Royal United Hospitals Bath
NHS Foundation Trust

Infection Prevention and Control

Annual Report | 2019/20

Contents

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

Compliant
Health and Social Care Act 2008: Code of Practice on the prevention and control of infections

2
MRSA infections
Trajectory: 0

22%
Reduction in MSSA infections from 2018/19
30 cases

13%
Reduction in *E coli* infections from 2018/19
53 cases

8
More *Klebsiella spp.* infections than 2018/19
27 cases

2
More *Pseudomonas aeruginosa* infections than 2018/19
13 cases

22
Clostridium difficile cases less than the objective of 59 cases

2%
Fewer cases of Norovirus in closed areas compared to 2018/19
93 cases

182
Bed days lost as a result of Influenza closures
39 outbreaks

Antimicrobial Stewardship 2019/20 CQUIN Targets not met

1.7%
Above the national average for total knee replacement surgical site infections
National average: 0.6%

86.9%
Level 2 Infection Prevention & Control training compliance
Target: 90%

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 2019 to 31 March 2020.

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. Compliance with the Hygiene Code was reviewed on a rolling programme at the Infection Prevention and Control Committee. Each criterion was assessed during the year and overall compliance reported

1.3 During 2019/20 there were 2 Trust apportioned MRSA bloodstream infections against a trajectory of 0.

1.4 There were 104 cases of MSSA bloodstream infections reported, of which 2 were reported for community providers. There were 30 hospital onset cases; a decrease of 22% on last year's reported Trust apportioned cases however the Trust remains a national outlier for these infections. There is currently no national reduction target for MSSA bloodstream infections however the Trust has introduced a 10% reduction target for 2020/21.

1.5 A 10% year on year ambition to reduce healthcare associated Gram negative blood stream infections was launched in 2017. This target is shared with the CCGs. During 2019/20 the Trust reported 344 cases of *E coli* bloodstream infection, this includes both hospital, community onset and community provider cases. There were 53 hospital onset cases; a 13% reduction on the previous year. The lower urinary tract remains the most common source of infection.

1.6 There were 109 *Klebsiella spp*. bloodstream infections were reported in 2019/20. 27 hospital onset cases were recorded; an increase in 8 cases compared with last year's performance.

1.7 There were 36 cases of *Pseudomonas aeruginosa* bloodstream infections. 13 hospital onset cases were recorded; an increase in 2 cases compared with last year's performance.

1.8 A revised *Clostridium difficile* objective was launched for 2019/20, the trajectory of 59 cases included both hospital onset and community onset healthcare associated cases. There were 42 cases of Trust apportioned *Clostridium difficile* infection reported of which there were no lapses of care in 5 cases therefore the year-end total was 37 cases. The Trust has introduced a 10% reduction target for 2020/21.

1.9 There were a total of 39 wards/bays closed during the period due to norovirus outbreaks. 273 bed days were lost as a result of the closures. There was a 53% decrease in lost bed days compared with the previous year.

1.10 There were 39 outbreaks of influenza between April 2019 and March 2020 which resulted in 182 bed days lost. This is an increase of 5% compared with the same time frame during 2018/19.

1.11 The antimicrobial stewardship programme has continued throughout the year. The 2019/20 CQUIN targets were not met.

1.12 Surgical site infections have reduced in patients undergoing repair of fractured neck of femur and total hip replacements however the number of patient reported infections that are associated total knee replacement remains above the national average.

1.13 The target for compliance with infection prevention and control Level 2 training did not meet the target; there were 86.9% of staff trained by the end of March 2019.

2 Key progress against objectives 2019/20

2.1 The team provided Trust wide updates on healthcare associated performance through infection prevention and control summits and presentations to the divisions. The updates have provided staff with performance data and a focus on where improvements need to be made.

2.2 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 reported through the Public Health England data capture system.

2.3 The Infection Prevention and Control Team (IPCT) have worked with the senior sisters to implement improvement projects within their areas. The projects have been targeted specifically at reducing *Clostridium difficile* and MSSA/Gram negative bloodstream infections.

2.4 Doors have been installed on bays throughout the Trust to improve cohorting facilities.

2.5 IPCT participated in wave 4 of the Improving Together programme. The main focus was on achieving a 10% reduction in hospital onset MSSA and E coli bloodstream infections and *Clostridium difficile* infections. An A3 was produced and presented to the Board and adopted by the Trust as a breakthrough objective. The 10% reduction in these infections was achieved and the objective has been carried forward to 2020/21 with aim of achieving a further 10% reduction in cases.

2.6 Other wards and departments who took part in Improving Together have also focused on reducing infections and the IPCT has taken part in huddles and provided support to the teams to achieve their goals.

2.6 IPCT were involved in the planning and commissioning of a number of building and refurbishment projects including C30 and external consultation with NHS Wiltshire CCG regarding the design of the integrated care centres in Trowbridge and Devizes.

2.7 IPCT led on fit testing staff for FFP3 respirators during the influenza season and also in preparation for COVID-19.

2.8 New hand hygiene posters were produced working collaboratively with the Communications Team.

2.9 IPCT undertook a Trust-wide audit of peripheral cannula insertion and maintenance. The results have been used to influence changes to the cannula care record and a review of practice.

2.10 IPCT led on equipment cleanliness audits; undertaking these monthly or weekly as required. An escalation plan was devised for areas that have not met the standard. An overall improvement in equipment cleanliness has been noted.

3 MRSA bloodstream infections

The reporting of MRSA bloodstream infections is mandatory for all NHS trusts. The Trust had a target of zero infections for the year 2019/20.

There were a total of 10 cases reported by the Trust during 2019/20. Eight cases were community acquired infections and two cases were recorded as 'Trust apportioned' as the blood cultures were taken more than 2 days after admission.

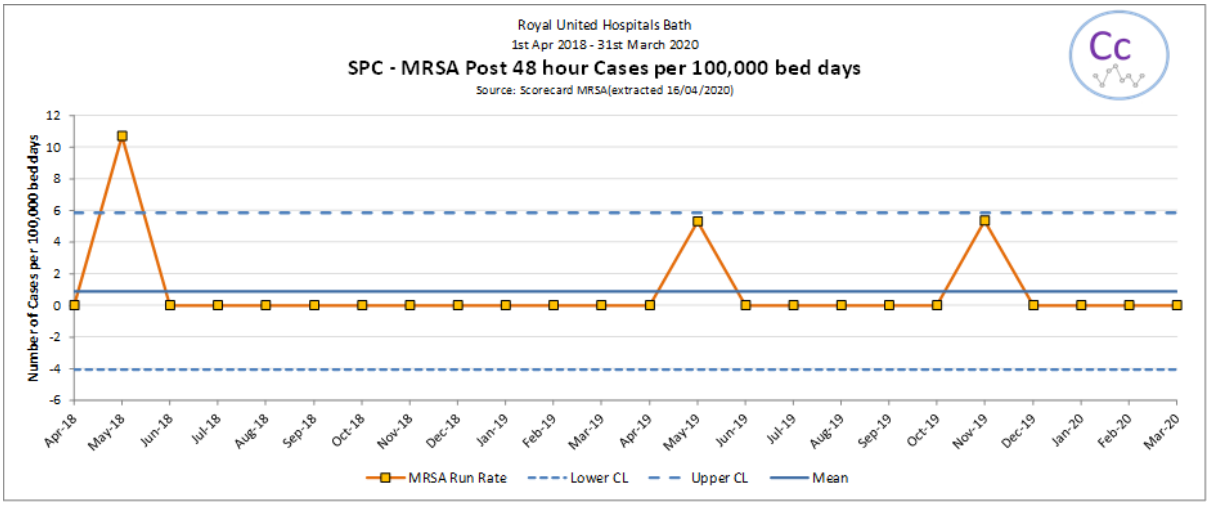


Figure 3: Trust apportioned MRSA bloodstream infection run rate

Actions taken

Post infection reviews were led by the IPCT for both hospital onset cases. The cases were also reported as Serious Incidents; these were investigated and reported through the Operational Clinical Governance Committee. Action plans were developed and these have been monitored by the relevant divisions through their governance structures.

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

The IPCT worked collaboratively with the CCGs to investigate community onset cases and have shared action plans where required.

4 MSSA bloodstream infections

The mandatory reporting of MSSA bloodstream infections commenced on 1 January 2011. There are currently no reduction targets set for this infection; Public Health England (PHE) are collating data which may act as a baseline for trajectory setting in the future.

There has been an overall decrease in the number of MSSA bloodstream infections reported during 2019/20 compared with the previous year. There were 104 cases of MSSA bloodstream infection reported; 2 were reported for community providers, 72 taken within 2 days of admission

and 30 cases where the blood cultures were taken after 2 days. There has been a 22% decrease in hospital onset cases in comparison with last year.

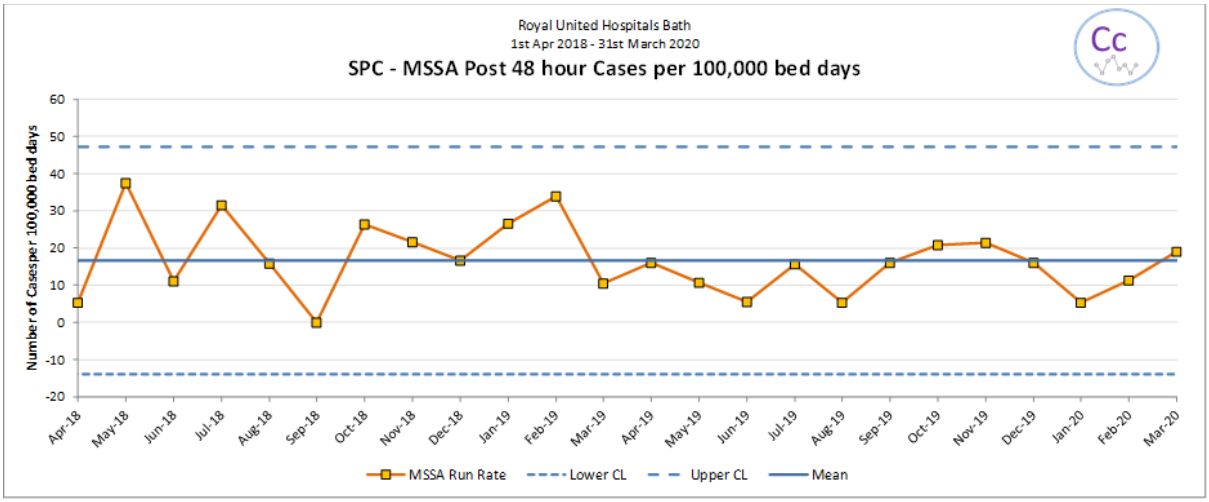


Figure 4: Trust apportioned MSSA bloodstream infection run rate

Actions taken

All cases of MSSA blood stream infection are assessed by the microbiologists or the Infection Prevention and Control Nurses who identify the potential source of infection. The microbiologists advise the clinical teams on treatment of the infection and follow these cases whilst they remain inpatients.

During 2019/20 a high proportion of Trust attributed MSSA infections were associated with vascular access devices. Infections associated with vascular access devices are almost always preventable; as a result a number of actions are being undertaken to reduce further infections:

- Only sterile gauze is used for line removal.
- All cannulation equipment stored in a clean location.
- Amended peripheral venous cannulation care record to include observation of site following removal.
- Refresher training for dressing application and skin decontamination.
- Revision of the Aseptic Non-Touch Technique workbook: staff assessment and sign-off by senior sisters.
- Cannulation audit pre and post implementation of the revised care record.
- Sharing of data at Infection Prevention and Control summits and divisional meetings.

See Appendix 14.3 for further information on these investigations and regional MSSA rates.

