# Infection Prevention and Control Annual Report

# April 2020-21

**Our Bolton NHS FT Values**

| Agenda Item |
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| **Title:** | IPC Annual Report 2020-21 |
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| **Meeting:** | IPC Committee | **Purpose** | Assurance | ✓ |
|---|---|---|---|---|
| **Date:** | 18/10/21 | | Discussion | |
| **Exec Sponsor** | Karen Meadowcroft | | Decision | |

| **Summary:** | The Trust has a statutory responsibility to be compliant with the Health and Social Care Act 2008 (Department of Health, 2010). A requirement of this Act is for the Board of Directors to receive an annual report from the Director of Infection Prevention and Control. This report details Infection Prevention and Control activity from April 2020 to March 2021, outlining our key achievements and an assessment of performance against national targets for the year.<br><br>The past year and more has been dominated by the COVID-19 pandemic. Infection prevention had never been of such importance to patients and staff to whom the Trust are responsible or for the population more widely. As such, the delivery of clean, safe care has been the utmost priority for the Trust.<br><br>An ongoing feature of the pandemic has been the regular changes to national guidance, often with little preamble or notice. The Trust has endeavoured to review any new guidance and understand the potential implications for the Trust as promptly as possible. This will continue; the IPC Team in partnership with the Cross-Divisional Operational Group will continue to review and operationalise national guidance in line with the needs and risks at Bolton FT. This includes proposed changes to PPE, practice, testing and visiting guidance.<br><br>There is a stated commitment to preventing all Healthcare Acquired Infections (HCAI) and a zero tolerance to all avoidable infections and the Trust has achieved this objective on most points.<br><br>In 2016, the Department of Health and Social Care set an ambition for England to halve the number of healthcare associated Gram Negative Blood Stream Infections (GNBSI) by March 2021 but recognising that this is a complex challenge with more than 50% of infections occurring in people outside of hospital settings, the date for achievement of this goal has been revised to March 2024 with a 25% reduction by March 2021. This is a whole economy target based on cases allocated to respective Clinical Commissioning Groups (CCGs) based on a baseline set January-December 2016. From this baseline, *Escherichia coli* (*E. coli*) bloodstream infections apportioned to Bolton FT have reduced by 46% as a calendar year total to the end of 2010. As a system, Bolton has made a reduction of 16% during this period. |
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| **Previously considered by:** | Infection Prevention and Control Committee |

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| **Proposed Resolution** | Continued surveillance |

| **This issue impacts on the following Trust ambitions** | | | |
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| *To provide safe, high quality and compassionate **care** to every person every time* | ✓ | *Our Estate will be **sustainable** and developed in a way that supports staff and community Health and Wellbeing* | |
| *To be a great place to work, where all **staff** feel valued and can reach their full potential* | | *To **integrate** care to prevent ill health, improve wellbeing and meet the needs of the people of Bolton* | ✓ |
| *To continue to use our **resources** wisely so that we can invest in and improve our services* | | *To develop **partnerships** that will improve services and support education, research and innovation* | |

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| **Prepared by:** | Richard Catlin | **Presented by:** | Richard Catlin |

## 1. Executive Summary

1.1. The Trust has a statutory responsibility to be compliant with the Health and Social Care Act 2008 (Department of Health, 2010). A requirement of this Act is for the Board of Directors to receive an annual report from the Director of Infection Prevention and Control. This report details Infection Prevention and Control activity from April 2020 to March 2021, outlining our key achievements and an assessment of performance against national targets for the year.

1.2. The past year and more has been dominated by the COVID-19 pandemic. Infection prevention had never been of such importance for both staff and patients to whom the Trust are responsible or for the population more widely. As such, the delivery of clean, safe care has been the utmost priority for the Trust.

1.3. An ongoing feature of the pandemic has been the regular changes to national guidance, often with little preamble or notice. The Trust has endeavoured to review any new guidance and understand the potential implications for the Trust as promptly as possible. This will continue; the IPC Team in partnership with the Cross-Divisional Operational Group will continue to review and operationalise national guidance in line with the needs and risks at Bolton FT. This includes proposed changes to PPE, practice, testing and visiting guidance.

1.4. There is a stated commitment to preventing all Healthcare Acquired Infections (HCAI) and a zero tolerance to all avoidable infections and the Trust has achieved this objective on most points (see **Table 1**).

1.5. In 2016, the Department of Health and Social Care set an ambition for England to halve the number of healthcare associated GNBSI by March 2021 but recognising that this is a complex challenge with more than 50% of infections occurring in people outside of hospital settings, the date for achievement of this goal has been revised to March 2024 with a 25% reduction by March 2021. This is a whole economy target based on cases allocated to respective Clinical Commissioning Groups (CCGs) based on a baseline set January-December 2016. From this baseline, *E. coli* bloodstream infections apportioned to Bolton FT have reduced by 46% as a calendar year total to the end of 2010. As a system, Bolton has made a reduction of 16% during this period.

## 2. Key Achievements and Challenges

2.1. The Chief Nurse (a post previously described as Director of Nursing) is the designated Trust Director of Infection Prevention and Control (DIPC) for the Trust and Chair of the Infection Prevention and Control Committee (IPCC). This role is now filled by the new Chief Nurse Karen Meadowcroft and prior to her appointment Marie Forshaw was the DIPC as the interim Director of Nursing.

2.2. The Infection Prevention and Control Committee (IPCC) has continued to meet on a monthly basis with the divisional triumvirates providing assurance reports to IPCC.

**Table 1: Reported Healthcare-associated Infection (HCAI) Cases 2020/21**

| Measure | 2019/20 Cases | 2020/21 Cases | Difference | Narrative |
|---|---|---|---|---|
| Methicillin - resistant Staphylococcus | 2 | 2 | No difference | The numbers of hospital-onset MRSA BSI remain low. The reported cases in |

| Measure | 2019/20 Cases | 2020/21 Cases | Difference | Narrative |
|---|---|---|---|---|
| aureus (MRSA) Blood Stream Infection (BSI) | | | | 2020/21 would have been lower if the blood cultures for one of the cases had been collected earlier. The patient was admitted generally unwell but a decision to collect a blood culture sample was made relatively late. |
| Methicillin-susceptible Staphylococcus Blood Stream Infection (MSSA BSI) | 15 | 16 | +1 (+7%) | There has been a small increase in cases year-to-year. There are no recurrent themes in the cases reviewed but the case review process for these cases is currently under review to improve scrutiny and to maximise learning. |
| *E. coli* BSI | 41 | 22 | -19 (-46.5%) | There has been a significant reduction in *E. coli* and *Klebsiella spp.* cases year-on-year. It isn't entirely clear why this is the case. The Trust has significant work in progress regarding patient hydration and intentional rounding which are likely to have impacted positively on the incidence of Gram-negative BSI. This cannot explain the entirety of the reduction. The case review process for these cases is currently under review to improve scrutiny and to maximise learning. |
| *Klebsiella spp.* BSI | 13 | 7 | -6 (-46.8%) | |
| *Pseudomonas aeruginosa* BSI | 1 | 3 | +2 (+200%) | The numbers of these infections remain low and are out of keeping with the general reductions seen in Gram-negative BSI. This is suggestive that this increase is anomalous. The case review process for these cases is currently under review to improve |

| Measure | 2019/20 Cases | 2020/21 Cases | Difference | Narrative |
|---|---|---|---|---|
| | | | | scrutiny and to maximise learning. |
| *Clostridium difficile* toxin (CDT) Cases (Hospital Onset Hospital Associated - HOHA + Community Onset Hospital Associated - COHA) | 57 | 59 | +2 (+3.5%%) | This is currently the area of greatest concern to the IPC service given the increase in cases year-to-year which has been sustained.<br><br>Of the 106 CDT cases in total in 2020/21, there were 14 cases where patients had multiple reported cases and there were 99 individuals with *Clostridium difficile* infection in 2020/21. There may be some mitigation for this as 13 of all of the reported CDI cases had previously had and been treated for COVID-19. However, if this was a direct causal relationship, then an increase in CDT cases nationally might be anticipated; however, this has not been the case and Bolton is an outlier of the national picture.<br><br>There have been no confirmed outbreaks in 2020/21. There have been two clusters of cases, but case reviews in conjunction with ribotyping results has confirmed that person-to-person transmission has been unlikely. |
| Carbapenemase Producing Enterobacteriacea (CPE) Cases | 30 | 9 | -21 (-70%) | As with the Gram-negative BSI, this another area of success with far fewer CPE cases over the past 12-months in comparison with the year earlier. There have been no outbreaks which has contributed |

| Measure | 2019/20 Cases | 2020/21 Cases | Difference | Narrative |
|---|---|---|---|---|
| | | | | significantly to this reduction. |

2.3. The Trust is required to submit a minimum of one quarter of data per year to comply with mandatory reporting for orthopaedic implant surgery. One quarter each of hip and knee replacement data was submitted during 2020-21.

2.4. **Hip replacements:** 99 surgeries were reviewed with one (1%) post-operative infection. The national average for this procedure is 0.8%.

2.5. **Knee replacements:** 160 surgeries were reviewed with eight (4.7%) post-operative infections identified. Each of these cases has had a clinical review by the relevant orthopaedic teams.

2.6. The impact of COVID-19 and the consequent precautions related to general and respiratory hygiene had a significant positive impact on the incidence of Influenza infections. During the conventional period for influenza infections, there was one confirmed case. This compared with 371 influenza cases admitted in the previous influenza season.

2.7. Due to changes to laboratory testing regulations in response to COVID-19, point of care test (POCT) for influenza was not available in the admission areas as in the previous two flu seasons but given the lack of influenza cases, this had no appreciable impact on patient care, safety or impact.

2.8. The Healthcare Workers Flu Vaccination Programme was launched on the 1st October 2020 and was led by Employment Services. Across Bolton FT 5291 staff in total were identified to be offered the seasonal influenza vaccine; 4097 identified as frontline and a further 1194 identified as non-clinical. Uptake across all staff was 4188 vaccines (79.1%) with 3232 (79%) uptake in frontline staff and 956 (80%) in non-frontline staff.

2.9. There were 29 new Carbapenemase Producing enterobateriaceae (CPE) acquisitions during 2020/21 – an increase from nine cases in 2019/20. This related to two specific outbreaks of cases which have now resolved.

2.10. *Escherichia coli (E. coli)* is the main cause of Gram negative bloodstream infections (GNBSI) with cases having increased nationally over the past decade. Although this in itself is a serious issue, it is of more concern because a growing proportion of these infections are resistant to simple antibiotic treatment. There were 196 cases of *E. coli* bacteraemia reported in 2020/21 for Bolton FT. Of these, 22 (11.2%) cases were apportioned to the Trust, the remaining 174 being apportioned to the community. This represents a decrease of 46.5% from the year earlier when there 41 hospital apportioned cases.

2.11. The primary causes of *E. coli* BSI were identified as urosepsis without an indwelling catheter (27%) and hepatobiliary sepsis (25%) although in 21% of cases a clear cause of the infection was not found.

2.12. All of the reasons for such a significant reduction are unclear. A national campaign for improved hygiene generally and hand hygiene specifically almost certainly played a positive role in this reduction as the majority of *E. coli* BSI are related to the patients' own bacteria being moved from one part of their body to somewhere where an infection might occur.

2.13. The ongoing work to improve hydration undertaken by the Hydration Steering group which has provided awareness for staff regarding the benefits and need for better patient hydration and their better outcomes when better hydrated – including a reduction in the likelihood of developing *E.* coli BSI related to urosepsis.

2.14. The Trust Antimicrobial Stewardship Committee included representatives from Bolton Clinical Commissioning Group (CCG) and Primary Care. This group liaised with Primary Care and the Community care teams to advise on the appropriate management of patients with recurrent UTI.

2.15. The Antimicrobial Stewardship Group prioritised on synchronising antibiotic prescribing guidelines and stewardship activities and applying best practice prescribing principles to promote antimicrobial stewardship as outlined in the Public Health England (PHE) Start Smart Then Focus guidance. These include documenting the rationale for starting antimicrobial therapy and regular review.

2.16. The Director of Infection Prevention and Control acknowledges the breadth and depth of work undertaken by the wider IPC Team, members of the Infection Control Committees as well as the day to day contribution of all our staff and clinical leaders working together to reduce the incidence of HCAIs.

**Recommendation**

The Board of Directors are asked to receive the Infection Prevention and Control Annual Report for 2020/21 and approve for publication.

