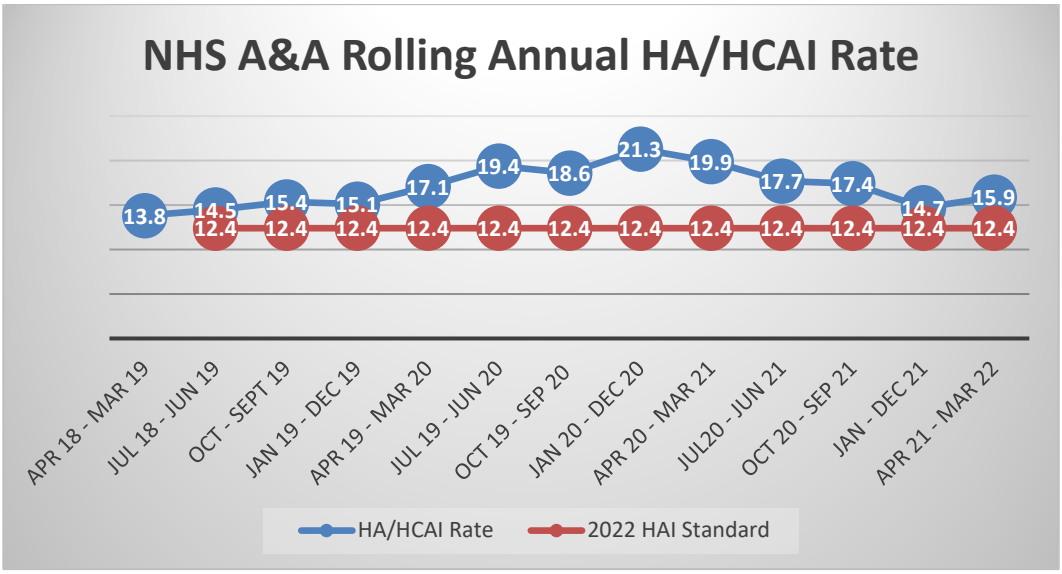


Chart 4 - Rolling Annual HCA SAB rate vs National Standard

There are 19 healthcare associated cases (14 hospital acquired and 5 healthcare associated) for quarter January – March 2022.

Hospital Acquired SABs
There have been 4 device related SABs, 2 peripheral vascular catheters (PVCs) - and 2 dialysis central vascular catheters (CVCs) in January – March 2022.

Point of Entry	January – March 2022
Contaminant	2
CVC tunnelled	2
PVC	2
Not known	5
People who inject drugs	1
Skin	1
Other – conjunctiva	0
SSI	1
Grand Total	14

Table 2 Hospital Acquired SABs Point of Entry January – March 2022

The IPCT will continue to carry out enhanced surveillance as per the national enhanced surveillance protocol. Twice monthly meetings are scheduled for the IPCT to discuss findings with a Microbiology Consultant. In addition, Microbiology are aiming to re-commence weekly SAB reviews of all cases at ward level.

ECB Standard
The ECB target is a 50% reduction in HCA ECBs by 2023-24, with an initial reduction of 25% by 2021-22 this has been extended to year ending March 2023, with 2018-19 used as the baseline.

NHS Ayrshire and Arran's HCA rate for 2018-19 was 45.7 cases per 100,000 TOBDs therefore in order to deliver our contribution to the national standard we

must achieve a rate of no more than 34.4 cases per 100,00 TOBDs for the year 2022-23 and rate of no more than 22.8 cases per 100,000 TOBDs by 2023-24.

Year	Percentage Reduction	Target rate	Target Case Numbers
Baseline	-	45.7	205
2022-23	10%	34.3	154
2023-24 (Final target)	50%	22.8	102

Table 3 –Targets for HCA ECBs

The Board's verified **quarterly** rate for the January – March 2022 quarter was 42.6 down from 49.0 (Chart 5).

