

NHS Greater Glasgow and Clyde	Paper No. 22/38
Meeting:	NHS Board
Meeting Date:	28/06/2022
Title:	The Healthcare Associated Infection Reporting Template (HAIRT) for January – March (Quarter 1) 2022
Sponsoring Director/Manager	Professor Angela Wallace, Executive Director of Nursing
Report Author:	Mrs Sandra Devine, Director of Infection Prevention and Control

1. Purpose

The Healthcare Associated Infection Reporting Template (HAIRT) is a mandatory reporting tool for the Board to have an oversight of the Healthcare Associated targets (*Staphylococcus aureus* bacteraemias (SAB), *Clostridioides difficile* infections (CDI), *E. coli* bacteraemias (ECB), incidents and outbreaks and all other Healthcare Associated Infections' (HCAI) activities across NHS Greater Glasgow & Clyde (NHSGGC) over the first quarter of 2022 (January – March).

The full HAIRT will now be considered by the Clinical and Care Governance committee on an ongoing basis with a summary being submitted to the NHS Board meeting.

2. Executive Summary

The paper can be summarised as follows:

- Annual Operational Plan (AOP) targets set for 2019-2022 for SAB, CDI and ECB are presented in this report;
 - SAB rates remain within limits. There were **72** healthcare associated SAB reported locally this quarter. Aim is 69 or less per quarter. Actions to address HCAI SAB reduction are included in this report.
 - ECB rates remain within normal control limits. There were **109** healthcare associated ECB this quarter, the aim is to have less than 114 cases per quarter so GGC are performing well at this point in time against this target.
 - CDI rates remain within normal control limits for the period of the report. There were **39** healthcare associated CDI this quarter, the aim is to have less than 51 cases per quarter so GGC are performing well at this point in time against this target.
 - Surgical Site Infection (SSI) surveillance remains paused nationally and was paused locally in mid-December 2021 when surveillance staff were redeployed to assist with COVID vaccination clinics. Surveillance resumed on the 1st February 2022.
 - Charts within this report, where appropriate, highlight continuous improvement over time.
 - MRSA and CPE Clinical Risk Assessment (CRA) compliance for January to March 2022 was 86% and 88% respectively. This is below the aim of 90%. NHS Scotland was also lower at 81% and 80% for these measures.

- The following link is the ARHAI report for the period October to December 2021. This report includes information on performance for CDI, ECB, SABs and SSI cases. [Clostridioides difficile infection, Escherichia coli bacteraemia, Staphylococcus aureus bacteraemia and Surgical Site Infection in Scotland \(windows.net\)](#) The 2022 targets continue to be extremely challenging but the ARHAI report demonstrates that GGC are not outliers in any category presented. Charts within this report, where appropriate, highlight continuous improvement over time.
- The second issue of the Infection Prevention and Control Quality Improvement Network (IPCQIN) newsletter was issued to staff via Core Brief in February 2022. This will ensure shared learning across the organisation on the improvements implemented thus far by the network.
- COVID-19 activity continued during this quarter. IPCT are working closely with colleagues to support the implementation of national guidance in practice. To date, in NHSGGC, there have been over 348,000 confirmed positive cases however many people do not require admission to our hospitals. There was an increase in ward closures in this quarter.
- The Board's cleaning compliance is 95% for the Quarter and Estates compliance is 96% for January and February and 97% for March.
- Close communication with ARHAI and other external organisations continues, with contributions from several members of the IPCT to National Groups.
- IPCT actions from the recommendations of the Scottish Government Oversight Board and Case Note Review are complete. One new initiative, proposed by GGC as a good practice point has been delayed due to COVID, i.e. development of an early warning system for high risk units. This action would be a first for Scotland and will be progressed as soon as practicably possible.

3. Recommendations

The Clinical and Care Governance Committee is asked to consider the following recommendations:

- Note the content of the HAIRT report.
- Note the performance in respect of the Annual Operational Plan (AOP) Standards for SAB, CDI and ECB.
- Note the detailed activity in support of the prevention and control of Healthcare Associated Infections.
- Note contribution of the IPCT to GGC response to COVID-19.

4. Response Required

This paper is presented for assurance

5. Impact Assessment

The impact of this paper on NHSGGC's corporate aims, approach to equality and diversity and environmental impact are assessed as follows:

- **Better Health** **Positive impact**
- **Better Care** **Positive impact**
- **Better Value** **Positive impact**

- **Better Workplace** **Positive impact**
- **Equality & Diversity** **Neutral impact**
- **Environment** **Positive impact**

6. Engagement & Communications

The issues addressed in this paper were subject to discussion with the Infection Prevention and Control (IPC) Team and the IPC Surveillance & Data Team. Comments were also taken into consideration from the below groups when reviewing the content and format following presentation:

- Acute Infection Control Committee (AICC)
- Board Infection Control Committee (BICC)
- Partnerships Infection Control Support Group (PICSG)

7. Governance Route

This full HAIRT Report has been previously considered by the following groups as part of its development:

- The Infection Prevention and Control Team (IPCT),
- Acute Infection Control Committee (AICC),
- Board Infection Control Committee (BICC),
- Partnerships Infection Control Support Group (PICSG), and
- Clinical and Care Governance Committee.

8. Date Prepared & Issued

Date the paper was written: June 2022

Date issued to Clinical and Care Governance Forum on:

Healthcare Associated Infection Summary – January to March 2022

The HAIRT Report is the national mandatory reporting tool and is presented quarterly to the Clinical and Care Governance Committee with a summary report to the NHS Board. This is a requirement by the Scottish Government HAI Task Force and informs NHSGGC of activity and performance against Healthcare Associated Infection Standards and performance measures. This section of the report focuses on NHSGGC Board-wide prevention and control activity and actions.

Performance at a glance relates only to the quarter reported and should be viewed in the context of the overall trend in the following pages.