This report is intended to give a concise overview of key activities in the Trust related to infection prevention and control (IPC), healthcare associated infections (HCAI) and antibiotic stewardship. IPC remains critical to the Trust as it is a core component in the delivery of clean, safe care; failures in IPC can lead to adverse outcomes for patients and a poor patient experience. Antimicrobial stewardship has increasingly been identified as a challenge for the UK and presents a legitimate risk of the widespread dissemination of multi-drug resistant organisms and is therefore reflected in this report and future plans.

The Trust has IPC and HCAI objectives set by NHS England related to *Clostridium difficile* and Gram Negative Bloodstream Infections[1] and meticillin resistant *Staphylococcus aureus* (MRSA).

## 3. SYSTEMS TO MANAGE AND MONITOR THE PREVENTION AND CONTROL OF INFECTION PREVENTION AND CONTROL (IPC)

### 3.1. IPC Service Delivery

The IPCT remains structurally unchanged from the structure in the previous year. The IPC functions continue to be split between the acute team who serve the Trust's acute services and the community team who serve the Trust's community functions as well as the Bolton Council. Bolton Council continues to commission Bolton Foundation Trust to provide community IPC services for their areas of accountability and the community services provided by Bolton FT.

The Director of Infection Prevention and Control (DIPC) retains overarching responsibility for IPC and reports directly to the Board. The Deputy DIPC (DepDIPC) oversees the development and implementation of IPC strategy and policies for the acute and community teams, reporting directly to the DIPC. The DepDIPC works in conjunction with the IPC doctor

[1] https://www.england.nhs.uk/nhs-standard-contract/21-22/

and the rest of the IPC team and key staff such as the antimicrobial pharmacists to develop strategy related to IPC and HCAI.

In 2020/21 the incumbent IPC matron stood down from their role as IPC matron – this post has been advertised but not recruited to and remains vacant. In response to the COVID-19 pandemic, a successful business case was submitted to the Capital Revenue and Investment Group (CRIG) to uplift the service by one whole time Band 7 specialist nurse post which has been recruited to, to support the additional work pressures created by the impact of the pandemic.

Bolton local authority also made additional albeit time limited investments in the IPC service. Two whole time Band 6 specialist nurse posts were funded in the Community Infection Prevention and Control Team (CIPCT) on a 12-month fixed term basis primarily to support the activity in care homes. These posts were filled and will come to an end in February 2022.

An additional three whole time Band 6 posts were funded from national funds via Bolton Local Authority on a 6-month fixed term basis. These posts were recruited to and supported vaccine roll-out, PPE training and face fit testing in the Intermediate Care Services Division.

### 3.2. Microbiology Services

The provision of microbiology services has been increased by one whole time post following a successful business case at CRIG and is now established at 3.6 WTE posts.

The team continue to provide advice by phone; regular antimicrobial ward rounds for the review of patients with complex or prolonged antibiotic treatment and has recently established a weekly ward round to review *Clostridium difficile* toxin positive patients. The team also provide planned and prospective support for the critical care departments such as Intensive Care Unit (ICU) and Neonatal Intensive Care Unit (NICU).

Out of hours IPC advice continues to be provided by the microbiology service. The microbiology service also provides IPC advice Greater Manchester Mental Health Trust under a service level agreement and a limited service for GPs.

Dedicated antimicrobial pharmacy support to supplement the wider IPC service and to improve the scrutiny and awareness of safer antimicrobial prescribing has reduced from 1.3 to 1.1. WTE.

The microbiology laboratory continues to provide a seven-day service for the diagnosis of *Clostridium difficile* toxin, meticillin resistant *Staphylococcus aureus* (MRSA), and Norovirus infections. There is access to COVID-19 testing 24-hours/day and seven days/week.

### 3.3. Healthcare Associated Infection (HCAI) System

The IPCT has discontinued the use of ICNet; a proprietary system for the management of HCAI. The system extracts data from the Trust laboratory system and Patient Administration System; the teams have access to real time results directly from the lab for critical results and via the lab reporting system and are now using Sunrise EPR for IPC documentation.

## 4. Healthcare Associated Infections (HCAI) performance

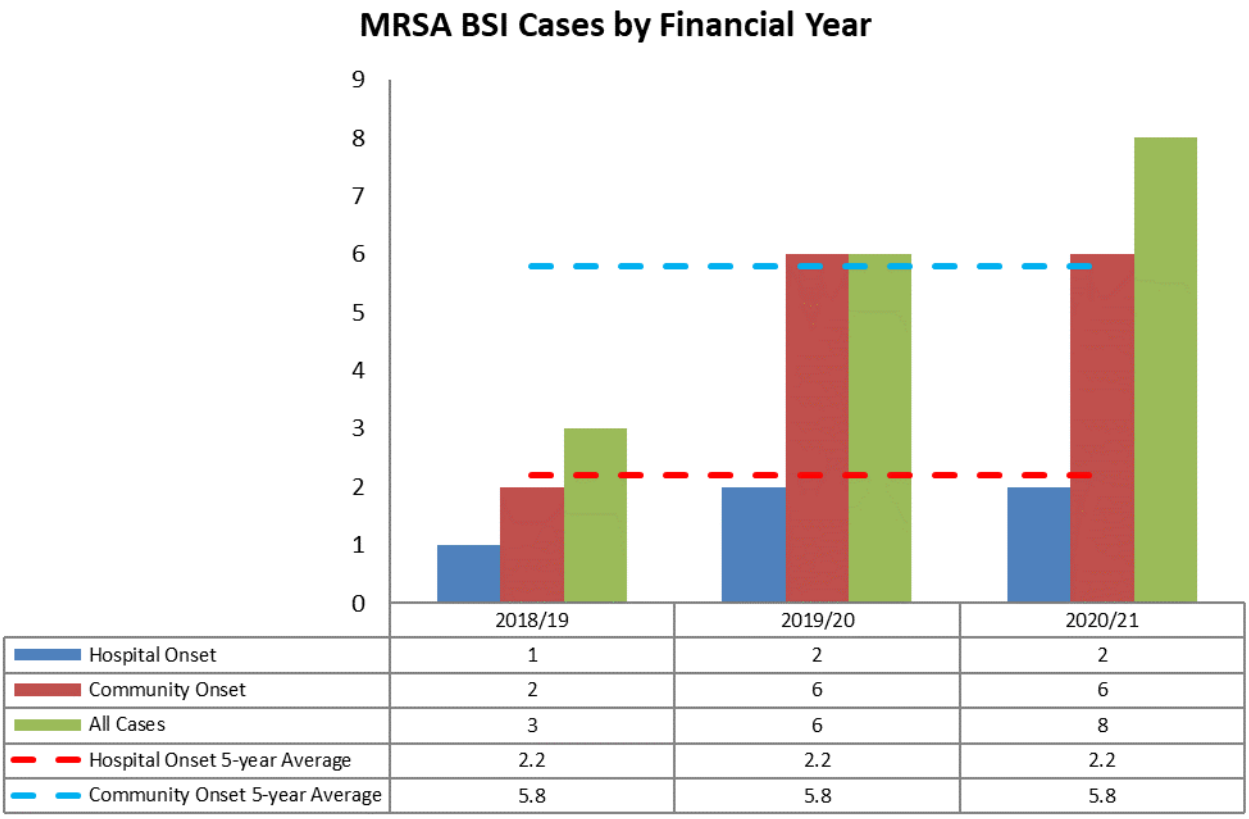
The Trust participates in the mandatory HCAI programmes. The following conditions are reported to the Department of Health (DH) via the Public Health England (PHE) Data Collection System (DCS):

1. MRSA positive blood cultures
2. *Clostridium difficile* toxin positive results
3. MSSA positive blood cultures
4. *E. coli* positive blood cultures
5. *Pseudomonas aeruginosa* blood cultures
6. *Klebsiella spp.* positive blood cultures

### 4.1. MRSA Bacteraemia

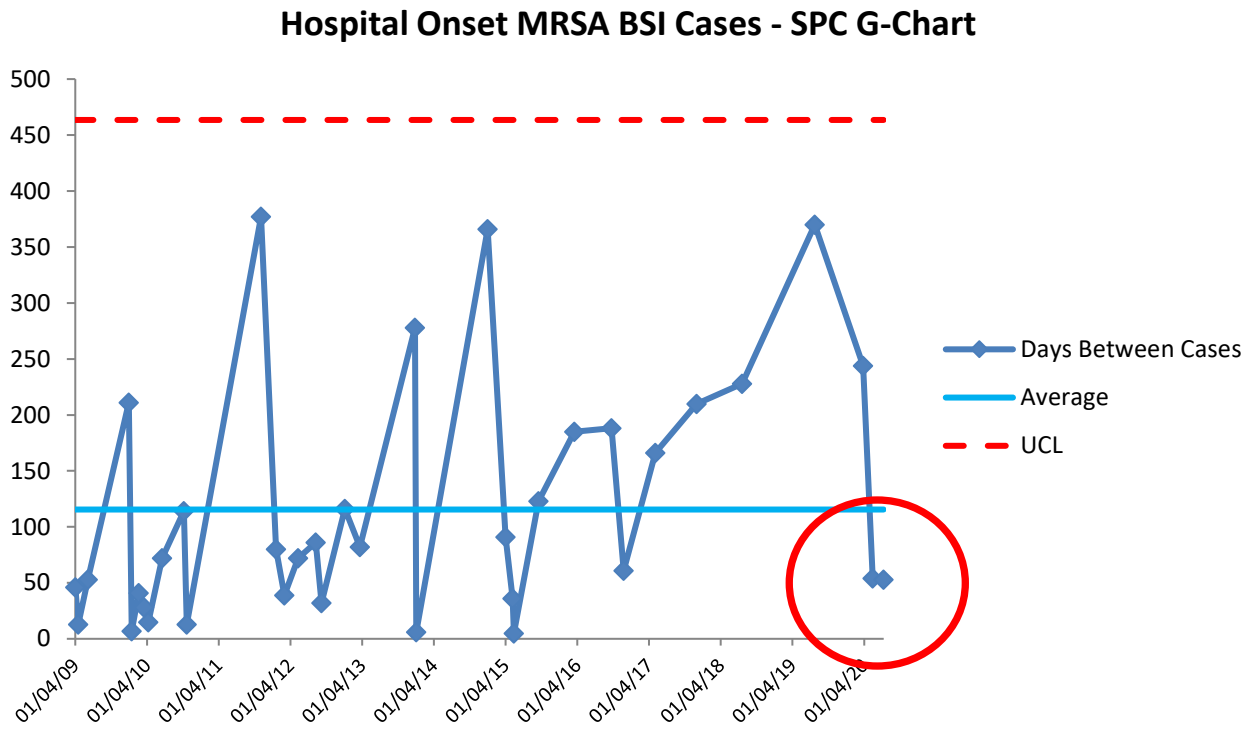
NHS England apportions cases to acute Trusts as outlined in **Appendix 1.**

**Fig. 1: MRSA Cases**




| | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|
| Hospital Onset | 1 | 2 | 2 |
| Community Onset | 2 | 6 | 6 |
| All Cases | 3 | 6 | 8 |
| Hospital Onset 5-year Average | 2.2 | 2.2 | 2.2 |
| Community Onset 5-year Average | 5.8 | 5.8 | 5.8 |

**Fig. 2: Hospital Onset MRSA Cases SPC Chart**




This chart shows that the period of time between MRSA cases had been increasing for the past two years but the most recent cases in 2020 reduce this time interval. There were no further cases in 2020/21 meaning that by the end of the FY, there had been more than 264 days between cases.

### 4.2. Trust Apportioned Cases

NHS England has set a zero tolerance policy for MRSA bacteraemias so every acute provider has a trajectory of zero cases every year. During 2020/21 there were two Hospital Onset cases.

**Case 1:** The source of the patient's original infection was a sacral sore. Their original MRSA BSI was community onset as the sample was collected in the Emergency Department (ED) on arrival (23/06/21). The patient had a **second** MRSA BSI from a sample dated 10/07/21. This was a continuation of the original infection and blood cultures were taken to assess the efficacy of the antibiotic treatment as the patient was not recovering as quickly as anticipated. Repeat positive BSI needn't be reported if they are collected within 14-days of the original but in this case, the sample was collected on the 17th day. In conclusion, there was no new infection, the learning for the Trust was to ensure that repeat blood cultures are taken within 14-days of the original sample date.

