

# Infection Prevention and Control Annual Report

## April 2021-22

Our Bolton NHS FT Values



|         |          |          |  |              |
|---------|----------|----------|--|--------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 1 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |              |

|               |                           |
|---------------|---------------------------|
| <b>Title:</b> | IPC Annual Report 2021-22 |
|---------------|---------------------------|

|                     |   |                |            |   |
|---------------------|---|----------------|------------|---|
| <b>Meeting:</b>     | Clinical Governance & Quality Committee | <b>Purpose</b> | Assurance  | ✓ |
| <b>Date:</b>        | 05/10/22                                |                | Discussion |   |
| <b>Exec Sponsor</b> | Tyrone Roberts                          |                | Decision   |   |

|                 |   |                  |                    |                |
|-----------------|---|------------------|--------------------|----------------|
| <b>Summary:</b> | <p>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 2021 to March 2022, outlining our key achievements and an assessment of performance against national targets for the year.</p> <p>The past year and more has been dominated by the COVID-19 pandemic. Infection prevention had never been of such importance in 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.</p> <p>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.</p> |                  |                    |                |
|                 | <b>HCAI</b>   | <b>Objective</b> | <b>Performance</b> | <b>Outcome</b> |
|                 | MRSA (hospital onset)   | 0                | 0                  | Met            |
|                 | <i>Clostridium difficile</i> infection (healthcare associated)  | 58               | 84                 | Not met        |
|                 | <i>E. coli</i> (healthcare associated)  | 76               | 62                 | Met            |
|                 | <i>Klebsiella spp.</i> (healthcare associated)  | 18               | 9                  | Met            |
|                 | <i>Pseudomonas aeruginosa</i>   | 4                | 2                  | Met            |
|                 | MSSA (hospital onset)   | 12 (internal)    | 22                 | Not met        |



|                                  |    |
|----------------------------------|----|
| <b>Previously considered by:</b> | NA |
|----------------------------------|----|

|                            |                        |
|----------------------------|------------------------|
| <b>Proposed Resolution</b> | Continued surveillance |
|----------------------------|------------------------|

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

|                     |                |                      |                |
|---------------------|----------------|----------------------|----------------|
| <b>Prepared by:</b> | Richard Catlin | <b>Presented by:</b> | Richard Catlin |
|---------------------|----------------|----------------------|----------------|



|         |          |          |  |              |
|---------|----------|----------|--|--------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 3 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |              |

| Contents |  | Page |
|----------|--|------|
| 1.       | Executive Summary  | 5    |
| 2.       | Key Achievements and Challenges  | 5    |
| 3.       | Systems To Manage And Monitor The Prevention And Control Of Infection Prevention And Control (IPC)   | 9    |
| 4.       | Healthcare Associated Infections (HCAI) performance  | 11   |
| 5.       | Infection Prevention and Control Governance  | 21   |
| 6.       | Influenza and COVID-19 Vaccines  | 25   |
| 7.       | COVID-19   | 25   |
| 8.       | Community IPC  | 30   |
| 9.       | Cleaning and Decontamination   | 31   |
| 10.      | Health and Social Care Act 2008 Code of Practice on the prevention and control of infections and related guidance  | 32   |
| 11.      | Appendix 1: HCAI Nomenclature from 2019/20 (CDI) and 2021/22 (MRSA, MSSA, <i>E. coli</i> , <i>Klebsiella spp.</i> and <i>Pseudomonas aeruginosa</i> Bacteraemia and COVID-19 | 34   |

## 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 2021 to March 2022, 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 in 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. 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**).
- 1.4. After a pause due to the pandemic, there were national targets set for the key healthcare associated infections (HCAI) of note: meticillin resistant *Staphylococcus aureus* (MRSA), *E. coli*, *Klebsiella spp.* and *Pseudomonas aeruginosa* bacteraemia and *Clostridium difficile* infections (CDI). There was no target set for meticillin sensitive *Staphylococcus aureus* (MSSA) bacteraemia but a local target was set by the Trust IPC Committee (IPCC).

## 2. Key Achievements and Challenges

- 2.1. The Chief Nurse 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 was filled during most of 2021/22 by Karen Meadowcroft until her retirement and was filled on an interim basis by Angela Hansen (Deputy Chief Nurse) until the new Chief Nurse – Tyrone Roberts – commenced in post and became the Trust DIPC.
- 2.2. The DIPC is supported by Richard Catlin (Deputy DIPC) and Dr Celia Chu (IPC Doctor).
- 2.3. The Infection Prevention and Control Committee (IPCC) meets on a monthly basis with the divisional triumvirates providing assurance reports to IPCC.

|         |          |          |  |              |
|---------|----------|----------|--|--------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 5 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |              |

**Table 1: Reported HCAI Cases 2021/22**

| Measure  | 2020/21 Cases | 2021/22 Cases | Difference | Objective | Narrative   |
|--|---------------|---------------|------------|-----------|---|
| Hospital Onset, Hospital Associated (HOHA) <sup>1</sup> MRSA bacteraemia | 2             | 0             | -2         | 0 cases   | The numbers of HOHA MRSA bacteraemias remain low and there were no cases reported in 2021/22. The last reported case was 10/07/20 meaning that by the end of March 2021, it had been 628 since the previously reported case. Before this, the longest period between cases had been 377 days. |

| GM Comparison Hospital Onset (cases) | 20/21 | 21/22 | 21/22 Rank |
|--------------------------------------|-------|-------|------------|
| Bolton FT                            | 2     | 0     | 1          |
| PAT                                  | 2     | 0     | 1          |
| The Christie                         | 1     | 0     | 1          |
| WWL                                  | 2     | 1     | 4          |
| Stockport                            | 2     | 2     | 5          |
| T&G                                  | 3     | 2     | 5          |
| SRFT                                 | 4     | 5     | 5          |
| MFT                                  | 11    | 10    | 8          |

Bolton FT remained one of the three best performing trusts in GM for 2021/22 with no cases identified in year.

| Measure               | 2020/21 Cases | 2021/22 Cases | Difference | Objective | Narrative  |
|-----------------------|---------------|---------------|------------|-----------|--|
| HOHA MSSA bacteraemia | 16            | 22            | +6 (37.5%) | NA        | There was a continued year on year increase, the reason for which is not fully understood. |

<sup>1</sup> See Appendix 1



| GM Comparison Hospital Onset (rates <sup>2</sup> ) | 20/21 | 21/22 | 21/22 Rank |
|--|-------|-------|------------|
| T&G  | 10    | 5     | 1          |
| PAT  | 8     | 7     | 2          |
| Stockport  | 5     | 8     | 3          |
| WWL  | 10    | 11    | 4          |
| Bolton FT  | 9     | 12    | 5          |
| SRFT   | 9     | 12    | 6          |
| MFT  | 14    | 13    | 7          |
| The Christie                                       | 13    | 18    | 8          |

The Trust performed similarly to half of the provider trusts in GM but was slightly worse than the average (12 cases against an average of 10.75 cases).

