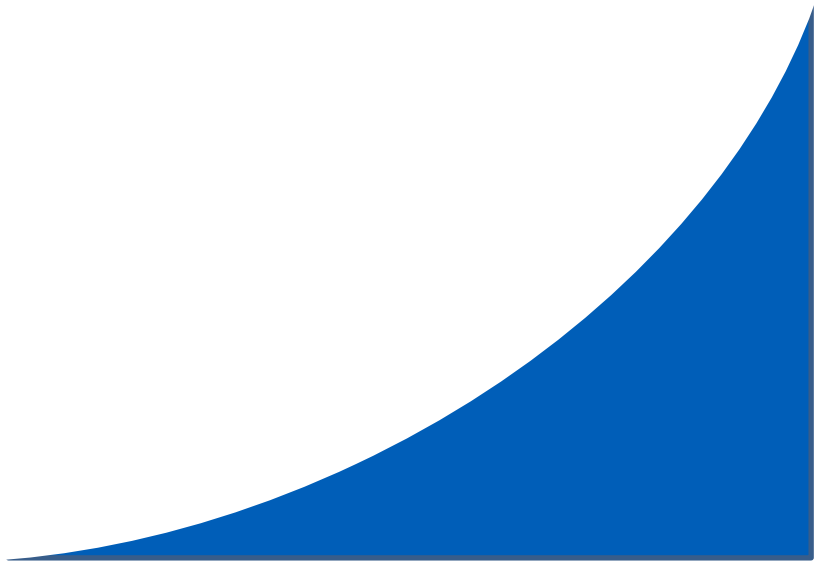




Royal United Hospitals Bath
NHS Foundation Trust

Infection, Prevention and Control

Annual Report | 2021/22



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Key:



Target met, Trust meeting standards, increase in performance from previous year



Target not met by narrow margins, Trust not meeting standards but evidence of improvement, slight reduction in performance from previous year



Target not met, Trust not meeting standards, significant reduction in performance from previous year

1 Executive Summary

- 1.1 This is the annual report of the Director of Infection Prevention and Control (DIPC) and summarises the work undertaken at the Royal United Hospitals Bath NHS Foundation Trust to manage infections during the period 1 April 2021 to 31 March 2022.
- 1.2 The Trust is compliant with the Health and Social Care Act 2008: Code of Practice on the prevention and control of infections and related guidance which was revised in July 2015
- 1.3 During 2021/22 Two MRSA bloodstream infections were reported by the Trust however there were no Trust apportioned MRSA bloodstream infections.
- 1.4 There were 95 cases of MSSA bloodstream infections reported. There were 23 hospital onset cases; 7 cases less than reported last year
- 1.5 The Trust reported a total of 269 cases of *E coli* bloodstream infection in 2021/22, this includes both hospital, community onset and community provider cases. There were 49 hospital onset cases; an increase of one case against last year's figures. There were 37 community onset healthcare associated cases. In total 86 healthcare associated cases were reported against the threshold of 114.
- 1.6 There were 75 *Klebsiella spp.* bloodstream infections were reported in 2021/22; this includes a case reported on behalf of a community provider. 16 hospital onset cases were recorded; a decrease in 6 cases compared with last year's performance. 7 community onset healthcare associated cases were reported making a total of 23 Trust apportioned infections 50% lower than the threshold of 46.
- 1.7 There were 38 cases of *Pseudomonas aeruginosa* bloodstream infections reported; 10 cases more than the previous year. 14 hospital onset and 5 community onset healthcare associated cases were reported making a total of 19 against the threshold of 19 cases.
- 1.8 There were 114 cases of *Clostridioides difficile* infection reported of which 55 cases were Trust apportioned; 3 more than were reported in the previous year. The Trust apportioned cases comprised of 36 hospital onset and 19 community onset healthcare associated cases. The threshold was 43 cases.
- 1.9 There were 3 outbreaks of norovirus between April 2021 and March 2022.
- 1.10 There were no outbreaks of influenza between April 2021 and March 2022.
- 1.11 The COVID-19 pandemic remained a key challenge for the Trust. National guidance has informed our local policies and protocols to support safe working and patient flow. Nosocomial transmission of COVID has increased at times when the community rates have peaked.
- 1.12 The IPC Board Assurance Framework was completed and presented to Board in January 2021 and was updated and taken to IPC Committee in March 2022. This then went to Board in May 2022.

1.13 The antimicrobial stewardship programme has continued throughout the year. The antimicrobial consumption reduction targets have been met and work is ongoing to reduce this further.

1.14 Surgical site infection mandatory surveillance continued throughout 2021/22. There has been a significant reduction in surgical site infections post elective colorectal surgery.

1.15 The target for compliance with infection prevention and control Level 2 training did not meet the 90% target; there were 79.8% of staff trained by the end of March 2022.

2 Key progress 2020/21

2.1 The Infection Prevention and Control Team have been instrumental in ensuring that any change in National guidance in relation to COVID-19 has been reflected in Trust guidance and policies. The team have continued to support staff to work safely and to ensure that patient pathways are maintained to prevent the spread of infection. There has also been collaborative working with colleagues in the Bath Swindon and Wiltshire CCG to enable sharing of policies and standardise the approach to preventing and managing infection across the three acute trusts: RUH, Great Western Swindon and Salisbury.

2.2 During 2021/22 the Infection Prevention and Control Team further increased their on-call commitment to include weekends and public holidays outside of the winter months in order to support the Trust to sustain patient flow and with the management of COVID-19 related incidents. This included the team being on-site and increasing working hours.

2.3 The Infection Prevention and Control Team continued to lead on outbreak prevention and management during the pandemic and were responsible for external reporting of these incidents and submission of other reports as required internally and externally.

2.4 The Infection Prevention and Control Team supported the adoption of the national IPC elearning package for all staff and have offered ad hoc face to face training sessions when required. The national IPC elearning package will replace the Trust online training during Autumn 2022.

2.5 Mandatory surveillance of health care associated infections has continued alongside the Infection Prevention and Control Team's key involvement with the COVID-19 pandemic. All cases have been reviewed and reported through the Public Health England data capture system. This includes reporting of infections for GPs and other provider organisations who use the RUH laboratory for processing specimens. A major challenge to this has been the delay in acquiring the new generation version of ICNet which is used by the team to view results and undertake surveillance. At present the system does not import certain results including those reported by the RUH laboratory which has meant that the team are using multiple systems to analyse data. It is anticipated that the new system will be in place by September 2022.

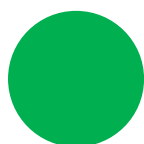
2.6 The Infection Prevention and Control Reference Group has continued to meet weekly throughout the year. The group has been instrumental in delivering guidance and policy changes and has been opened up for all staff to attend who require advice on managing infections that is specific to their specialties.

2.7 The Infection Prevention and Control Team have revised the following policies during the last year:

- Aseptic Non-Touch Technique
- Chicken Pox and Shingles
- Standard Infection Control Precautions and Hand Hygiene
- Infection Prevention and Control Surveillance
- Linen
- Tuberculosis
- Transmissible Spongiform Encephalopathy Agents including CJD

2.8 The Infection Prevention and Control Team have contributed to the paperless inpatient documentation project and have advised on revision of key documents that support patient care. These documents will replace some of the care plans that are currently paper based. The team have also revised the Trust standard stool chart and led on replacing this and training staff to use it in all adult inpatient settings

3 Meticillin resistant *Staphylococcus aureus* (MRSA) bloodstream infections



The reporting of MRSA bloodstream infections is mandatory for all NHS trusts. There is a national target of zero preventable MRSA bloodstream infections.

There were 2 cases reported by the Trust during 2021/22. Both cases were community onset and were attributable to the designated CCG. There have been no hospital onset cases since February 2021.

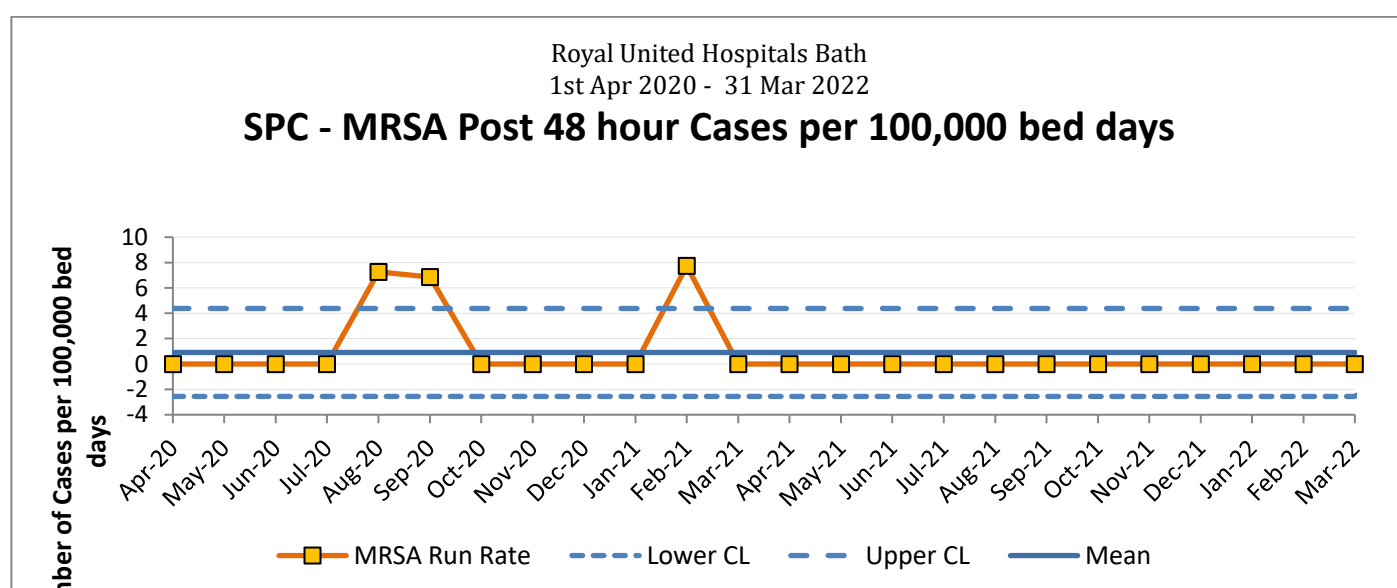
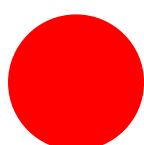


Figure 3: Trust apportioned MRSA bloodstream infections since April 2020

See Appendix 14.2 for further information on these investigations and regional MRSA rates.

4 Meticillin sensitive *Staphylococcus aureus* (MSSA) bloodstream infections



MSSA bloodstream infections have been part of mandatory surveillance since 2011. There are currently no national reduction targets or thresholds set for this infection.

In 2021/22 there were 95 cases of MSSA bloodstream infection reported; 72 taken within 2 days of admission and 23 hospital onset cases where the blood cultures were taken after 2 days. The number of hospital onset cases has reduced by 7 in comparison with the previous year.