**Case 2:** The source of the patient's infection was a lower respiratory tract infection. The patient was admitted with a pyrexia and should have – according to our local policies – have had blood cultures collected on admission but did not. The patient did have blood cultures collected on the third day of their admission which were positive for MRSA but didn't change

the outcome or management. In conclusion, this was a failure to collect blood cultures in a timely fashion.

### 4.3. Non-Trust Apportioned MRSA Cases

There were six community onset cases in 2020/21. These cases have been reviewed using post-infection review (PIR) methodology. In year, the support by Bolton FT for the CCG to undertake these reviews has been strengthened to improve shared learning.

### 4.4. MRSA Screening

The Trust has maintained a universal policy to MRSA screening with all elective and non-elective admissions being screened for MRSA on admission to the Trust. Additional screening is undertaken in the critical care departments of the Trust where patients are screened on admission to the relevant unit and on a weekly basis. Elective patients may also be screened as part of their pre-admission pathway to maximise safety prior to surgery or other invasive procedures.

Patients are re-screened for MRSA weekly once they have been an inpatient for 14 days or more.

Patients who have become colonised with MRSA after admission are now reviewed to determine measures to reduce future likelihood.

### 4.5. *Clostridium difficile*

NHS England apportions cases as outlined in **Appendix 1.** Every hospital onset hospital associated case is formally reviewed and managed by the Trust HCAI Harm Free Care Panel.

The Trust follows the Department of Health guidelines for *C. difficile* testing[2]. These guidelines stipulate that all stool specimens type 5-7 on the Bristol Stool Chart (BSC) should be tested if there is no other clear cause of diarrhoea. All samples submitted to the lab from the acute services in patients older than two years that meet this definition should always be tested for CDT in the laboratory, additional to any other test request. Any sample in a patient over the age of 65 from community patients should be tested for CDT additional to any other tests requested.

The test should be undertaken using a two-step algorithm with a sensitive screening test; step one using glutamate dehydrogenase enzyme immunoassay (GDH EIA) or *Clostridium difficile* toxin polymerase chain reaction (CDT PCR). Step two using CDT EIA. It is only the CDT EIA positive cases that are mandated for reporting. Bolton FT uses GDH EIA followed by CDT EIA.

Samples that are GDH EIA positive and CDT EIA negative are tested with CDT PCR. If this test is negative, then we can confirm with a high level of certainty that the patient's stool sample does not contain a toxigenic *Clostridium difficile* which means that they cannot develop a *Clostridium difficile* infection (CDI) and are of no clinical risk to other patients. These patients may be taken out of isolation and managed as per their needs. Patients stool

[2] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/215135/dh_133016.pdf

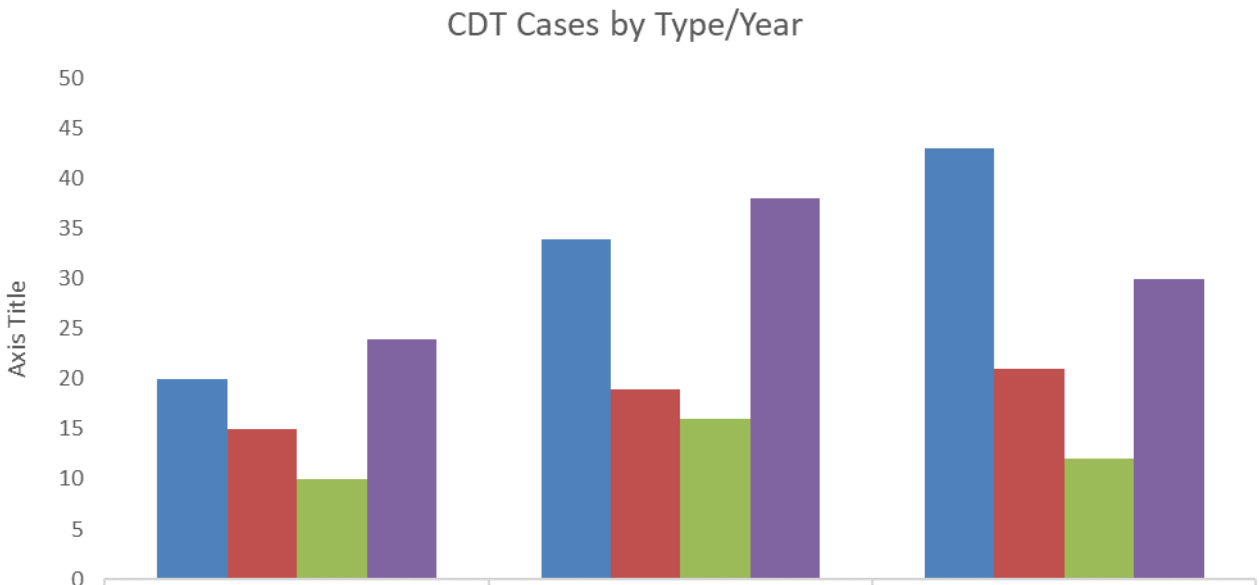
with CDT detected by PCR may have had a false negative CDT EIA test or have *Clostridium difficile* but they don't currently have active infection. CDT EIA can only be detected when the bacteria is producing the toxin that causes disease.

These patients are kept in isolation in line with the trust *Clostridium difficile* policy and may be treated for CDI following discussion with the microbiology team.

### 4.6. Trust Apportioned Cases

The objective for Bolton FT by NHS England for 2019/20 (and which has been assumed to have been carried over to 2020/21) was no more than 32 HOHA and COHA cases combined. The Trust ended the year with 63 cases in total (43 HOHA cases and 21 COHA cases).

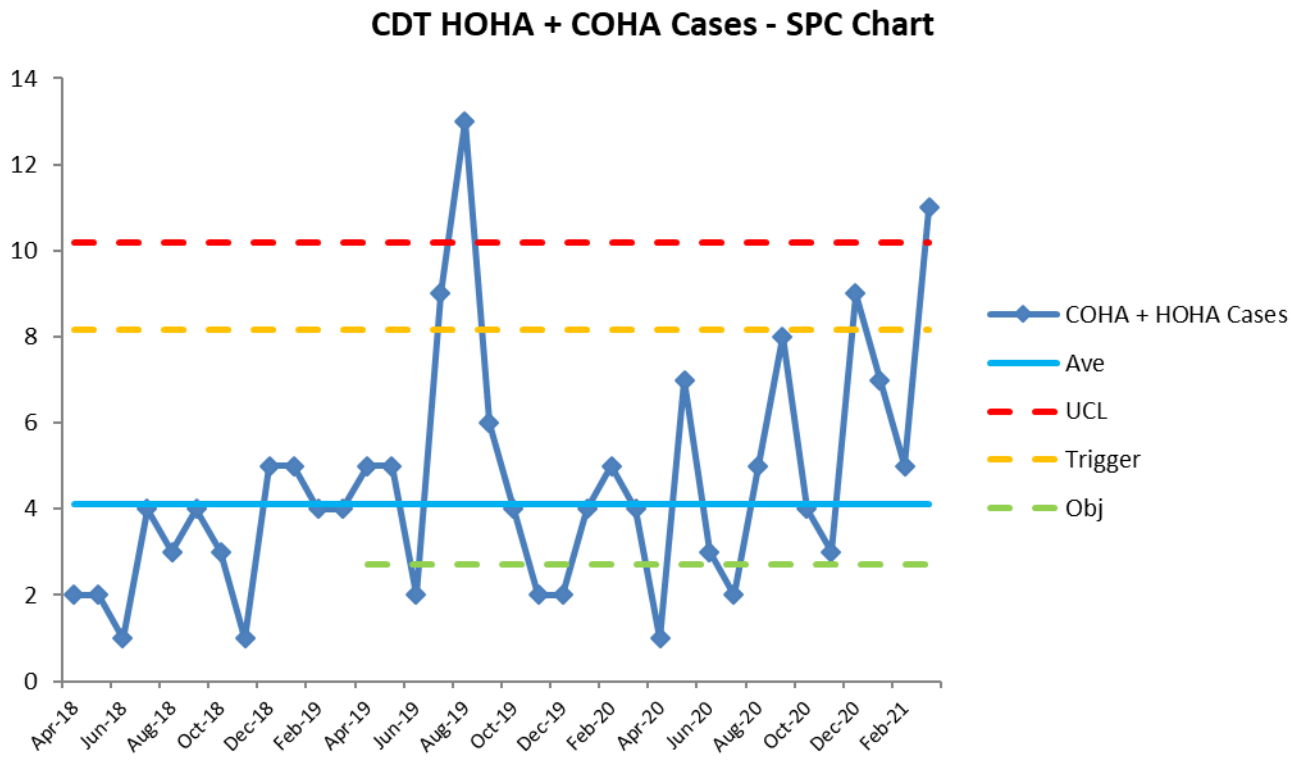
**Fig. 3: CDT cases**




| | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|
| HOHA | 20 | 34 | 43 |
| COHA | 15 | 19 | 21 |
| COIA | 10 | 16 | 12 |
| COCA | 24 | 38 | 30 |

This table illustrates the increases seen over the past 12-months. 15% of HOHA cases had earlier had COVID-19 infection and their subsequent treatment including the use of antibiotics may have contributed to some but not all of this increase.

**Fig. 4: Hospital Onset CDT Cases SPC Chart**




There has been a general sustained improvement in the number of HOHA & COHA cases over the past three years (the 2019/20 definitions have been applied to cases retrospectively for comparative review).

There have been no noted outbreaks or confirmed person-to-person transmission.

Trust apportioned cases are subject to a review which is undertaken using a guided root cause analysis approach. The purpose of these is to review the care provided and assess whether the care delivered was safe and appropriate. They are reviewed to establish whether care might have contributed to the risk of the patient developing a CDT infection and if this is the case, whether the corresponding policy was followed.

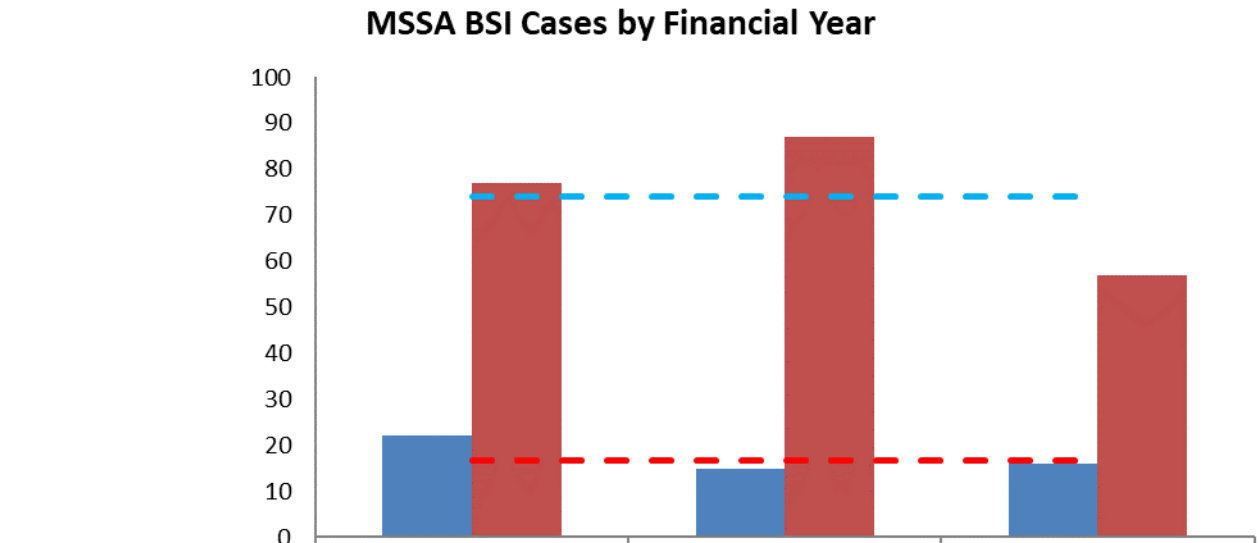
The clinical teams are responsible for the review. On the day of the result, the ward/department management team (patient consultant, ward manager and matron) are notified and given a date for the case to be fed back. The reviews are undertaken by a multidisciplinary team led by the patient's consultant. Feedback is undertaken at a Harm Free Care Panel chaired by the DIPC or Medical Director attended by the DepDIPC and IPC team, IPC doctor or Consultant Microbiologist and antimicrobial pharmacist. The cases are presented by senior doctor and a senior nurse from the department.