5 Gram negative bloodstream infections

5.1 *Escherichia coli* (E coli) bloodstream infections

During 2019/20 the Trust reported a total of 344 E coli bloodstream infections. This includes 3 cases that were reported on behalf of community providers. The 10% reduction target was achieved for hospital onset cases.

See Appendix 14.4.1 for more information

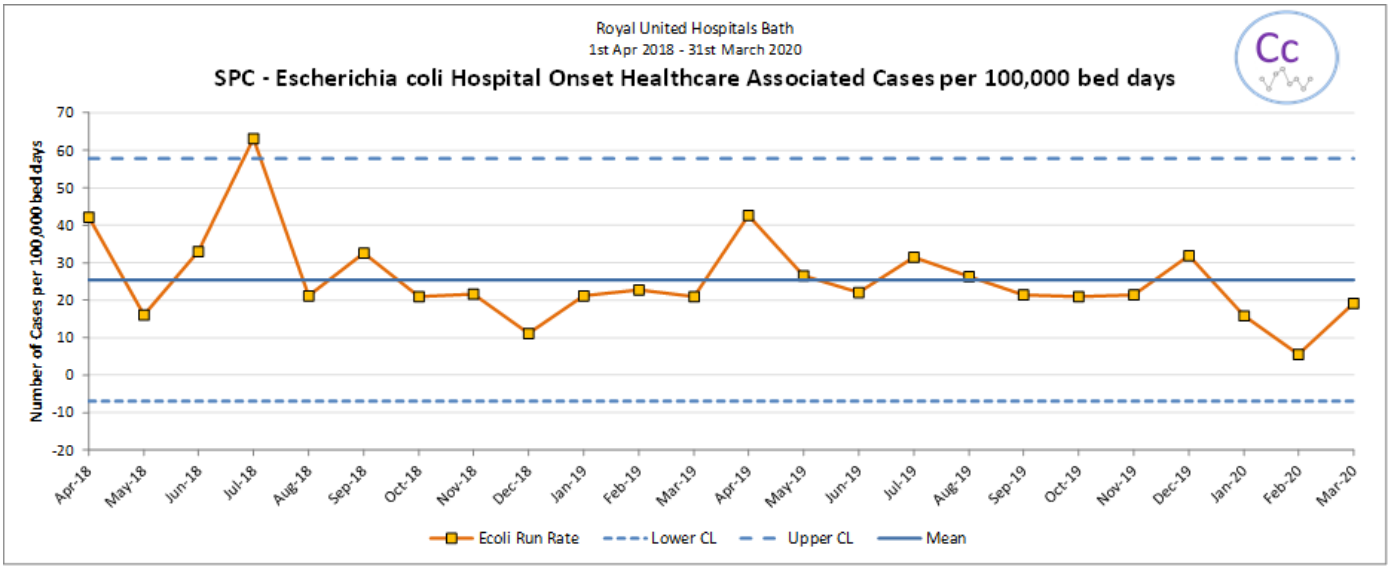


Figure 5.1: Hospital onset healthcare associated E coli bloodstream infections

Actions taken

The lower urinary tract is the most common source of these infections and it has been identified that dehydration is often an underlying issue. The Trust Nutrition and Hydration group have undertaken a spot check audit of hydration within inpatient settings and this demonstrated that there were areas where patients had a negative fluid balance and were therefore likely to develop adverse effects due to dehydration.

A number of actions were undertaken following the audit, these included:

- Trial of a hydration station for patients
- Purchase of larger cups for patients
- 'Droplet' trial: an electronic reminder to patients to drink more frequently

The actions have not been fully evaluated at the time of writing this report due to COVID activity however there has been feedback that all of the actions were received positively by patients or staff. There is a plan to re-audit in the next few months.

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

5.2 *Klebsiella spp.* bloodstream infections

There were a total of 109 cases of *Klebsiella spp.* bloodstream infections reported during 2019/20. This includes two infections that were reported for community providers.

There were 27 hospital onset healthcare associated cases, 26 community onset healthcare associated cases and 54 community onset non-healthcare associated cases. There has been an increase in all of these categories in comparison with last year's performance.

See Appendix 14.4.2 for more information.

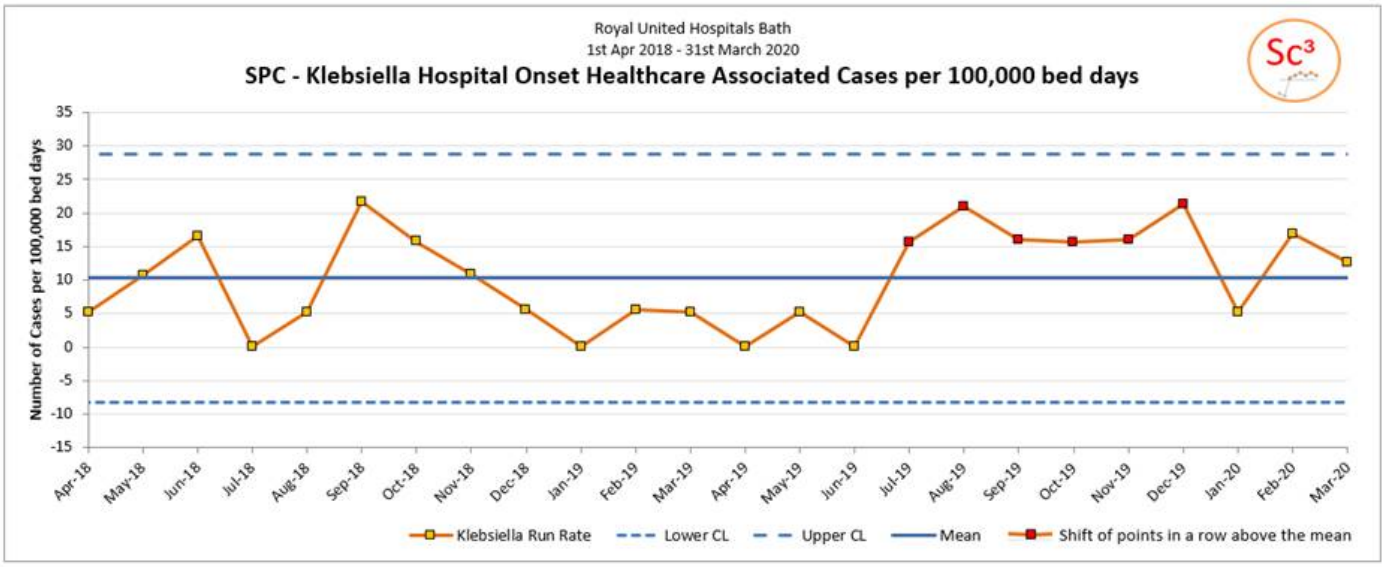


Figure 5.2: Hospital onset healthcare associated Klebsiella spp. bloodstream infections

Actions taken

All cases were reviewed by the microbiologists or the infection prevention and control nurses and the potential source identified. Lower urinary tract infections were the most common source (30%) of which 44% were urinary catheter associated. A notes review of the catheter associated cases has been undertaken and dehydration was identified as the most common theme.

5.3 *Pseudomonas aeruginosa* bloodstream infections

There were a total of 36 cases reported during 2019/20. There were 13 hospital onset healthcare associated cases, 6 community onset healthcare associated cases and 17 community onset non-healthcare associated cases. There has been an overall increase of 6 cases (20%) compared with last year.

See Appendix 14.4.3 for more information.

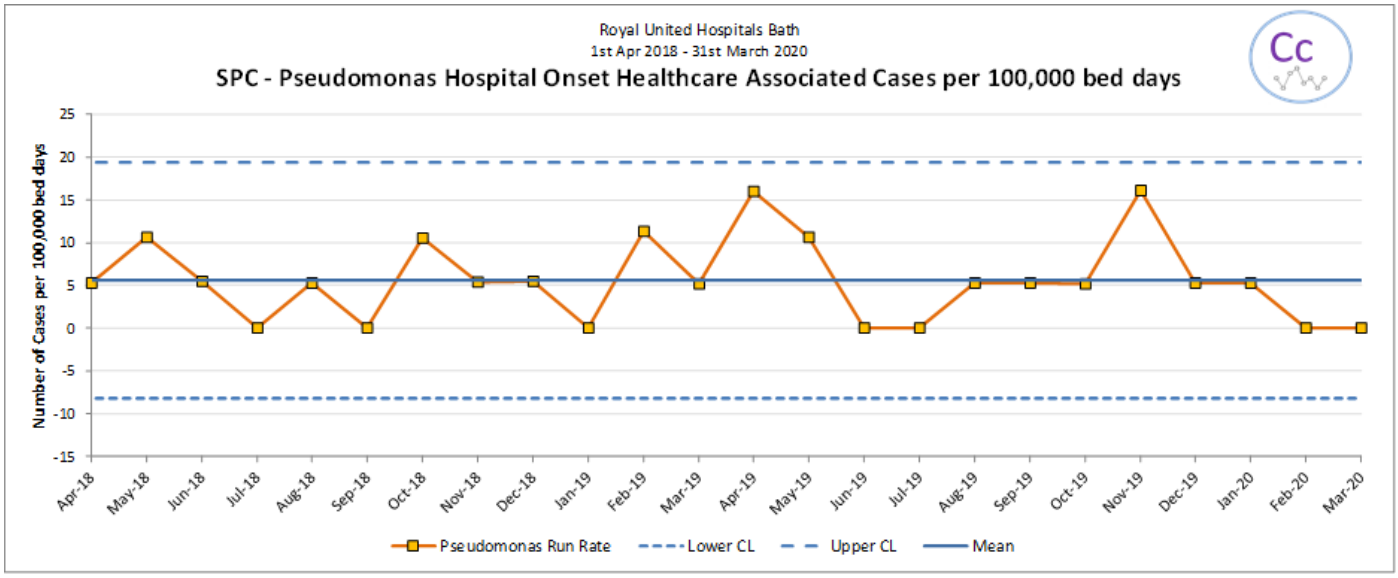


Figure 5.3: Hospital onset healthcare associated Pseudomonas aeruginosa bloodstream infections

Actions taken

Many of the patients with *Pseudomonas aeruginosa* bloodstream infections have other underlying conditions and it has been difficult to identify a source of infection in a large number of these cases. For those where the source has been identified the lower urinary tract remains the most commonly identified and more than half of these patients has urinary catheters. Notes reviews of the patients with catheters have been undertaken however due to the small numbers no significant trend has been identified.

6 *Clostridium difficile* infection (CDI)

For 2019/20 the Trust was set an objective (target) of 59 cases. New categories for assigning Trust apportioned cases were introduced in April 2019: cases where the sample has been taken 2 or more days after admission (hospital onset) and those where the sample has been taken within 28 days of discharge from hospital (community onset healthcare associated). The total number of Trust apportioned cases reported at the end of March 2020 was 42. Five cases were presented to NHS Wiltshire CCG who confirmed no lapse of care and there was agreement that these cases would not count against the trajectory although they remain as recorded cases. With these cases deducted the total number that counted against the objective was 37.

There were 24 hospital onset and 18 community onset healthcare associated cases. Two of the hospital onset and three community onset healthcare associated cases were found to have no lapses in care on investigation.