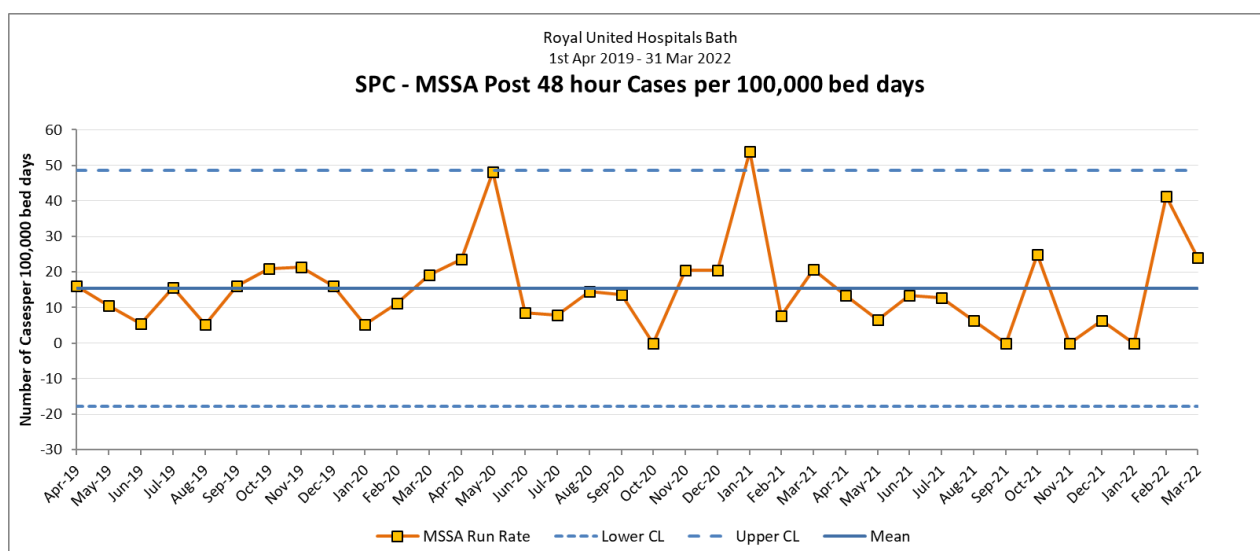


Figure 4: Trust apportioned MSSA bloodstream infections per 100,000 bed days since April 2019

Actions taken

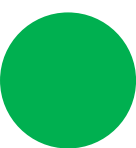
All cases of MSSA bloodstream infection are assessed by the microbiologists and on discussion with the relevant clinical team they will identify the potential source of infection. This will include a physical examination of the patient where possible and a review of any radiological reports alongside other microbiological samples if appropriate. In some cases affected patients have complex illness and histories where it is not possible to identify a single source of infection and these are reported as cause unknown. The microbiologists advise the clinical teams on treatment of all patients with MSSA bloodstream infections and continue to follow them up whilst they remain inpatients.

During 2021/22 vascular access devices remained the most likely source in a large proportion of Trust attributed MSSA infections. Work has been ongoing to prevent these infections however learning from root cause analysis investigations has shown that peripheral venous cannulae are still being left in situ for longer than required and documentation of insertion, removal and observation of cannulae sites is inconsistent. Improvement strategies are being worked through with the senior sisters to improve documentation and reduce harm.

See [Appendix 14.3](#) for further information on these investigations and regional MSSA rates.

5 Gram negative bloodstream infections

In July 2021 NHS England and NHS Improvement published Minimising *Clostridioides difficile* and Gram-negative Bloodstream Infections alongside the NHS Standard Contract for 2021/22. This document set infection thresholds for each NHS Trust, NHS foundation trust and clinical commissioning group. Hospital trust thresholds include all healthcare associated cases: both hospital onset and community onset where the patient has been discharged from hospital within a certain timeframe. The timeframe for community onset healthcare associated Gram-negative bloodstream infections is where the infection occurs within 28 days of discharge from the reporting trust.



5.1 *Escherichia coli* (E coli) bloodstream infections

During 2021/22 the Trust reported a total of 269 *E coli* bloodstream infections. This includes 1 case reported on behalf of a community provider. There were 49 hospital onset and 37 community onset healthcare associated cases reported: a total of 86 trust attributed infections. The threshold was set at 114 cases for the year therefore the Trust achieved the reduction trajectory.

See [Appendix 14.4.1](#) for more information

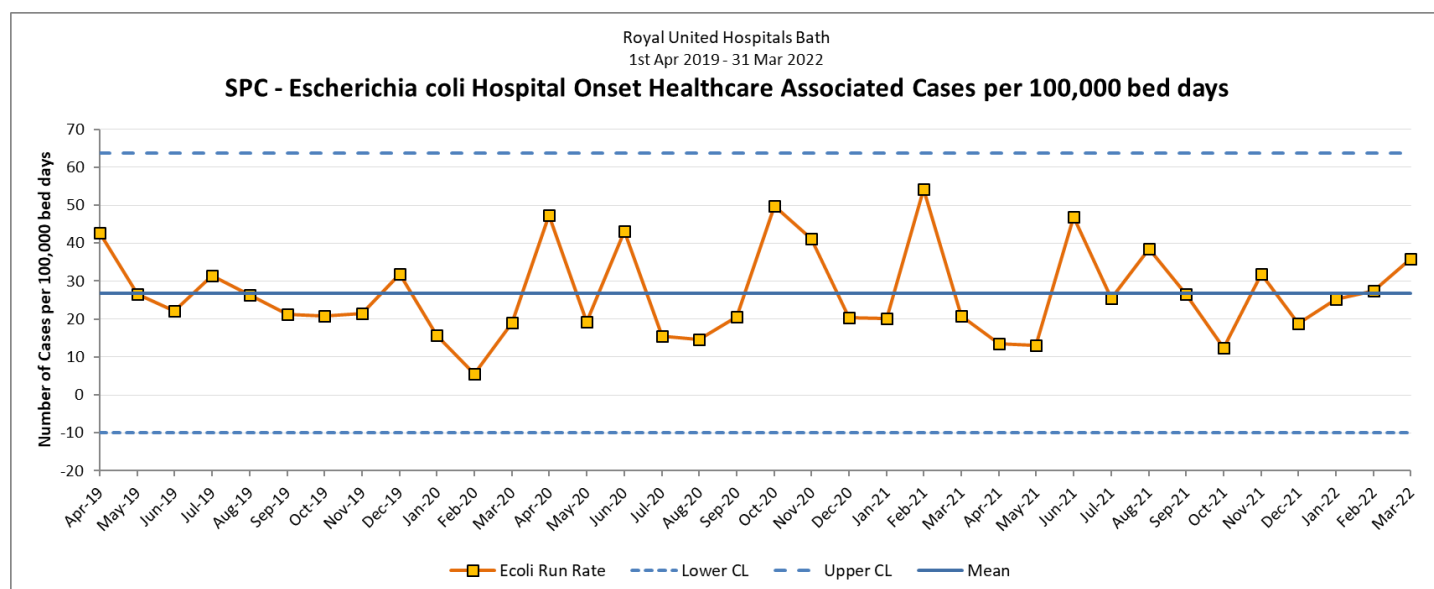


Figure 5.1: Hospital onset healthcare associated *E coli* bloodstream infections since April 2019

Actions taken

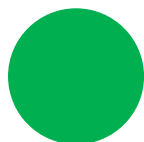
Hepatobiliary is the most common source of these infections overall (76 cases). For hospital onset cases the most common source of infection was the lower urinary tract (13 cases). These infections can be linked to dehydration; work to improve patient hydration has been ongoing during the last year however other factors can also be linked to this such as nursing staffing levels and increased heat on wards due to closed doors on bays.

The Trust is constantly reviewing staffing levels; some of the challenges last year have been increased due to COVID sickness levels. There is also a programme to replace the doors on bays

as many are damaged from constant use; these will only need to be closed if there is an infection incident or outbreak.

Actions taken to reduce E coli bloodstream infections will also had a positive impact on reducing infections from *Klebsiella spp.* and *Pseudomonas aeruginosa*.

5.2 *Klebsiella spp.* bloodstream infections



There were a total of 75 cases of *Klebsiella spp.* bloodstream infections reported during 2021/22, this includes a case reported for another provider; blood cultures taken at Frome Community Hospital.

There were 16 hospital onset healthcare associated cases, 6 cases less than reported in 2020/21. There were 7 community onset healthcare associated cases reported making a total of 23 Trust apportioned cases against the NHS Standard Contract threshold of 46 cases.

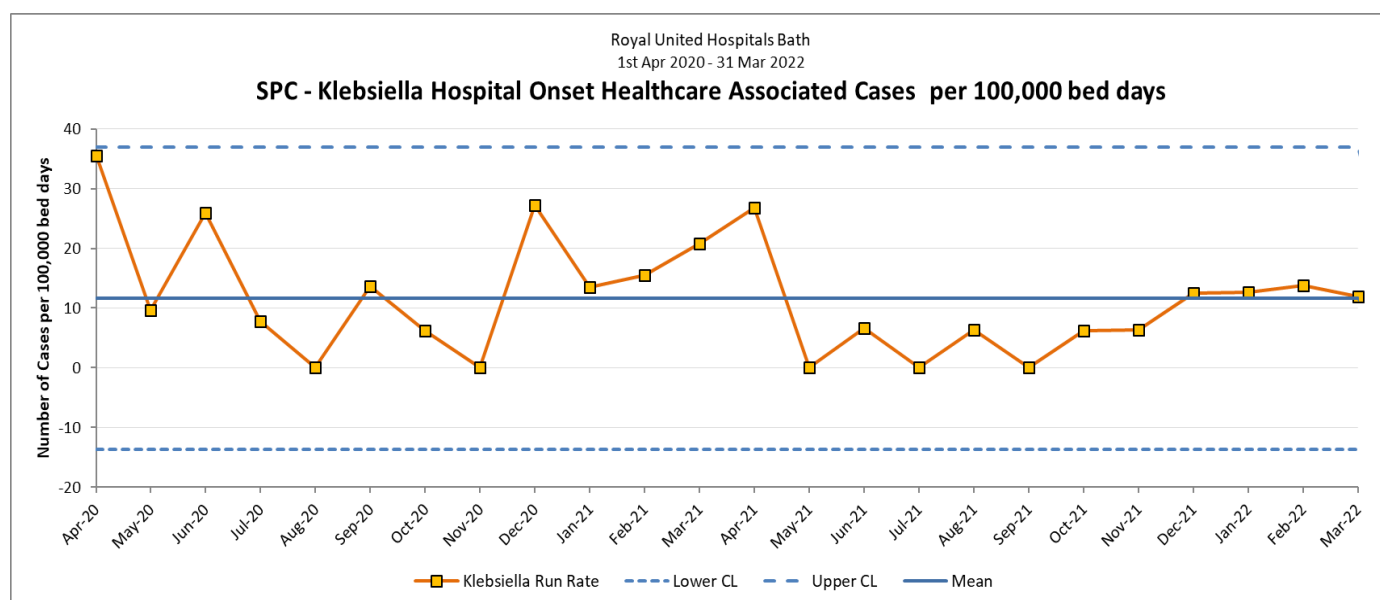


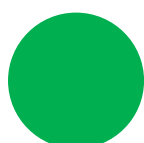
Figure 5.2: Hospital onset healthcare associated *Klebsiella spp.* bloodstream infections since April 2020

Actions taken

All cases were reviewed by the microbiologists or the infection prevention and control nurses and the potential source identified. The most common source of infection was identified as hepatobiliary however for hospital onset cases there were two sources that were identified as the most common, although in relatively low numbers. These were lower respiratory tract infections and lower urinary tract.