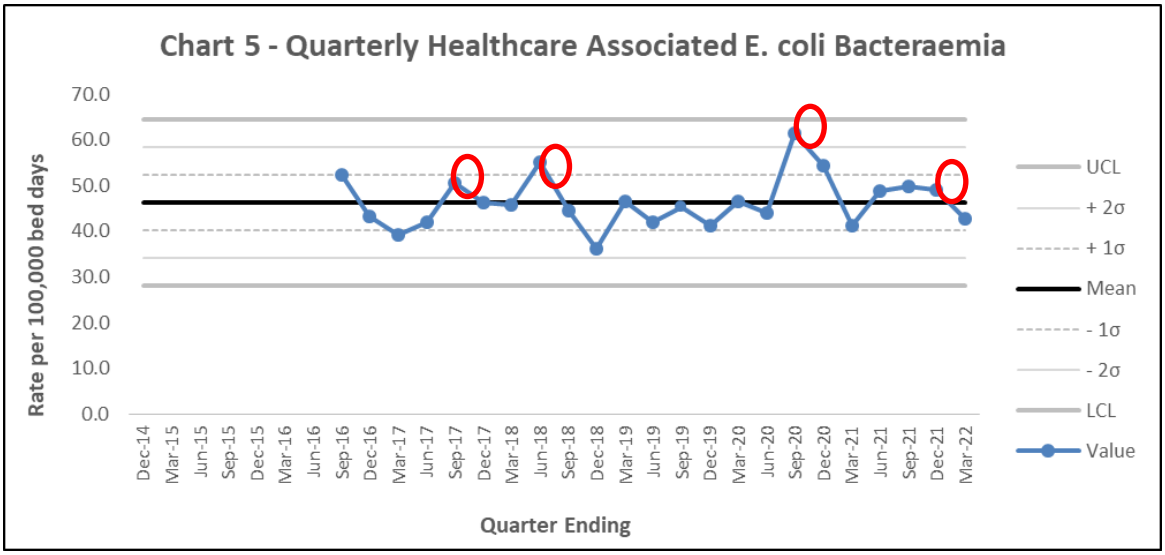


Chart 5 – Quarterly Healthcare Associated ECB Rate

The Board's verified **annual** HCA rate for the year ending March 2022 was 47.6 down from 50.6. This is well above the year 3 reduction target of 34.3 (Chart 6).

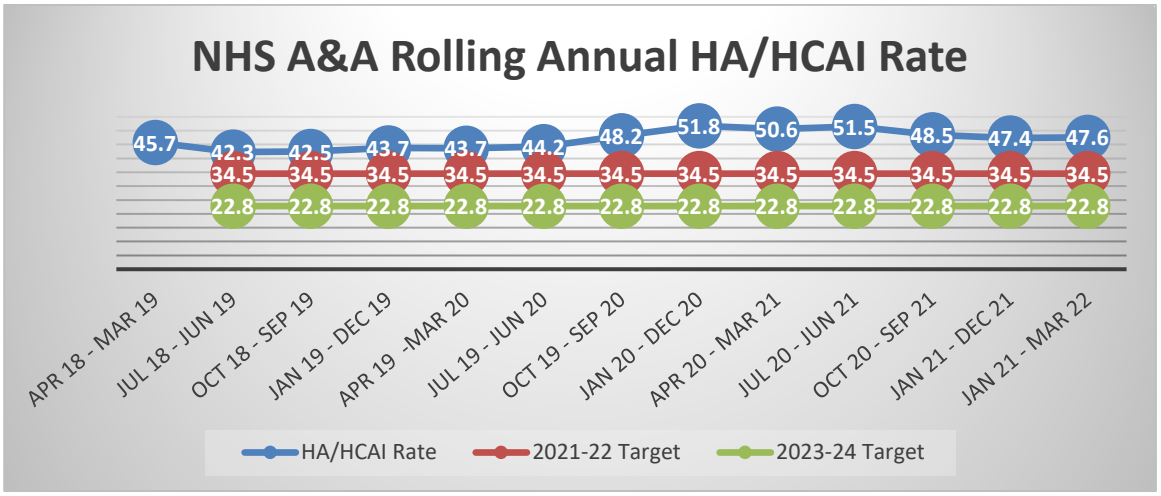


Chart 6 – NHS A&A Graduated Rolling Annual HCA Target Trajectory

The local ECB surveillance data is entered directly onto the national surveillance database with the results accessed via the Discovery platform.