	Jan 2022	Feb 2022	Mar 2022	Status toward AOP target (based on trajectory to Mar 2022)
Healthcare Associated <i>Staphylococcus aureus</i> bacteraemia (SAB)	30	26	16	Above aim (23/ month)
Healthcare Associated <i>Clostridioides difficile</i> infection (CDI)	16	9	14	Below aim (17/ month)
Healthcare Associated <i>Escherichia coli</i> bacteraemia (ECB)	33	36	40	Below aim (38/ month)
Hospital acquired IV access device (IVAD) associated SAB	9	8	nil	
Healthcare associated urinary catheter associated ECB	4	8	8	
Hand Hygiene	98	97	98	
National Cleaning compliance (Board wide)	95	95	95	
National Estates compliance (Board wide)	96	96	97	

Key infection control challenges (relating to performance)**Staphylococcus aureus bacteraemia**

- There were 30 healthcare associated SAB in January; 26 in February and 16 in March. Aim is 23 or less per month.

Clostridioides difficile infection

- There were 16 healthcare associated CDI in January; 9 in February and 14 in March. Aim is 17 or less per month.

Escherichia coli bacteraemia

- There were 33 healthcare associated ECB in January; 36 in February and 40 in March. Aim is 38 or less per month.

SAB, CDI and ECB case numbers remain within control limits this period.

Surgical Site Infection Surveillance

- Surveillance was paused nationally (CNO letter 25th March 2020) however, NHSGGC continued to sustain SSI surveillance until December 2021 when it was paused locally due to the surveillance nurses being deployed to support the vaccine rollout programme. Surveillance recommenced on 1st February. Further information will be included in the next HAIRT.

Staphylococcus aureus bacteraemia (SAB)

	Jan 2022	Feb 2022	Mar 2022
Total	36	34	21
Hospital *	21	21	6
Healthcare*	9	5	10
Community	6	8	5

HCAI monthly Aim for Hospital and Healthcare is 23 patient cases.

Healthcare associated *S. aureus* bacteraemia total for the rolling year April 2021 to March 2022 = **318**. HCAI yearly aim is **280**.

***Hospital and Healthcare are the cases which are included in the Scottish Government (SG) reduction target.**

Comments:

- Overall SAB numbers have been stable from 2020 and in control with minimal variation which indicates a stable system.
- The number of Healthcare Associated Infection cases has been variable but within expected limits since 2020.
- Community cases have shown a reduction since March 2021.
- Enhanced bacteraemia surveillance temporarily switched to light methodology as directed by SG because of the acknowledged increased workload of IPCTs responding to the challenges of COVID-19.
- In addition to the nationally set targets, infections from an IVAD caused by *S. aureus* are investigated fully and reported.
- There have been 20 SAB cases associated with an IVAD in Q1-2022. There are now local SAB reduction groups in each of the geographical sectors as part of the IPCQIN.

E.coli bacteraemia (ECB)

	Jan 2022	Feb 2022	Mar 2022
Total	70	77	80
Hospital *	17	22	21
Healthcare*	16	14	19
Community	37	41	40

HCAI Aim for Hospital and Healthcare is 38.

Healthcare associated *E. coli* bacteraemia total for the rolling year April 2021 to March 2022 = **535**. HCAI yearly aim is **452**.

***Hospital and Healthcare are the cases included in the SG reduction target.**

Comments:

- There has been a reduction in E.coli bacteraemia cases in 2022 to date.
- The Healthcare Associated ECB number of cases is currently stable and in control with minimal variation which indicates a stable system. In the past 9 months on 8 occasions the number of cases has been below the mean. This indicates improvement over time.
- There remains some variability in monthly community onset cases.
- Urinary catheters remain a high risk factor for ECB, and were associated with 18% of all healthcare associated cases this quarter.
- SPC charts for healthcare associated cases related to a urinary catheter are now included in each Acute Sector monthly report.
- Ward level data of entry point of bacteraemia is also available via MicroStrategy. This provides prospective information to Senior Charge Nurses to assist reduction of cases that may be amenable to improvement methodology.

Clostridioides difficile infection (CDI)

	Jan 2022	Feb 2022	Mar 2022
Total	24	11	24
Hospital *	10	6	9
Healthcare*	5	3	4
Indeterminate*	1	-	1
Community	8	2	10

Healthcare associated *Clostridioides difficile* total for the rolling year April 2021 to March 2022 = **213**.

HCAI yearly aim is **204**.

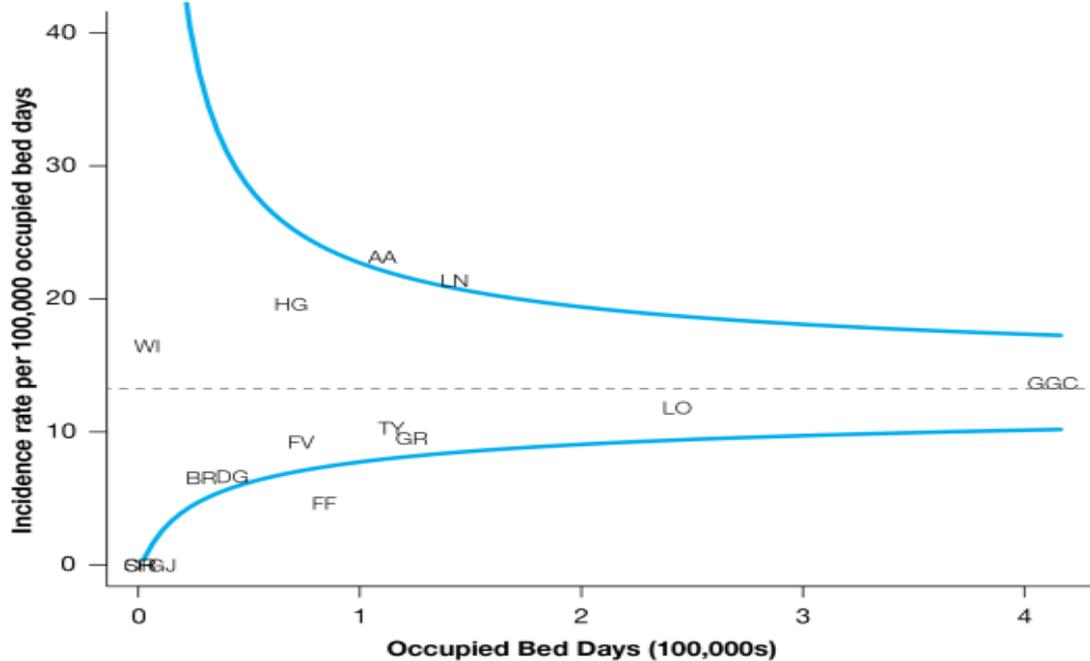
* **Hospital, Healthcare and Indeterminate are the cases which are included in the SG reduction target.**