See [Appendix 14.4.2](#) for more information.

5.3 *Pseudomonas aeruginosa* bloodstream infections



There were a total of 38 cases reported during 2021/22. There were 14 hospital onset and 5 community onset healthcare associated cases. The total number of Trust apportioned cases was 19 against the NHS Standard Contract threshold of 19.

Actions taken

As with the other Gram negative infections all cases were reviewed by the microbiologists and the source of infection identified where possible. The most common source of infection was the lower urinary tract overall and this was also found to be the most common source of hospital onset cases.

See [Appendix 14.4.3](#) for more information.

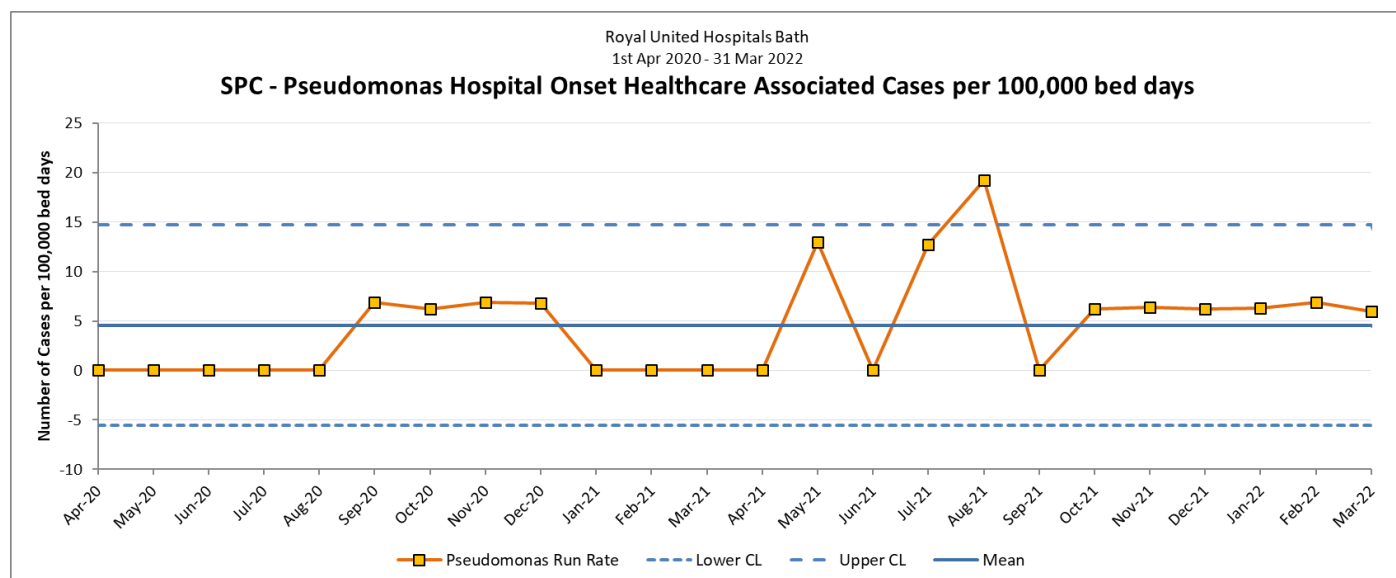
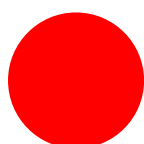


Figure 5.3: Hospital onset healthcare associated *Pseudomonas aeruginosa* bloodstream infections since April 2020

6 Clostridioides difficile infection (CDI)



National *Clostridioides difficile* thresholds were published within the 2021/22 NHS Standard Contract. The threshold for the Trust was set at 43 cases.

The Infection Prevention and Control team reported a total of 114 cases for the year which included 3 cases for other healthcare providers. There were 36 hospital onset and 19 community onset healthcare associated cases reported therefore the total number of Trust apportioned cases was 55, 12 cases above the threshold.

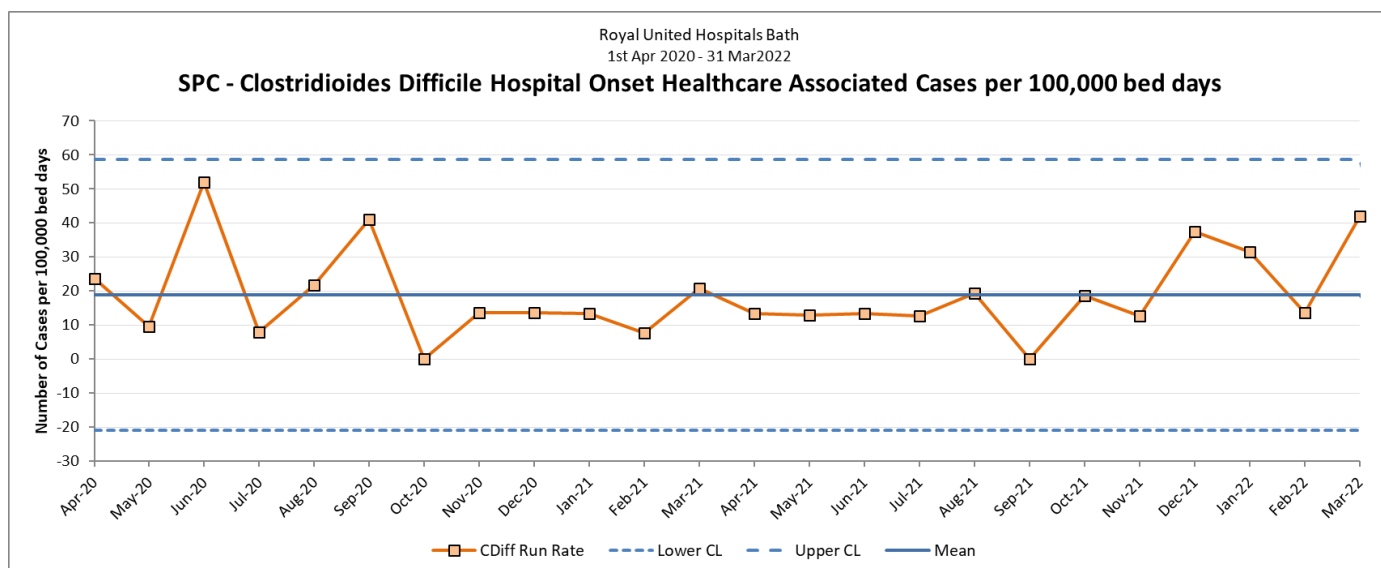


Figure 6: Hospital onset CDI infections since April 2020

Actions taken

Root cause analysis (RCA) is undertaken for all hospital onset *Clostridioides difficile* infections. An action plan is produced in each case and the RCAs are presented by the senior sister at an RCA 72 hour meeting which is arranged by the appropriate clinical division. Themes are drawn at the review meetings and recommendations made to the divisions for improvement actions. The RCAs and action plans are also presented to the divisions who are responsible for monitoring against the action plans.

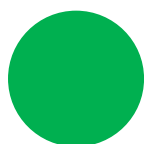
Completion of stool charts and recognition of diarrhoea has been a consistent theme therefore the Infection Prevention and Control Team developed a revised stool chart which is simpler to use and aids identification of when a stool sample needs to be taken. The new charts were distributed across the Trust in early 2022 and feedback from staff has been positive.

Antimicrobial stewardship is also key to reducing *Clostridioides difficile* infection. More information on the work of the Antimicrobial Stewardship Team is provided in Section 9 of this report.

A *Clostridioides difficile* infection reduction work plan has been reinstated for 2022/23. The Infection Prevention and Control Team will support the clinical divisions to complete the actions.

See [Appendix 14.5](#) for further information and regional CDI rates.

7 Norovirus



During 2021/22 there were 3 bay or ward closures due to outbreaks of diarrhoea and vomiting caused by norovirus. There were a further 16 incidents where beds were closed for up to 48 hours following the isolation of a patient with confirmed norovirus however no other patients acquired the infection during the bay closure.

There were a total of 127 bed days lost in total: 92 of which were lost during the 3 outbreaks.

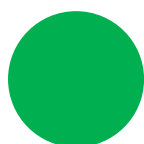
Author: Yvonne Pritchard, Senior Infection Prevention and Control Nurse	Date: 7 September 2022
Agenda Item:	12 of 31

Norovirus outbreaks 2021/22

Month	Location	Number of patients with norovirus	Bed days lost
June 2021	OPAU Bay 1	7	29
June 2021	OPAU whole ward	8	56
November 2021	Haygarth Bay 2	2	7

All areas were cleaned thoroughly prior to admitting new patients after the end of each outbreak was declared.

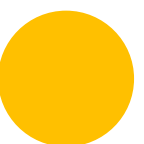
8 Influenza



There were no influenza outbreaks during 2021/22 however there were 6 incidents where bays were closed to new admissions due to single cases of Influenza A. All of these incidents occurred after National lockdown restrictions were lifted within the community.

The Trust policy is to close areas to new admissions for 4 days following patient contact however in all of the incidents the bays were opened earlier as either all of the patient contacts had been discharged or isolated. A total of 9 bed days were lost.

9 Antimicrobial stewardship (AMS)



9.1 Staff update

The Antimicrobial Stewardship Pharmacist post-holder returned from maternity leave in August 2020. The Senior Pharmacy Technician for antimicrobials was recruited in May 2021 following a five month period of no technician in post but is leaving in early June 2022. A replacement will go out to advert shortly.

There are 2 Consultant Microbiologists in post who share the AMS duties.