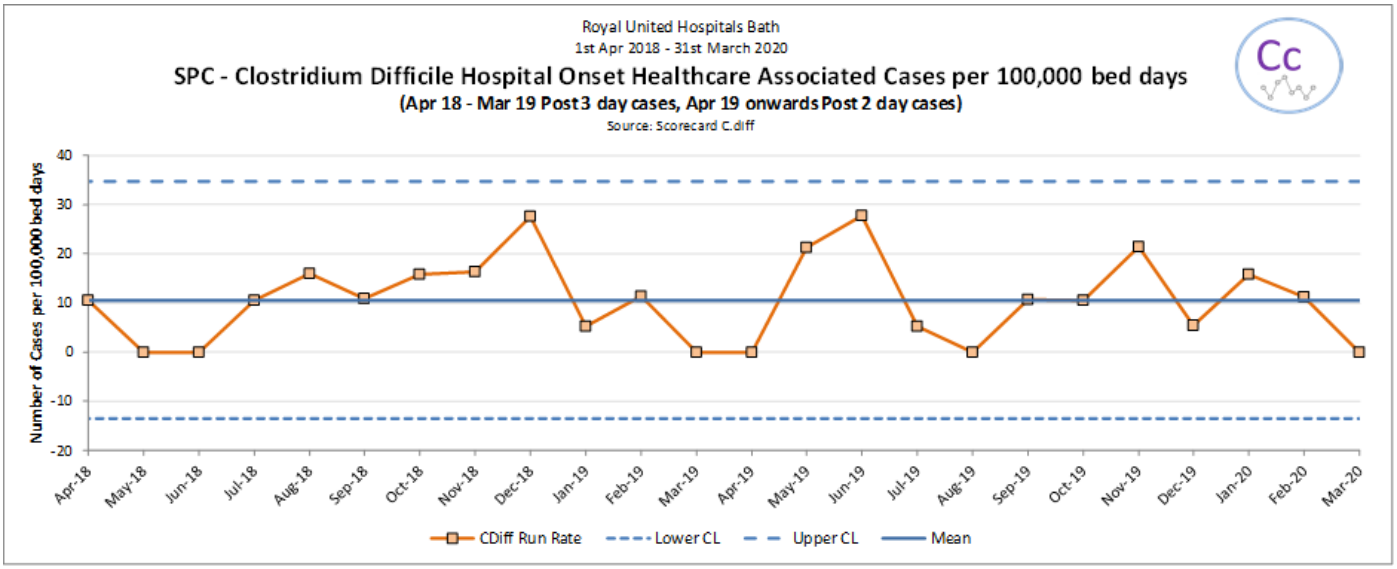


Figure 6: Hospital onset CDI run rate

Actions taken

The *Clostridium difficile* improvement plan has been amalgamated into an overarching healthcare associated infection improvement plan. Actions to reduce the incidence of *Clostridium difficile* infection include:

- Fortnightly senior sisters meetings to share data and review improvement strategies
- Weekly walkabouts by the DIPC and IPC Team to review cleanliness, condition of the environment and to speak with staff regarding infection prevention and control issues
- Revision of the RCA process to improve attendance at meetings
- Continued rollout of the antibiotic review kit (ARK)
- Introduction of a new cleaning auditing programme to meet with the revised National Standards of Cleanliness
- Trust wide focus on cleanliness of patient equipment with regular audits undertaken

The Trust requested a supportive visit for management of *Clostridium difficile* from NHSE/I early in 2019 however this was delayed due to availability of the visiting team. The visit took place in July 2019 and a feedback report was received. All issues identified within the report have been addressed and were included in the healthcare associated infection improvement plan.

See Appendix 14.5 for further information and regional CDI rates.

7 Norovirus

During 2019/20 there were a total of 39 closures due to outbreaks of diarrhoea and vomiting. These comprised of 9 full wards and 30 bay/partial ward closures. There were a total of 273 bed days lost as a result of these closures and a total of 93 confirmed cases of norovirus. There was a 53% decrease in the number of bed days lost compared with the previous year however there were only 2% fewer confirmed cases of norovirus on the closed areas.

The majority of infections occurred during November 2019 and February 2020. There were no closures due to norovirus in August and October 2019.

See Appendix 14.6 for further information and a breakdown by ward of closures.

Actions taken

The Trust takes part in voluntary surveillance of norovirus outbreaks; these are reported to Public Health England via a database. This information is used to show regional trends in norovirus infection and helps with predicting when major outbreaks are likely to occur. Norovirus often occurs in cycles and it is recognised that there will be peaks of infection every few years.

When a ward or bay is closed due to an outbreak the IPCT visit the area twice a day to document and monitor the severity of symptoms. During the winter months the team provide an on-call service for weekends and bank holidays so that closed wards can continue to be monitored and decisions to reopen areas can be made without having to delay until the next working day. Outbreak meetings are held at least once a day during the week if there are areas closed; plans for reopening the areas are made in consultation with divisional staff, the Site Team and Hotel Services (now Facilities).

8 HCAI associated deaths

All deaths where HCAI is recorded on the death certificate in part I, the primary cause, are reported as Serious Incidents (SIs) by the Trust. For each SI a root cause analysis investigation is carried out in order to identify possible causes and actions to be taken to prevent similar incidents. These incidents are also reported on the Strategic Executive Information System (StEIS).

During 2019/20 there was one HCAI associated death reported. MSSA bloodstream infection was reported as the joint cause of death along with pneumonia in part 1a of the patient's death certificate, see 13.8. The death has been investigated and it was identified that the probable source of the MSSA infection was an infected peripheral venous cannula site. The root cause analysis was reviewed at the Infection Prevention Control Committee and via the divisional governance structure and an action plan has been completed.

9 Influenza

Influenza A was the predominant strain during the influenza season of 2019/20; there were no ward closures due to Influenza B. The influenza season started earlier than in previous years however the majority of bed closures happened in December 2019 and January 2020. There were 182 bed days lost due to influenza bed closures; a 5% increase in closures in comparison with the previous year however the figures include outbreaks that occurred in April and May 2019 which were part of the previous season.

The use of the cohort ward (Parry) commenced in December 2019 and remained in use for 6 weeks. The beds on Parry were held for patients who were admitted with influenza and this helped to free up side rooms that could be used for patients with other infections across the Trust.

See Appendix 14.7 for further information and a breakdown by ward of closures.

Actions taken

On site testing for influenza continued throughout the winter and the laboratory offered extended opening hours when required. A total of 2564 rapid influenza tests were carried out in the RUH Microbiology laboratory: 419 tested positive for Influenza A and only 23 tested positive for Influenza B.

Testing for other respiratory viruses has continued to be available via the laboratory at Southmead Hospital.

10 Antimicrobial stewardship (AMS)

10.1 Staff update

Antimicrobial Stewardship Microbiologist – The post holder will be on Maternity Leave from June 2020. Whilst microbiologists offer some AMS work through their MDTs, ward rounds and clinical advice there will be no lead for AMS until September 2021. There was a business case submitted in February for a 5th microbiologist to increase infection control, AMS and general microbiology capacity. In relation to AMS, the RUH currently provides 1.5 Pas for the AMS lead. Benchmarking shows that most Trusts of equal size have 4 – 5 Pas for this role. In order to support AMS fully and activities such as the anti-fungal stewardship CQUINS the time dedicated to an AMS lead needs to increase. The business case was not successful but has been re-submitted in May 2020 due to Covid highlighting the high pressures on this department.

Antimicrobial Stewardship Pharmacist – The post holder is on Maternity Leave until August 2020. Interim cover has been provided on a part-time basis however the cover will cease on 31 May 2020.

If both roles were covered the Trust would still remain below regional/national average for staffing for AMS activity per 100 beds.

Actions taken

An action plan has been drafted alongside the board assurance framework which highlights the need for the 5th consultant post and the business case is currently being reviewed.

The Chief Pharmacist and lead for pathology are planning to review AMS using an A3 with support from the coach house with a view to producing a 5 year plan and framework for the Trust AMS. There may be a resource implication for this but the initial aim is to identify the need better.

The Chief Pharmacist has agreed to fund the current interim AMS pharmacist for longer so that they can train the returning pharmacist and provide extra support.

10.2 Antimicrobial stewardship activities

AMS Activities	Description	Issues
Comittee	Quarterly meetings, report to IPCC	April cancelled due to COVID -19
AMS Rounds	ICU, NICU, Haematology/oncology, *C.difficile*, rotating general ward. Trial AMS pharmacist to daily MAU board round. Limited capacity to continue with staff gaps over next 6 months.	NHS Benchmarking Nov19–RUH below national average AMS ward rounds/100 beds. Physical rounds interuppted by COVID -19.
C. difficile	Weekly rounds, contribution to RCA's, data on potential causitive antibiotic trends, primary care feedback of non guideline use of antibiotics.	
CQUIN/ MOP/Standard contract	19/20 UTI >65/colorectal Q4 abandoned. 20/21 CAP/UTI global - on hold until review in July. Antifungal stewardship – Q1/Q3 only achieved. Consumption target – await national admissions data.	No capacity for Anti Fungal Stewardship team with current staffing to meet Q2/4 targets.
Regional	Peer review of AMS pharmacy service by Salisbury completed. Currently recruiting to Regional AMS Lead – to engage with new post and STP/ICS leads. Regional AMS capacity benchmarking completed.	
Training	Level 1 - mandatory all pt facing staff. Level 2 update ongoing. Regular clinical pharmacists training, IPC nurse study day (ARK)	Issues with ESR incorporating ARK training package. Panel meeting cancelled twice.
Audit	Trustwide compliance audit. Vancomycin/gentamicin therapeutic levels/avoiding toxicity. ED antimicrobial use – guideline compliance. Clarithromycin guideline compliance. Penicillin allergy documentation on admission. Carbapenem review – 2 x per week.	
Guidelines	Updates: Adult Empirical Treatment, Surgical Prophylaxis, Paediatric Empirical Treatment, Fungal Infection – critical care and haemotology/oncology, Gentamicine/Vancomycin/Teicoplanin prescribing and monitoring, CAP guidance, Skin and Soft Tissue infections. Rapid dissemination COVID guidance via microguide. Sepsis care plan on ePMA.	Microguide cost increasing 10 fold Sep 2020. Review of continued use Vs Survive on Call – locally developed app.
Safety	Gentamicin/Vancomycin prescribing process update. Review of OPAT prescribing processes – ongoing. Exploration Penicillin delabelling project- liaise with Bristol/Regional AMS group – ongoing.	
Covid 19 response	Feedback to NICE rapid reviews for CAP treatment. Trials intranet info/drug procurement. PCT testing intro/audit. For inclusion in NIHR rapid research on use in COVID 19.	

Comms	World Antibiotic Awareness Week Nov 2019, Antimicrobial Stewardship Newsletter May 2019	
NHSI review July 2019	AMS resources to be ring fenced. AMR group/ ARK delivering improvements, advised prepare a business case to continue work long term – **to present strategy for AMS to CGC, date TBC** Overarching infection control /AMS strategy development and supporting improvement plan to focus on top risks for clear and firm frame for delivery.	CGC slot postponed March, cancelled May.