As previously reported, reducing urinary catheter related infections remains the Board's primary strategy for lowering the overall bacteraemia rate. This work had been impacted due to the COVID-19 pandemic. The Executive Nurse Director has recently tasked the newly appointed Deputy Nurse Director (Interim) with re-establishment of the Urinary Catheter Improvement Group (UCIG). Initial contact has been made with key stakeholders to ensure appropriate membership.

COVID-19 Pandemic
The COVID-19 pandemic continues to have a significant impact on Infection Prevention and Control Team (IPCT) resource and input towards the Annual Planned Programme. There were 53 Outbreaks across acute and community settings that were managed during quarter 4, January – March 2022.

2.3.1 Quality/patient care
HCAIs are associated with higher levels of morbidity and mortality. Attainment of the national HCAI standards will result in fewer infections in patients and improve patient outcomes.

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.

The IPC activity has primarily been focussed 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. A risk template has been developed and includes a number of mitigations to treat this risk. This has been entered onto the operational risk register. An interim Annual Planned Programme for 2021-22 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
This is an update report to Board members and an impact assessment has therefore not been completed. 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 1 August 2022.

2.4 Recommendation

- Discussion

Board Members are asked to review and discuss this report which provides an update on the Board's current performance against the national HCAI standards.

3. List of appendices

- Appendix 1, Antimicrobial Management Group, update bulletin: A focus on *Clostridioides Difficile* Infection rate in NHS Ayrshire & Arran.

Antimicrobial Management Group

Update Bulletin

Number 08 June 2022

A focus on *Clostridioides Difficile* Infection rate in NHS Ayrshire & Arran

Situation

NHS Ayrshire & Arran (NHS A&A) has been highlighted as an exception in the quarterly healthcare associated *Clostridioides Difficile* Infection (CDI (HA-CDI) funnel plot analysis (Figure 1), with an incidence of 23.2 HA-CDI cases per 100,000 total occupied bed days (TOBDs) for 2021 Q4 (October to December). This compares with a national HA-CDI incidence of 13.3 cases per 100,000 TOBDs.

This is the second consecutive quarter that NHS A&A have had a markedly higher HA-CDI incidence than the national average.