### 4.7. MSSA Bacteraemia

There are no national targets for MSSA cases. NHS England apportions cases in line with the process in **Appendix 1**. The IPC Committee created an internal stretch target of no more than 14 cases.

There was an increase in MSSA cases in 20/21 to 16 Hospital Onset cases from 15 in the year earlier.

**Fig. 5: MSSA cases**




| | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|
| Hospital Onset | 22 | 15 | 16 |
| Community Onset | 77 | 87 | 57 |
| Hospital Onset 5-year Average | 16.8 | 16.8 | 16.8 |
| Community Onset 5-year Average | 74.2 | 74.2 | 74.2 |

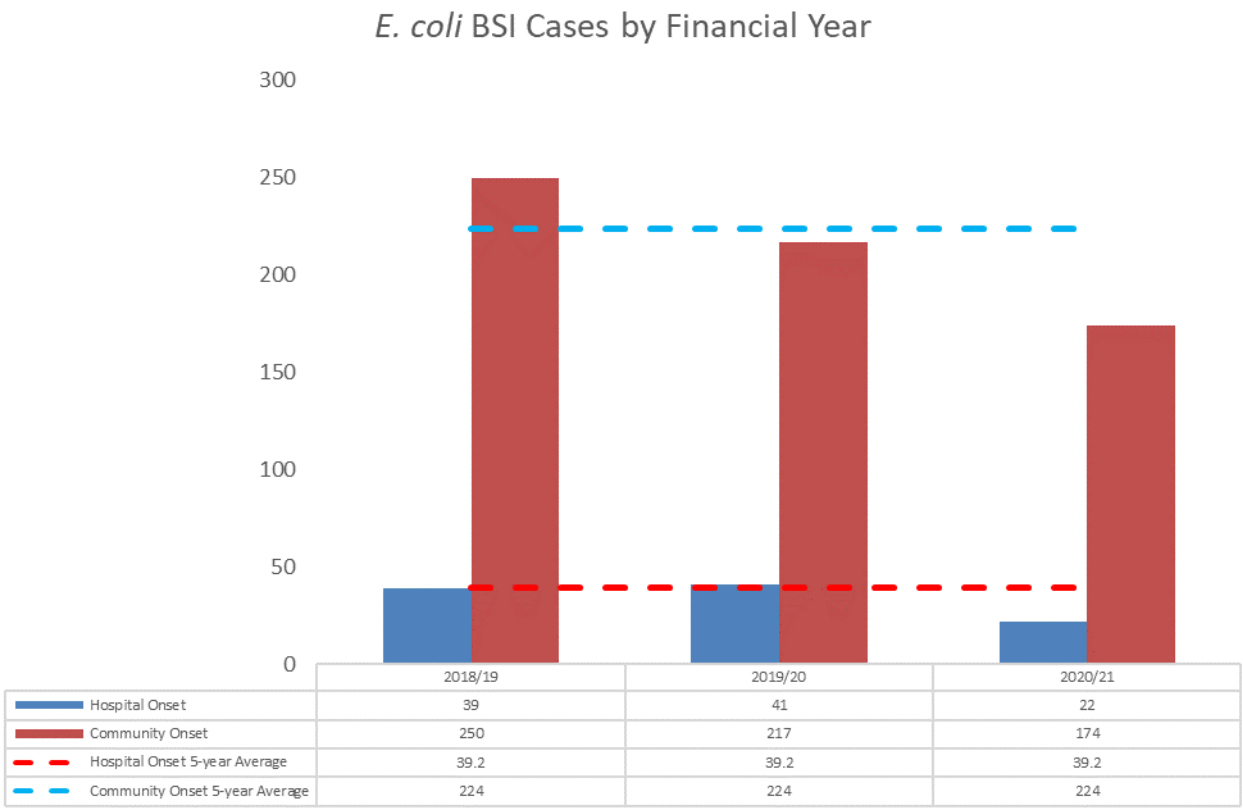
## Gram Negatives

In November 2016, the government announced an intention to reduce all Gram negative bloodstream infections by 50% by the end of 2020/21. As a consequence, two new organisms were added to the mandatory surveillance list: *Klebsiella* species and *Pseudomonas aeruginosa*.

### 4.8. *E. coli* Bacteraemia

*E. coli* infections are more complex than MRSA or MSSA infections and much less likely to be attributed only to healthcare provision with personal hygiene and levels of hydration key risk factors for these infections.

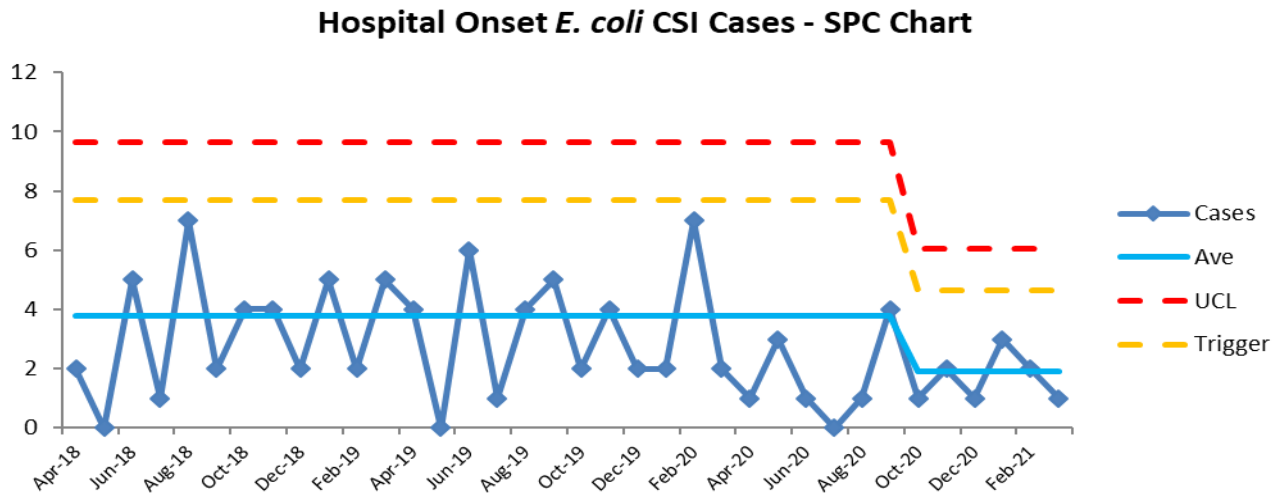
**Fig. 6: *E. coli* cases**




| | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|
| Hospital Onset | 39 | 41 | 22 |
| Community Onset | 250 | 217 | 174 |
| Hospital Onset 5-year Average | 39.2 | 39.2 | 39.2 |
| Community Onset 5-year Average | 224 | 224 | 224 |

Bolton FT has seen a general reduction of cases over the past few years with a 46% decrease between 2019/20 to 2020/21:

**Fig. 7: *E. coli* SPC Chart**

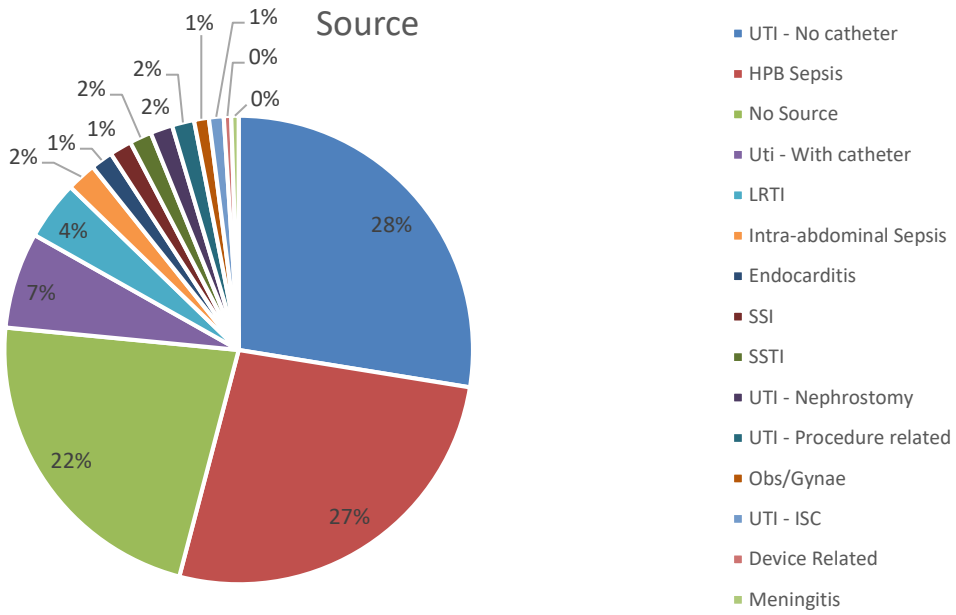



This chart illustrates that there has been a statistical reduction in hospital onset *E. coli* BSI.

There are *E. coli* cases that are directly related to the provision of healthcare – *E. coli* infections due to urinary tract infections in patients with indwelling urinary catheters – others are less clear although hydration and cleanliness are known to be important.

The IPC Committee now sees a breakdown of *E. coli* cases by cause to better understand the impact of the provision of healthcare on the incidence of *E. coli* bloodstream infections. Shown here are cases for 2019/20:

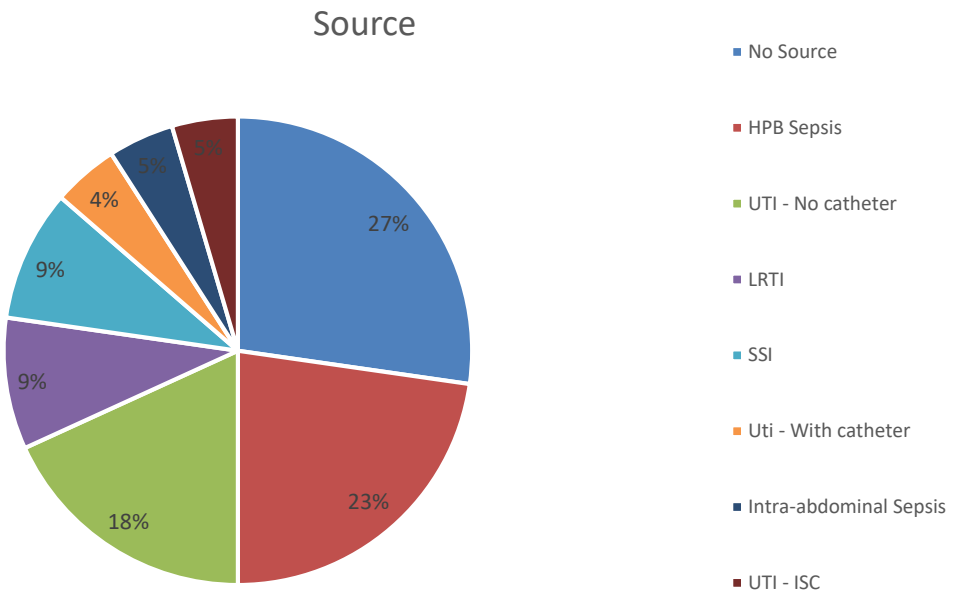
**Fig. 8: *E. coli* by Proportion & Source; all *E. coli* BSI**




| Key to abbreviations | |
|---|---|
| HPB Sepsis | Hepatobiliary sepsis |
| LRTI | Lower respiratory tract infection |
| SSTI | Skin/soft tissue injury |
| UTI | Urinary tract infection |
| ISC | Intermittent self-catheterisation |
| HPB | Hepatobiliary |
| SSI | Surgical site infection |

The most common source was urinary tract infections (with a urinary catheter) followed by hepatobiliary infection and urinary tract infection (without a urinary catheter). No source was identified in 22% of cases.