| Measure   | 2020/21 Cases | 2021/22 Cases | Difference | Objective | Narrative  |
|---|---------------|---------------|------------|-----------|--|
| Healthcare associated <i>E. coli</i> <sup>β</sup> bacteraemia | 38            | 63            | +35 (66%)  | 76        | <p>There was an increase in cases year-on-year with almost all of the increase coming from patients with <i>E. coli</i> bacteraemias on admission but who were inpatients at Bolton in the preceding 28-days making them community onset, healthcare associated (COHA)<sup>4</sup>. This reflects three things:</p> <ol style="list-style-type: none"> <li>1. 2020/21 seems to have had an artificially low number of cases generally</li> <li>2. The Bolton case rate rise was also observed across England and may have reflected the challenges for general population health and wellbeing during the</li> </ol> |

<sup>2</sup> All rates here described as rate per 100,000 occupied overnight beds

<sup>3</sup> See **Appendix 1**

<sup>4</sup> See **Appendix 1**



| Measure | 2020/21 Cases | 2021/22 Cases | Difference | Objective | Narrative   |
|---------|---------------|---------------|------------|-----------|---|
|         |               |               |            |           | <p>pandemic where access to care may have been more challenging</p> <p>3. 2021/22 had a particularly hot summer and <i>E. coli</i> bacteraemia are strongly correlated with simple urinary tract infections (i.e. without indwelling urinary catheters) and dehydration</p> |

| GM Comparison Hospital Onset (rates) | 20/21 | 21/22 | 21/22 Rank |
|--------------------------------------|-------|-------|------------|
| PAT                                  | 1260  | 694   | 1          |
| WWL                                  | 561   | 753   | 2          |
| Stockport                            | 1505  | 1700  | 3          |
| Bolton FT                            | 1143  | 1895  | 4          |
| T&G                                  | 792   | 1995  | 5          |
| The Christie                         | 2335  | 2019  | 6          |
| MFT                                  | 1882  | 2367  | 7          |
| SRFT                                 | 2821  | 3284  | 8          |

Bolton performed about better than half of the trusts in GM and reported almost the average for the providers across the city.

| Measure  | 2020/21 Cases | 2021/22 Cases | Difference | Objective | Narrative  |
|--|---------------|---------------|------------|-----------|--|
| Healthcare associated <i>Klebsiella</i> spp. bacteraemia | 17            | 9             | -8 (47%)   | 18        | There was a marked improvement in the incidence of <i>Klebsiella</i> spp. bacteraemias year-on-year. |





| GM Comparison Hospital Onset (rates) | 20/21 | 21/22 | 21/22 Rank |
|--------------------------------------|-------|-------|------------|
| WWL                                  | 179   | 217   | 1          |
| PAT                                  | 619   | 256   | 2          |
| Bolton FT                            | 511   | 271   | 3          |
| T&G                                  | 760   | 538   | 4          |
| Stockport                            | 697   | 557   | 5          |
| The Christie                         | 820   | 1388  | 6          |
| MFT                                  | 1307  | 1416  | 7          |
| SRFT                                 | 1850  | 1619  | 8          |

Bolton was the third best provider in GM and had a substantially better case rate than the average (783 cases).

| Measure                                   | 2020/21 Cases | 2021/22 Cases | Difference | Objective | Narrative   |
|---|---------------|---------------|------------|-----------|---|
| <i>Pseudomonas aeruginosa</i> bacteraemia | 6             | 2             | -4 (66%)   | 4         | There was a marked improvement in the incidence of <i>Pseudomonas aeruginosa</i> bacteraemias year-on-year. |

| GM Comparison Hospital Onset (rates) | 20/21 | 21/22 | 21/22 Rank |
|--------------------------------------|-------|-------|------------|
| WWL                                  | 179   | 26    | 1          |
| Bolton FT                            | 181   | 60    | 2          |
| Stockport                            | 84    | 111   | 3          |
| PAT                                  | 117   | 117   | 4          |
| SRFT                                 | 601   | 278   | 5          |
| T&G                                  | 222   | 317   | 6          |
| MFT                                  | 396   | 466   | 7          |
| The Christie                         | 631   | 947   | 8          |



| Measure                 | 2020/21 Cases | 2021/22 Cases | Difference | Objective | Narrative   |
|-------------------------|---------------|---------------|------------|-----------|---|
| CDT Cases (HOHA + COHA) | 59            | 82            | +23 (39%)  | 58        | CDI became an emerging issue during the second half of 2021/22. There had been significant changes to processes related to the management of COVID-19 which impacted on how patients with suspected or confirmed CDI were managed. Isolation was more difficult, post-CDI cleaning was managed differently and antibiotics were used more frequently as part of the management of COVID-19 infections |

| GM Comparison Hospital Onset (rates) | 20/21 | 21/22 | 21/22 Rank |
|--------------------------------------|-------|-------|------------|
| WWL                                  | 549   | 676   | 1          |
| PAT                                  | 865   | 790   | 2          |
| T&G                                  | 982   | 1457  | 3          |
| MFT                                  | 1664  | 2030  | 4          |
| Stockport                            | 780   | 2145  | 5          |
| SRFT                                 | 2220  | 2174  | 6          |
| The Christie                         | 2398  | 2398  | 7          |
| Bolton FT                            | 1775  | 2467  | 8          |

| Measure   | 2020/21 Cases | 2021/22 Cases | Difference | Objective | Narrative  |
|-----------|---------------|---------------|------------|-----------|--|
| CPE Cases | 9             | 3             | -6 (66%)   | NA        | There has been a marked reduction in the number of CPE cases identified. |



| Measure                   | 2020/21 Cases | 2021/22 Cases | Difference | Objective | Narrative   |
|---------------------------|---------------|---------------|------------|-----------|---|
| Nosocomial COVID-19 cases | 343           | 230           | -113 (67%) | NA        | There has been a marked reduction in the number of nosocomial cases identified. |



|         |          |          |  |               |
|---------|----------|----------|--|---------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 11 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |               |

- 2.4. 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. As testing capacity and supply chains for test kits improved during the pandemic, POCT was replaced with rapid polymerase chain reaction (PCR) testing which provided staff with results in about after the sample being received in the laboratory 24-hours/day. This was used primarily for emergency admission samples.
- 2.5. There were three new Carbapenemase Producing enterobacteriaceae (CPE) acquisitions during 2021/22 – a reduction from nine months in 2020/21.
- 2.6. *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 212 cases of *E. coli* bacteraemia reported in 2021/22 for Bolton FT. Of these, 62 (29%) cases were apportioned to the Trust as healthcare associated (as defined in **Appendix 1**) with the remaining being apportioned to the community.
- 2.7. This represents a 66% increase from the year earlier.
- 2.8. The primary causes of *E. coli* BSI were identified as urosepsis without an indwelling catheter (40%) and hepatobiliary sepsis (19%) although in 18% of cases a clear cause of the infection was not found.
- 2.9. There was an increase in cases year-on-year with almost all of the increase coming from patients with *E. coli* bacteraemias on admission but who were inpatients at Bolton in the preceding 28-days making them community onset, healthcare associated (COHA). This reflects three things:
- 2.9.1. 2020/21 seems to have had an artificially low number of cases generally
- 2.9.2. The Bolton case rate rise was also observed across England and may have reflected the challenges for general population health and wellbeing during the pandemic where access to care may have been more challenging
- 2.9.3. 2021/22 had a particularly hot summer and *E. coli* bacteraemia are strongly correlated with simple urinary tract infections (i.e. without indwelling urinary catheters) and dehydration
- 2.10. 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.
- 2.11. 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.
- 2.12. 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 HCAs.

|         |          |          |  |               |
|---------|----------|----------|--|---------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 12 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |               |

## Recommendation

The Board of Directors are asked to receive the Infection Prevention and Control Annual Report for 2021/22 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 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 largely structurally unchanged from the structure in the previous year although two posts have been added funded by a new Service Level Agreement with Bolton NHS Clinical Commissioning Group.