HCAI aim for Hospital and Healthcare and Indeterminate onset is 17.

Comments:

- There had been a number of months when the number of CDI cases were increased i.e. March 2021 until September 2021. This increase was noted across NHS Scotland. The IPCT continued to closely monitor and implement local actions in any area with higher than expected numbers.
- There has been a reduction in cases from October 2021 to date and only **eleven** CDI cases were reported in February 2022.
- There had been an increase in HCAI cases since March 2021 to September 2021, however this has decreased in December 2021 to March 2022 (below HCAI standard aim).
- Community acquired cases increased slightly in 2021, with 7 months above the mean however remained within control limits.

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.^{1,2}



1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: Information Services Division ISD(S)1.
2. NHS Golden Jubilee, NHS Orkney and NHS Shetland overlap.

Actions Taken:

- Cases in hospital: All patients are reviewed by the IPCT and advice is given regarding isolation and transmission based precautions. The IPCNs visit patients and discuss the infection and what this means for them.
- Any ward with 2 cases of HAI in two weeks is automatically visited daily and the Senior Charge Nurse (SCN) is assisted with the completion of the ARHAI Trigger Tool. Any clusters (2) are sent to the Reference Lab for testing. Each ward receives an updated CDI Statistical Process Control (SPC) chart each month, which means control limits are continually monitored and action taken as required but it also demonstrates improvement where this has occurred. Prospective ward level information on CDI cases is available on MicroStrategy for access by SCNs across our Acute sites.

Micro-Strategy and ICNet – prospective tailored data provision on SAB, CDI, ECB and SSI Surveillance

IPC have been working collaboratively with eHealth colleagues to incorporate several measures into the MicroStrategy dashboard. These went live in May 2021.

This will enable staff to quickly view prospective information on SAB, CDI and ECB from point of care to Board level. The software platform has the benefits of providing users with the ability to view all key quality indicators in one screen to get a quick overview of hospital performance in real-time and also easily interpret detailed information with data graphics.

Security access for each specific user will allow tailored access to interactive dossiers for each ward area. The system provides functionality to filter reports seamlessly for the users and the capacity to view trends over time to monitor improvement in the reduction of HCAI cases in NHSGGC.

This will allow SCNs in the Acute Sector to access their own ward level data on each of the three measures. Lead Nurses, Clinical Service Managers and General Managers will have access to the wards and hospitals included in their remit.

Acute Directors, the Chief Operating Officer and Chief Executive will also be able to view this information via the suite of reporting tools. Surgical Site Infection (SSI) surveillance information was also incorporated on the platform in December 2021. This will provide prospective data provision on surgical procedures included in the SSI programme to the respective surgical clinicians.

Surgical Site Infection (SSI) Surveillance:

SSI Surveillance: paused in December 2021

National SSI surveillance remains suspended.

Local surveillance was paused in mid-December 2021 to allow the three IPC surveillance nurses to assist with booster delivery at NHSGGC COVID vaccination centres.

As 30 day readmission surveillance for November 2021 procedures were not complete, there is no surveillance data on November to January 2022 procedures.

Surveillance recommenced on 1st February and further details will be included in the next HAIRT.

Meticillin resistant *Staphylococcus aureus* (MRSA) and *Clostridioides difficile* recorded deaths

The National Records of Scotland monitor and report on a variety of death causes recorded on the death certificate. Two organisms are monitored and reported; MRSA and *C. difficile*. Please click on the link for further information:

<https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/deaths>

There were two deaths in January 2022, one in February 2022 and one in March 2022 where hospital acquired *Clostridioides difficile* was recorded on the death certificate. These were both considered to be antibiotic associated and not due to cross infection. Datix incident reports were raised and the clinical teams were asked to complete clinical reviews.

<https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/deaths>

There were no deaths this quarter where hospital acquired MRSA was recorded on the death certificate.

Hand Hygiene Monitoring Compliance

NHSGGC Board

	Apr 202 1	May 202 1	Jun 202 1	July 202 1	Aug 202 1	Sep t 202 1	Oct 202 1	Nov 202 1	Dec 202 1	Jan 202 2	Feb 202 2	Mar 202 2
Boar d Total	97	97	97	98	98	97	98	97	98	98	97	98

Estate and Cleaning Compliance (per hospital)

The data is collected through audit by the Domestic Services Team using the Domestic Monitoring National Tool, and areas chosen within each hospital are randomly selected by the audit tool. Any issues such as inadequate cleaning is scored appropriately and if the score is less than 80%, a re-audit is scheduled. Estates compliance assesses whether the environment can be effectively cleaned; this can be a combination of minor non-compliances such as missing screwcaps, damaged sanitary sealant, scratches to woodwork etc. The results of these findings are shared with Serco/Estates for repair. Similar to the cleaning audit, scores below 80% trigger a re-audit.

Infection Prevention and Control Quality Improvement Network (IPCQIN) Update

The aim of the IPCQIN is that by December 2022, The IPCQI will create the organisational conditions to facilitate and support the reduction of preventable infections associated with healthcare delivery. The Steering Group and the Operational Group have met several times now and the main three work streams that support and deliver the objectives of the Operational Group have been established and have made progress.