**Fig. 9: E. coli by Proportion & Source; Hospital Onset *E. coli* BSI**

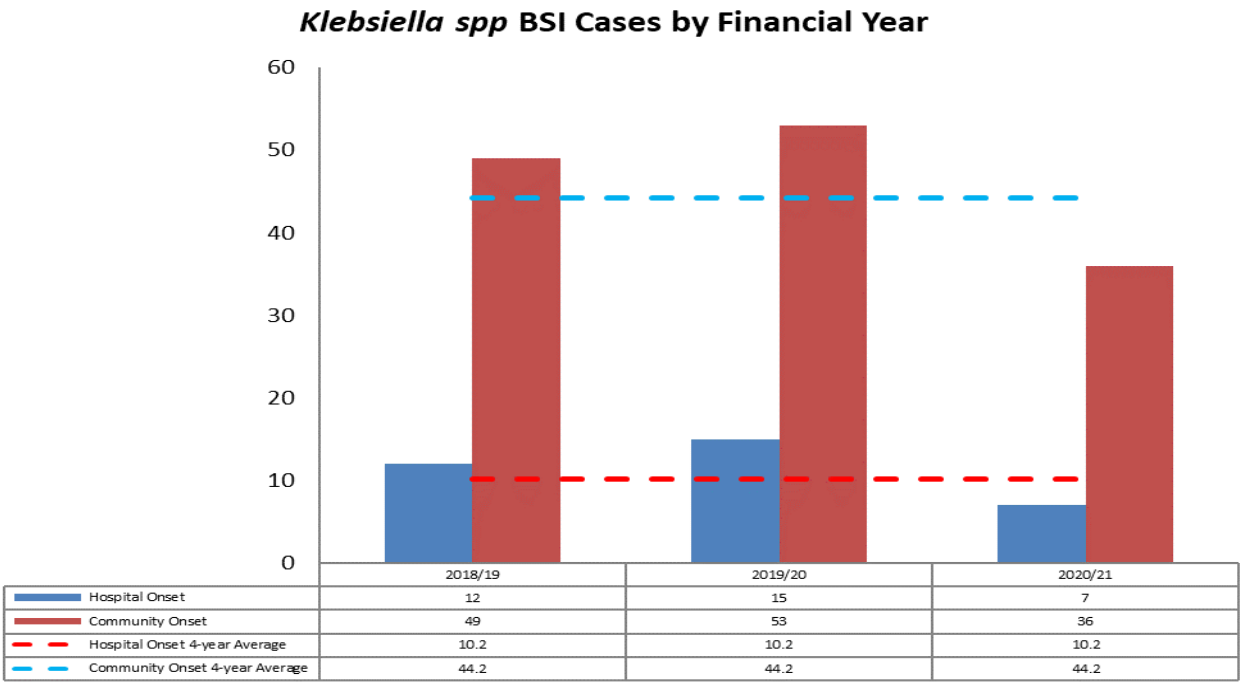



No source was identified in 27% cases. Hepatobiliary infection (23%) then UTI with no catheter (18%) were the most commonly identified sources of hospital onset *E. coli* BSI.

### 4.9. *Klebsiella spp.* Bacteraemia

Mandatory surveillance of bloodstream infections caused by all species of *Klebsiella* started in 2017. There were 43 cases in 202/21 of which 7 were apportioned to the Trust. This compares with 68 cases in the year before of which 15 were apportioned as hospital onset.

**Fig. 10: *Klebsiella spp* Cases**

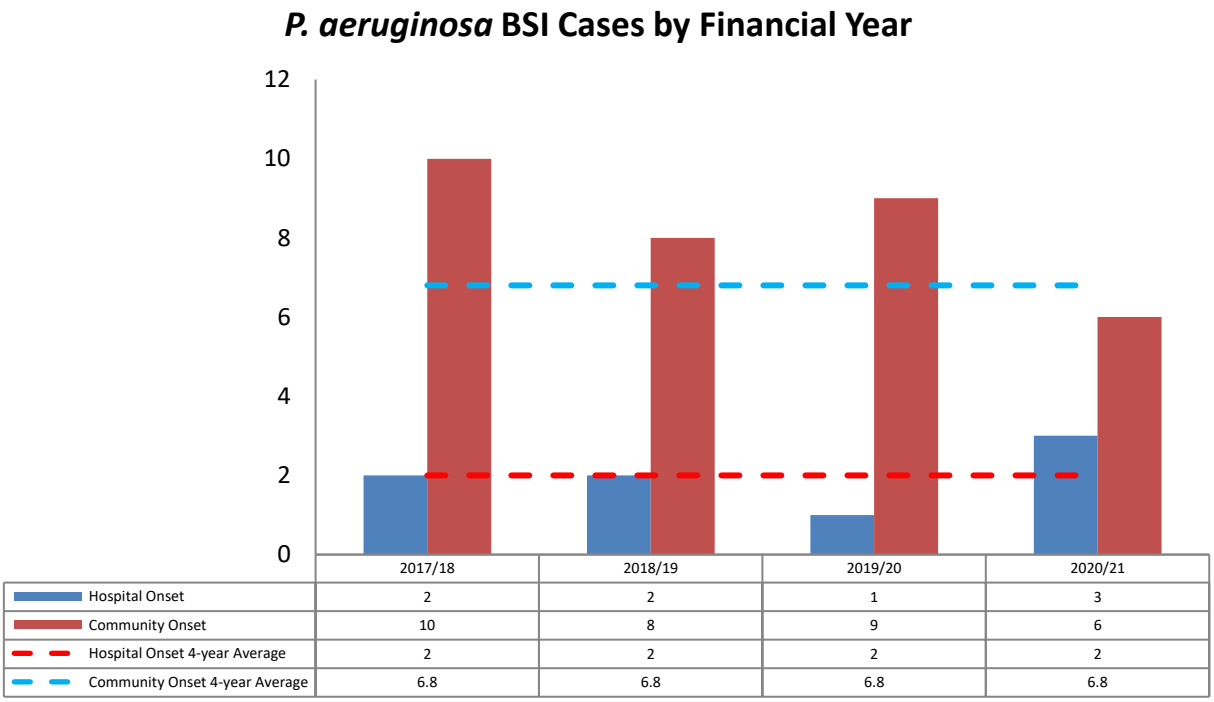



| | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|
| Hospital Onset | 12 | 15 | 7 |
| Community Onset | 49 | 53 | 36 |
| Hospital Onset 4-year Average | 10.2 | 10.2 | 10.2 |
| Community Onset 4-year Average | 44.2 | 44.2 | 44.2 |

## 4.10. *Pseudomonas aeruginosa* Bacteraemia

Mandatory surveillance of bloodstream infections caused by *Pseudomonas aeruginosa* started in 2017. There have been no significant changes with nine cases in total of which three were apportioned as hospital onset; this compared to 10 and one case respectively in the year before.

**Fig. 11: *Pseudomonas aeruginosa* Cases**



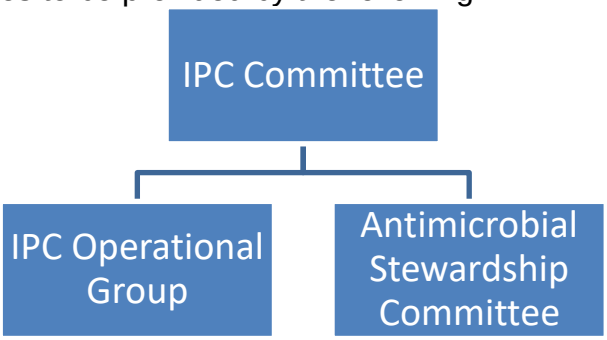

| | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|
| Hospital Onset | 2 | 2 | 1 | 3 |
| Community Onset | 10 | 8 | 9 | 6 |
| Hospital Onset 4-year Average | 2 | 2 | 2 | 2 |
| Community Onset 4-year Average | 6.8 | 6.8 | 6.8 | 6.8 |

## 4.11. Additional Surveillance

In addition to these HCAI, the IPC team undertakes active surveillance of other infections or conditions that are important because of the illness they cause and the impact or due to the antibiotic resistance they confer.

## 5. Infection Prevention and Control Governance

IPC assurance continues to be provided by the following:




### 5.1. Infection Prevention Control Committee (IPCC)

The committee meets monthly and is chaired by the DoN/DIPC. This committee provides assurance to the DIPC to be reported to the Board where required and provides a strategic direction for the provision of IPC. The committee covers the following on a regular basis plus other topics by exception:

- HCAI surveillance
- Outbreaks/periods of increased incidence
- Antimicrobial stewardship
- Policy approval
- Emerging issues
- Divisional concerns

The revised Terms of Reference are available on request.

### 5.2. Antibiotic Stewardship Committee (ASC)

The antimicrobial stewardship committee is chaired by the Trust Antimicrobial Stewardship lead – who is a consultant medical microbiology – and includes representation from each of the clinical divisions. The remits of the group are to provide assurance on the following:

- Ensuring the relevant policies are in date and evidence based
- Provide assurance that key antibiotic prescribing policies are audited and that the audits are fed back
- The Trust has a strategy for providing safe and effective care related to antibiotic prescribing and use

The committee oversees the audit of antibiotic prescribing against the standards set out in the DH Start Smart Then Focus[3]. There are five auditable standards:

1. Compliance with Trust Antibiotic Guidelines (*including prescription in line with culture and sensitivity testing and/or microbiology recommendation).*
2. Indication for treatment written in the patient case notes at the point of antibiotic initiation.

3 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/417032/Start_Smart_Then_Focus_FINAL.PDF

3. Indication for treatment written in the antibiotic section of the prescription chart.
4. Stop date or a review clearly documented in the case notes by 48 hrs.
5. Stop or review date clearly documented on the prescription chart by 48 hrs.

**Trustwide Compliance with Each Standard:**

The set the Trust an objective of at least 85% compliance with all five standards for 2019/20