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 now has a dual role adding Divisional Nurse Director for Diagnostics and Support Services Division (DSSD) and has now been augmented with a new post – IPC Service Lead/Assistant Divisional Nurse Director for DSSD. These work in conjunction with the IPC doctor and the rest of the IPC team and key staff such as the antimicrobial pharmacists to develop strategy related to IPC and HCAI.

In 2021/22 the post of IPC matron remained vacant following a number of unsuccessful attempts to fill the post. This was re-advertised and a successful appointment made in March 2022 and started in post from April 2022. This post holder now manages the whole IPC service.

Bolton NHS Clinical Commissioning Group has funded two posts to provide an advisory and review services for the services provided in Primary care across Bolton.

#### **3.2. IPC Board Assurance Framework (BAF)**



|         |          |          |  |               |
|---------|----------|----------|--|---------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 13 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |               |

In response to the pandemic, NHS England produced a series of IPC Board Assurance Frameworks for oversight by Trust Boards. These have been completed under the oversight of the IPC Committee and reported to the Board via QAC.

### 3.3. 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 ICU and 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 been maintained at 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.



|         |          |          |  |               |
|---------|----------|----------|--|---------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 14 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |               |

#### 4. Healthcare Associated Infections (HCAI) performance

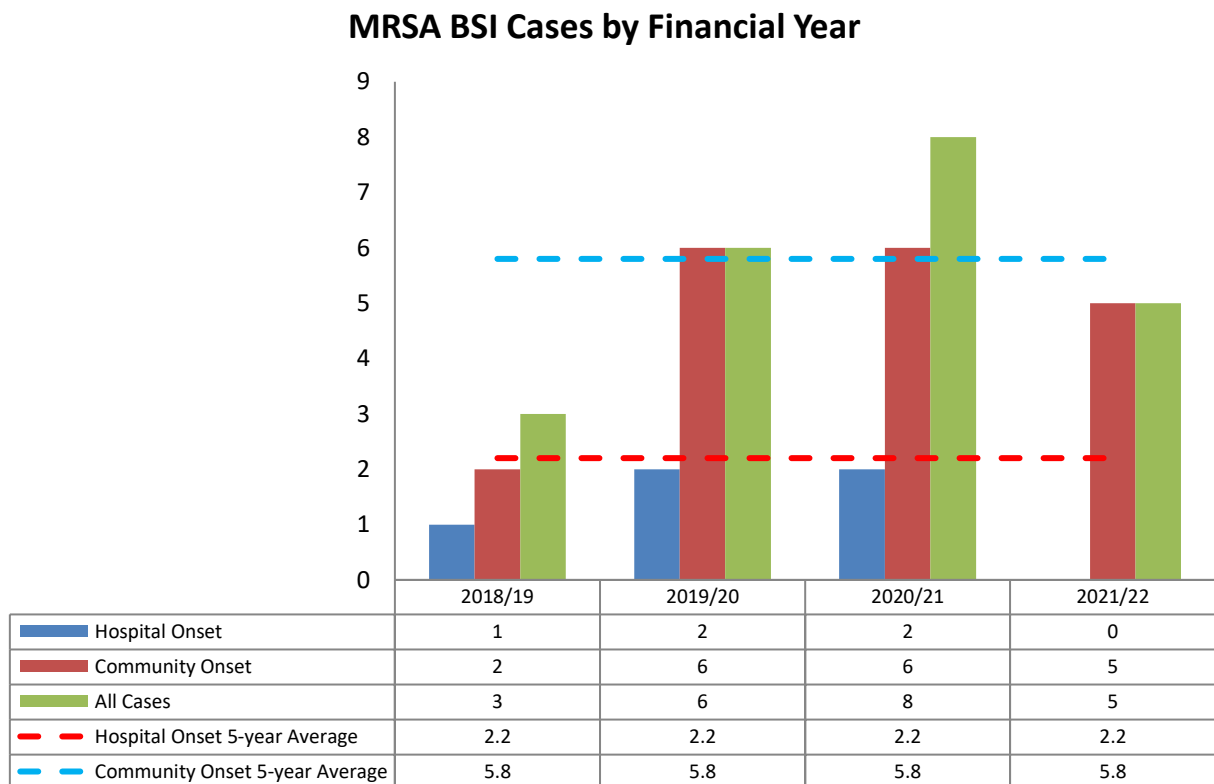
The Trust participates in the mandatory HCAI programmes. The following conditions are reported to the Department of Health (DH) via the Public Health England (PHE) Data Collection System (DCS):

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

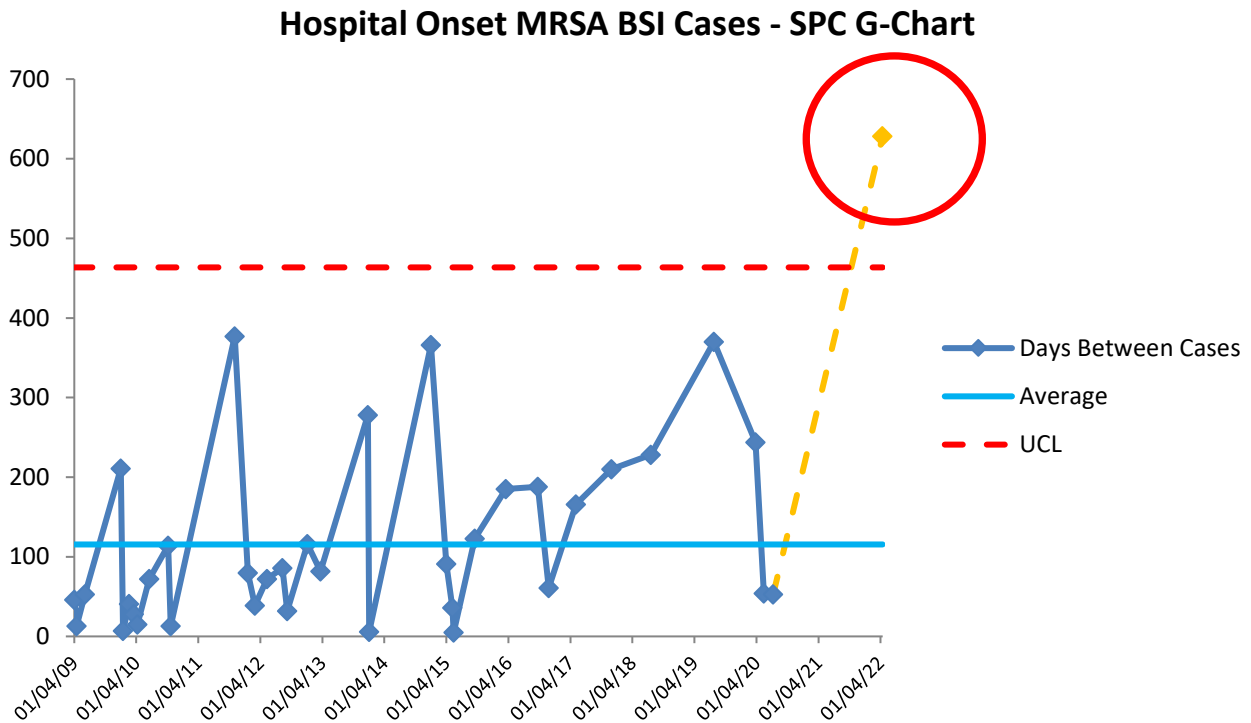
##### 4.1. MRSA Bacteraemia

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

**Fig. 1: MRSA Cases**



**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 cases in 2021/22 meaning that by the end of the FY, there had been more than 628 days without cases.