9.2 Antimicrobial stewardship activities

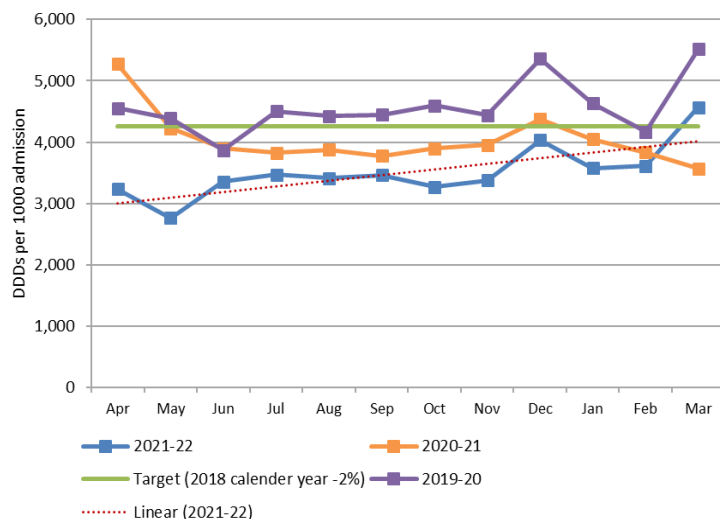
AMS Activities	Description	Issues
Comittee	<p>Quarterly meetings, report to IPCC and will report to the deteriorating patient working group.</p> <p>Membership has been expanded to include representation from areas of high consumption including</p> <ul style="list-style-type: none"> • Respiratory • Haematology • Acute medicine • General Surgery • Trauma and Orthopaedics <p>There is now a Trust Antimicrobial Stewardship policy due to be ratified in July 2022 to give a clearer reporting and governance structure.</p>	<p>Meeting now running as of November 2021, next scheduled July 2022. One meeting was missed in Spring 2022 due to not being quorate.</p> <p>The medical director is the interim chair however a more permanent chair is being sought.</p>
Author: Yvonne Pritchard, Senior Infection Prevention and Control Nurse		Date: 7 September 2022
Agenda Item:		13 of 31

AMS Rounds	<p>Now there are 2 newly recruited Medical Microbiologists all face-to-face Microbiology rounds are in process since October 2021. These include:-</p> <ul style="list-style-type: none"> • ITU- daily • Haematology/Oncology MDT- weekly • Cardiology/Infective Endocarditis MDT-weekly • Staphylococcus aureus bacteraemia weekly reviews • Complex patient review- weekly • OPAT virtual round - weekly • Carbapenem reviews- twice weekly • Monthly Prosthetic joint infection meetings • MAU MDT- weekly • AMS rounds on Parry and Pulteney ward based on Antimicrobial compliance audit data and complexity of patients on these wards. 	
<i>C. difficile</i>	<p>Weekly rounds by Consultant Microbiologist Contribution to RCAs, data on potential causative antibiotic trends, primary care feedback of non guideline use of antibiotics.</p>	
CQUIN/ MOP/Standard contract	<p>UTI CQUIN: in progress since April 2022 AMS team have updated adult guidelines. CAP CQUIN: in progress led by respiratory, AMS team are in process of reviewing adult CAP guidelines</p>	
Regional	<p>BSW AMS network. South West antimicrobial pharmacist network.</p>	
Training	<p>Level 2 AMS update complete and live on ESR.</p> <p>Full programme of face to face /hybrid teaching by AMS team underway since Summer 2021 including updates to:-</p> <ul style="list-style-type: none"> • Acute medical team • Pharmacy team • Emergency Medicine medical team • Surgical junior doctors • Stroke team • Respiratory team 	
Audit	<p>Trustwide compliance audit performed quarterly by AMS pharmacist and fed to Divisional and governance leads as well as Antimicrobial Stewardship Group Members. Areas that are underperforming are selected for AMS rounds and AMS education. Areas of good performance are now ranked in top 3 and celebrated.</p> <p>Vancomycin/gentamicin therapeutic levels/avoiding toxicity. Results led to Adjustment of Gentamicin care plan re-audit due 2022</p> <p>Carbapenem review – 2 x per week.</p> <p>Audit of Staphylococcus aureus bacteraemias led to adjustment of community acquired sepsis guidelines March 2022</p>	
Guidelines	<p>Updated as required – with additional safety information and new recommendations.</p> <p>Paediatric guidelines have been separated out and are on MicroGuide. All paediatric guidelines have been reviewed by the paediatric team in Spring 2022 and are due for publication.</p> <p>Adult antimicrobial guidelines will be reviewed in Summer 2022.</p>	
Safety	<p>Gentamicin prescribing process update – care plan now mandatory on ePMA</p>	

	Review of OPAT prescribing processes, clinical governance and structure ongoing.	
Comms	World Antibiotic Awareness Week Nov 2021, Antimicrobial Stewardship Newsletter quarterly Updated guidelines highlighted on Workplace and staff brief	

9.3 Antimicrobial Consumption

(a) Total Consumption



Antibiotic Consumption

Public Health England (PHE) have set a target to reduce DDDs by 2% this year against 2018 calendar year (4350).

Target 2018 -2% = **4,263**.

Total number of DDDs/1000 admissions for 2021/22 = **3,524** therefore the target was achieved.

The aim for 2022/23 is to maintain DDDs below the PHE set threshold.

Figure 9.3: Total antibiotic consumption 2021/22

(b) Carbapenem Consumption

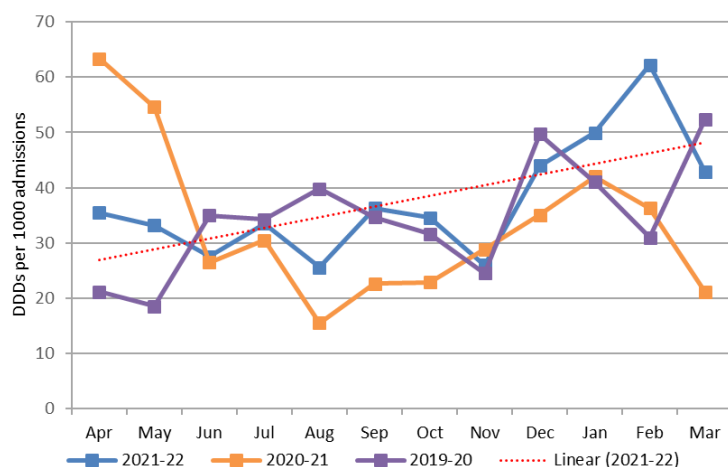


Figure 9.3.1: Carbapenem consumption 2021/22

Carbapenem Usage

Consumption is higher than the previous year but usage remains low compared to regional and national figures.

Although not a CQUIN target, the aim is to reduce Carbapenem consumption and reserve its use for patients who require it as per microbiology advice to avoid antibiotic resistance.

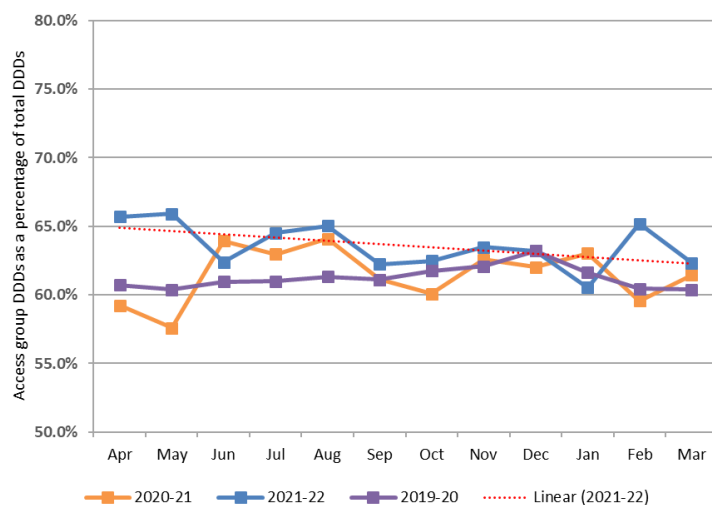
Total no. of DDDs/1000 admissions for 2020/21 = **31**

Total no. of DDDs/1000 admissions for 2021/22 = **37**

Twice weekly reviews of Carbapenems as flagged by pharmacy have been re-established to ensure all prescriptions are appropriate.

In comparison to our region, the RUH is the **second** lowest user of Carbapenems per 1000 admissions.

(c) Access Group



ACCESS Group Antibiotics

The use of WHO classified 'Access' antibiotics remains above 60% which is higher than the national and regional figure.

Although not a CQUIN target, it is important that as a Trust we continue to monitor the proportion of antibiotics prescribed within the ACCESS group to help reduce antibiotic resistance and preserve the effectiveness of "last resort" antibiotics that are needed when all others fail.

Total for 2020/21 = **62%**

Total for 2021/22 = **62%**

The aim for 2022/23 is to increase this figure and utilise more Access group antibiotics.

Figure 9.3.2: Access group antibiotic consumption 2021/22

(d) Watch and Reserve Group

The use of WHO classified 'Watch' antibiotics is 38% and 'Reserve' group antibiotics remain low at around 1 - 2% and the Trust remains the lowest user of these classes of antibiotics in comparison to the region and nationally.

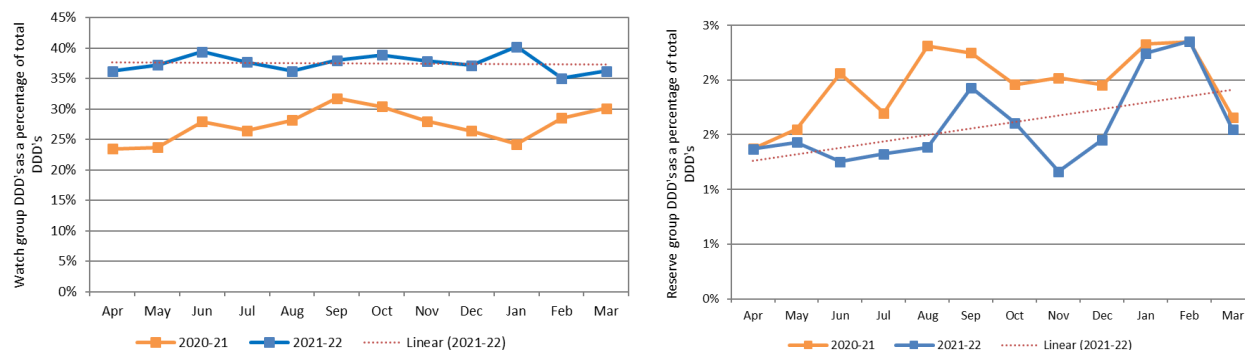


Figure 9.3.3: Watch and Reserve group antibiotic consumption 2021/22

9.4 Training Compliance

- AMS Level 1 = 88% (target 90%)
- AMS Level 2 = 64.1% the update was live at the end of May 2021, lowest compliance amongst bank staff
- ARK = 63.2% - increasing according to projections.

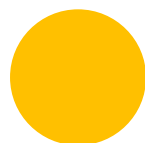
Antimicrobial Stewardship at the RUH is important to improve antibiotic prescribing, protect individual patients and the local population from unintended harm from antibiotic overuse including HCAI's, and contribute to slowing antibiotic resistance.

The Trust is committed to following the principles outlined in the Department of Health (DH) guidance "Antimicrobial Stewardship: Start Smart then Focus" and follow the guidance and processes set out in NICE NG15 and the Public Health England 5 and 20 year action plans on AMR

<https://www.gov.uk/government/collections/antimicrobial-resistance-amr-information-and-resources#strategic-publications>

10 Surgical Site Infection Surveillance

10.1 Mandatory Surveillance



The Trust takes part in the mandatory surveillance of surgical site infections which involves the reporting of infections post-operatively in patients undergoing certain types of orthopaedic surgery. This includes surveillance of patients prior to and post discharge and also patients who are readmitted with post-operative infections. If the infection has occurred within 30 days of the surgery, or in the case of implant surgery within one year, the incident will be reported as a surgical site infection.