**Fig. 12: Antimicrobial Stewardship Compliance Standard 1**

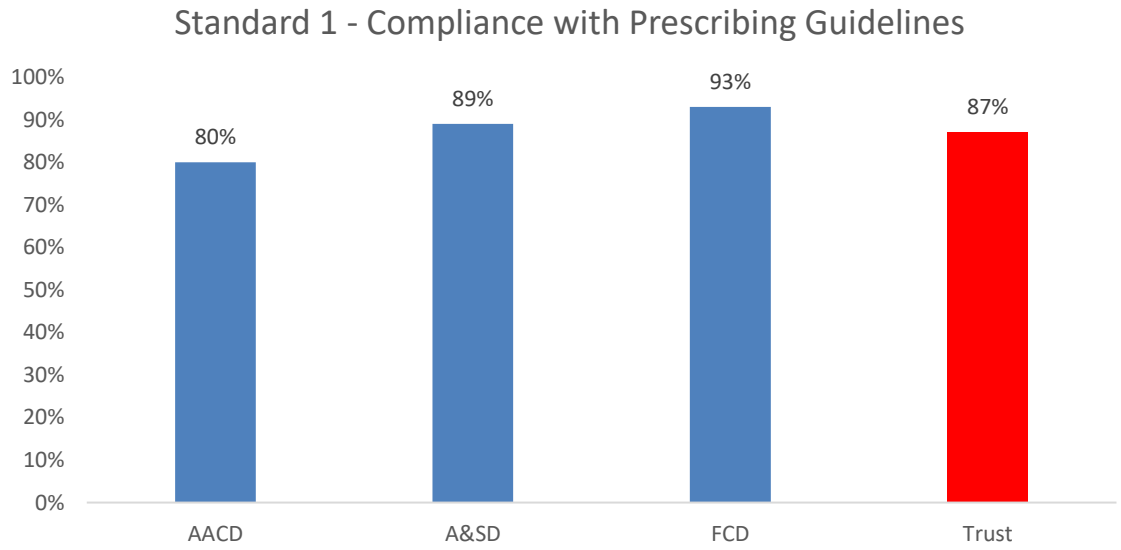


**Fig. 13: Antimicrobial Stewardship Compliance Standard 2**

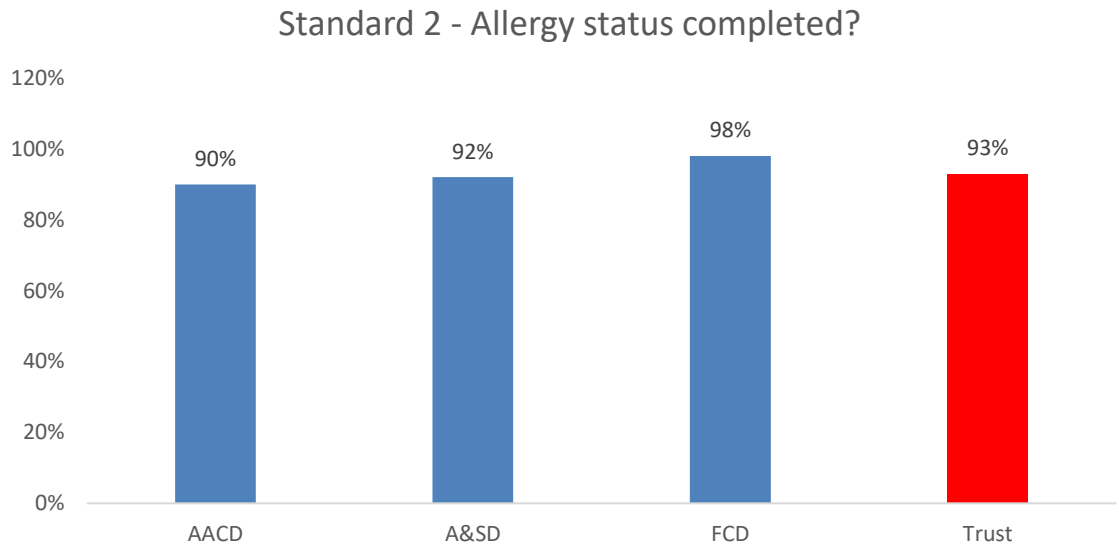



**Fig. 14: Antimicrobial Stewardship Compliance Standard 3**

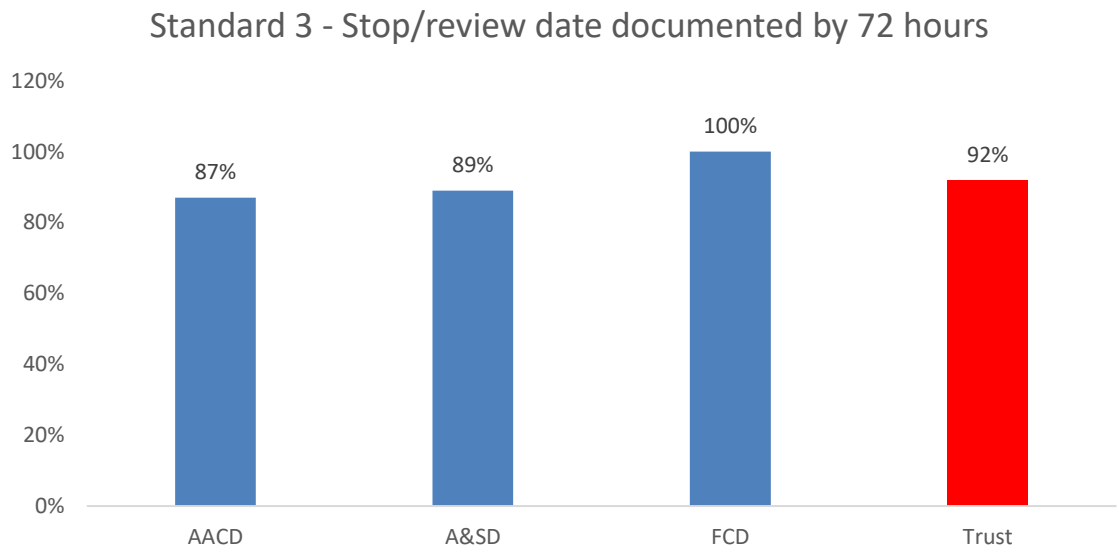


**Fig. 15: Antimicrobial Stewardship Compliance Standard 4**

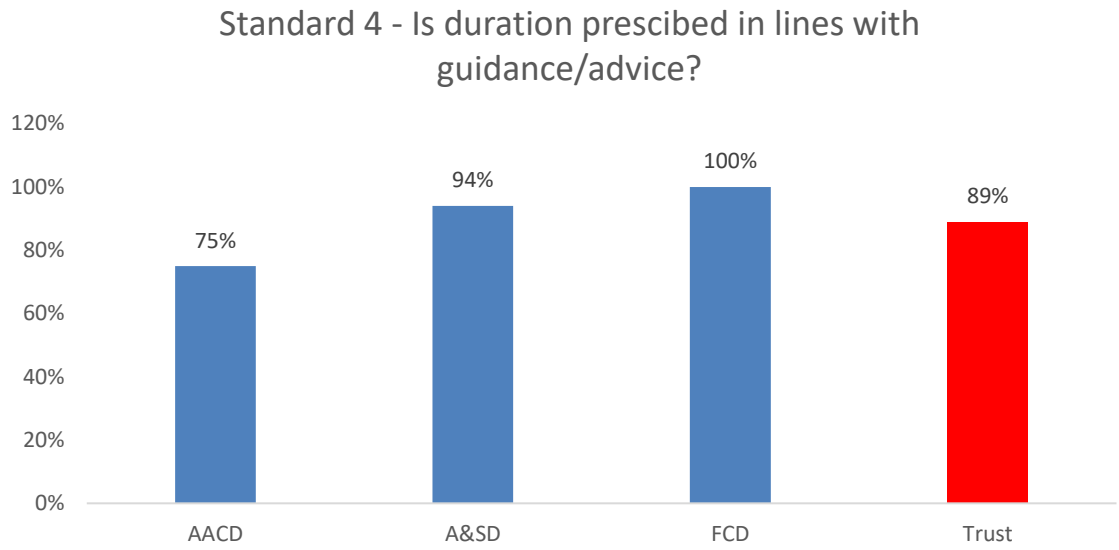
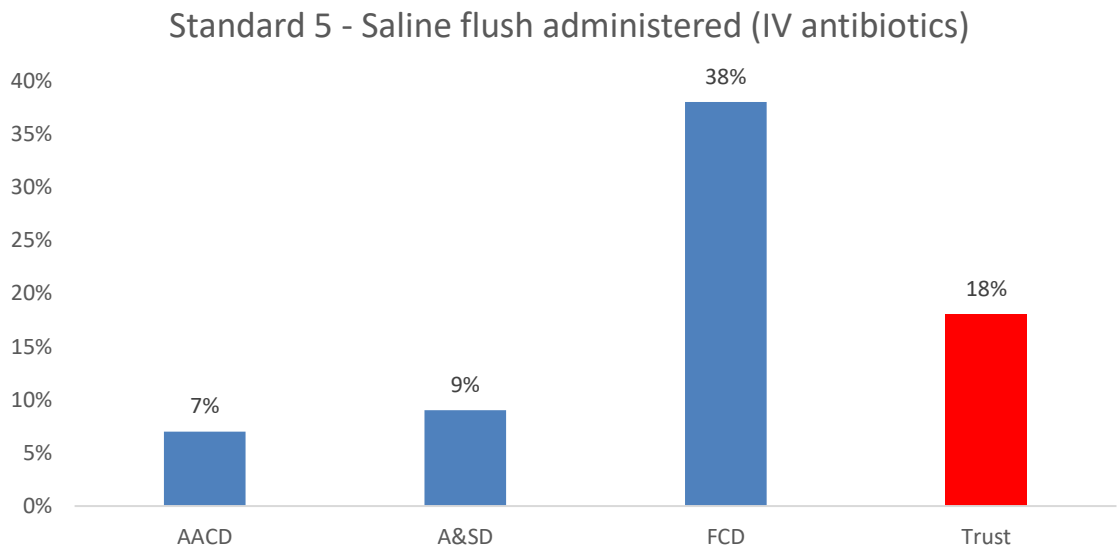



**Fig. 16: Antimicrobial Stewardship Compliance Standard 5**




This last standard is a new one and improvements are being targeted by the Antimicrobial Stewardship Committee.

### 5.3. Representation at other Trust wide groups

Members of the IPCT represent the service at a number of Trust wide groups such as the medical devices group, Professional Advisory Group (PAG), Group Health and Safety Committee and is invited into other Trustwide groups such as building projects as required.

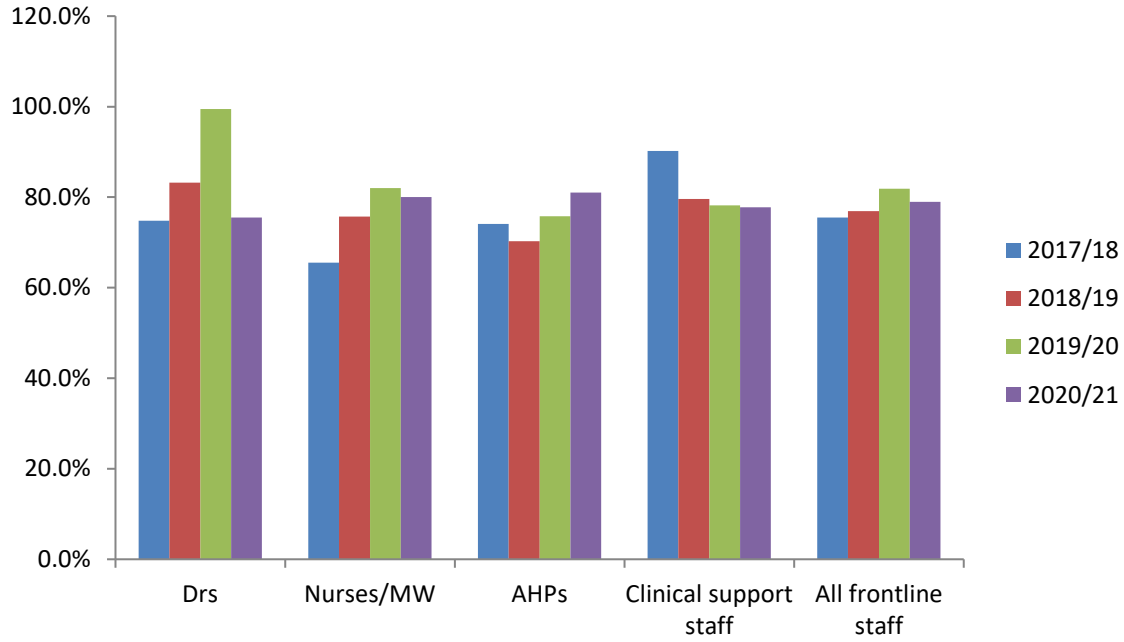
The IPCT also represent the Trust at external meetings including the Greater Manchester West Mental Health Trust IPCC, North West Infection Control (NORWIC) and the NHS North IPC collaborative group.

## 6. Influenza

### 6.1. Staff Flu Vaccination Campaign

The HR team supported a successful flu vaccination programme for frontline staff in 2020/21 19/20[4]. Uptake in all frontline staff groups increased based on the previous years. Overall uptake for the Trust for frontline healthcare staff was 79%.

**Fig. 17: Flu Vaccine Uptake**




In total 4464 staff were vaccinated of which 3530 were frontline staff.

## 7. COVID-19

Brief COVID-19 summary

Much of the Trust activity has been impacted by the COVID-19 pandemic. The pandemic has been caused by the virus SARS-CoV-2 which causes the illness COVID-19. In November 2019 a novel viral pneumonia was recognised in Asia. This was later identified to be a novel coronavirus – initially referred to as Novel Wuhan Coronavirus.

COVID-19 was declared a pandemic by the World Health Organisation (WHO) on March 11 2020.

The first case of COVID-19 was identified at Bolton FT 2nd March 2020.

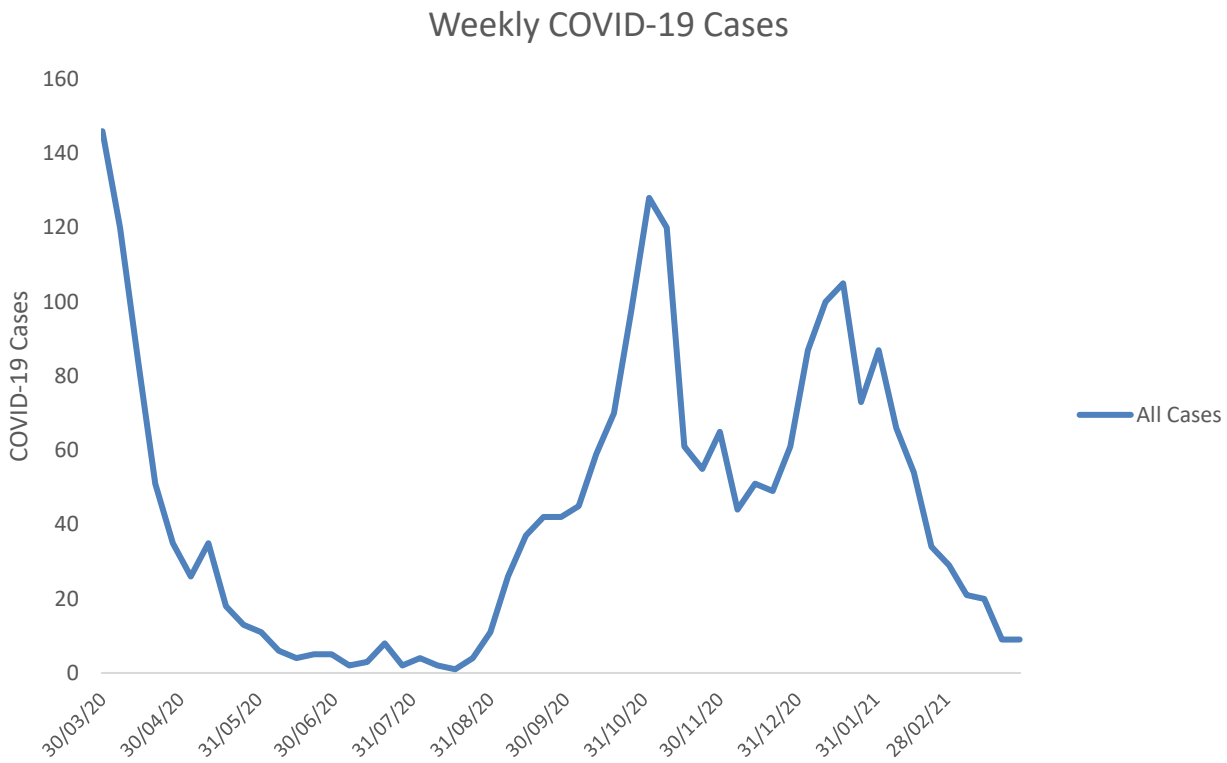
The virus has been and continues to be hugely disruptive to hospital services and society during 2020.