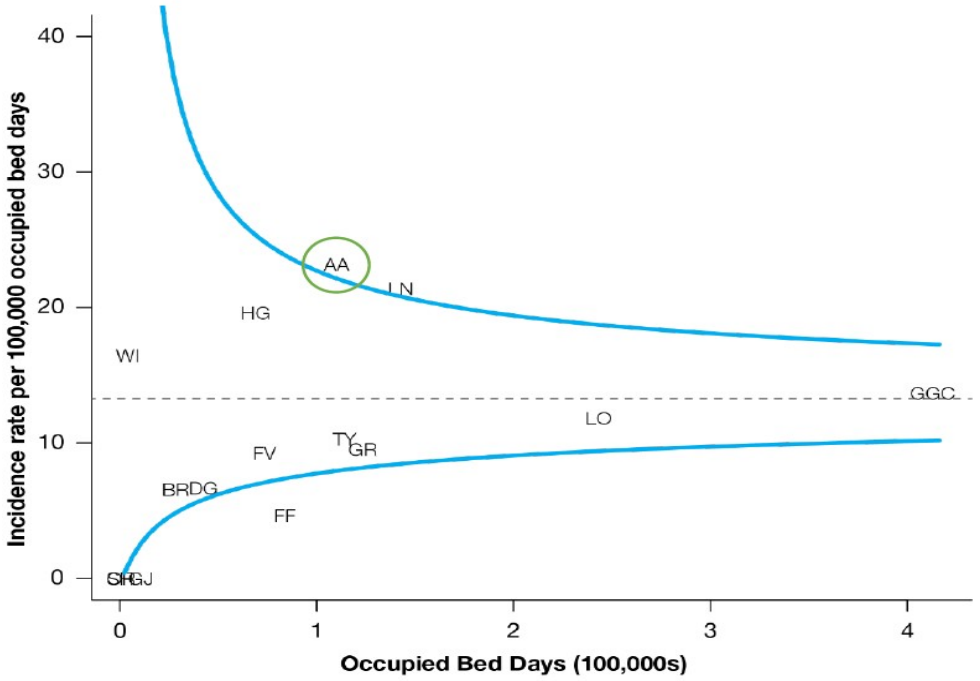


Figure 1: Funnel plot of CDI incidence rates (per 100,000 TOBD) in healthcare associated infection cases for all NHS boards in Scotland in Q4 2021

Written by: K Hamilton, Senior Antimicrobial Pharmacist, on behalf of the Antimicrobial Management Group
Checked by: Mahanth Manuel, Consultant Physician and Antimicrobial Management Group Chair
Date: 29th June 2022

Background

Healthcare associated CDI rate

There were 32 CDI cases reported by NHS A&A in Q4-2021 (October to December). Of these, 26 cases (81.3%) were identified as healthcare associated CDI (HA-CDI). This is an incidence of 23.2 HA-CDI cases per 100,000 TOBDs, which is higher than the national average (Figure 1), and follows an upwards shift in the quarterly HA-CDI rate since September 2020 (Figure 2). Of note is that this trend appears to be mirroring a continuing increase in oral cephalosporin use in NHS A&A (Figure 5).

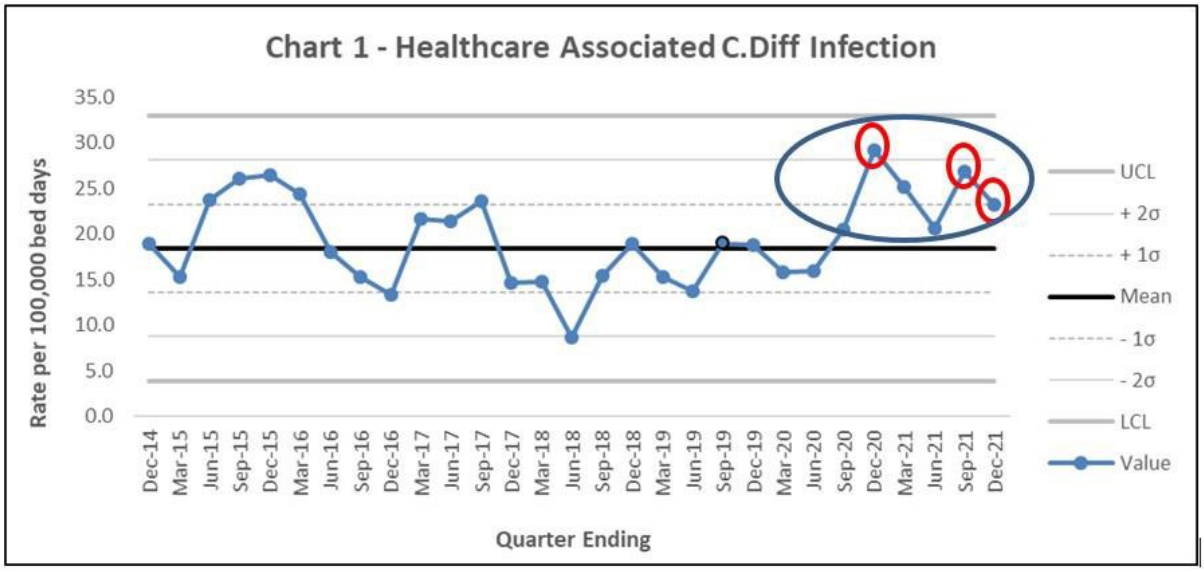


Figure 2: NHS A&A Quarterly HCA CDI Rate

Antibiotic Prescribing

Use of any broad-spectrum antimicrobial agents increases the risk of CDI as a result of disruption to the normal gut flora. **Current or recent (within the last 12 weeks) use of "4C antimicrobials" (i.e. cephalosporins, clindamycin, co-amoxiclav, (fluoro)quinolones) is a major risk factor for developing CDI and agents from this group should be avoided unless no more narrow spectrum antimicrobial is suitable.**