**4.2. Hospital-Onset, Hospital Associated Cases**

There were no cases in 2021/22.

**4.3. Non-Trust Apportioned MRSA Cases**

There were five community onset cases in 2021/22. 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 and will in future all cases will be investigated by the FT IPC service.

There was a repeated theme of patients who acquired systemic MRSA bloodstream infections related to intravenous drug use. The IPC services have worked with the drug and alcohol services to outreach into these communities to provide education, guidance and support.

**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 apportsions 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<sup>5</sup>. 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 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

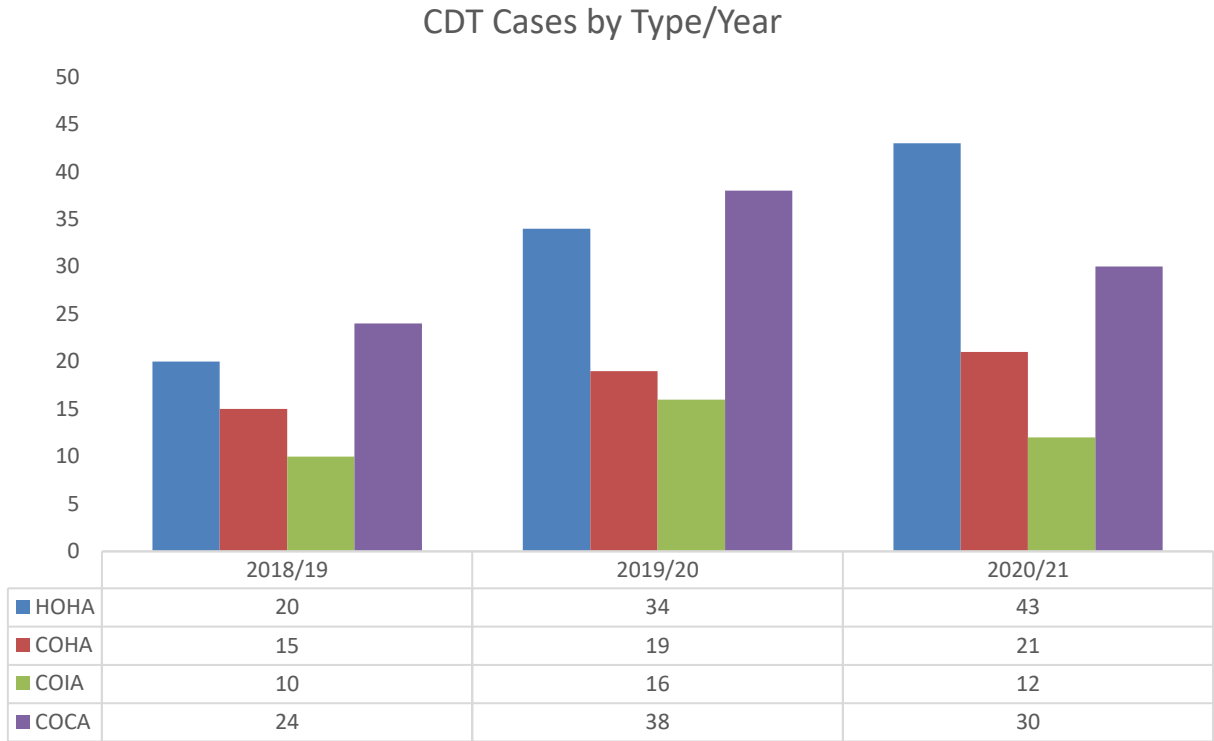
An objective for healthcare associated CDI cases was set by NHS England for 2021/22 of no more than 58 cases. The Trust ended the year with 84 cases in total (65 HOHA cases and 19 COHA cases).

---

<sup>5</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/215135/dh\\_133016.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/215135/dh_133016.pdf)

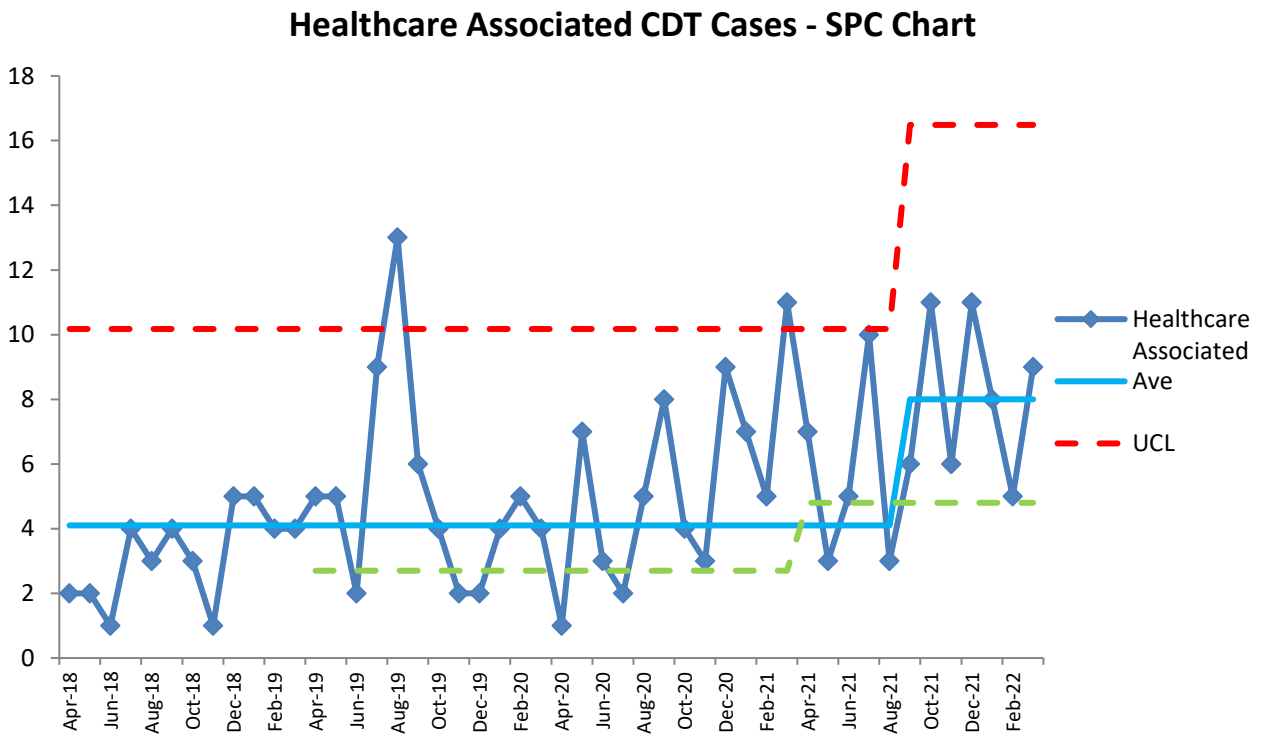
|         |          |          |  |               |
|---------|----------|----------|--|---------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 17 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |               |

**Fig. 3: CDT cases**



This table illustrates the increases seen over the past 24-months.