The surgical site surveillance nurses are employed by the Surgical Division. They routinely report on surgical site infections in patients who had undergone a total hip replacement (THR), total knee replacement (TKR) and repair of a fracture to the hip. The surveillance nurses also collect and report data for certain types of breast surgery however this is not mandatory.

Reporting has continued for all periods for surgical site infections within the fractured neck of femur and breast surgery cohort.

The Trust has continued to report on total knee and total hip replacement surgery. The numbers involved are greatly reduced compared to pre-pandemic levels due to the impact of non-elective care on our ring fenced orthopaedic elective ward causing the cessation of TKR and THR surgery for periods over the past 12 months.

The Trust received a letter in April 2022 relating to the surveillance period July – September 2021 identifying it as a high outlier for TKR surgical site infections with an infection rate of 1.0%.

The Trust had zero TKR surgical site infections April 2021-March 2022 but due to the reporting period for comparison of the past 5 years for all Trusts we were identified as an outlier. During the past 5 years extensive work has been undertaken to reduce all surgical site infections.

The table below shows the surgical site infection percentage per reported pathway over the past 4 reported quarters for the RUH compared to all Trusts. The reporting period for comparison to all Trusts is 5 years.

Procedure	RUH	All Trusts
Total Hip Replacement (THR)	0%	0.3%
Total Knee Replacement (TKR)	1.0%	0.3%
Repair of Femur	0.4%	0.8%

10.2 'PreciSSion' project

It is recognised that surgical site infection is more common after colorectal surgery where wounds are frequently contaminated by bowel content and rates are reported between 8-30%.

Within the reporting period, the surgical site infection team have been working closely with the colorectal teams to support the 'PreciSSion' Project.

Measuring Surgical Site Infection from 30 day patient reported outcomes has now been successfully implemented and has been in place since May 2020.

Following implementation of the 'PreciSSion' bundle in May 2020, there has been a 70% reduction in surgical site infection for elective colorectal surgery at the RUH, which has decreased from a baseline average of 24% to 7% and this has been sustained for 12 months.

Due to the early success of the project the RUH has elected to continue to be part of the project in the South West and as such the surgical site infection nurse will continue to collect data and support the work of the 'PreciSSion' Project. This is not reportable to the UK Health Security Agency at this time.

11 COVID-19

11.1 SARS CoV-2

During 2021/22 there were peaks of COVID-19 infections both nationally, regionally and locally which increased hospital admissions significantly. The Trust has maintained an escalation plan for the periods of time when COVID-19 infections increase so that cohort areas can be utilised to accommodate patients to be cared for together. This also frees up side rooms to admit patients with COVID into specialty beds if required or to allow for the isolation of clinically extremely vulnerable patients of those with other communicable diseases.

There were many changes in national policy last year which have been reflected in the Trust guidance. These include changes in PPE use, isolation and screening of patients and the removal of the high, medium and low risk pathways (red, blue and green pathways at RUH). The Infection Prevention and Control Team has been instrumental in supporting staff to adjust to changing guidance and developing standard operating procedures and action cards for staff to utilise.

Daily outbreak or ward review meetings have continued during the peaks of infection with a membership that covers both clinical areas, staffing and cleaning.

Nosocomial transmission has also increased during peaks of infection however the most recent COVID variants have not resulted in patients becoming very unwell and admissions to Intensive Care have fallen. In many cases nosocomial infection is detected when patients have asymptomatic COVID screening as part of the admission or discharge process.

Nosocomial COVID infections are categorised as follows:

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- COVID detected between days 0-2 of admission – these are community acquired cases not nosocomial infections
- COVID detected between days 3-7 of admission – indeterminate nosocomial infection that could have been acquired in the community also
- COVID detected between days 8-14 of admission – probable nosocomial infection
- COVID detected on day 15+ of admission – definite nosocomial infection

The number of infections detected by month is summarised in the table below with the breakdown of the infections into nosocomial and community acquired categories. Those marked as 'requires checking' include cases where patients may have been tested within 90 days of a previous infection.

COVID infections	2021										2022												
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar											
Definite	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	3	2.1%	6	2.7%	0	0.0%	16	9.4%	13	7.0%	8	5.5%	17	6.1%
Probable	0.0%	0	0.0%	0	0.0%	1	1.3%	6	5.5%	4	2.8%	5	2.3%	3	1.9%	5	2.9%	7	3.8%	16	11.0%	26	9.4%
Indeterminate	20.0%	0	0.0%	2	11.8%	3	3.8%	9	8.2%	13	9.0%	8	3.6%	6	3.9%	26	15.3%	16	8.6%	14	9.7%	45	16.2%
Community Acquired	80.0%	2	50.0%	13	76.5%	70	87.5%	90	81.8%	119	82.1%	197	89.1%	136	87.7%	117	68.8%	135	72.6%	102	70.3%	180	65.0%
Requires Checking	0.0%	2	50.0%	2	11.8%	6	7.5%	5	4.5%	6	4.1%	5	2.3%	10	6.5%	6	3.5%	15	8.1%	5	3.4%	9	3.2%
Total	5	4	17	80	110	145	221	155	170	186	145	277											

The Trust has worked collaboratively with the other acute NHS organisations within BSW CCG to align practices regarding management of patients who are COVID contacts and the length of time they require isolation.

The divisional Patient Safety Teams lead on reporting and investigating nosocomial COVID patient deaths.

12 Level 2 Infection Prevention and Control Training



Level 2 infection prevention and control training is mandatory for all patient-facing staff. This training has been delivered by e-learning since December 2019. The e-learning package is being revised currently and will be relaunched before the end of 2022.

The Trust has a target of 90% compliance with Level 2 infection prevention and control training; in April 2022 the overall compliance was 79.8%, a drop from 84.4% last year. None of the divisions/departments achieved the 90% target.

Division/Department	Training compliance 2021-22	Training compliance 2020-21
Bank	64.7% (↓3.6%)	68.3%
Corporate	76.3% (↓11%)	87.3%
Emergency Medicine	66.5%	N/A*
Estates and Facilities	76.5% (↓4.5%)	81%
Family and Specialist Services	82.4% (↓7.5%)	89.9%

Medicine	86.6% (↓1.3%)	87.9%
Non-Paid and Recharge°	54.5% (↓45.5%)	100%
Research and Development	88.4% (↓6.3%)	94.7%
Surgery	83.1% (↓1.7%)	84.8%
Trust	79.8% (↓4.6%)	84.4%

*Emergency Medicine were included in the Medical Division figures last year

°N.B there are only 11 staff who are eligible for training in this department which affects the compliance significantly; they can only achieve 90% if at least 10 staff have completed their training.

13 Appendices

13.1 Infection Prevention and Control Team (IPCT) Structure and Arrangements

13.1.1 The Infection Prevention and Control Arrangements

The Chief Executive holds the ultimate responsibility for all aspects of infection prevention and control within the Trust.

The Chief Nurse is the designated Executive lead; Director of Infection Prevention and Control (DIPC). The Chief Nurse reports directly to the Chief Executive and the Board and is the chair of the Infection Prevention and Control Committee (IPCC) and was the Senior Infection Prevention and Control Nurse's line manager until the Deputy DIPC/Associate Chief Nurse was appointed in February 2022. The Deputy DIPC/Associate Chief Nurse reports directly to the Chief Nurse/DIPC.

The Infection Control Doctor (ICD) is a consultant microbiologist who provides expert microbiological advice and supports the DIPC. There are now two consultant microbiologists who share this role; one is the lead ICD and the other is the Deputy ICD.

The Senior Infection Prevention and Control Nurse is responsible for the operational management of the Infection Prevention and Control Team (IPCT) and for ensuring that the Infection Prevention and Control Strategy is embedded.

The Infection Prevention and Control Nurses (IPCNs) provide expert clinical advice and support to Trust staff in the delivery of the Strategy. The team covers all sites within the Trust including the community birthing centres, the Sexual Health Clinic and Sulis Hospital.

The team also provided cover via a service level agreements for the Independent Health Group.

13.1.2 The Infection Prevention and Control Team

The team is made up of the following staff:

- 1 WTE Senior Infection Prevention and Control Nurse Band 8a
- 0.91 WTE Infection Prevention and Control Nurse Band 7
- 2.65 WTE Infection Prevention and Control Nurses Band 6
- 0.8 WTE Surveillance and Administration Assistant Band 3

13.1.3 Infection Prevention and Control Committee governance and reporting structure

The Trust Infection Prevention and Control Committee reports to Quality Board and Quality Governance Committee, which in turn reports to the Board of Directors.

13.2 MRSA bloodstream infections

There were no hospital onset MRSA bloodstream infections during 2021/22. The Trust reported 2 community onset cases; these were investigated by the appropriate CCG leads and feedback on any issues identified were provided to the patients' GP and other healthcare services accessed by the patients.

The wards and departments that in previous years had been high risk for MRSA infections have worked on ensuring that the screening and decolonisation guidance is followed. This will have impacted on reducing the number of serious infections.

13.2.1 MRSA bloodstream infection regional benchmarking

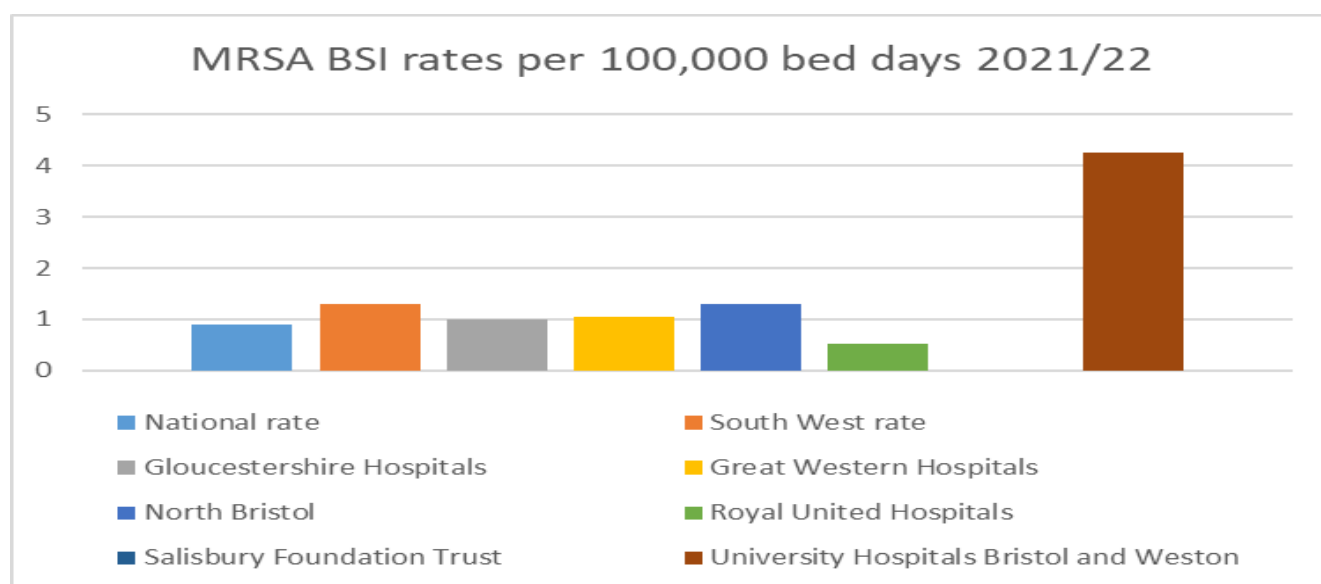


Figure 13.2: MRSA BSI (bloodstream infection) rates 2021/22

The Trust now has one of the lowest rates of hospital onset MRSA bloodstream infection within the region. The Trust has a rate of 0.52 against the South West average of 1.31.