Other risk factors for CDI include;

- Increased age (>65 years old)
- A previous diagnosis of CDI
- Prolonged hospital stay
- Serious underlying diseases
- Surgical procedures (in particular bowel procedures)
- Immunosuppression
- Use of proton pump inhibitors (PPIs) or H_2 antagonists

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Assessment

Acute Hospital use of 4C antimicrobial agents

The use of cephalosporins, clindamycin and co-amoxiclav in acute hospitals in NHS A&A is below the national average, however a concerning trend exists with fluoroquinolone prescribing, where use is higher than the national average (Figure 3):

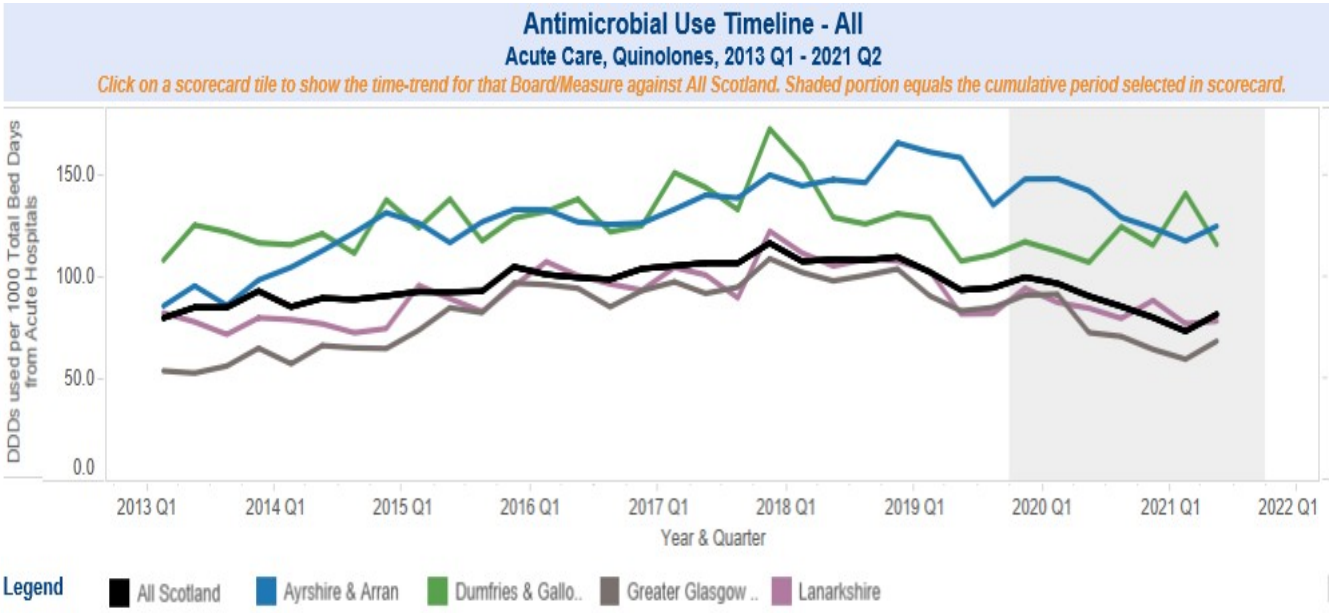

Figure 3: NHS A&A quinolone prescribing DDDs/1000 Total Bed Days. (Source: Discovery, Hospital Medicines Utilisation Database (HMUD) Information Services Division (ISD))

Primary Care use of 4C antimicrobial agents

In primary care combined use of 4C antimicrobials is above the national average and consistently higher than in comparator boards (Figure 4).