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



There has been a general sustained increase in the number of healthcare associated cases sufficiently to represent a statistical increase.

There were two confirmed outbreaks which were investigated and managed by an Outbreak Control Team (OCT).

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.

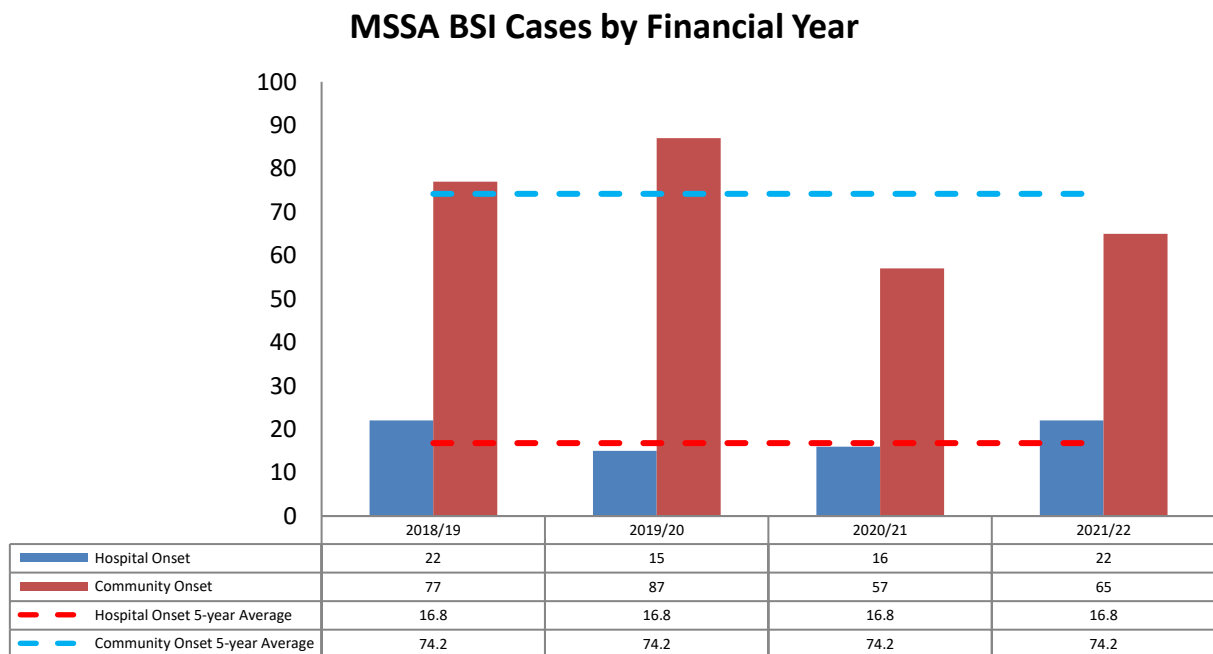
The clinical teams are responsible for the review. On the day of the result, the ward/department management team (patient consultant, ward manager and matron) are notified and given a date for the case to be fed back. The reviews are undertaken by a multidisciplinary team led by the patient’s consultant. Feedback is undertaken at a Harm Free Care Panel chaired by the 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 12 cases.

There was an increase in MSSA cases in 2021/22 to 22 HOHA cases from 16 in the year earlier.

**Fig. 5: MSSA cases**



## Gram Negatives

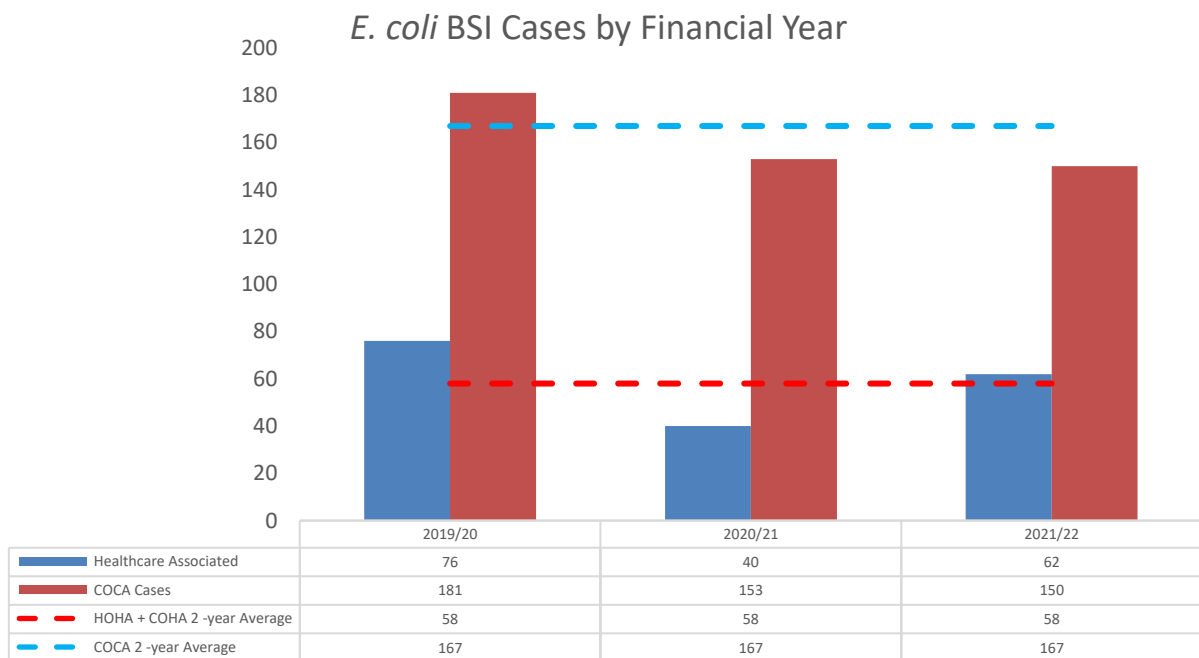
In November 2016, the government announced an intention to reduce all Gram negative bloodstream infections by 50% by the end of 2020/21. As a consequence, two new organisms were added to the mandatory surveillance list: *Klebsiella* species and *Pseudomonas aeruginosa*.