At the time of writing this report it had been more than 500 days since the last Trust apportioned case.

13.3 MSSA bloodstream infections

Peripheral venous cannula associated infections accounted for 39% of the hospital onset MSSA bloodstream infections. These infections are avoidable and remain of considerable concern.

The senior sisters have focused attention on documentation of insertion, maintenance and removal of intravascular devices to ensure that these are not left in situ for longer than required and that any possible signs of infection are picked up early however this has not reduced the number of infections reported.

The Trust Peripheral Cannulation Policy is awaiting revision and is part of a bigger piece of improvement work that is taking place across the Trust. This will include further training requirements

13.3.1 MSSA bloodstream infection regional benchmarking

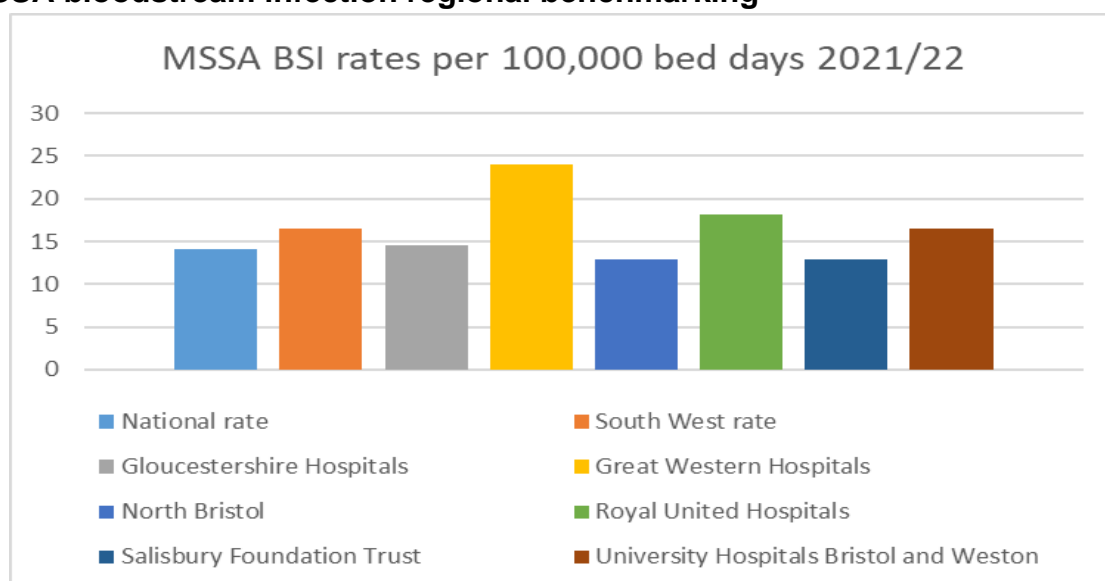


Figure 13.3.1: MSSA BSI (bloodstream infection) rates 2021/22

At the end of 2021/22 the Trust had a rate of 18.2 against the South West average of 16.47. The Trust sits in the middle of the pack for the three trusts within BSW.

13.4 Gram negative bloodstream infections

In July 2021 quality requirements for minimising rates of Gram negative bloodstream infections to threshold levels were introduced for the first time as part of the NHS Standard Contract. Thresholds were set for each trust and clinical commissioning group in England.

13.4.1 E coli bloodstream infections

The mandatory surveillance of *E coli* bloodstream infections commenced on 1 June 2011. From 2011-2017 these infections were split into community apportioned (blood cultures taken within 3 days of admission) and trust apportioned (blood cultures taken 3 days or more after admission).

From July 2017 the definition changed to hospital onset and community onset cases. All hospital onset cases are defined as those where the positive blood culture is taken 2 or more days after admission and are recorded as healthcare associated.

Community onset cases are where the blood culture has been taken either in the community or within the first 2 days of admission to hospital. Community onset cases are further broken down into healthcare associated and non-healthcare associated infections. Community onset healthcare associated infections are defined as those where the patient has either been in the reporting hospital in the preceding 28 days. Non-healthcare associated infections are where the patient has not been in the reporting trust in the preceding 28 days.

Mandatory surveillance includes positive blood cultures taken at GP practices or community hospitals in the Trust figure as the IPCT reports these on the United Kingdom Health Security Agency (UKHSA) Healthcare Associated Infections Data Capture System on behalf of primary care and provider organisations. There were 2 cases reported for community providers during 2021/22.

	Hospital onset healthcare associated	Community onset healthcare associated	Community onset non-healthcare associated
Apr 2021	2	2	18
May 2021	2	3	24
Jun 2021	7	5	14
Jul 2021	4	6	16
Aug 2021	6	1	22
Sept 2021	4	1	16
Oct 2021	2	3	11
Nov 2021	5	3	15
Dec 2021	3	1	18
Jan 2022	4	3	8
Feb 2022	4	5	13
Mar 2022	6	4	8
TOTAL	49*	37	183

*There were 48 hospital onset cases reported in 2020/21.

Figure 13.4.1: *E coli* bloodstream infections 2021/22

All patients who have a confirmed *E coli* bloodstream infection, including community onset cases, are reviewed by the microbiologists or infection prevention and control nurses who identify the most likely source of infection based on their review of the patient and their underlying pathologies. The source or cause of infection and any risk factors are reported via the UKHSA HCAI data capture system.

The most common cause of *E coli* bloodstream infection was hepatobiliary which accounted for 76 (28%) cases. Hepatobiliary infections are most likely to be associated with a patient's lifestyle or with underlying cancers.

The second most common source of infection was lower urinary tract in non-catheterised patients which accounted for 67 (25%) cases. The lower urinary tract was also the top contributor to hospital onset infections; 13 cases of which 5 were urinary catheter associated. The Catheter Passport has been revised and relaunched this year. All patients who are discharged with urinary catheters should have a passport that they carry with them when they have contact with healthcare professionals.

The Trust is also working collaboratively with our colleagues in BSW on a Gram negative infection reduction plan.

There were 27 cases (10%) where the source of infection was unknown or there was no underlying source of infection identified.

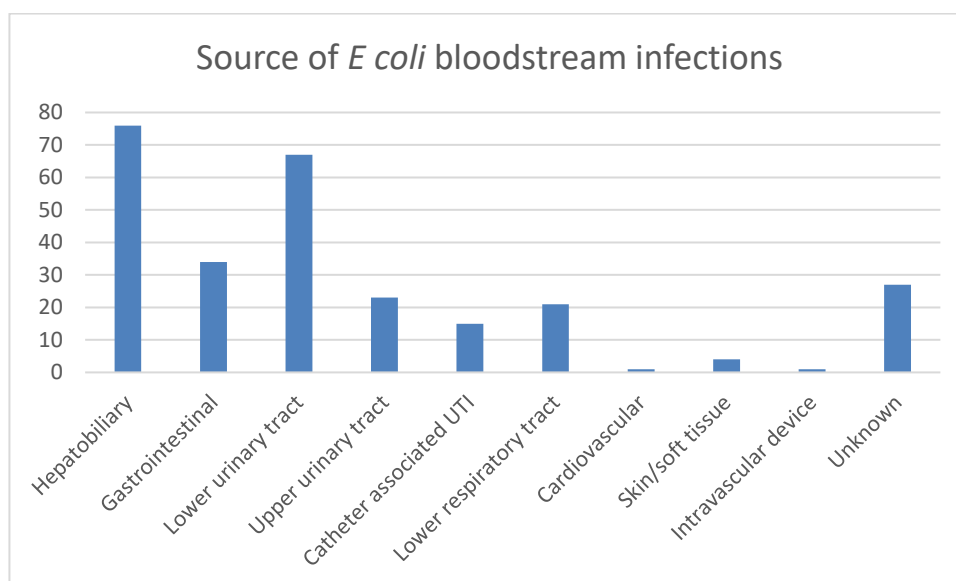


Figure 13.4.1.2: Source of *E coli* bloodstream infections 2021/22

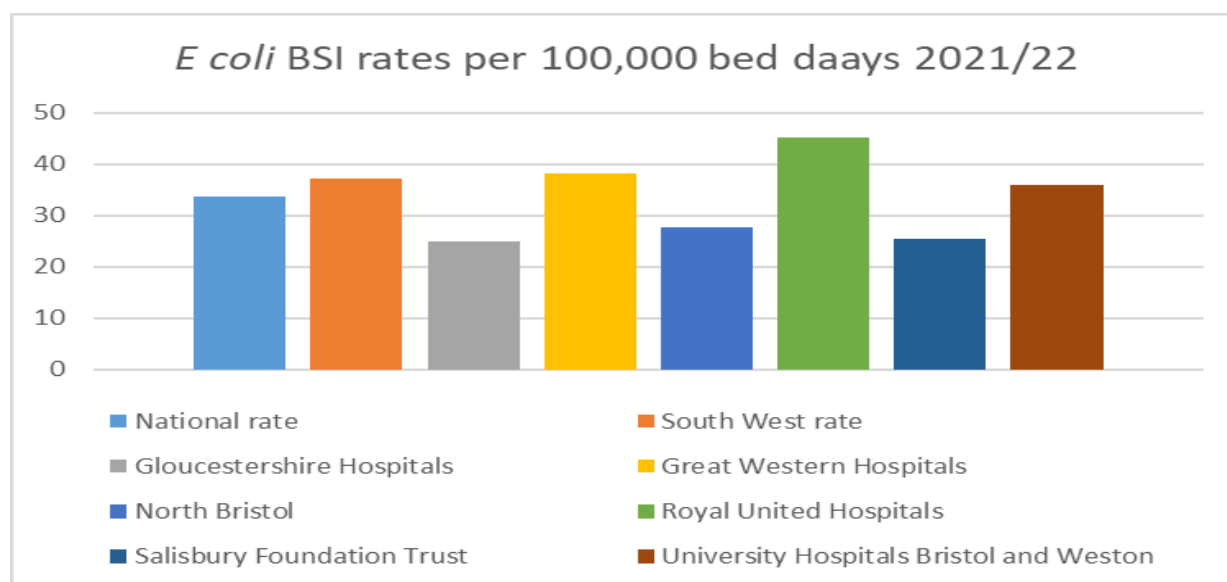


Figure 13.4.1.: *E coli* BSI (bloodstream infection) rates 2021/22

The Trust has a rate of 45.16 for *E coli* blood stream infections; this is higher than the national and South West average of 37.11 and we are an outlier in comparison with the other trusts within BSW.