10.3 Antimicrobial CQUIN Performance 2019/20

Colorectal surgical prophylaxis

	Q1	Q2	Q3	Q4
Percentage of antibiotic prophylaxis prescriptions achieving CQUIN compliance	**80.0%**	**81.5%**	**81.0%**	**N/A**
Compliance is defined as single dose or appropriate further dose AND guideline compliant (YY) **Target = 90%**				

UTI inappropriate diagnosis and treatment >65 years

	Q1	Q2	Q3	Q4
Percentage of lower UTI prescriptions achieving CQUIN compliance	**55%**	**71%**	**81%**	**N/A**
Compliance is defined as diagnosis AND management of lower UTI compliant with guidelines **Target = 60% - 90%**				

CQUIN 2020/21 has been postponed until April 2021. AMR

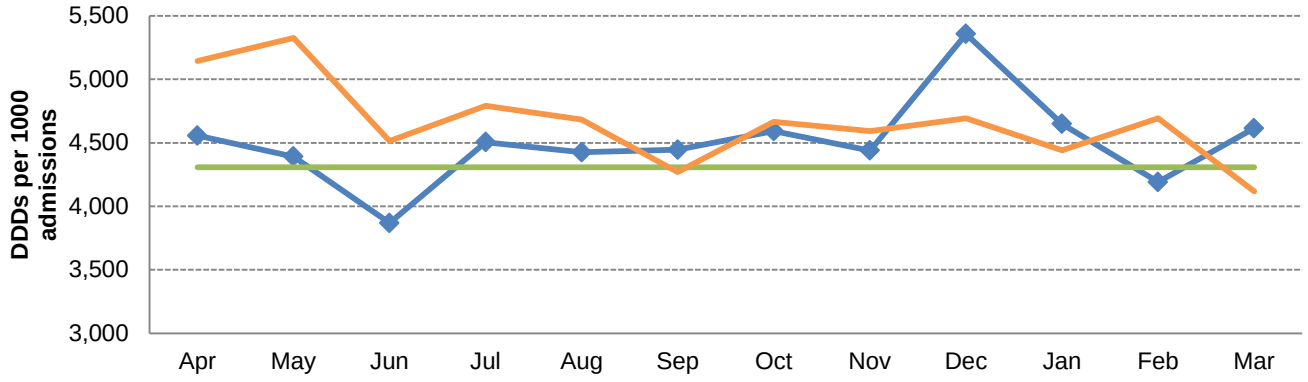
CQUINS will focus on Community Acquired pneumonia (CAP) and urinary tract infection (UTI) across all patient groups.

Actions

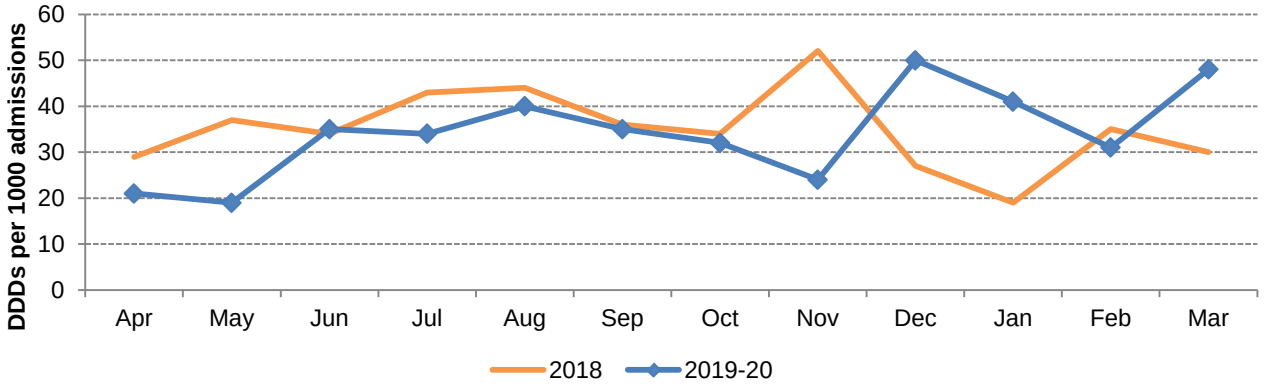
CAP – current daily review of co-amoxiclav prescribing in response to increased volume of use (and C.difficile numbers). Audit from microbiology and AMS pharmacist on clarithromycin prescribing has also highlighted inappropriate prescriptions and gaps in CAP treatment pathway regarding urinary legionella testing and response to results. Group to meet including microbiology and respiratory and acute medical physicians to improve practice. Reviewing option to create a care plan for CAP management within millennium to incorporate diagnostic pathway and treatment meeting goals of UK 5 year AMR action plan. If successful a similar approach could be taken to UTI management.

Antimicrobial Consumption

(a)Total Consumption
Provisional figures – reduction on 2018 but 1% target not met. Await final admission figures (9 month delay 2018/19).



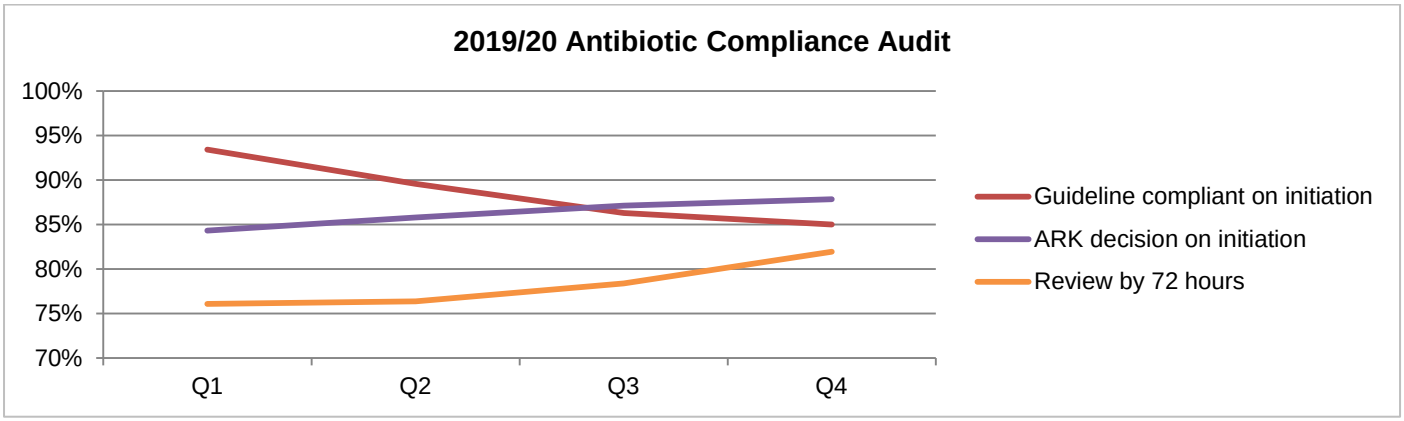
(b)Carbapenem consumption
Await confirmed admission figures for final consumption. Mirrors previous year and usage remains low compared to regional/national figures.

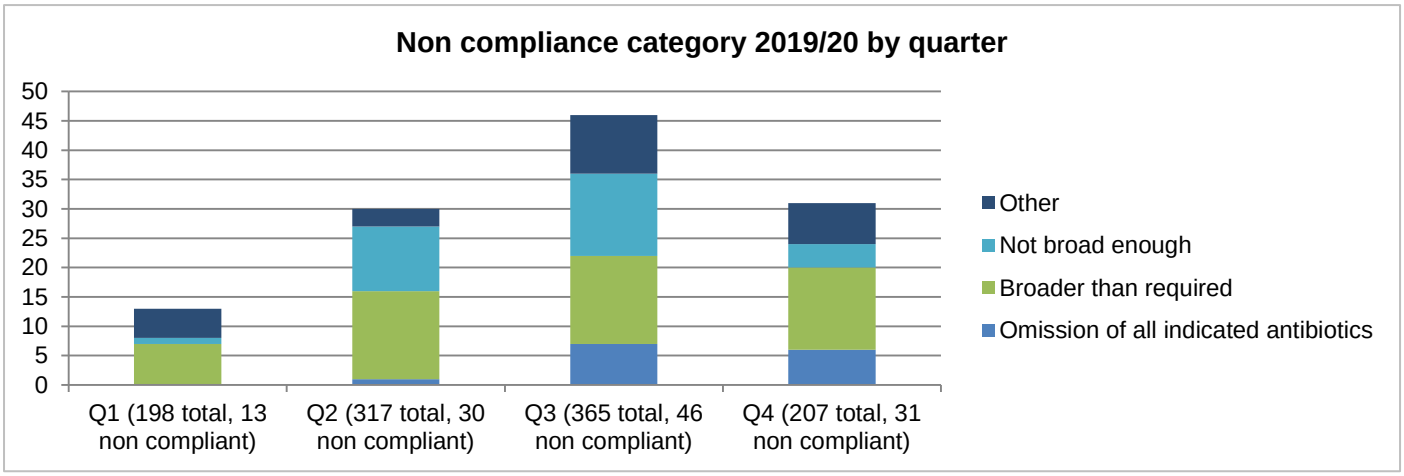


Action
Aim to have ARK mandatory training live prior to new cohort of doctors joining in Summer 2020 to encourage improved compliance with antimicrobial prescribing guidance, early review of antimicrobial therapy and appropriate early intravenous to oral switch. Antimicrobial pharmcist to provide data on performance of specilities to clinical pharmacists for feedback and discussion at clinical governance groups 3 monthly.
Plan for audit to take place in conjunction with Bath University in Autumn 2020, if all permissions in place, comparing diagnostic criteria and course lengths in common infections such as CAP, HAP, IECOPD and pyelonephritis with NICE guidance to prioritise areas for potential intervention to safely decrease antimicrobial consumption in common infections.

Training Compliance
Level 1 = 78%, Level 2 = 70%. Lowest compliance amongst Bank staff.

Guideline Compliance Audit
Audit of 1086 infections treated with antibiotics over 12 months.





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.
We are committed to following the principles outlined in the DoH 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

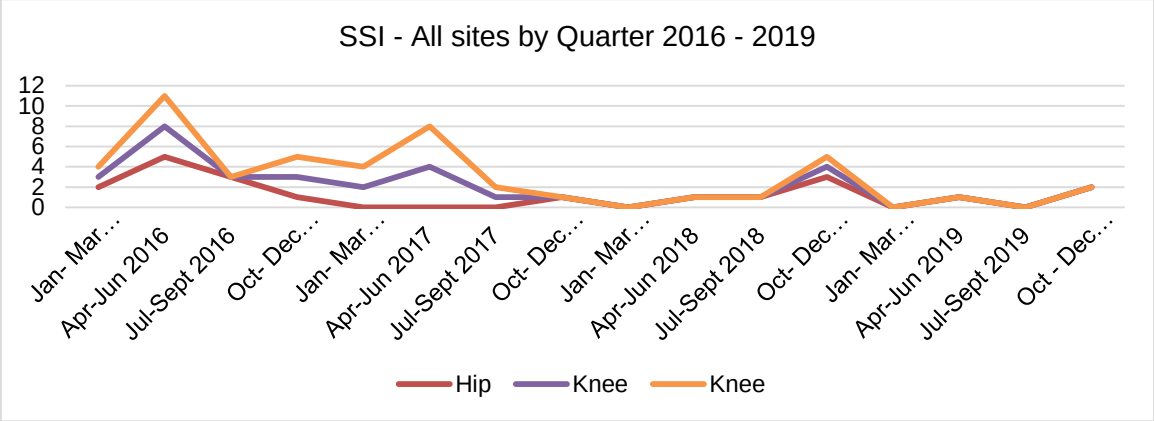
11 Surgical Site Infection Surveillance

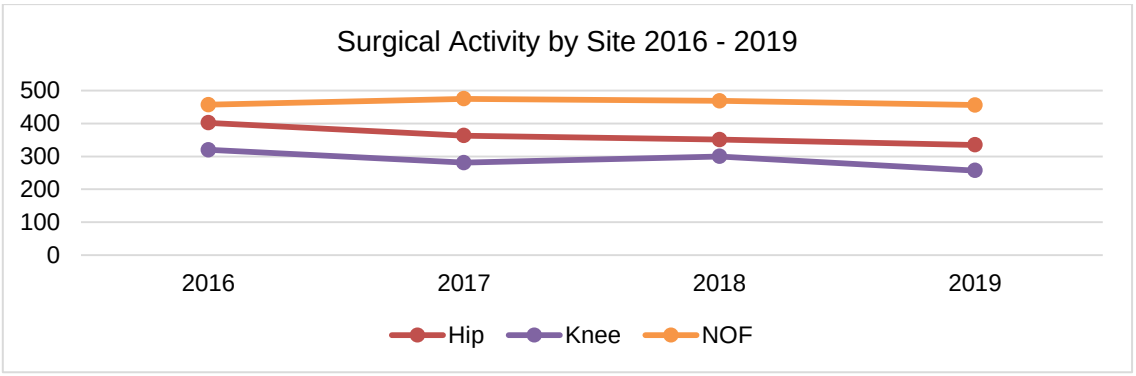
The Trust takes part in the mandatory surveillance of surgical site infections which involves the reporting of infections post-operatively in patients undergoing certain types of Orthopaedic surgery. This includes surveillance of patients prior to and post discharge and also patients who are readmitted 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 surveillance nurses are employed by the Surgical Division, and during 2019 they reported on surgical site infections in patients who had undergone hip replacement (THR), knee replacement (TKR) and repair of a fracture to the hip.