Below is the second issue of the network's Newsletter which was shared with staff in February 2022.



2nd Issue - IPCQI
Network Newsletter

COVID-19 - Update

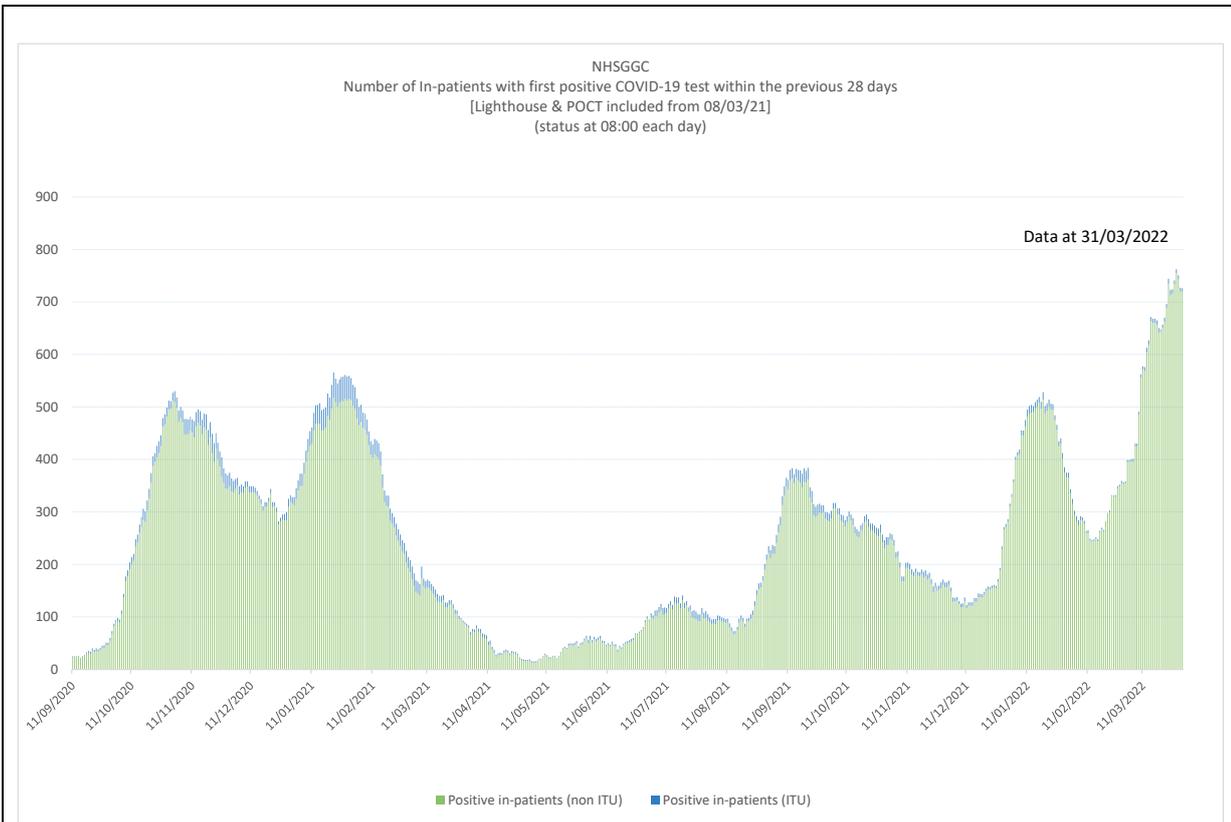
NHS Scotland is now experiencing its most recent wave of COVID-19. As of 3rd April 2022 in NHSGGC there have been over 434,000 confirmed positive cases however many people do not require admission to our hospitals. This has been the most significant wave in terms of inpatient activity.

As well as the IPCNs providing advice and expertise to the local clinical teams, the IPCT monitor all COVID-19 positive cases to assist with the provision of overall case numbers, ITU admissions and deaths.

The bar graph displays the number of in-patients across all GGC hospitals who tested positive for COVID-19. In blue is the number of people in intensive care areas.

DAILY REPORTING – from 15/09/2020 to date

BOARD OFFICIAL



Daily reporting includes only those in-patients who have had a first positive COVID-19 test within the previous 28 days. It includes Lighthouse, PCR and selected point of care testing results (Not LFD).

Public Health Scotland now publish weekly reports on the incidence of COVID-19 in Scotland. These are available at: <https://beta.isdscotland.org/find-publications-and-data/population-health/covid-19/covid-19-statistical-report/>

Further information on Coronavirus (COVID-19) data, intelligence and guidance is available at: <https://www.publichealthscotland.scot/our-areas-of-work/sharing-our-data-and-intelligence/coronavirus-covid-19-data-and-guidance>

Ward closures due to COVID-19												
There were 65 ward closures due to COVID-19 in January, 41 for February and 84 in March 2022.												
Month	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sept-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
Ward Closures	3	8	6	5	18	22	21	14	28	65	41	84
Bed Days Lost	16	670	307	519	1078	1521	1892	1305	1699	3262	2087	3576

Below is an extract from ARHAI Scotland's Report on the incidence of COVID-19 in Scotland – Validated data up until 03 April 2022



Table 1: Number of COVID-19 cases, by onset status and NHS board: specimen dates up to 03 April 2022.^{1,2,3,4}