[4] Frontline staff are classified by the DH as: doctors, GPs, qualified nurses/midwives, other registered healthcare professionals and support staff to clinical staff

### 7.1. COVID-19 Numbers in FY 20/21

In 2020/21 the Trust admitted 2115 patients with COVID-19 with three distinct waves:

**Fig. 18: Weekly COVID-19 cases**




In 2020/21 the Bolton laboratory processed more than 68,000 COVID-19 samples.

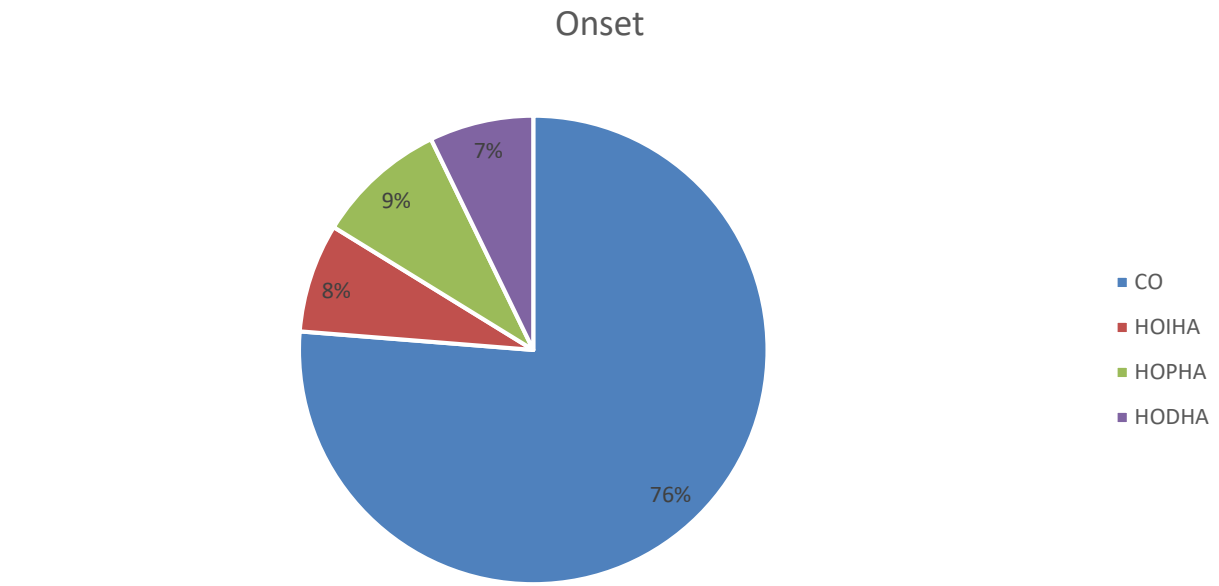
### 7.2. Nosocomial Cases

NHSE/i created consistent definitions to determine where it was likely that an inpatient COVID-19 case was acquired:

| HCAI Category | Criteria |
|---|---|
| Community Onset (CO) | Positive specimen taken date <= 2 days after admission to trust |
| Hospital-Onset Indeterminate Healthcare-Associated (HOIHA) | Positive specimen taken date 3-7 days after admission to trust |
| Hospital-Onset Probable Healthcare-Associated (HOPHA) | Positive specimen taken date 8-14 days after admission to trust |
| Hospital-Onset Definite Healthcare-Associated (HODHA) | Positive specimen taken date 15 or more days after admission to trust |

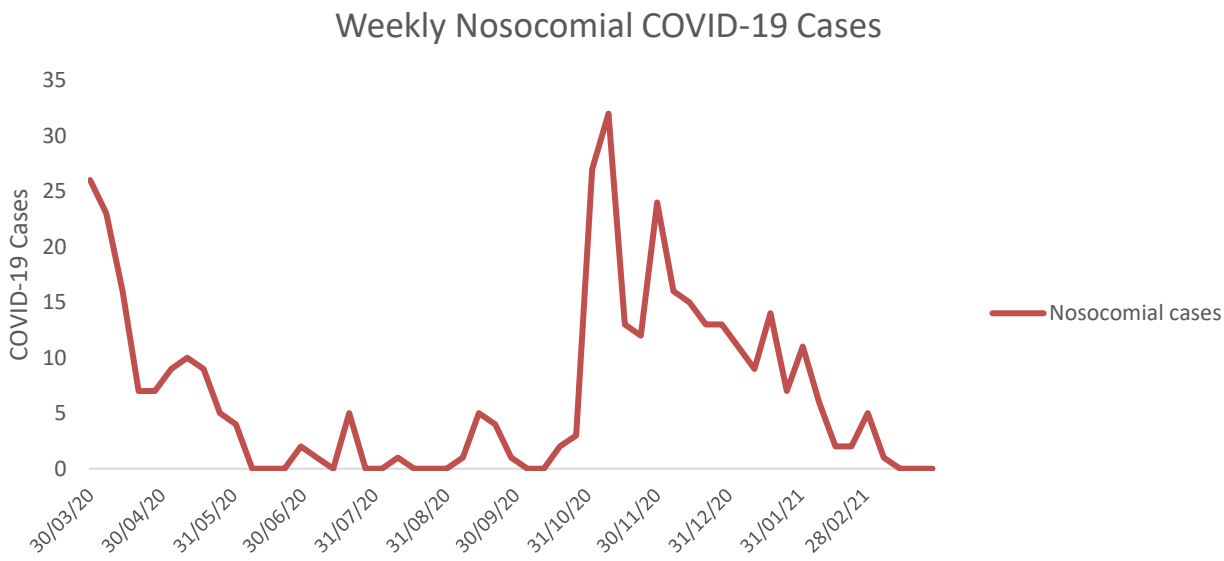
HOPHA and HODHA cases are considered to be nosocomial – or acquired during the provision of healthcare. These definitions are based on the incubation period – the period from exposure to the start of illness – which is up to 14 days but more frequently shorter.

**Fig. 19: Proportion of COVID-19 Onset**



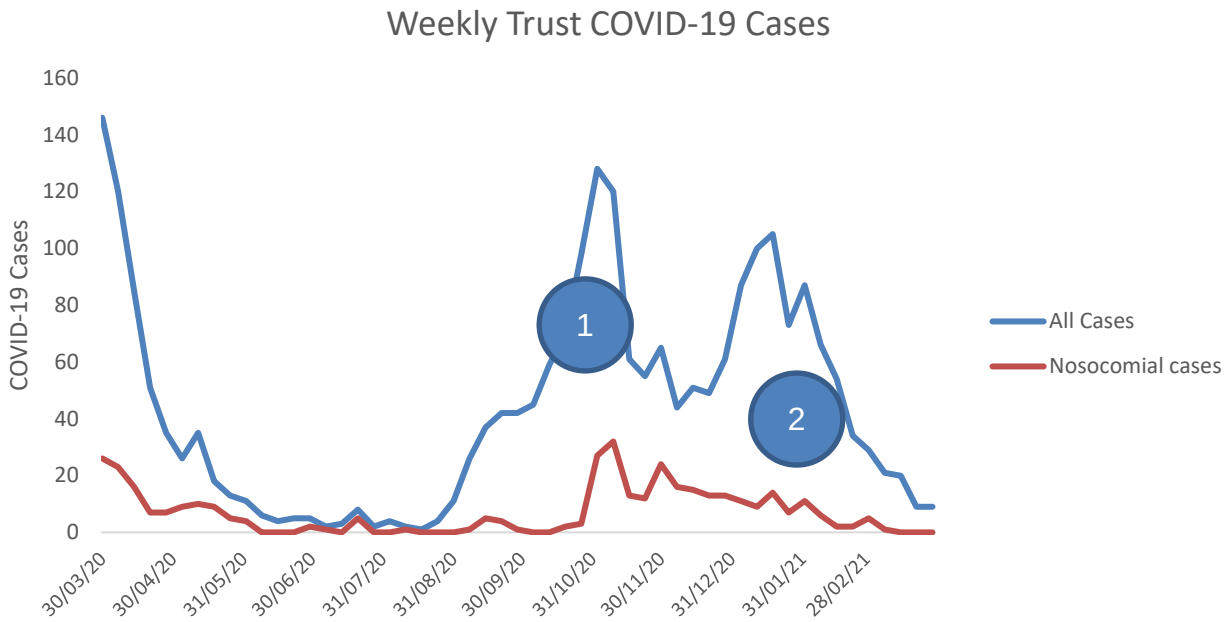

Over the 2020/21 period there were two distinct peaks in cases:

**Fig. 20: Weekly Nosocomial COVID-19 Cases**




The first peak related to the early part of the pandemic when testing was insufficient and results took up to 72 hours to be available. This in turn led to cross-transmission and nosocomial cases of infection. Overlaid, it is clear that during the second peak of infections, there was a clear link between COVID-19 cases generally and the consequent nosocomial cases (1) but this link was broken before the emergence of the third wave as the Trust had better strategies for reducing the risk of cross-transmission (2):

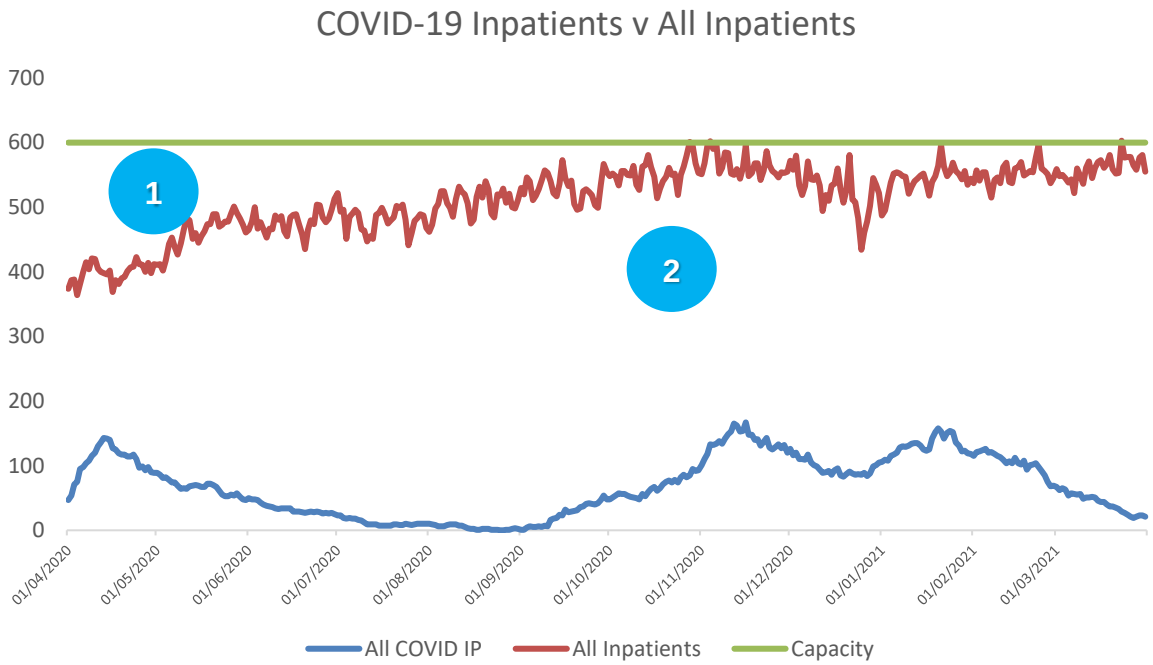
**Fig. 21: Comparison of All cases and Nosocomial COVID-19 Cases**




During the second wave (1) there was a different challenge to the initial response. National planning at the outset of the pandemic galvanised acute organisations to discharge patients at scale and at speed in order to create potential capacity for the anticipated COVID-19 admissions. This created in the order of 200 empty beds[5] in the hospital making accommodating patients according to their COVID-19 status relatively straightforward. During the second and third waves, this unused capacity was unavailable as patients were presenting to the emergency department in similar volumes to the period during the initial phase of the pandemic. There were fewer than 30 empty beds across the Trust in Mid-October when the Trust began to come under pressure from the second wave of infections. These are indicated as points 1 & 2 on the chart below.