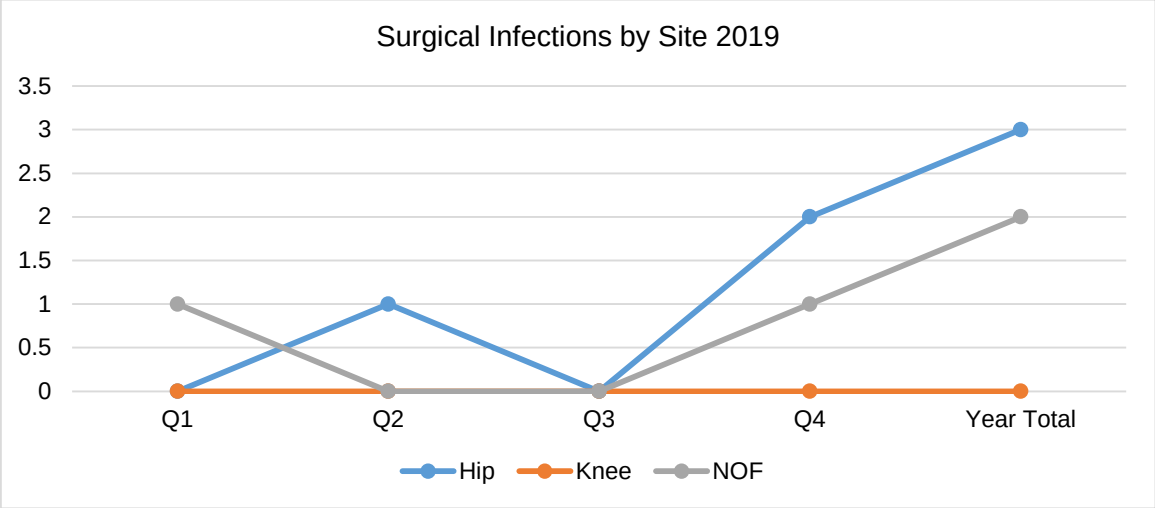
The surveillance nurses have also collected and reported data for the 12-month period on certain types of Breast surgery however this is not mandatory.

Significant work was undertaken in the previous reporting period that focused on a number of areas such as high level theatre cleaning, Infection SBAR investigations and review by Consultant Surgeon and reporting into Infection Prevention and Control Committee. Bi-monthly Surgical Site Infection Surveillance Working Group continues to meet to monitor and support the recommendations in the previous reporting period.





12 infections were reported in the 4 quarter period. 7 (58%) of the infections were patient reported and are not reportable to the PHE. Patient reported infections accounted for 68% of non-reportable surveillance in the previous reporting period. This is a reduction but remains an area of focus for the service. RUH surveillance for THR, fractured neck of femur and TKR account for 0.3%, 0.1% and 2.3% respectively. National averages indicate 0.3%, 0.1% and 0.6% across the same sites which would indicate the RUH to be an outlier for patient reported infections on TKR surgery.



12 COVID-19

12.1 SARS CoV-2

In December 2019 a cluster of cases of pneumonia of an unknown source in China were reported to the World Health Organization. In January 2020 it was identified that a novel coronavirus, SARS CoV-2, had been identified as the cause of the outbreak. The disease associated with the virus is known as COVID-19. The virus has since circulated worldwide and the World Health Organization declared a global pandemic on 11 March 2020.

The first suspected case of COVID-19 was screened at the Trust on 23 January 2020. This was followed by a number of patients who had travelled from affected regions and were also screened at the Trust. The Infection Prevention and Control Team led the screening programme, taking referrals from Public Health England and NHS 111 until mid-March 2020 when the volume of referrals increased significantly. Screening of patients was taken over by the Emergency Department and admitting wards. The first case to be confirmed at RUH was on 11 March 2020.

The pandemic has been challenging for all health and social care providers however staff at the Trust have worked collaboratively to ensure that patient safety is maintained and to protect health care workers from acquiring the infection.

Cohorting of suspected and confirmed cases commenced in March. All patients with suspected infection were either isolated or admitted to a cohort area, where beds were at least 2 metres apart. If a positive result was reported the patients were transferred to one of the confirmed cohort wards. Patients with COVID-19 requiring Intensive Care support were nursed in the Day Surgery Theatres that were staffed by ICU staff and reservists from other areas within the Trust.

The Infection Prevention and Control Team have been heavily involved with the planning aspects of patient placement and with advice on personal protective equipment. The team advised on a local policy that has been agreed for staff to cease wearing their uniforms to and from work and they arranged for hand dispensers to be installed in all public areas around the Trust. The team also led on fit testing for FFP3 masks until this was taken on by a dedicated team of fit testers.

A number of Estates works have also been required to ensure that patients with suspected or confirmed COVID-19 can be physically separated from patients who do not have the infection, for example doors have been fitted on bays throughout the Trust. The Infection Prevention and Control Team have worked closely with Estates and Facilities to advise on the infection prevention and control aspects related to these works.

A major part of the Infection Prevention and Control Team's role has been to review the guidance that has been published and updated by Public Health England and other national bodies. The guidance has been adapted into local policies and standard operating procedures. Any changes in guidance are communicated through the Trust Silver and Gold meetings and by the Communications Team in daily staff briefings.

On 31 March 2020 there had been a total of 88 confirmed COVID-19 cases and 13 deaths from the disease reported by the Trust.

13 Level 2 Infection Prevention and Control Training

Level 2 infection prevention and control training is mandatory for all patient-facing staff. Until December 2019 staff had a choice of how they received this training; either face to face training delivered by the IPCT or by e-learning. The Strategic Learning Committee took the decision to stop the classroom based sessions in December 2020. There were a number of staff who approached the IPCT requesting for face to face sessions as they had difficulty with accessing e-learning so the team reinstated some sessions however as these were poorly attended they have since ceased.

The Trust has a target of 90% compliance with Level 2 infection prevention and control training; in April 2020 the overall compliance was 86.3% however two divisions had achieved the 90% target. This is a decrease in training compliance in comparison with last year when 89.9% had been achieved at year end.

Division	Training compliance
Bank	67%
Corporate	88%
Estates and Facilities	86.9%
Medicine	90.4%
Non-Paid and Recharge	57.1%
Research and Development	97.4%
Surgery	89.9%
Women and Children's	89%
Trust	**86.3%**

14 Appendices

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

14.1.1 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 Director of Nursing and Midwifery is the designated executive lead; Director of Infection Prevention and Control (DIPC). She reports directly to the Chief Executive and the Board and she is the chair of the Infection Prevention and Control Committee (IPCC). The Director of Nursing and Midwifery is the Senior Infection Prevention and Control Nurse's line manager.

The Infection Control Doctor (ICD) is a consultant microbiologist who provides expert microbiological advice and supports the DIPC. The ICD is the deputy chair of the IPCC.

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 team also provided cover via service level agreements for Avon and Wiltshire Mental Health Partnership NHS Trust (AWP) and the Independent Health Group.

14.1.2 The Infection Prevention and Control Team

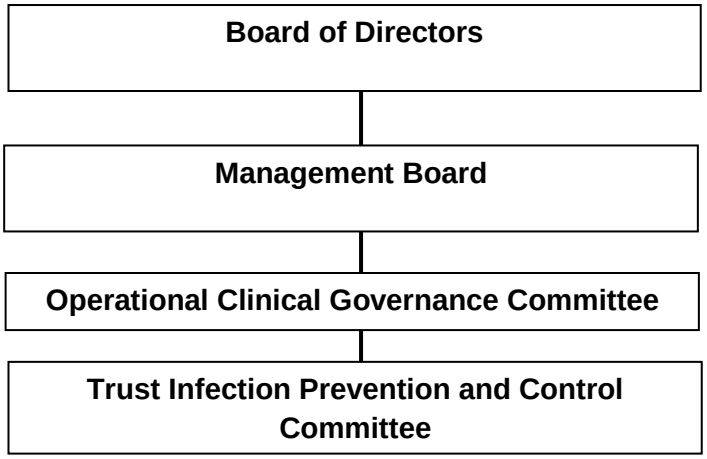
The team is made up of the following staff:

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

One of the full time band 6 posts was vacant for six months and was recruited to in November 2019. The Surveillance and Administration Assistant post was also vacant for two months. The post has been recruited to.

The Infection Control Doctor role is shared by two consultant microbiologists. From November 2019 the Lead Infection Control Doctor was on maternity leave therefore the Deputy Infection Control Doctor has covered this post with support from one of the other microbiologists.

14.1.3 Infection Prevention and Control Committee governance and reporting structure



14.2 MRSA bloodstream infections

Case 1 was a patient who was homeless and an intravenous drug user. The patient was non-compliant with treatment and despite extensive investigation no clear source was identified for the infection.

Case 2 was a patient who was also an intravenous drug user and was admitted with an infected groin injection site.

In both cases it was established that infection was unavoidable and the patients were eventually discharged when medically fit.

Four of the community onset cases were also intravenous drug users. Samples from all of these patients, including those with hospital onset of infection, were typed and it was identified that they match the strain of MRSA that has been isolated in the intravenous drug user population within the Bristol area where clusters of MRSA infections have been found. As a result all patients with a history of intravenous drug use are now screened for MRSA on admission and decolonisation commenced to prevent potential contamination of wounds.

14.2.1 MRSA bloodstream infection regional benchmarking

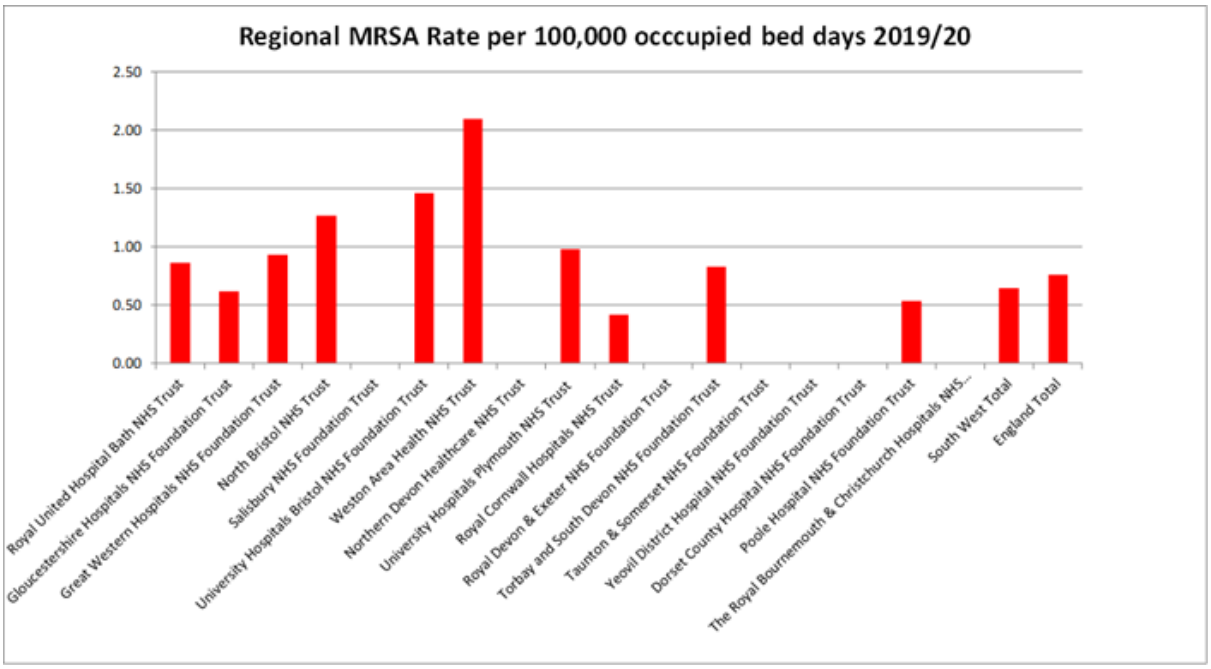


Figure 14.2: Regional MRSA rates 2019/20

The Trust has the sixth highest rate of MRSA bloodstream infection within the region and the rate is currently higher than the national average. The improvement work that is being taken forward to reduce MSSA infection should also reduce MRSA acquisition. This work along with improved targeted MRSA screening compliance will be monitored closely and performance will be reported through the existing Infection Prevention and Control governance structures.