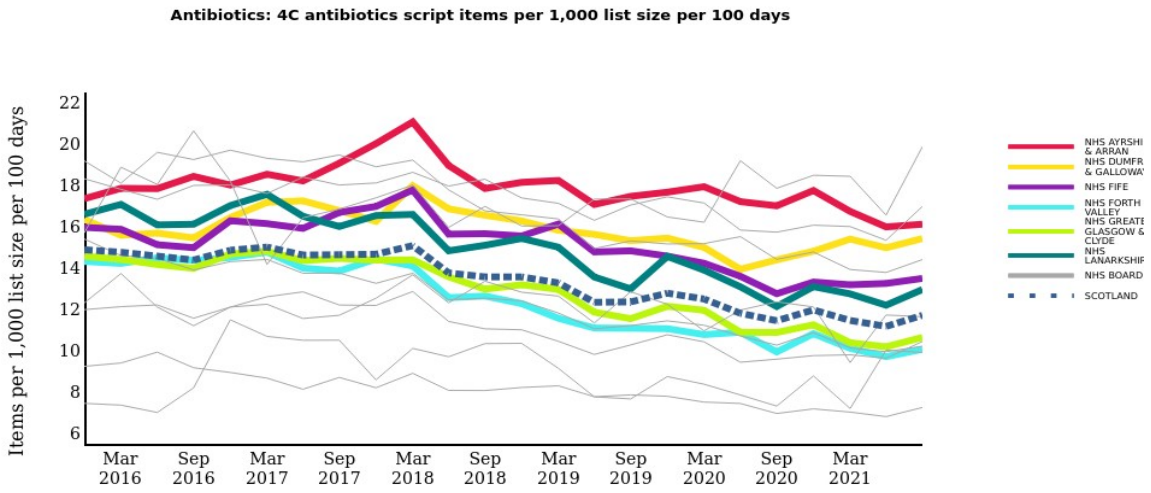

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Figure 4: NHS A&A 4C antibiotic items /1000 list size/100 days

The use of oral cephalosporins (i.e. mainly cefalexin) is of particular concern (Figure 5) and previous audit work highlighted high rates of use for both UTI treatment and prophylaxis of recurrent UTI in primary care. Cefalexin is not a recommended agent for the latter indication.