### 4.8. *E. coli* Bacteraemia

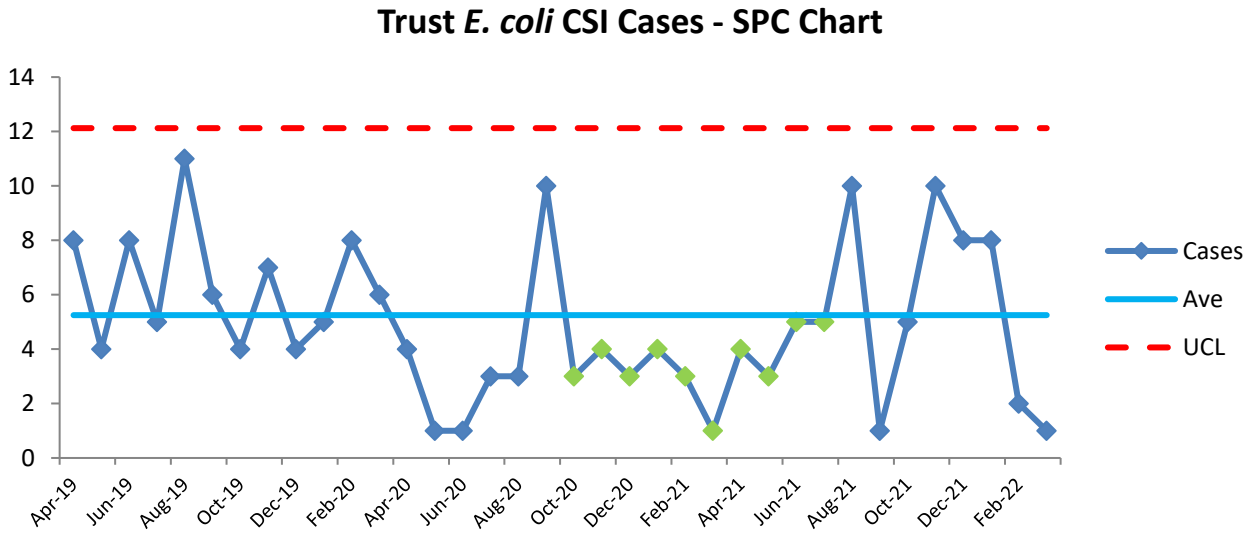
*E. coli* infections are more complex than MRSA or MSSA infections and much less likely to be attributed only to healthcare provision with personal hygiene and levels of hydration key risk factors for these infections.

Bolton FT has seen a general reduction of cases over the past few years with an 18.5% decrease between 2019/20 and 2021/22:

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



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

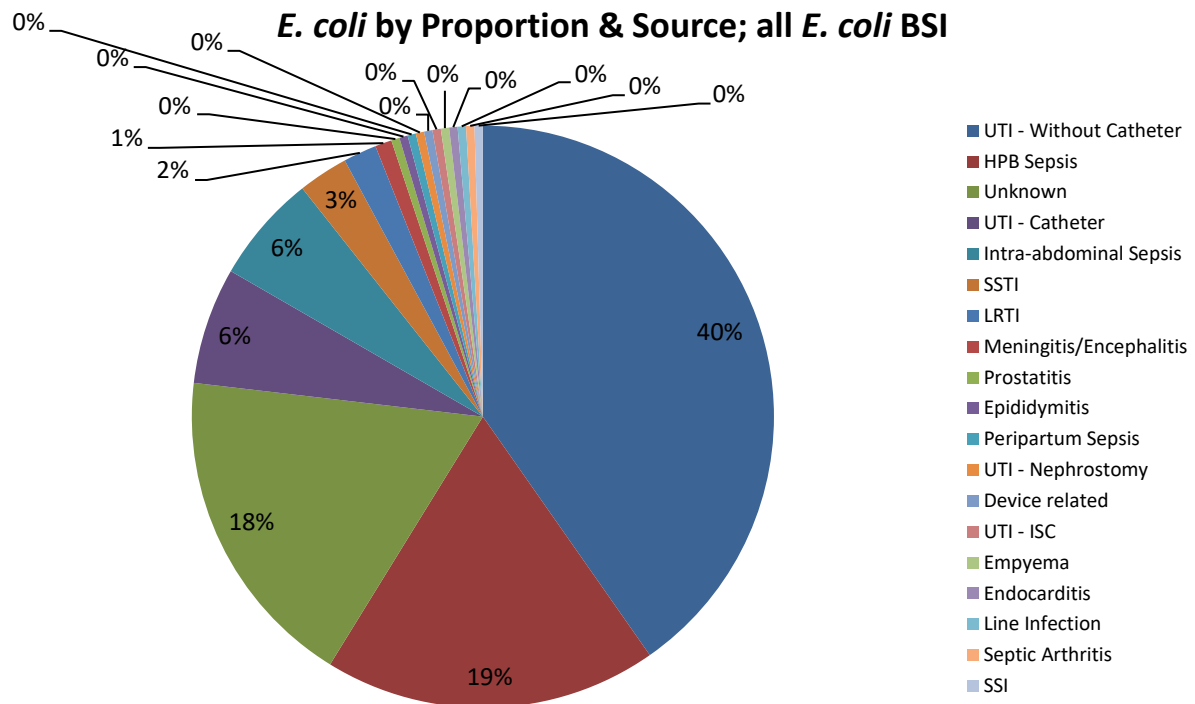


This chart illustrates that overall there has been sustained statistical change in *E. coli* cases although there was a period of 10 consecutive data points below the average between October 2020 and July 2021.

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:

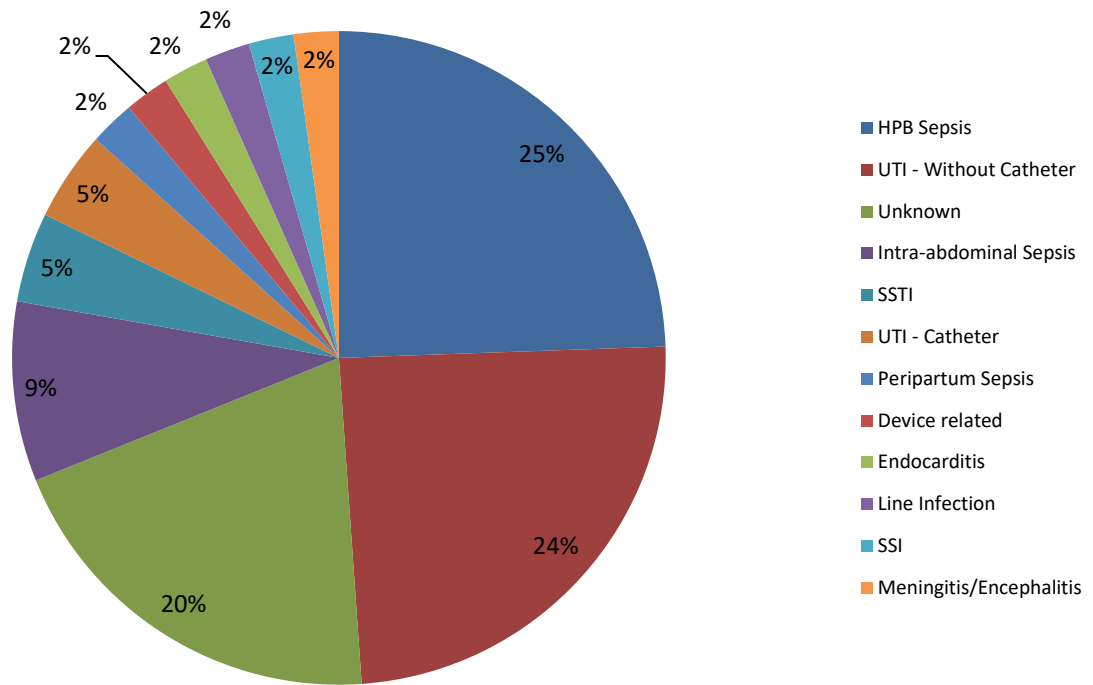
**Fig. 8: *E. coli* by Proportion & Source; all *E. coli* BSI**



| 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 18% of cases.