14.3 MSSA bloodstream infections

Line associated infections accounted for more than half of the hospital onset MSSA bloodstream infections. These infections are avoidable however despite interventions that were introduced in 2019 we have only seen a small reduction in these cases.

MSSA blood stream infections were identified as our greatest challenge during the infection prevention and control summits last year. Improvement work was commenced, led by the senior sisters and matrons, and this has helped to focus teams on making small sustainable changes to reduce the risk of infection. These changes include:

- Revision of the peripheral venous cannula care record
- Switching to sterile gauze for dressings when removing lines
- A review of where cannula insertion equipment is kept
- Increasing compliance with aseptic non-touch technique training
- A review of dressings used to secure lines

Improvement strategies and successes have been shared between ward teams. Some teams have also used this as a focus on their Improving Together programme.

We will continue the work that has commenced throughout 2020/21 and we have planned to introduce more improvement strategies in the coming months.

14.3.1 MSSA bloodstream infection regional benchmarking

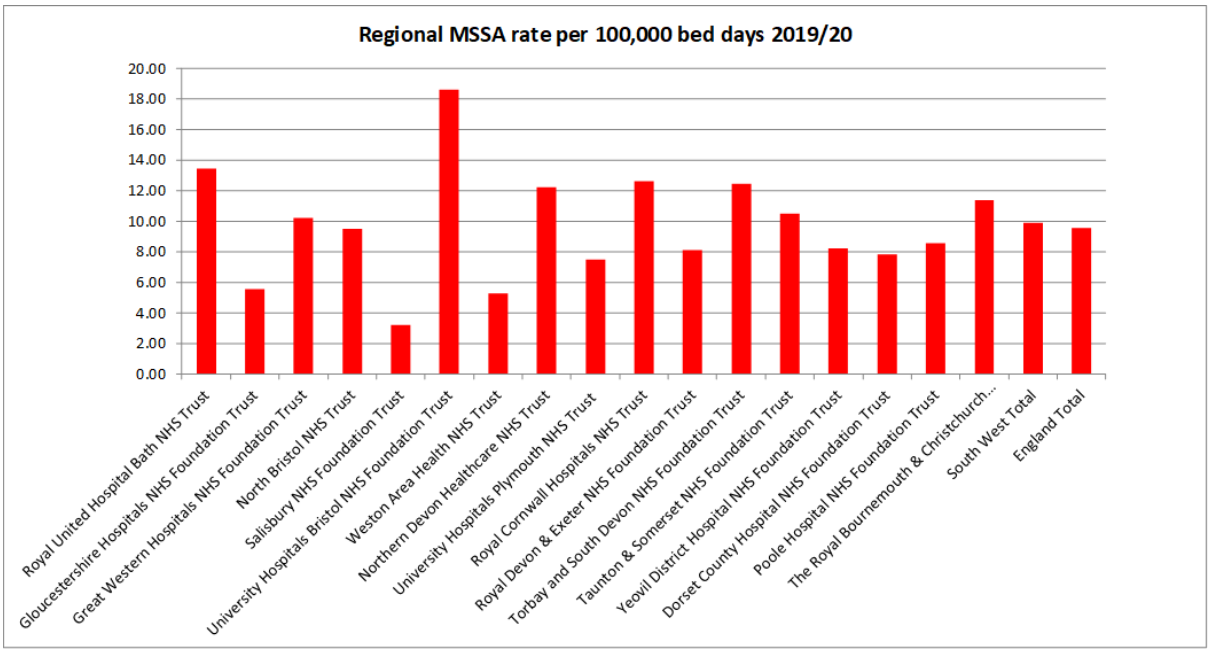


Figure 14.31: Regional MSSA rates 2019/20

The Trust remains an outlier for MSSA bloodstream infections. At the end of 2019/20 the Trust had the second highest rates within the region and remains a national outlier.

14.4 Gram negative bloodstream infections

In April 2017 the Secretary of State for Health launched an ambition to reduce Gram-negative bloodstream infections by 50% by 2021. Infection caused by these organisms has increased nationally; despite the decrease in other infections such as MRSA, *E coli, Klebsiella* spp. *and Pseudomonas aeruginosa* account for 72% of all Gram-negative bloodstream infections therefore these organisms have been identified as the key focus for reduction.

For the first two years from April 2017 a target was introduced to reduce cases of healthcare *associated E coli* bloodstream infection by 10% annually. Approximately 75% of these infections occur before admission to hospital therefore a whole health economy approach has been utilised. The target is not Trust specific and is shared with the Clinical Commissioning Groups who are rewarded with a Quality Premium for improvements in the quality of services.

14.4.*1 Escherichia coli (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 72 hours of admission) and trust apportioned (blood cultures taken 72 hours 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.

PHE surveillance includes positive blood cultures taken at GP practices or community hospitals in the Trust figure as the IPCT reports these on the PHE Healthcare Associated Infections Data Capture System on behalf of primary care and provider organisations. There were 2 cases reported for Virgin Care and 1 case for Wiltshire Health and Care. With these cases deducted from the overall total there were 341 *E coli* bloodstream infections reported by the Trust.

	Hospital onset healthcare associated	Community onset healthcare associated	Community onset non-healthcare associated
Apr 2019	8	3	19
May 2019	5	3	16
Jun 2019	4	5	19
Jul 2019	6	5	23
Aug 2019	5	7	31
Sept 2019	4	2	23
Oct 2019	4	1	20
Nov 2019	4	0	21
Dec 2019	6	2	22
Jan 2020	3	4	20
Feb 2020	1	7	10
Mar 2020	3	2	23
TOTAL	**53***	**41**	**247**

*There were 53 hospital onset cases reported in 2019/20.

Figure 14.4.1.1: E coli bloodstream infections 2019/20

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 to PHE via the HCAI data capture system.

The most common cause *of E coli* bloodstream infection was lower urinary tract infection in non-catheterised patients, which accounted for 81 (24%) cases.

The second most common source of infection was hepatobiliary which accounted for 59 (17%) cases. Hepatobiliary infections are most likely to be associated with a patient's lifestyle or with underlying cancers.

There were 37 cases (16%) where the source of infection was unknown and 24 (7%) cases where there was no clear underlying focus of infection when assessed.

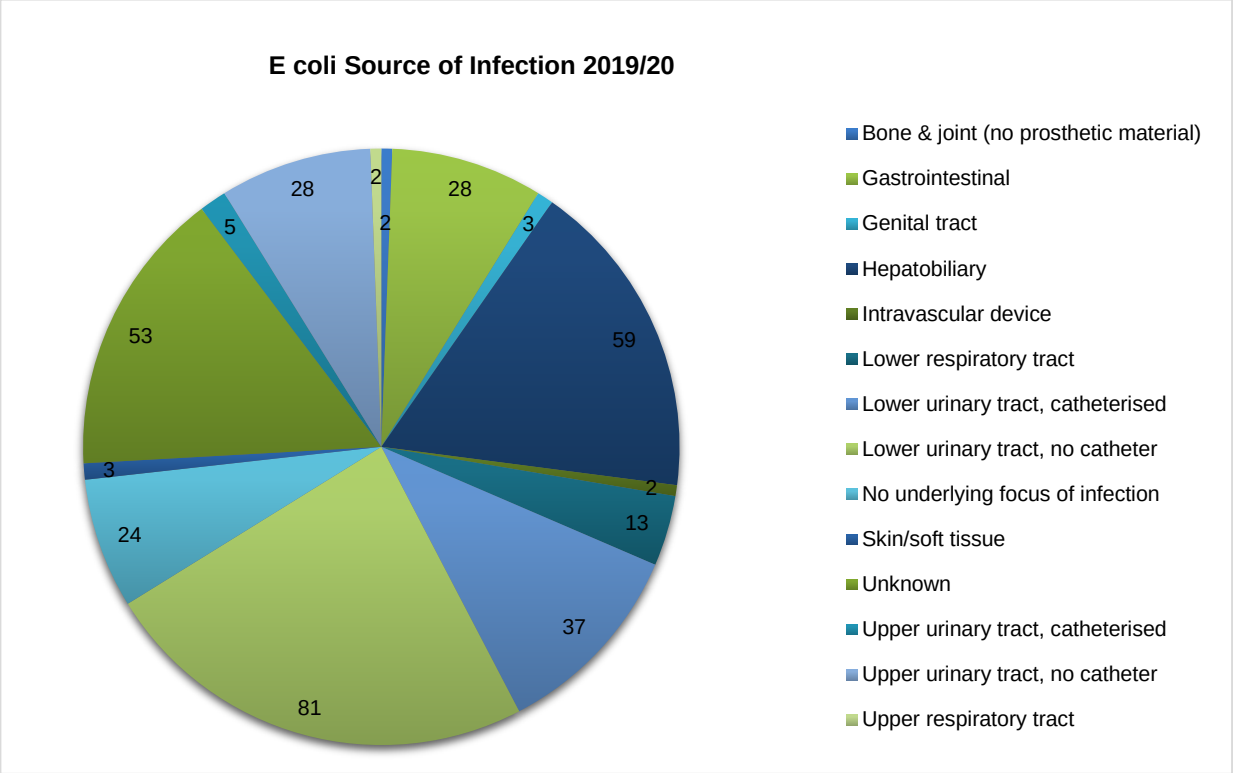


Figure 14.4.1.2: Sources of E coli bloodstream infections 2019/20

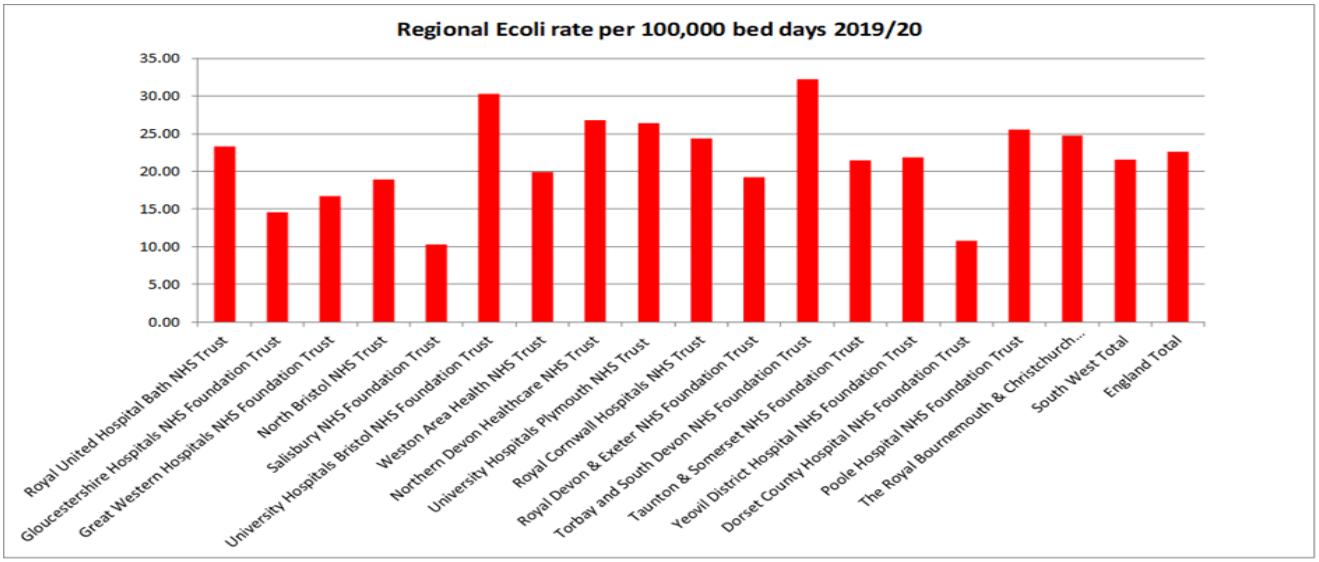


Figure 14.4.1.3: South West regional E coli rates per 100,000 bed days 2019/20

The Trust rates for *E coli* blood stream infections are slightly higher than the regional and national averages: the average rate foe England is 22.6 per 100,000 bed days whereas the RUH rate is 23.7.