13.4.2 *Klebsiella* spp. bloodstream infections

Klebsiella are Gram-negative bacteria that are found in the environment and also in the human intestinal tract. They commonly cause healthcare associated infections and are the second most frequently identified source of Gram-negative bloodstream infection after *E coli*.

The Trust has continued to report all *Klebsiella spp.* bloodstream infections the UKHSA data capture system as part of the mandatory surveillance programme during 2021/22. They are also identified as hospital onset healthcare associated, community onset healthcare associated and community onset non-healthcare associated cases.

A total of 75 cases were reported by the Trust in 2021/22 of which 16 were hospital onset and 7 cases were community onset healthcare associated; a total of 23 Trust apportioned cases against the NHS Standard Contract threshold of 46 cases.

Klebsiella pneumoniae was the most prevalent species isolated during 2021/22, making up 84% of cases reported.

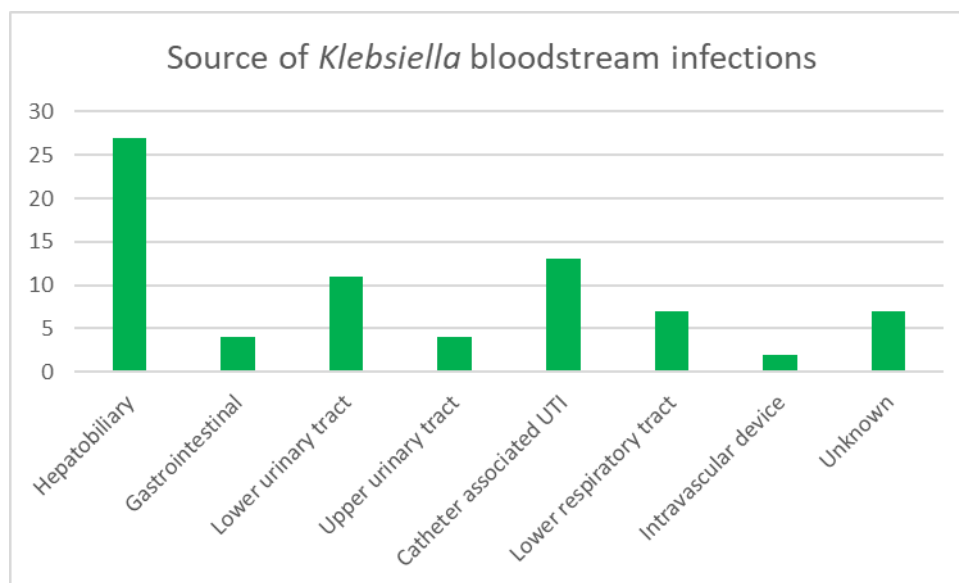


Figure 13.4.2: Source of *Klebsiella* spp. bloodstream infections 2021/22

The most common source of infection was identified as hepatobiliary and this accounted for 27 (36%) cases, the second most common source was the lower urinary tract in patients with indwelling urinary catheters at 13 cases (17%).

The most common sources of infection in hospital onset cases were the lower urinary tract (4 cases) and the lower respiratory tract (4 cases). Three of the lower respiratory tract infections were diagnosed in ventilated patients on the Intensive Care Units. Actions taken to reduce and prevent *E coli* bloodstream infections will also have an impact on *Klebsiella* sp. The Intensive Care Units have care bundles for prevention of ventilator associated respiratory tract infections and these have continued to be used.

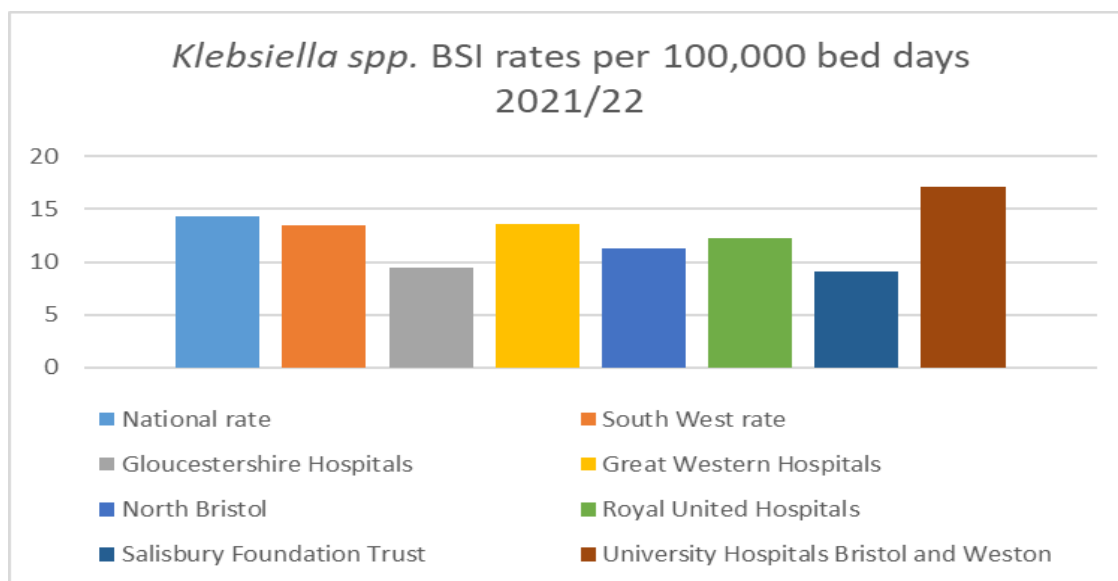


Figure 13.4.3: *Klebsiella spp.* BSI (bloodstream infection) rates 2021/22

The Trust has a *Klebsiella spp.* blood stream infection rate of 12.29 which is below the national and South West average of 13.49. The Trust sits in the middle of the pack for the three trusts within BSW.

13.4.3 *Pseudomonas aeruginosa* bloodstream infections

Pseudomonas aeruginosa are Gram-negative bacteria found in soil and water. It is an opportunistic pathogen which can cause a wide range of infections, particularly in patients who are immunocompromised. The organism is known to cause infections by contaminating invasive devices such as urinary catheters.

The Trust has continued to report all *Pseudomonas aeruginosa* bloodstream infections via the UKHSA data capture system during 2021/22.

The same process is used as with the other Gram-negative bloodstream infections; each case is reviewed by a microbiologist; the most likely source and risk factors are identified and antimicrobial treatment is adjusted accordingly.

A total of 38 cases were reported by the Trust in 2020/21 of which 14 were hospital onset and 5 community onset healthcare associated. The total number of Trust apportioned cases was 19 which matched the NHS Standard Contract threshold.

The most common source of infection was the lower urinary tract 11 (29%) cases however 7 of which were urinary catheter associated and include patients with catheters inserted in the community and within hospital.. This was also the case for patients with hospital onset infections: the lower urinary tract was the most common source (4 cases), 3 of which were catheter associated.

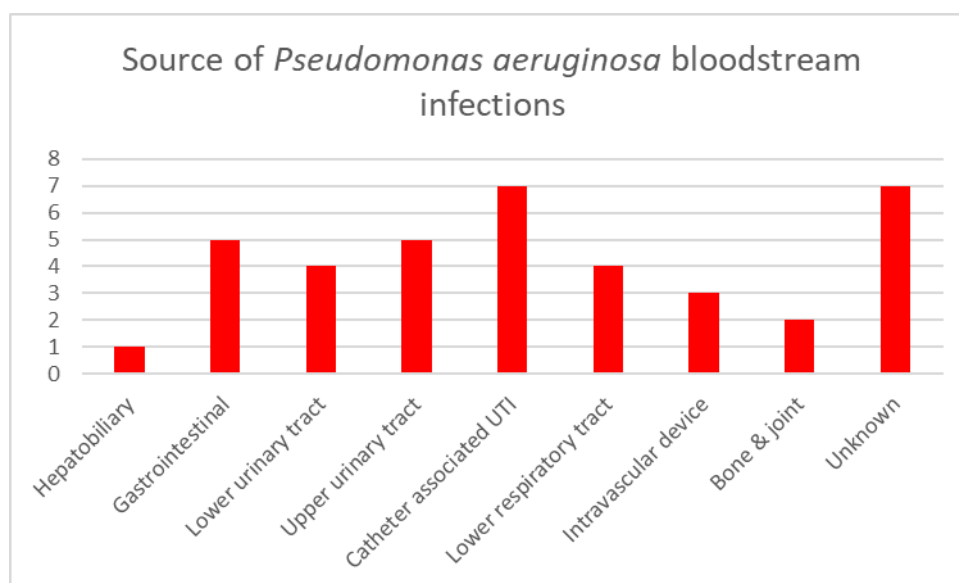


Figure 13.4.4: Source of *Pseudomonas aeruginosa* bloodstream infections 2021/22

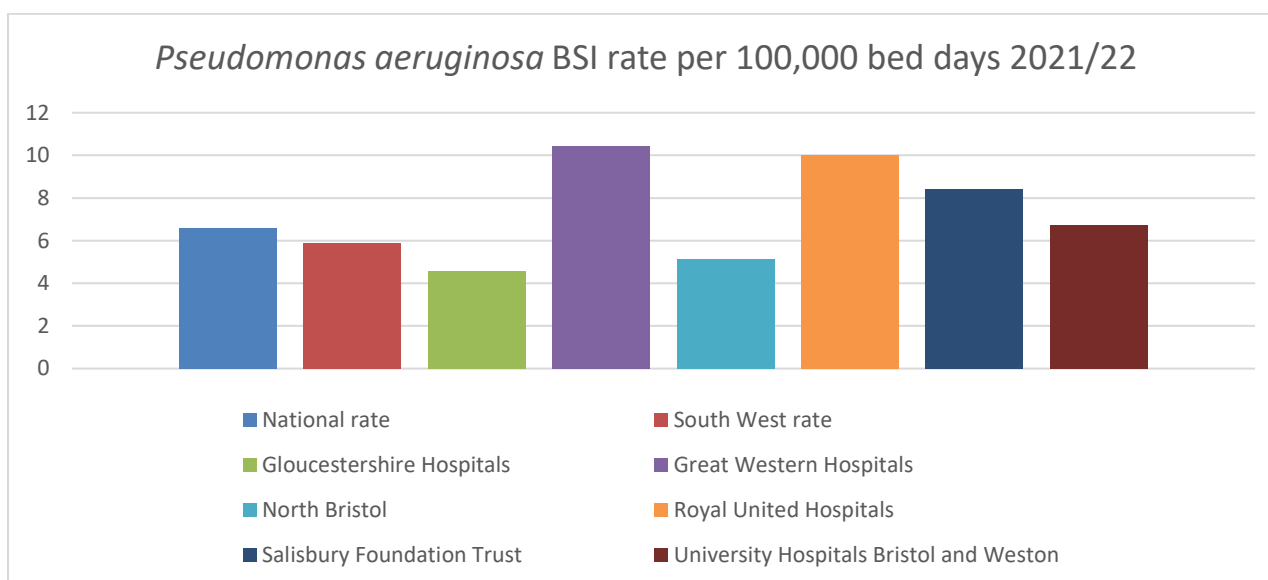


Figure 13.4.5: *Pseudomonas aeruginosa* BSI (bloodstream infection) rate 2021/22

The Trust has a *Pseudomonas aeruginosa* blood stream infection rate of 9.99 against the South West average of 5.91. The Trust sits in the middle of the pack for the three trusts within BSW.