**Fig. 9: *E. coli* by Proportion & Source; Healthcare Associated *E. coli* BSI**



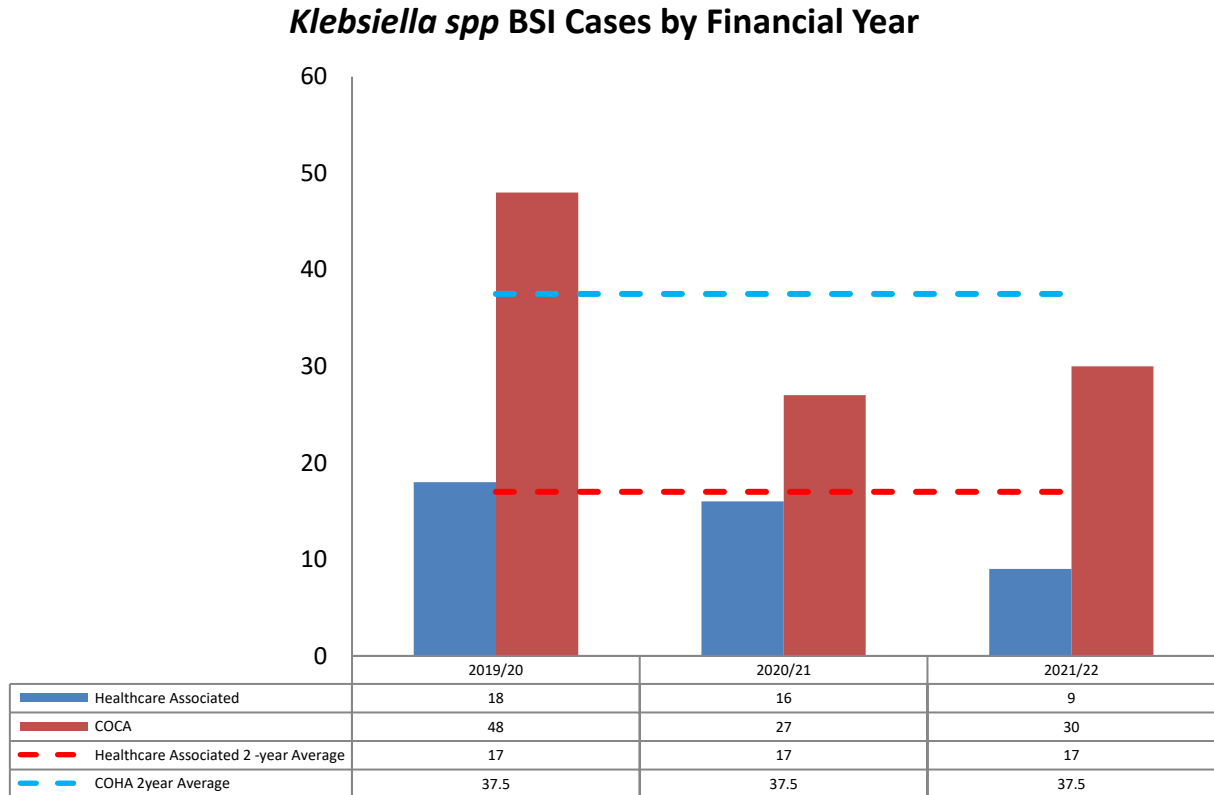
No source was identified in 20% cases. Hepatobiliary infection (25%) then UTI with no catheter (24%) were the most commonly identified sources of hospital onset *E. coli* BSI.



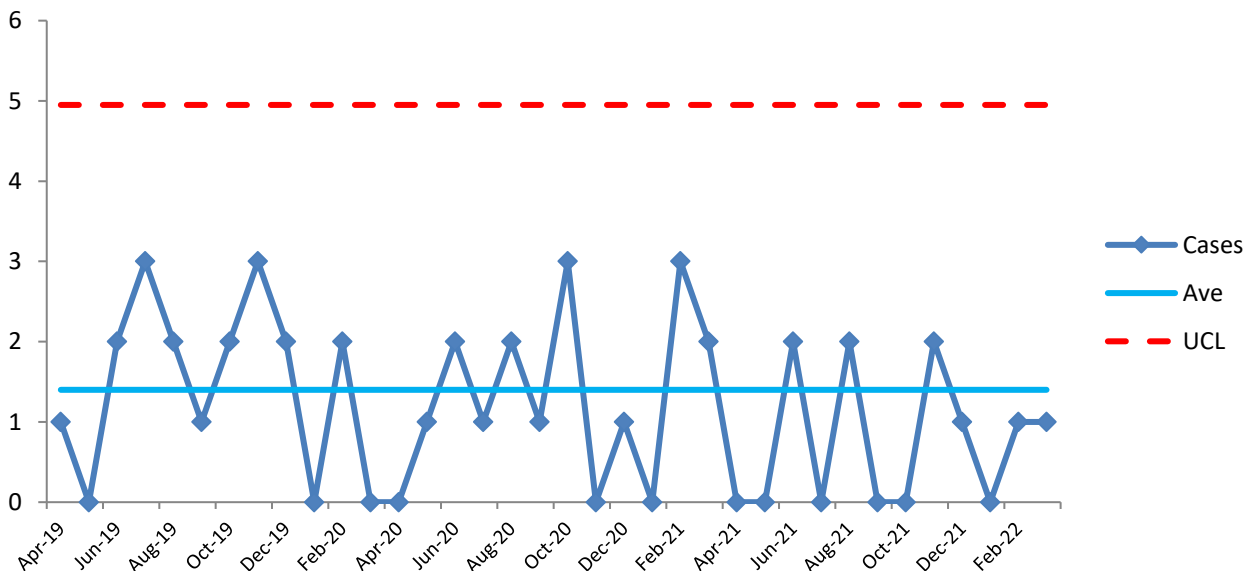
#### 4.9. *Klebsiella* spp. Bacteraemia

Mandatory surveillance of bloodstream infections caused by all species of *Klebsiella* started in 2017. There were 39 cases in 2021/22 of which nine were healthcare associated. This compares with 43 cases in the year before of which 16 were healthcare associated.

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



**Fig. 11: *Klebsiella* spp SPC Chart**



There has been no change in the incidence of *Klebsiella* spp. cases.