[5] There wasn't sufficient staffing to have operated all of these empty beds if there had been a need to due to staff shortages in line with the government policy to quarantine for 14 days if an individual or a household member had COVOD-19 signs/symptoms

**Fig. 22: COVID-19 Positive Inpatients as a Proportion of all Inpatients**

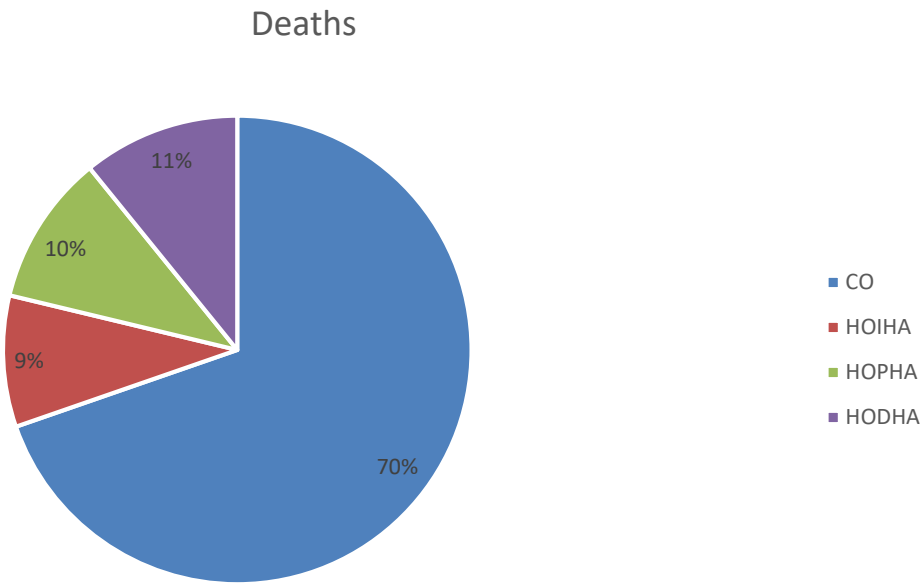



The practical consequence of this rapid acceleration in cases was that there wasn't the capacity to isolate patients promptly once individual cases were identified. This meant that single cases or incident that may have been contained within a four-bedded bays went on to become whole ward outbreaks. The consequence was a sustained period of nosocomial cases; nearly two-thirds (63%) of all of the nosocomial cases reported from 01/03/21-05/07/21 occurred within a 16-week period between 02/11/20 and 21/02/21.

### 7.3. Patient Deaths

During 2020/21 673 patients died at Bolton FT; of these 143 (21%) died after nosocomial acquisition of COVID-19:

**Fig. 23: COVID-19 Related Deaths by Onset**




### 7.4. Staff Deaths

There have been three staff members who have died of COVID-19 during the pandemic. Two if these were not infected through their employment but were admitted as patients.

The third staff member died after acquiring COVID-19 during the early part of the pandemic. The incident was referred to the Health and Safety Executive (HSE) as a Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) incident and reviewed as a Serious Incident.

The review determined that although the staff member had acquired COVID-19 through their work, the Trust had acted in line with the national guidance at the time of their practice Sadly, the guidance at the time was inadequate to adequately protect this member of staff who had a number of underlying risk factors for severe COVID-19 infection.

### 7.5. Testing and Testing Progress

The Trust brought in-house COVID-19 testing online in early May 2020 using the BD Max platform. This had the capacity for up to 96 samples/day to be processed, each test taking six hours to report. This was later augmented and then replaced by the Panther platform which has increased capacity to over 400 tests/day, each test taking four hours to report.

These platforms have been augmented by two other platforms that allow for rapid testing:

- Cepheid GeneXpert – this platform takes ~60 minutes to report and allows up to 12 samples to be tested at a time
- Roche Liat – this platform takes ~20 minutes to report but only allows for one sample to be tested at a time

### 7.6. Personal Protective Equipment (PPE)

There has never been a time when any PPE was unavailable to staff at Bolton FT. There were periods when the availability of long-sleeved gowns was critically low but all of the PPE required to keep staff safe was always available.

Initially the Trust commissioned external face fit testers to perform assessments on staff that:

- Respirators were suitable for staff
- Staff were competent to don and doff respirators safely

More recently, the Trust has been supported by an NHS centrally funded on-site service that has provided 2-3 competent staff to provide this service. Staff have never been required to work in areas where the use of respiratory protective equipment who have not been suitably trained.

## 8. Community IPC

The team covers such services as care, homes, Bolton hospice, schools, district nursing, podiatry and community loan stores as examples. The team provide an informative, open, and knowledgeable service working cross organisationally to promote safe and effective infection prevention and control practices.

The team have worked largely with care homes and Bolton Hospice during the pandemic providing training and support for the management of residents and helping these organise navigate the regularly changing landscape of guidance. This has included regular webinars for the care home staff.

The team continue to liaise directly with patients where necessary to ensure they are receiving the correct treatment and have a good understanding of their infection. This may also involve communication and close liaison with other teams - including district nurses, Children's Community, Nursing Team, tissue viability service, podiatry and GPs amongst others.

### 8.1. Other Functions

The team also take queries by phone, contribute to Route Cause Analysis (RCAs) of Trust and non-Trust related infections. The team continue to lead on work in the Bolton population in raising awareness of infections related to injecting drug use such as MRSA and Group A *Streptococcus*.

## 9. Cleaning and Decontamination

### 9.1. Decontamination across the Trust

The Infection Prevention and Control team continues to provide decontamination advice throughout the Trust. The IPCT are available to give specialist advice on policies, procedures and the purchase of equipment in relation to decontamination.

The methods, processes and audits have been reviewed in year in response to a spike in CDT cases as described earlier.

### 9.2. Cleaning Service

Domestic services continue to be delivered by Bolton iFM. Bolton iFM continue to monitor cleaning standards as part of the service contract. Audits are undertaken using national standards. The audits are visual inspections incorporating 41 standards.

Departments are considered to be high-risk (for example, complex care) or very high-risk (for example, ICU). The same standards are monitored, but a successful audit in a high-risk area is 95% compliance with the audit whereas the required compliance in a very high-risk area is 98%.

All cleaning performance is reviewed and discussed at the Trust IPC Committee. Scores are reviewed monthly by the IPC team and area with consistently low scores or scores that generate a specific concern are discussed with the relevant managers.

### 9.3. Infection Control audits

The IPCT have continued to carry out audits of practice and adherence to key IPC standards on at least an annual basis. High risk areas (listed below) are audited at least twice yearly:

- ICU
- HDU
- A&E Dept
- Ward D1
- Ward D2
- CDU
- NICU
- Main Theatres

The audits are planned in advance and carried out by a member of the IPCT with a member of the ward staff; ideally the ward manager or IPC link nurse.

An action plans are completed by the ward staff and returned to the IPCT and the results are fed through the divisional governance structures.

If the initial audit is unsatisfactory then a re-audit is required and if there are significant concerns, the issue may be escalated to the senior management team for support.

These audits are reported to the IPC Committee via the revised divisional IPC monthly reports for assurance and exceptions are challenged and discussed.

### 9.4. Hand Hygiene Audits

Hand hygiene audits are completed by nominated departmental staff continue and are inputted into secure applications. All grades of all types of staff are included in the audit and up to five members of staff are observed to check that hand washing before and after patient contact is taking place. Managers are able to generate reports for feed back to their team/department.

Hand hygiene audits are reported to the IPC Committee via the revised divisional IPC monthly reports for assurance and exceptions are challenged and discussed.

## 10. Plans for 2021/22

During the next 12 months the IPCT aims to ensure a high quality and effective service across the whole Trust with an aim of preventing infection by the application of clean, safe care against the continued backdrop of the COVID-19 pandemic. This continues to be the most challenging period experienced by the NHS in its existence and the wellbeing of staff and patients remain paramount. At all times the IPC team and DIPC will endeavour to meet the 10 core standards in the Code of Practice and NICE guidance.

| **Health and Social Care Act 2008 Code of Practice on the prevention and control of infections and related guidance (updated 2012)** | | **NICE (2011) Quality Improvement Guide for HCAI** |
|---|---|---|
| **Criterion** | **The registered Provider is required to demonstrate** | **Quality Improvement Statement** |
| **1** | Systems to manage and monitor the prevention and control of infection. These systems use risk assessments and consider how susceptible service users are and any risks that their environment and other users may pose to them | 1 |
| **2** | Provide and maintain a clean and appropriate environment in managed premises that facilitates the prevention and control of infections | **2** |
| **3** | Provide suitable accurate information on infections to service users and their visitors | |
| **4** | Provide suitable accurate information on infections to any person concerned with providing further support or nursing/medical care in a timely fashion | **4** |
| **5** | Ensure that people who have or develop an infection are identified promptly and receive the appropriate treatment and care to reduce the risk of passing on the infection to other people | **5** |

| Health and Social Care Act 2008 Code of Practice on the prevention and control of infections and related guidance (updated 2012) | | NICE (2011) Quality Improvement Guide for HCAI |
|---|---|---|
| **6** | Ensure that all staff and those employed to provide care in all settings are fully involved in the process of preventing and controlling infection | **6** |
| **7** | Provide or secure adequate isolation facilities | **7** |
| **8** | Secure adequate access to laboratory support appropriate | **8** |
| **9** | Have and adhere to polices, designed for the individual's care and provider organisations. That will help to prevent and control infections | **9** |
| **10** | Ensure so far as is reasonably practicable, that care workers are free of and are protected from exposure to infections that can be caught at work and that staff are suitably educated in the prevention and control of infection associated with provision of health and social care | **10** |

NHS England has now established objectives for key HCAI for 2021/22. The nomenclature outlined in **Appendix 1** has now been adopted for all HCAI:

| | |
|---|---|
| **CDT (HOHA + COHA cases)** | No more than 58 cases |
| ***E. coli* BSI (HOHA + COHA cases)** | No more than 76 cases |
| ***Pseudomonas* (HOHA + COHA cases)** | No more than four cases |
| ***Klebsiella spp.* BSI (HOHA + COHA cases)** | No more than 18 cases |

There are no centrally set objectives for MRSA or MSSA BSI so the following have been adopted:

| | |
|---|---|
| **MRSA BSI** | Zero tolerance |
| **MSSA BSI** | No more than 12 HOHA cases |

**Appendix 1: HCAI Nomenclature from 2019/20 (CDI) and 2021/22 (MRSA, MSSA, *E. coli*, *Klebsiella spp.* and *Pseudmonas aeruginosa* BSI)**

- **Community onset community associated:** cases that occur in the community or on the day of admission or the following day **and** the patient has not been an inpatient in the trust reporting the case in the previous 12 weeks (COCA).
- **Community onset indeterminate association:** cases that occur in the community or on the day of admission or the following day **and** the patient has been an inpatient in the trust reporting the case in the previous 12 weeks but not the most recent four weeks (COIA).
- **Community onset healthcare associated:** cases that occur in the community or on the day of admission or the following day **and** the patient has been an inpatient in the trust reporting the case in the previous 4 weeks (COHA).
- **Healthcare onset healthcare associated:** cases detected from a sample collected from the third day of admission (admission being day 1 – HOHA).