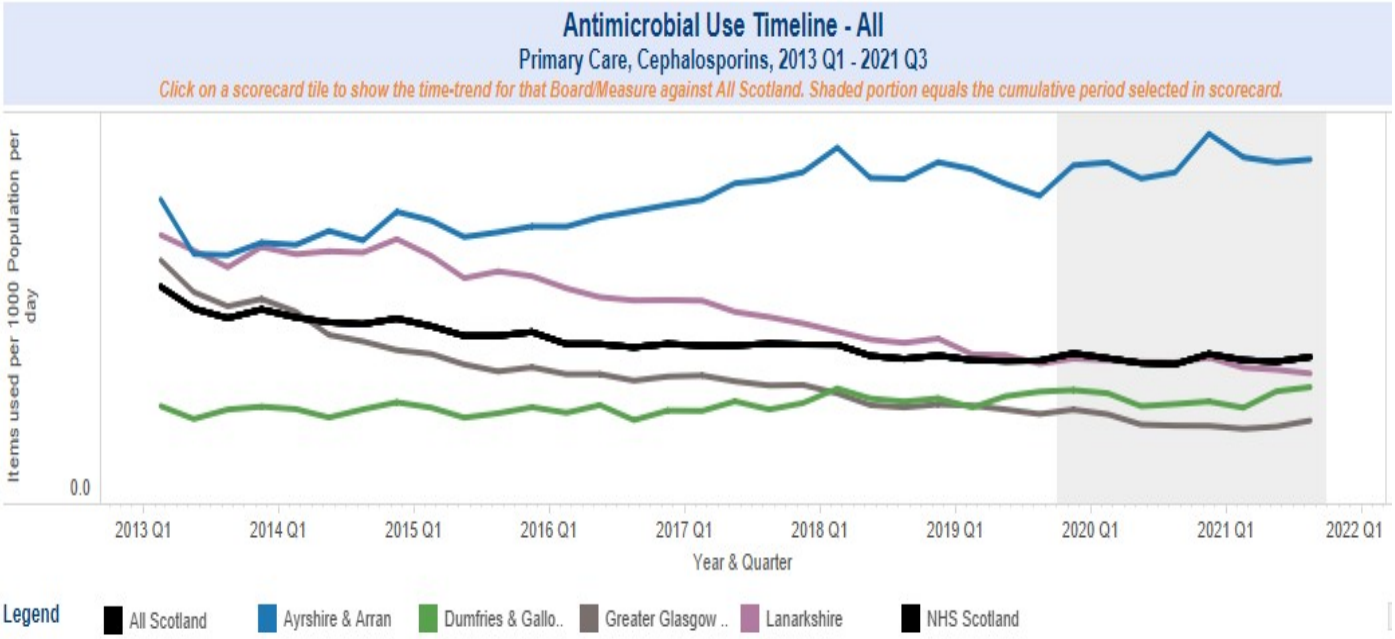

Figure 5: NHS A&A cephalosporin prescribing (items/1000 population) Source: Discovery, Prescribing Information System, Information Services Division

NHS A&A are marked outliers as prescribers of oral cephalosporins, (Figure 5) and use has continued to rise since 2016. Similarly, the number of HA-CDI has risen over time, and particularly so over the last 3 years (Figure 6). **In the absence of any other changes in antimicrobial usage and antimicrobial policy changes which may have increased use of 4C agents, this suggests strongly that the use of oral cefalexin is a driver of the increasing number of cases of CDI in NHS A&A.**

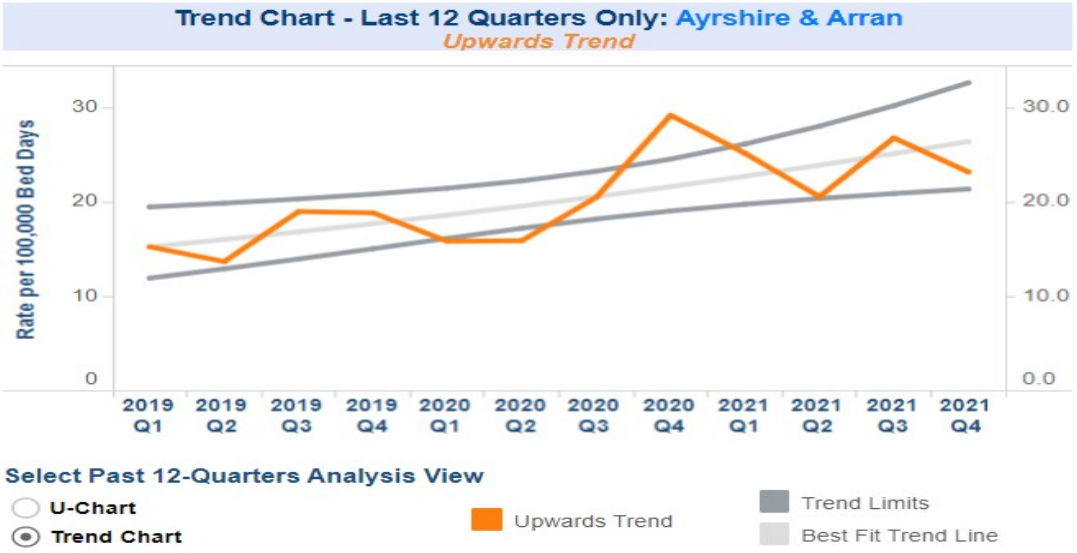

Figure 6: Trend chart for Healthcare associated CDI in NHS AA, Q1-2019 to Q4-2021

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Date: 29th June 2022

Recommendations

- To reduce the risk of CDI, and where culture and antimicrobial susceptibility data is available to guide antimicrobial treatment, **avoid 4C agents wherever possible**.

- In the absence of such information, ensure antimicrobial prescribing is in line with the NHS A&A empirical treatment of infection guide NHSAA - Infections (antimicrobialcompanion.scot).

- Cefalexin is not a recommended agent for UTI prophylaxis. Follow guidance for UTI prophylaxis in the NHS A&A 'Management of Recurrent UTI in adults (≥ 16 years)' guideline.

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