NHS board	Total COVID-19 cases (n)	Non-hospital onset (n)	Indeterminate hospital onset cases (n)	Probable hospital onset cases (n)	Definite hospital onset cases (n)	Non-hospital onset (%)	Indeterminate hospital onset cases (%)	Probable hospital onset cases (%)	Definite hospital onset cases (%)
Ayrshire & Arran	129,997	1,791	259	417	851	1.4%	0.2%	0.3%	0.7%
Borders	29,866	194	52	56	137	0.6%	0.2%	0.2%	0.5%
Dumfries & Galloway	41,141	575	54	24	89	1.4%	0.1%	0.1%	0.2%
Fife	119,023	1,102	121	93	461	0.9%	0.1%	0.1%	0.4%
Forth Valley	107,004	1,360	151	127	361	1.3%	0.1%	0.1%	0.3%
Golden Jubilee	61	34	13	6	8	-	-	-	-
Grampian	166,348	1,188	138	142	452	0.7%	0.1%	0.1%	0.3%
Greater Glasgow & Clyde	434,816	4,791	979	1,034	2,497	1.1%	0.2%	0.2%	0.6%
Highland	85,311	578	54	41	182	0.7%	0.1%	0.0%	0.2%
Lanarkshire	256,200	1,753	492	480	958	0.7%	0.2%	0.2%	0.4%
Lothian	301,905	2,724	433	528	1,203	0.9%	0.1%	0.2%	0.4%
Orkney	4,781	25	1	1	5	0.5%	0.0%	0.0%	0.1%
Shetland	5,700	29	1	1	0	0.5%	0.0%	0.0%	0.0%
Tayside	128,524	1,744	217	259	581	1.4%	0.2%	0.2%	0.5%
Western Isles	6,625	40	3	5	13	0.6%	0.0%	0.1%	0.2%
Scotland	1,817,302	17,928	2,968	3,214	7,798	1.0%	0.2%	0.2%	0.4%

Outbreaks or Incidents in Quarter 1 2022

Outbreaks / Incidents

Outbreaks and incidents across NHSGGC are identified primarily through ICNet (surveillance software package), microbiology colleagues or from the ward. ICNet automatically identifies clusters of infections of specific organisms based on appendix 13 of the National Infection Prevention & Control Manual (NIPCM) to enable timely patient management to prevent any possible spread of infection. The identification of outbreaks is determined following discussion with the Infection Control Doctor/Microbiologist. In the event of a possible or confirmed outbreak/incident a Problem Assessment Group (PAG) or Incident Management Team (IMT) meeting is held with staff from the area concerned, and actions are implemented to control further infection and transmission.

The ARHAI Healthcare Infection Incident Assessment Tool (HIAT) is a tool used by the IMT to assess the impact of the outbreak or incident. The tool is a risk assessment and allows The IMT to rate the outbreak/incident as RED, AMBER, or GREEN.

All incidents, regardless of assessment, are reported to the Antimicrobial Resistance & Healthcare Associated Infection (ARHAI) group. A link to the reports for NHS Greater Glasgow and Clyde is below:

<https://www.nhsggc.org.uk/your-health/infection-prevention-and-control/reports-and-publications/hai-reports-hairt/>

All outbreaks are notified to ARHAI

HIAT

The HIIAT is a tool used by boards to assess the impact of an outbreak or incident. The tool is a risk assessment and allows boards to rate the outbreak/incident as RED, AMBER, or GREEN. ARHAI are informed of all incidents who onward report to the Scottish Government Health and Social Care Directorate (SGHSCD).

HIIAT **GREEN** - 12 reported for January, 7 for February and 8 for March 2022
HIIAT **AMBER** - 27 reported for January, 18 for February and 14 for March 2022

HIIAT **RED** - 12 reported for January, 8 for February and 10 for March 2022

(COVID-19 incidents are now included in the above totals but not reported as incident summaries)

Outbreaks/Incidents (HIIAT assessed as AMBER or RED excluding COVID 19)

Chryseobacterium species from blood culture Ward 6a Haemato-Oncology and Royal Hospital for Children

Chryseobacterium spp. is non-spore forming, aerobic GNB primarily found in soil, water and is chlorine resistant. One case in 6A with Hickman line blood culture growing Chryseobacterium spp. was identified on 01/01/22. Repeat blood culture 03/01/22 and line tip 04/01/22 were negative. Incident was HIIAT scored as **AMBER** on 12/01/22 and then **GREEN** on 09/02/22. Source of infection remains unclear. The patient was discharged home.

The following control measures were undertaken;

- Enhanced supervision audit carried out every 4 weeks. No cleanliness issues.
- Hand hygiene audit carried out every 4 weeks with the most recent audit 12/01/22, advice on improvement given.
- Multidisciplinary Clinical review was completed.
- Water is tested every 4 weeks. Last year 1350 samples were tested from ward 6A. This organism was not identified in any of these samples.
- All taps on the haematology/oncology patient pathway are fitted with point of use filters.
- Routine weekly Hysan drain decontamination continues.
- Continued surveillance of GNB with the use of SPC charts as per ARHAI methodology.
- Enhanced cleaning is in place in this unit in response to the COVID 19 pandemic.

Investigations:

- Audit of line care documentation 12/01/22 – issues noted with CVC documentation and were addressed by service.
- Peer audit of line care practice carried out 12/01/22 – no issues identified.

No further cases have been identified.

Lightburn Hospital, Ward 3(Medicine for the Elderly) – Influenza A

Five patients with Influenza identified from the 3-5th March 2022. HIIAT assessed as **AMBER** on the 08/03/22 then **GREEN** 10/03/22. All patients have recovered.

The following control measures were undertaken;

- Patient contacts were encouraged to wear face masks.
- PPE in place as per ARHAI Winter Respiratory Infections in Health and Care Settings IPC Addendum.
- Ward 3 is naturally ventilated; windows were opened periodically every hour. Cold temperatures precluded windows being constantly open.
- Whole ward commenced on seasonal influenza prophylaxis.

Healthcare Environment Inspectorate (HEI)

HEI undertook an Acute Hospital Safe Delivery of Care Inspection of The Queen Elizabeth University Hospital Campus between the 22nd and 24th March 2022. This inspection resulted in six areas of good practice and five requirements.