13.5 *Clostridioides difficile* infections

The reporting of the number of cases of *Clostridioides difficile* (CDI) infections is mandatory for all NHS Trusts. All cases over 2 years of age must be reported. Both hospital onset and community onset healthcare associated cases, where the sample has been taken within 28 days of discharge, are attributed to the Trust.

In 2021/22 the NHS Standard Contract threshold for Trust apportioned *Clostridioides difficile* infections was set at 43 cases. A total of 114 cases were reported during this period of which 36 were hospital onset and 19 were community onset healthcare associated cases therefore there were 55 Trust apportioned cases; 12 over the threshold.

The Trust are working collaboratively with primary care the other organisations within BSW to reduce the *Clostridioides difficile* infection rate.

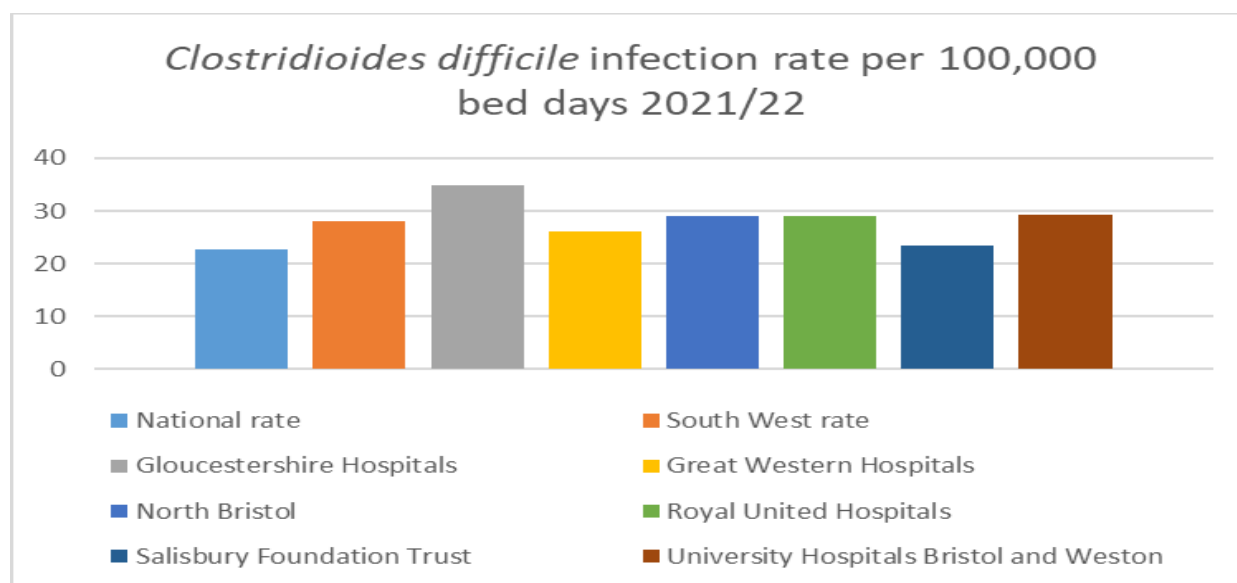


Figure 13.5:1 Clostridioides difficile infection rate 2021/22

It has been identified that some inpatient areas have had missed opportunities for obtaining stool samples, this has been addressed and improvements are being seen, but needs to be sustained. There have repeated samples being sent on patients with a history of CDI, without considering a medical review and conversation with the microbiology team. By not sending inappropriate samples, we might have prevented two or three patients not being reported as toxin positive. This is also being addressed with improved communication and monitoring as part of the CDI rounds.

The UK *C difficile* prevention advice 'How to deal with the problem' has not been updated since the 2008. Hand hygiene, isolation, prescribing (including antibiotic reviews), cleaning and use of technologies such as UVC decontamination remain the fundamentals to best practice. The Trust is following the current tool kit and we are anticipating new management and treatment guidance at the end 2022.

The Southwest as a whole has a higher than average rate for the country, and the RUH are not alone in seeing high numbers of *C difficile* cases. However the RUH have reported more cases than our two neighbouring Trusts. This data has led to a Bath and North East Somerset, Swindon and Wiltshire (BSW) wide collaborative being set, the aim is to understand the wider issues that are driving our acute and community CDI rates.

The IPC team will continue to collaborate with integrated care board colleagues and healthcare colleagues in the attempt to discover the true causes of a patient acquiring and developing *C difficile*. This in turn will develop an action plan to be able to start to reduce the *C difficile* numbers

13.6 Cleaning

The increased cleaning frequencies of frequently touched surfaces and shared toilet facilities due to COVID continued during the year, utilising additional temporary staffing. This was in line with PHE/UKHSA guidelines for healthcare facilities. All cleaning in clinical areas was completed using a sodium hypochlorite and detergent solution.

The cleaning audit scores reported are summarised in the table below:

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Risk Level	2020/21	2021/22
Very High Risk – 98%	97.93%	96.79%
High Risk – 95%	96.63%	95.06%
Significant Risk – 85%	96.90%	94.61%
Low risk – 75%	93.56%	91.12%

The Patient Led Assessment of the Care Environment (PLACE) assessment did not take place nationally due to the pandemic and therefore no results are available for this year.

Following publication of the National Standards of Healthcare Cleanliness in April 2021, work has been underway to redesign the cleaning service to meet the minimum mandated frequencies. The resulting business case has been approved for funding, and an HR consultation with cleaning staff started on 7th August. Implementation of the new cleaning shifts and cleaning frequencies will start on 2nd August 2022. A derogation has been obtained from NHS England & Improvement to delay implementation until this date.

Due to the planned changes to cleaning shifts, recruitment within cleaning has been frozen, to minimise impact of changes on new staff. Recruitment started again in May 2022 following the outcome of the HR consultation. Temporary staffing has been used to fill vacancies and for cleaning of increased frequencies, however, this has resulted in increased occurrences of lower than optimum staffing availability. This is reflected in the cleaning scores.

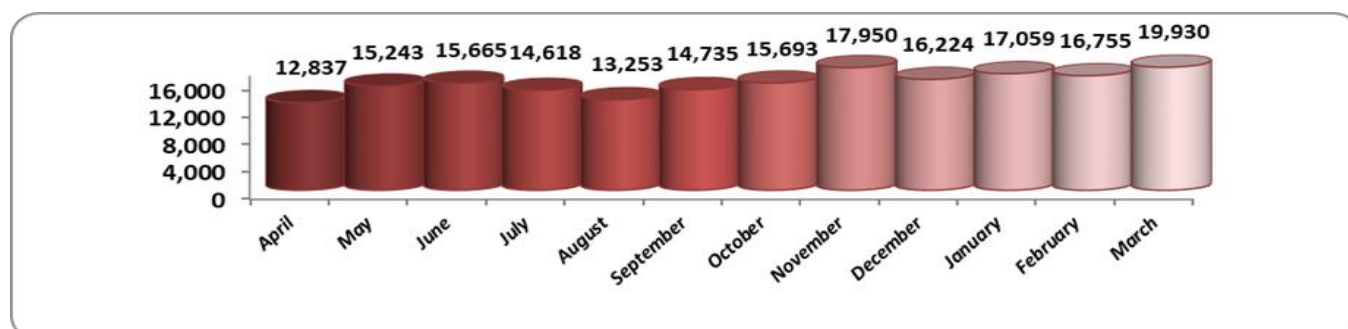
Functional risk areas, cleaning responsibilities and cleaning specification have all been approved through the Infection Prevention Control Committee. Cleaning frequencies of shared patient toilets in FR1 and FR2 functional risk areas have been increased to four full cleans daily.

13.7 Decontamination of Medical Devices

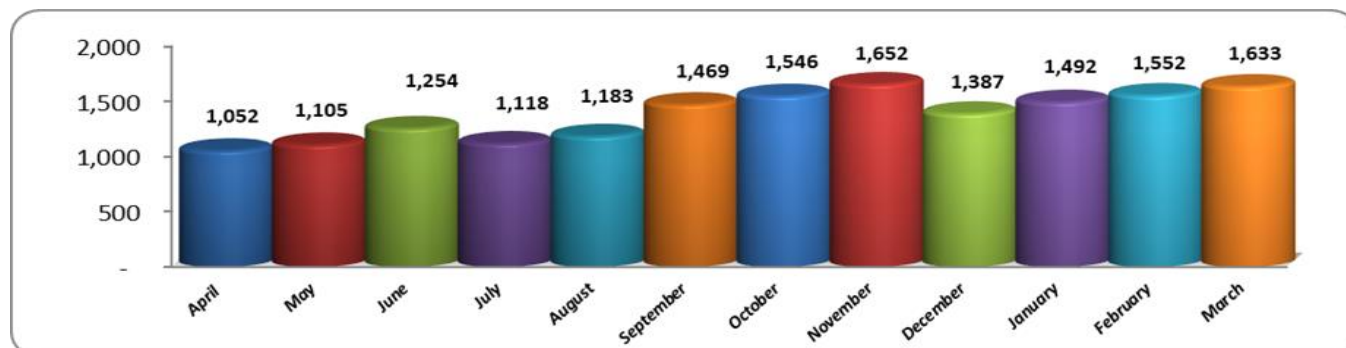
Central Decontamination

Sterile Services (SSD) is accredited to BS EN ISO 13485:2016 and registered with the Medicines and Healthcare products Regulatory Agency (MHRA) for the assembly, supply and distribution of sterile packs and instrument sets for hospitals and other health care related establishments. SSD re-manufactures procedure packs, single instruments and theatre sets using the items which are mutually compatible and used in accordance with manufacturer’s instructions and users requirements – to conform to Annex V Section 3.2 and Article 12 of MDD 93/42/EEC Revision 2007/47/EC. The items are thermally disinfected and will be sterilised in accordance with Health Technical Memorandum (HTM) 01-01 guidelines.

Currently SSD supplies to 121 locations – internal & external to RUH. During 2021-22 SSD processed 189,962 items which included 1,703,981 instruments.



SSD also provides a comprehensive decontamination services to various service users for re-useable heat sensitive flexible endoscopes. High level disinfection service for flexible endoscopes is managed by SSD in accordance with the BSG Guidelines for Gastrointestinal Endoscopy and HTM 01-06.



Endoscope Dispatched per Month 2021-22

SSD is working to address increased work load due to post-COVID recovery plans and replacing aging infrastructure.

Local Decontamination

SSD & IPC team are working with rest of the clinical colleagues to improve the local decontamination standards. Addressing pitfalls mainly on documentation (policies, SOPs, risk assessments & training records) is very important to give assurance on patient safety. Currently 14 locations are using Trophon devices for trans-vaginal probes. Few issues with damaged probe need to be investigated further. Inadequate decontamination of reusable Lenses in Ophthalmology is in trust risk register.