14.4.*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 reported all *Klebsiella spp*. bloodstream infections to Public Health England via the data capture system during 2019/20. They are also reported as hospital onset healthcare associated, community onset healthcare associated and community onset non-healthcare associated cases.

Klebsiella pneumoniae was the most prevalent species isolated during 2019/20, making up 80% of cases reported.

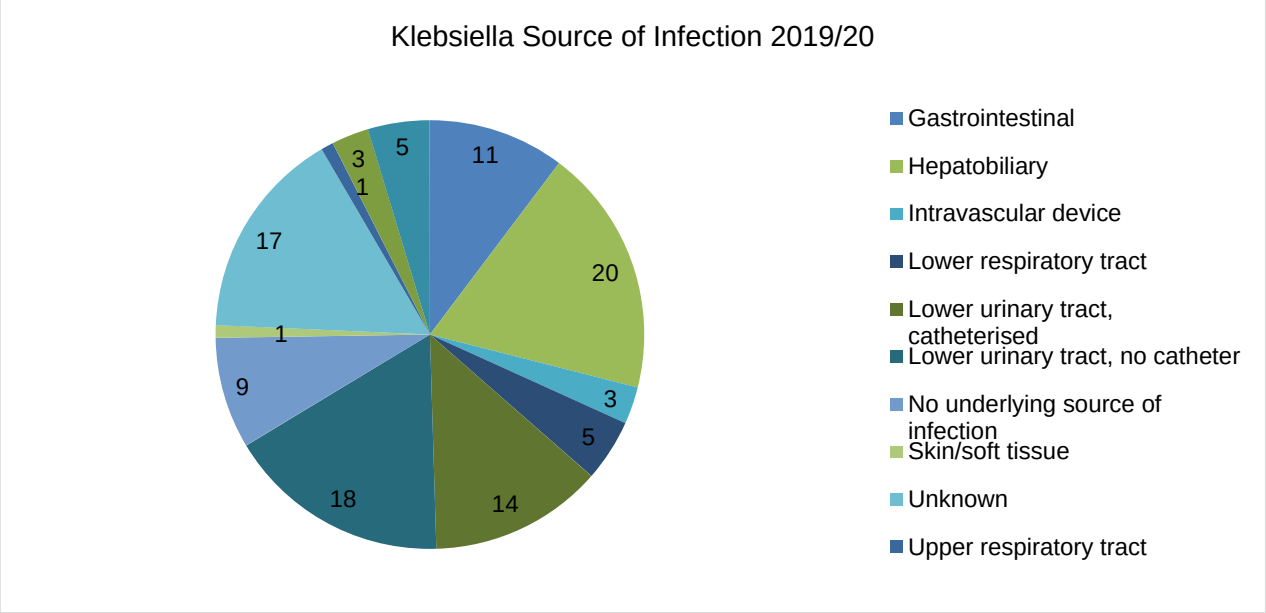


Figure 14.4.2: Source of Klebsiella spp. bloodstream infections 2019/20

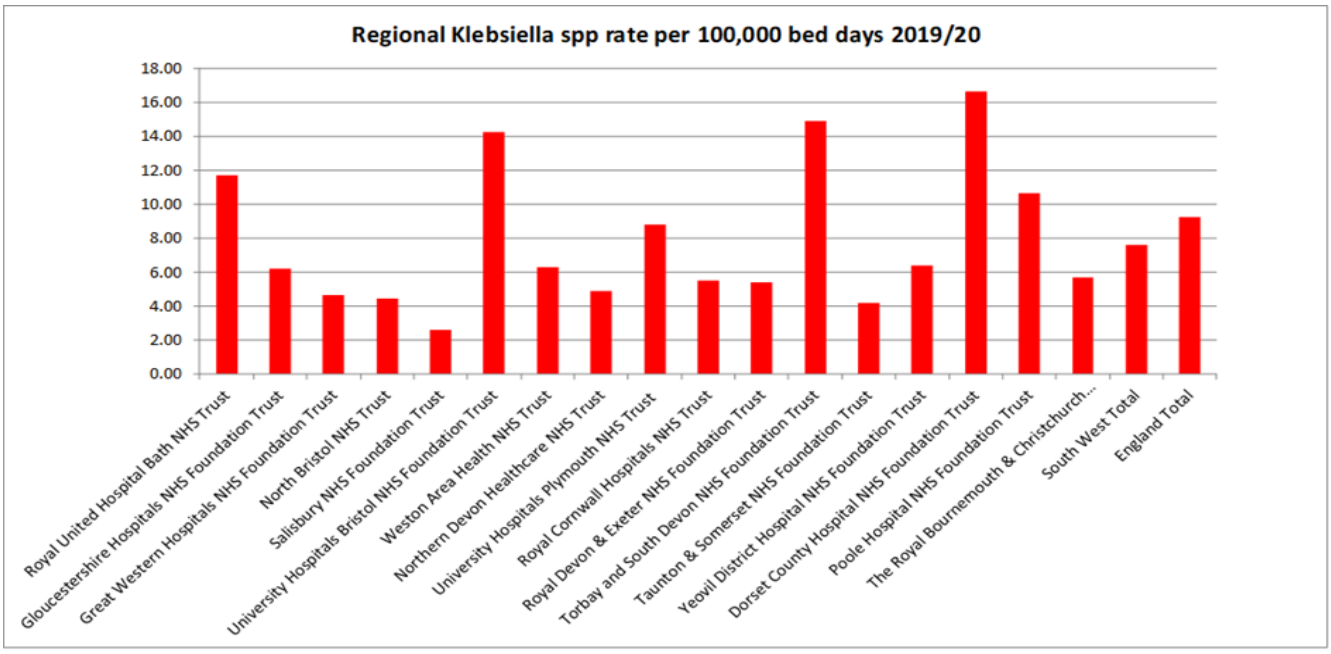


Figure 14.4.3: South West regional Klebsiella spp. bloodstream infections rates per 100,000 bed days 2019/20

The Trust rates for *Klebsiella spp.* bloodstream infections are higher than both the regional and national averages. The average rate for hospital onset cases in England is 9.2 per 100,000 bed days, the rate for the Trust is 11.9.

14.4.3 *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 reported *all Pseudomonas aeruginosa* bloodstream infections to Public Health England via the data capture system during 2019/20.

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

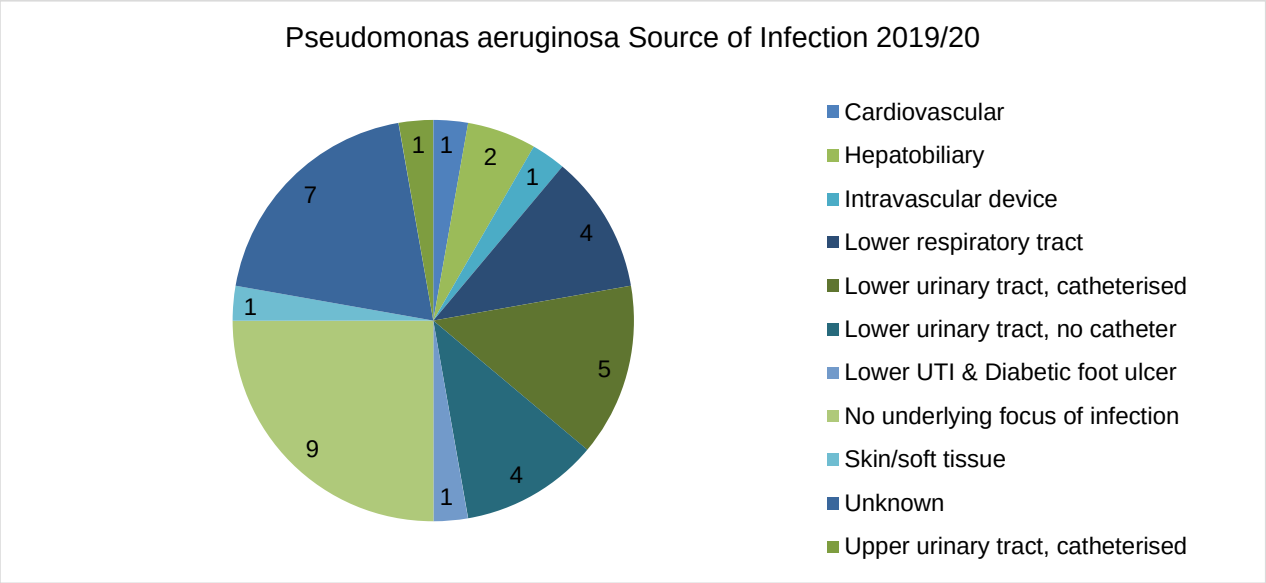


Figure 14.4.3: Source of Pseudomonas aeruginosa bloodstream infections 2019/20

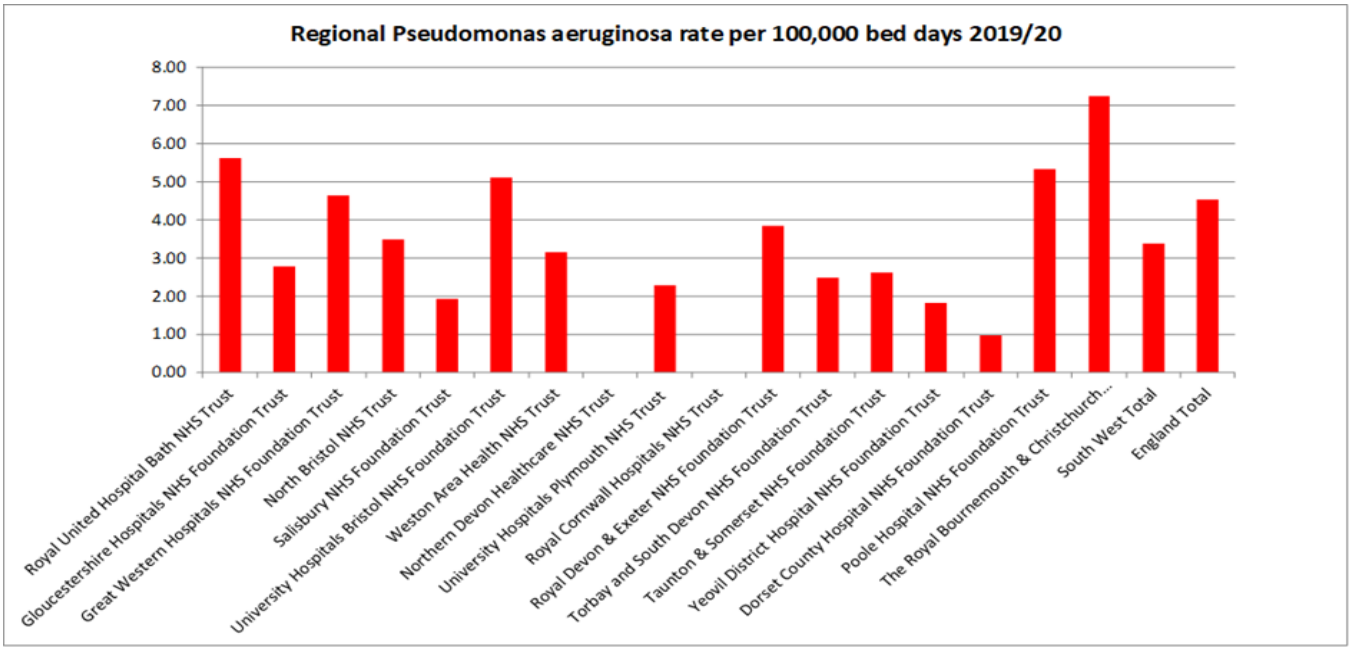


Figure 14.4.4:South West regional Pseudomonas aeruginosa bloodstream infection rates per 100,000 bed days 2019/20

The Trust rates for *Pseudomonas aeruginosa* bloodstream infections are higher than both the regional and national averages. The average rate for hospital onset cases in England is 4.4 per 100,000 bed days, the rate for the Trust is 5.3.