All HEI reports and action plans can be viewed by clicking on the link:

http://www.healthcareimprovementscotland.org/our_work/inspecting_and_regulating_care/nhs_hospitals_and_services/find_nhs_hospitals.aspx

Multi-drug resistant organism screening

As part of the national mandatory requirements, each board is expected to screen specific patients for resistant organisms. These are Carbapenemase producing Enterobacteriaceae (CPE) and MRSA. Assessment to screen depends on a clinical risk assessment performed on all admissions to indicate whether the patient requires to be screened. On a quarterly basis we assess compliance of completing this risk assessment to provide assurance of effective screening and report this nationally. The national expectation of compliance is **90%**.

Last validated quarter Jan-Mar 2022		NHSGGC 88% compliance rate for CPE screening	Scotland 88%
		NHSGGC 86% compliance rate for MRSA screening	Scotland 81%

Local results have been prospectively feedback to the ward areas audited this quarter to encourage improved compliance with CRA completion.

Work is currently underway with eHealth to incorporate this information electronically into the patient admission eRecord.

APPENDIX - 1**Healthcare Associated Infection Reporting Guidance, Glossary, Definitions and Infection Control Targets****Purpose:**

This paper can be referred to when reading the HAIRT Reports, it covers any Scottish Government guidance and aims relating to Infection Prevention and Control (IPC), list of abbreviations and definitions for some of the medical terms or infection types mentioned in the HAIRT reports. It also includes some systems and process that have been put in place by IPC to reduce the harm from infections and prevent them from happening.

Glossary of abbreviations

Following feedback from stakeholders, below is a list of abbreviations used within this report:

AOP	Annual Operational Plan
ARHAI	Antimicrobial Resistance Healthcare Associated Infection
CDI	<i>Clostridioides difficile</i> infection
CPE	Carbapenemase producing Enterobacteriaceae
CVC	Central Venous Catheter
ECDC	European Centre for Disease Control
HAI	Hospital Acquired Infection (not present or incubating on admission to hospital and arising \geq 48 hours after admission). Please note this excludes COVID-19 cases (hospital onset currently thought to be >14 days).
HCAI	Healthcare Associated Infection
HEI	Healthcare Environment Inspectorate
HIAT	Healthcare Infection Incident Assessment Tool
HPV	Hydrogen Peroxide Vapour
IMT	Incident Management Team
IPCAT	Infection Prevention and Control Audit Tool
IPCN	Infection Prevention and Control Nurse
IPCT	Infection Prevention and Control Team
IVAD	Intravenous/Intravascular Access Device
MRSA	Meticillin Resistant <i>Staphylococcus aureus</i>
NES	NHS Education for Scotland
PAG	Problem Assessment Group
PEG	Percutaneous Endoscopic Gastrostomy
PICC	Peripherally Inserted Central Catheter
PVC	Peripheral Vascular/Venous Catheter
SAB	<i>Staphylococcus aureus</i> bacteraemia
SG	Scottish Government
SGHSCD	Scottish Government Health and Social Care Directorate
SICPs	Standard Infection Control Precautions
SSI	Surgical Site Infection
UCC	Urinary Catheter Care
UTI	Urinary Tract Infection
SPC	Statistical Process Control: An analytical technique that plots data over time. It helps us understand variation and in so doing, guides us to take the most appropriate action. SPC is a good

technique to use when implementing change as it enables us to understand whether changes made have resulted in an improvement.

Datix The software used by NHS Greater Glasgow and Clyde for clinical and non-clinical incident reporting (and managing complaints and legal claims) and forms part of the Risk Management Strategy. It is a web-based application that allows any staff member with access to StaffNet to report an incident.

***S. aureus* and *E. coli* bacteraemias**

Definition of a bacteraemia

Bacteraemia is the presence of bacteria in the blood. Blood is normally a sterile environment, so the detection of bacteria in the blood (most commonly accomplished by blood cultures) is always abnormal. It is distinct from sepsis, which is the host response to the bacteria. Bacteria can enter the bloodstream as a severe complication of infection, (like pneumonia, meningitis, urinary tract infections (UTI) etc.), during surgery, or due to invasive devices such as peripheral vascular catheters (PVC), Hickman lines, urinary catheters etc. Transient bacteraemias can result after dental procedures or even brushing of teeth although this poses little or no threat to the person in normal situations.

Bacteraemia can have several important health consequences. The immune response to the bacteria can cause sepsis and septic shock which has a high mortality rate. Bacteria can also spread via the blood to other parts of the body (haematogenous spread), causing infections away from the original site of infection, such as endocarditis (infection of the heart valves) or osteomyelitis (infection of the bones). Treatment for bacteraemia is with antibiotics for many weeks, in some circumstances however, cases such as *S. aureus* bacteraemia, usually 14 days of antibiotic therapy is required.

Origin Definitions for Bacteraemia Surveillance

<https://www.ARHA1.scot.nhs.uk/web-resources-container/protocol-for-national-enhanced-surveillance-of-bacteraemia>

Healthcare Associated Infection	<p>Hospital Acquired Infection</p> <p>Positive blood culture obtained from a patient who has been hospitalised for ≥48 hours. If the patient was transferred from another hospital, the duration of in-patient stay is calculated from the date of the first hospital admission.</p> <p>If the patient was a neonate / baby who has never left hospital since being born. OR The patient was discharged from hospital in the 48 hours prior to the positive blood culture being taken. OR A patient who receives regular haemodialysis as an out-patient. OR Contaminant if the blood aspirated in hospital. OR If infection source / entry point is surgical site infection (SSI). <i>[This will be attributed to hospital of surgical procedure]</i></p>
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BOARD OFFICIAL

	<p>Healthcare Associated Infection</p> <p>Positive blood culture obtained from a patient within 48 hours of admission to hospital and fulfils one or more of the following criteria:</p> <p>Was hospitalised overnight in the 30 days prior to the positive blood culture being taken. OR Resides in a nursing, long-term care facility or residential home. OR IV, or intra-articular medication in the 30 days prior to the positive blood culture being taken, but excluding IV illicit drug use. OR Had the use of a registered medical device in the 30 days prior to the positive blood culture being taken, e.g. intermittent self-catheterisation or Percutaneous Endoscopic Gastrostomy (PEG) tube with or without the direct involvement of a healthcare worker (excludes haemodialysis lines see HAI). OR Underwent any medical procedure which broke mucous or skin barrier, i.e. biopsies or dental extraction in the 30 days prior to the positive blood culture being taken. OR Underwent care for a medical condition by a healthcare worker in the community which involved contact with non-intact skin, mucous membranes or the use of an invasive device in the 30 days prior to the positive blood culture being taken, e.g. podiatry or dressing of chronic ulcers, catheter change or insertion.</p>
Community Acquired Infection	<p>Positive blood culture obtained from a patient within 48 hours of admission to hospital who does not fulfil any of the criteria for healthcare associated bloodstream infection.</p>

Healthcare Associated Infection (HCAI) Surveillance

NHSGGC has systems in place to monitor key targets and areas for delivery. The surveillance and HCAI systems and ways of working allow early detection and indication of areas of concern or deteriorating performance.

***Staphylococcus aureus* bacteraemia (SAB)**

All blood cultures that grow bacteria are reported nationally and it was found that *S. aureus* became the most common bacteria isolated from blood culture. As *S. aureus* is an organism that is found commonly on skin, it was assumed (nationally) that bacteraemias occurred because of the presence of a device such as a PVC, and as such a national reduction strategy was initiated and became part of the then HEAT targets in 2006. The target was a national reduction rather than a Board-specific reduction however the latest target set for 2019-2022 is Board-specific, based on the NHS Boards current infection rates.

NHSGGC's Approach to SAB Prevention and Reduction

All *S. aureus* bacteraemia are monitored and reported by the IPCT. Investigations to the cause of infection consist of examining the patients notes, microbiology, biochemistry and haematology reports to identify potential causes of the infection; from this, in most cases, a provisional cause is identified however if necessary, this is discussed further with the clinical team responsible for the management of the patient to assist further with the investigation. Any issues identified during the investigations, such as incomplete care bundle* etc. is highlighted at this time, and where appropriate, a DATIX report is generated. Once a conclusion has been agreed, the information is discussed with the Infection Control Doctor and outcomes agreed. This information is part of mandatory reporting and is submitted to ARHAI quarterly.

* Care “bundles” are simple sets of evidence-based practices that when implemented collectively, improve the reliability of their delivery and patient outcomes. There are several care bundles in use within GGC, e.g. PVC, Central Venous Catheter (CVC), SSI and Urinary Catheter Care (UCC). Compliance with these bundles is monitored via the IPC Audit Tool (IPCAT) and if there is an outbreak or incident.

Information on patients with SABs is available to the Directorate/ Division in three ways; monthly summary reports, SAB specific quarterly reports and via the micro strategy dashboard monthly GGC acute operating division report, which is presented as a summary at the Acute Clinical Governance Committee. All SABs associated with an IVAD are followed-up by an audit of PVC/CVC practice in the ward or clinical area of origin, and the results are returned to the Chief Nurse for the Sector/Directorate. The analysis of the data and subsequent SAB reports enable the IPCT to identify trends in particular sources of infections such as Hickman line infections etc. and it also enables the IPCT to identify areas requiring further support. The data also influences the elements contained in the IPC Annual Work Plan and the IPCQIN.

Continual monitoring and analysis of local surveillance data, enables the IPCT and local teams to identify and work towards ways to reduce infections associated with IVADs. All SABs are reviewed and investigated fully and highlighted to the patients’ clinicians, nursing staff and management colleagues. Where appropriate, a DATIX is generated for infections so learning is shared and discussed at local clinical governance meetings.

Healthcare Associated Infection Standards – local reduction aims

- *S. aureus* bacteraemia – reduction of 10% from 2019 to 2022

Local quarterly reduction aim charts have been produced for GGC as a whole and for the five Acute Sectors

	2018/19 Rate (base line) per 100,000 total bed days	No of HCAI cases (per annum)	Reduction %	Date for reduction	Target HCAI rate per 100,000 total bed days	Target HCAI cases per annum	Target HCAI cases per month
SAB	19.3	324	10	2022	17.4	280	23

Sector/Directorate local reduction aims – January – March cases

	Patient cases	Aim per Quarter	Status
Clyde Sector	16	14	Above aim
North Glasgow Sector	18	17	Above aim
Regional Services	11	13	Below aim
South Glasgow Sector	23	22	Above aim
Women’s & Children	4	4	On aim
GGC Total	72	69	Above aim

Sector/Directorate reports are issued for action by Sector/Directorate teams.

All Acute hospital cases are prospectively available on MicroStrategy IPC dashboard.

Escherichia coli bacteraemia (ECB)**NHSGGC's approach to ECB prevention and reduction**

E. coli is one of the most predominant organisms of the gut flora, and for the last several years the incidence of *E. coli* isolated from blood cultures, i.e. causing sepsis, has increased to the point that it is the most frequently isolated organism in the UK. As a result of this, the HAI Policy Unit has now included *E. coli* as part of the AOP targets. The most common cause of ECB is from complications arising from UTIs, hepato-biliary infections (gall bladder infections) and infections associated with urinary catheters. It should be acknowledged that there is limited number of possible interventions to target ECB because infections are often spontaneous and not associated with health care or health care interventions.

Daily case totals for all three HCAI standards are reported to the IPC Senior Management Team to provide a prospective update on the current situation within the Board.

Healthcare Associated Infection Standards – local reduction aims

- *E.coli* bacteraemia – initial reduction of 25% by 2021/2022

Local reduction aim charts have been produced for GGC as a whole and for the five Acute sectors. The IPC Work Plan for 2020/2021 includes the development of tools to assist clinical teams to improve the incidence of *E. coli* bacteraemia.