14.5 Clostridium difficile infections

The reporting of the number of cases of Clostridium difficile (CDI) infections is mandatory for all NHS Trusts. All cases over 2 years of age must be reported.

There are changes to the reporting algorithm that have been implemented from April 2019. All trusts will have both hospital onset and community onset healthcare associated cases as part of the Clostridium difficile objective. The timescale for diagnosis of infection has also been reduced; from April 2019 all samples taken two or more days after admission will be trust attributed. At the end of March 2020 the hospital onset CDI rate for the Trust was 10.5 per 100,000 bed days in comparison with the national average of 15.4 per 100,000 bed days.

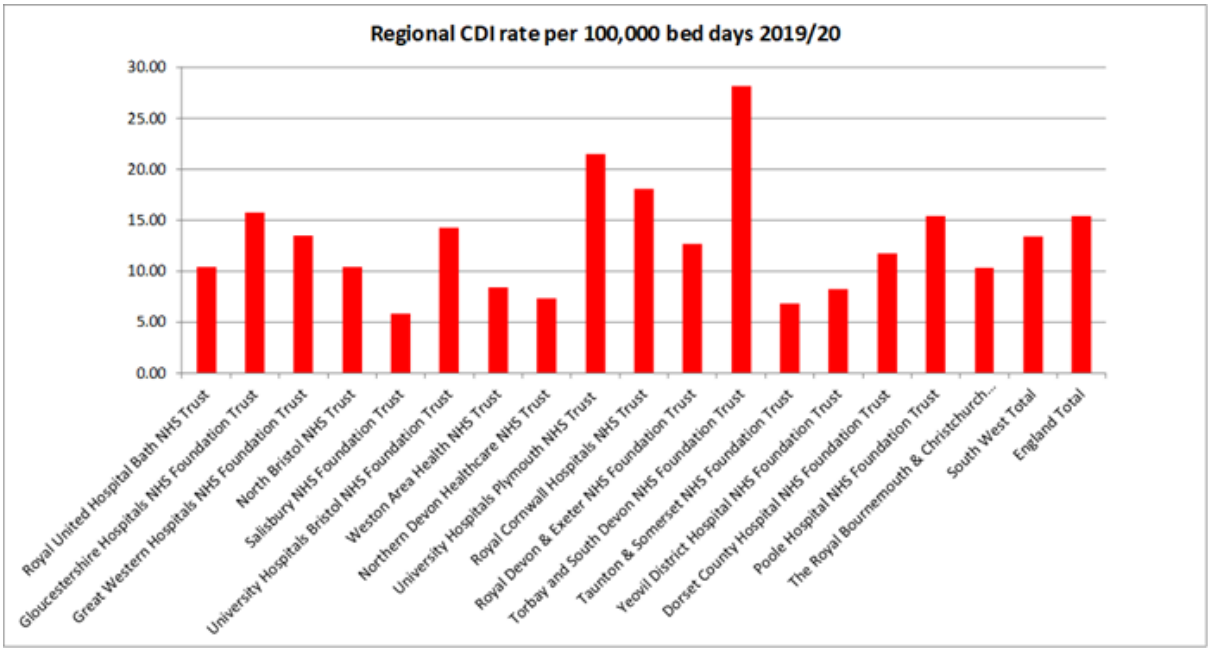


Figure 14.5: Regional Clostridium difficile infection rates 2019/20

14.6 Norovirus

Norovirus is a frequent cause of outbreaks in hospitals. Approximately 3000 people are admitted to hospitals in England with norovirus each year and this infection spreads very quickly placing a huge burden on health care services.

In order to reduce the spread of norovirus prompt isolation of infected patients is essential. 8.7% of the Trust bed base is single side rooms with en-suite toilet facilities in comparison with 20.7% which is the average in trusts in England. The lack of appropriate side rooms has an impact on how outbreaks are managed and this risk is on the Trust risk register. If patients are not isolated the virus, which is very infectious, can spread to neighbouring patients. The most effective way of managing an outbreak is to isolate the area where symptoms have occurred and prevent other patients from being admitted until symptoms have ceased. Staff working in the area must adhere to high standards of hand hygiene and use of personal protective equipment. The isolated area

can be a bay or a whole ward depending on the layout of the area and the number of patients involved.

Month	Area affected	Bed days lost
April 2019	MAU Area C	4
	Haygarth Bay 3	9
May 2019	Parry Bay 1	1
	ASU A&B Bays	2
	Waterhouse	6
June 2019	Respiratory	75
July 2019	Midford Bay 3	2
	Parry Bay 3	8
September 2019	Waterhouse Bay 3	2
November 2019	Parry	16
	William Budd Bays 1&2, followed by whole ward	15
	Haygarth Bay 1	1
	Pulteney Bay 4	1
	Pulteney Bay 2	4
	Haygarth Bay 3, followed by whole ward	28
	William Budd Bay 2	0
December 2019	Combe Bay 1	1
	Medical Short Stay female Bay	6
	Robin Smith Bay 5	0
	Midford Bay 4	2
	ACE Area C	2
	Forrester Brown	0
	Parry Bays 1&3	5
	Waterhouse Bay 2, followed by whole ward	8
	Haygarth Bay 2	2
	Combe	22
January 2020	Forrester Brown Bay 2	3
	Waterhouse Bays 1&2	10
	Combe Bay 3	0
	Pulteney Bay 3	3
	William Budd Bay 3	2
	Waterhouse Bay 1	0
	Robin Smith Bay 3	1
February 2020	Haygarth Bay 3	0
	ACE Areas A&B	6
	Midford	17
	Parry Bay 2	2
	Parry Bay 3	2
March 2020	Midford Bay 1	5
Total number of bed days lost during 2019/20		**273**

Figure 14.6: Closures due to norovirus outbreaks

It is not possible to provide any comparative data with other local trusts as the voluntary reporting of outbreaks to PHE is not undertaken by all neighbouring trusts.

14.7 Influenza

Patients with possible influenza must be isolated immediately however when bed capacity is high there can be delays in isolating patients and this leads to closure of bays until all patient contacts can be isolated. If all patient contacts cannot be isolated the bay will remain closed until all patients have exceeded the incubation period without developing symptoms. When bays are closed the infection prevention and control team review the patients at least once a day to monitor for signs of infection. When the bay is ready to reopen a deep clean is carried out before any other patients are admitted.

Table below shows the areas that were closed during 2019/20 and the number of bed days that were lost in each area.

The use of Parry Ward as a flu cohort ward has assisted with isolation of patients and reduced the number of potential bay closures that may have resulted if patients were not either isolated or transferred to Parry.

Month	Area affected	Bed days lost
April 2019	ACE Area C	8
	ASU C Bay	0
	Cheselden Bays 1&2	8
	Robin Smith Bay 6	2
	Cardiac Bay 3	7
	Respiratory	22
	Parry Bay 4	5
	Cardiac Bay 5	3
	Midford Bay 4	8
May 2019	Haygarth Bay 1	3
July 2019	Parry Bay 2	5
September 2019	Respiratory Bays 1&3	1
December 2019	Cardiac Bay 5	1
	Waterhouse Bay 2	4
	William Budd Bay 1	2
	Combe Bay 2	2
	Midford Bay 3	1
	MAU Areas A&C	2
	MTU	2
	William Budd Bay 2	4
	Pulteney Bay 4	2
	Waterhouse Bay 3	2
	Cheselden Bay 2	4
	ASU A Bay	5
	Respiratory Bays 1&3	8
	Parry Bay 1	8
	Haygarth Bays 1&2	9
	Haygarth Bay 3	1
	Haygarth Bay 4	3
	Respiratory Bay 2	9
January 2020	Parry Bay 4	0
	Pulteney Bay 4	5
	Pulteney Bay 3	5
	Cardiac Bay 1	2

Month	Area affected	Bed days lost
	Cardiac Bay 2	2
	Cardiac Bay 1	4
February 2020	Haygarth Bay 1	0
	ASU A Bay	13
	ASU B Bay	10
Total number of bed days lost during 2019/20		**182**

Figure 14.7: Ward/bay closures due to confirmed Influenza A 2019-20

14.8 Serious Incidents

There were two serious infection prevention and control incidents reported during 2019/20.

The first incident was an outbreak of norovirus on Respiratory Ward in June 2019. The ward was closed for 11 days and there were 14 confirmed cases. The outbreak led to the loss of 75 bed days. On investigation it was identified that the index case was a patient who had been having diarrhoea and vomiting at home prior to admission. This information was not communicated to the staff on Respiratory and the patient was not isolated until norovirus had been detected. Incomplete compliance with PPE use was also noted. On completion of the investigation the findings were reported to the Operational Governance Committee and an action plan put in place. All actions have since been completed.

The second incident was a patient who developed a healthcare associated MSSA bloodstream infection on Acute Stroke Unit and died three days after this was diagnosed. The probable source of the infection was an infected peripheral venous cannula site. MSSA was given as the joint cause of death along with pneumonia on the patient's death certificate. The incident was investigated and it was identified that the number and complexity of cannulations were indicated as contributory factors. Actions were identified and these included competency training for staff who insert peripheral venous cannula and documentation checks. The incident was reported at the Infection Prevention and Control Committee meeting and the senior sister shared the learning from the incident. All actions have been completed.

14.9 Cleaning

Work has been on-going throughout the year to ensure the Trust meets the standards laid out in the National Specifications of Cleanliness in the NHS (2007). Overall audit score for each risk level increased over the year:

Risk Level	April 2019	March 2020
Very High Risk – 98%	96%	97.79%
High Risk – 95%	87.99%	95.25%
Significant Risk – 85%	89.15%	93.30%

The improvement in cleaning has been achieved through the introduction of microfibre cloths, a new staff allocation and annual leave process, and improved supervision. The auditing system has also to fully meet the requirements of the National Specifications.

The annual Patient Led Assessment of the Care Environment (PLACE) was completed in November 2019 using a revised question set. Healthwatch and Trust volunteers took part, together with IPC, Facilities and Estates staff and an external validator. Results for Cleaning (99.69%) and Condition, Appearance and Maintenance (96.34%) are either above or at the national average score. Further work is required to improve Privacy and Dignity, Dementia and Disability elements of the assessment.