	2018/19 Rate (base line) per 100,000 total bed days	No of HCAI cases (per annum)	Reduction %	Date for reduction	Target HCAI rate per 100,000 total bed days	Target HCAI cases per annum	Target HCAI cases per month
ECB	38.1	638	25	2022	28.6	452	38

Sector/Directorate local reduction aims - January - March cases

	Patient cases	Aim per Quarter	Status
Clyde Sector	17	27	Below aim
North Glasgow Sector	34	35	Below aim
Regional Services	16	12	Above aim
South Glasgow Sector	35	35	On aim
Women's & Children	6	4	Above aim
HSCP	1	-	-
GGC Total	109	113	Below aim

All Acute hospital cases are prospectively available on MicroStrategy IPC dashboard.

Clostridioides difficile infection (CDI)

Reporting to ARHAI of *C. difficile* infections has been mandatory for several years in NHS Scotland. NHSGGC has met its targets over the years and has maintained a low rate of infection. Similar to the SAB target, the new target set for 2019-2022 is based on our Board's rate rather than an overall national rate.

C. difficile can be part of the normal gut flora and can occur when patients receive broad-spectrum antibiotics which eliminate other gut flora, allowing *C. difficile* to proliferate and cause infection. This is the predominant source of infection in GGC. *C. difficile* in the environment can form resilient spores which

enable the organism to survive in the environment for many months, and poor environmental cleaning or poor hand hygiene can lead to the organism transferring to other patients, leading to infection. Another route of infection is when a patient receives treatment to regulate stomach acid which affects the overall pH of the gut allowing the organism to proliferate and cause infection.

Origin definitions for *Clostridioides difficile* infections

Local Enhanced CDI Surveillance in NHSGGC: Definition of Origin	
Hospital acquired CDI	is defined as when a CDI patient has had onset of symptoms at least 48 hours following admission to a hospital.
Healthcare associated CDI	is defined as when a CDI patient has had onset of symptoms up to four weeks after discharge from a hospital.
Indeterminate cases of CDI	is defined as a CDI patient who was discharged from a hospital 4-12 weeks before the onset of symptoms.
Community associated CDI	is defined as a CDI patient with onset of symptoms while outside a hospital and without discharge from a hospital within the previous 12 weeks; or with onset of symptoms within 48 hours following admission to a hospital without stay in a hospital within the previous 12 weeks.

NHSGGC’s Approach to CDI Prevention and Reduction

Similar to our SAB and ECB investigation, patient history is gathered including any antibiotics prescribed over the last several months. Discussions with the clinical teams and microbiologists assist in the determination and conclusion of the significance of the organism, as occasionally the isolation of the organism can be an incidental finding and not the cause of infection. Data is shared with the antimicrobial pharmacist and cases are discussed at the Antimicrobial Management Group to identify inappropriate antimicrobial prescribing. Daily case totals for all three HCAI standards are reported to the IPC Senior Management Team to provide a prospective update on the current situation within our Board.

Healthcare Associated Infection Standards – local reduction aims <i>C. difficile</i> – reduction of 10% from 2019 to 2022							
	2018/19 Rate (base line) per 100,000 total bed days	No of HCAI cases (per annum)	Reduction %	Date for reduction	Target HCAI rate per 100,000 total bed days	Target HCAI cases per annum	Target HCAI cases per month
CDI	19.0	318	10	2022	17.1	204	17

Sector/Directorate local reduction aims – January – March cases			
	Patient cases	Aim per Quarter	Status
Clyde Sector	4	15	Below aim
North Glasgow Sector	20	15	Above aim
Regional Services	7	5	Above aim
South Glasgow Sector	7	15	Below aim
Women’s & Children (age ≥ 15 yr)	0	1	Below aim
GP specimens	1	-	-
GGC Total	39	51	Below aim

All Acute hospital cases are prospectively available on Micro-Strategy.

Surgical Site Infection (SSI) Surveillance

SSI surveillance is the monitoring and detection of infections associated with a surgical procedure. In GGC the procedures included are hip arthroplasty, Caesarean-section, major vascular surgery and large bowel surgery. These are all mandatory procedure categories for national reporting. In addition, the IPCT undertake surveillance on knee arthroplasty, repair of fractured neck of femur and in the Institute of Neurological Sciences (QEUH campus), spinal and cranial surgery. The IPCT monitor patients for 30 days post-surgery and for those procedures with implants, up to 90 days post-surgery including any microbiological investigations from the ward for potential infections and also hospital re-admissions relating to their surgery. Any mandatory procedure category infection associated with a surgical procedure is reported nationally to enable board to board comparison. GGC infection rates are comparable to national infection rates.

NHSGGC's Approach to SSI Prevention and Reduction

SSI criteria is determined by using the European Centre for Disease Control (ECDC) definitions. Any infection identified is investigated fully and information gathered including the patients' weight, duration of surgery, grade of surgeon, prophylactic antibiotics given, theatre room, elective or emergency, primary theatre dressing, etc. can provide additional intelligence in reduction strategies. The IPCT closely monitor infection rates, and any increased incidence of SSIs are prospectively reported to management and clinical teams, and Incident Management Team (IMT) meetings are held.

Meticillin resistant *Staphylococcus aureus* (MRSA) and *Clostridioides difficile* recorded deaths

The National Records of Scotland monitor and report on a variety of death causes recorded on the death certificate. Two organisms are monitored and reported; MRSA and *C. difficile*. Please click on the link for further information:

<https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/deaths>

COVID-19

Public Health Scotland now publish weekly reports on the incidence of COVID-19 in Scotland. These are available at: <https://beta.isdscotland.org/find-publications-and-data/population-health/covid-19/covid-19-statistical-report/>

Further information on Coronavirus (COVID-19) data, intelligence and guidance is available at: <https://www.publichealthscotland.scot/our-areas-of-work/sharing-our-data-and-intelligence/coronavirus-covid-19-data-and-guidance>