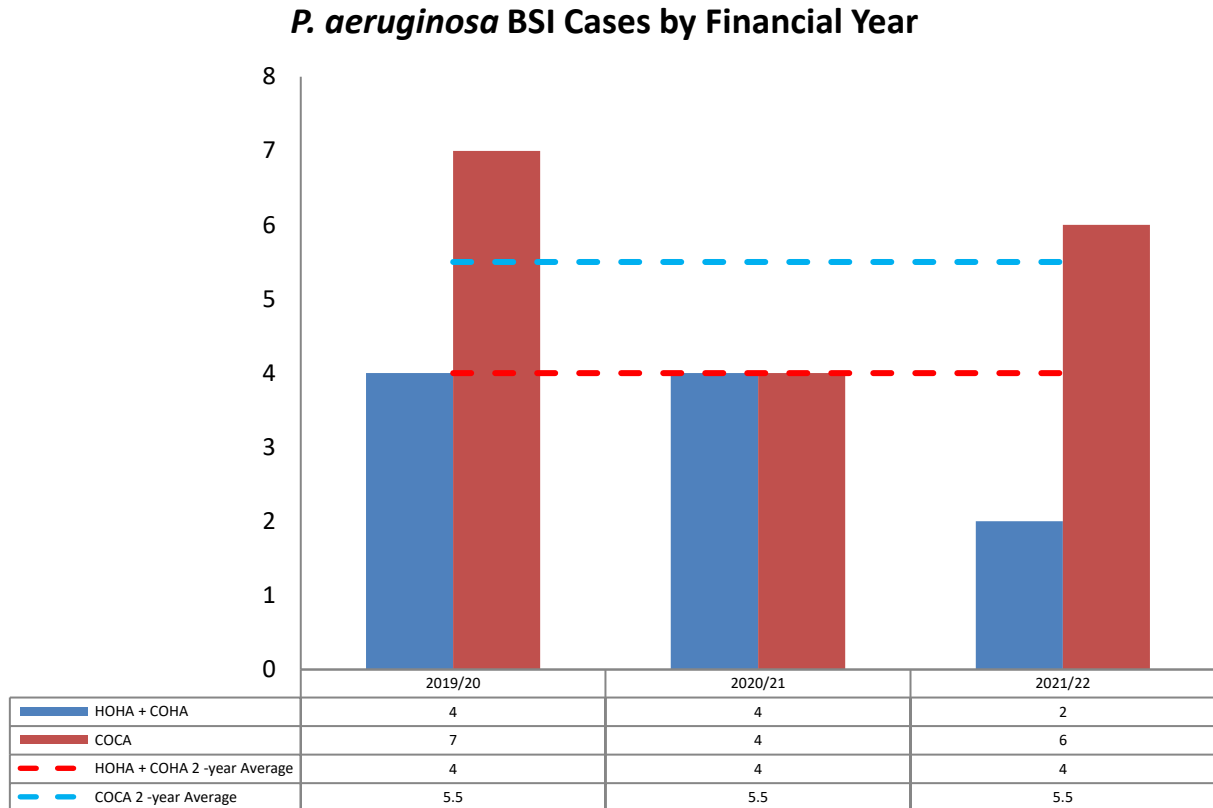


4.10.

***Pseudomonas aeruginosa* Bacteraemia**

Mandatory surveillance of bloodstream infections caused by *Pseudomonas aeruginosa* started in 2017. There was a reduction in the number of cases in 2021/22 – from four to two healthcare associated cases.

**Fig. 12: *Pseudomonas aeruginosa* Cases**



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 IPC Committee.

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

The committee meets monthly and is chaired by the Chief Nurse/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 remit 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<sup>6</sup>. 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. 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:

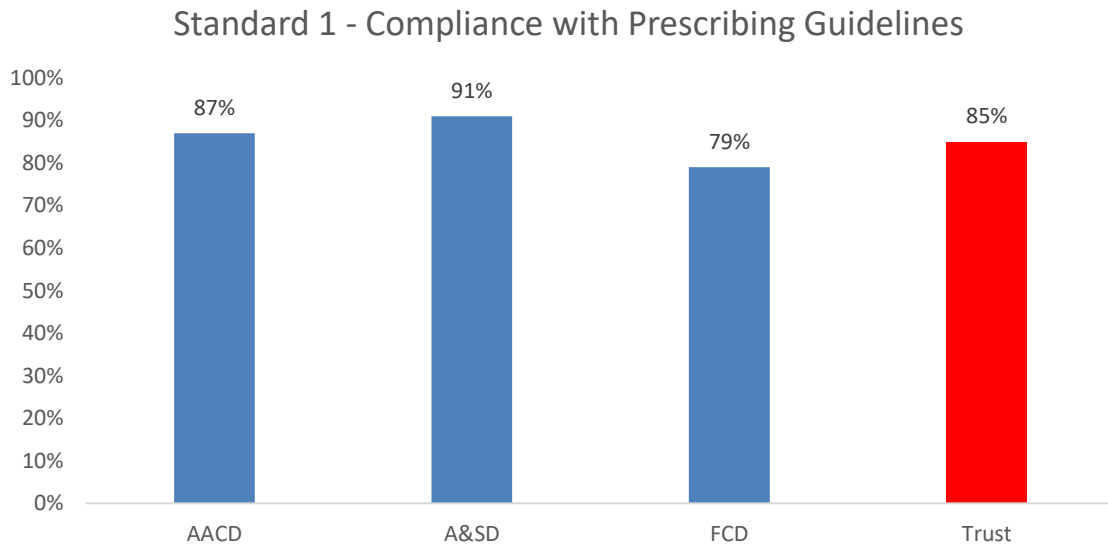
The set the Trust an objective of at least 85% compliance with all five standards for 2019/20

6

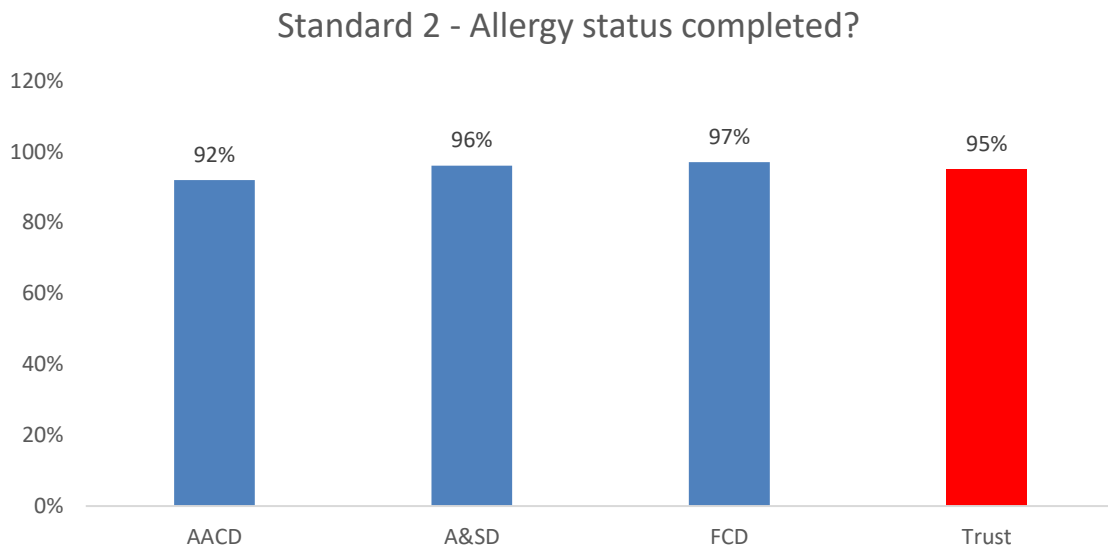
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/417032/Start\\_Smart\\_Then\\_Focus\\_FINAL.PDF](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/417032/Start_Smart_Then_Focus_FINAL.PDF)

|         |          |          |  |               |
|---------|----------|----------|--|---------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 26 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |               |

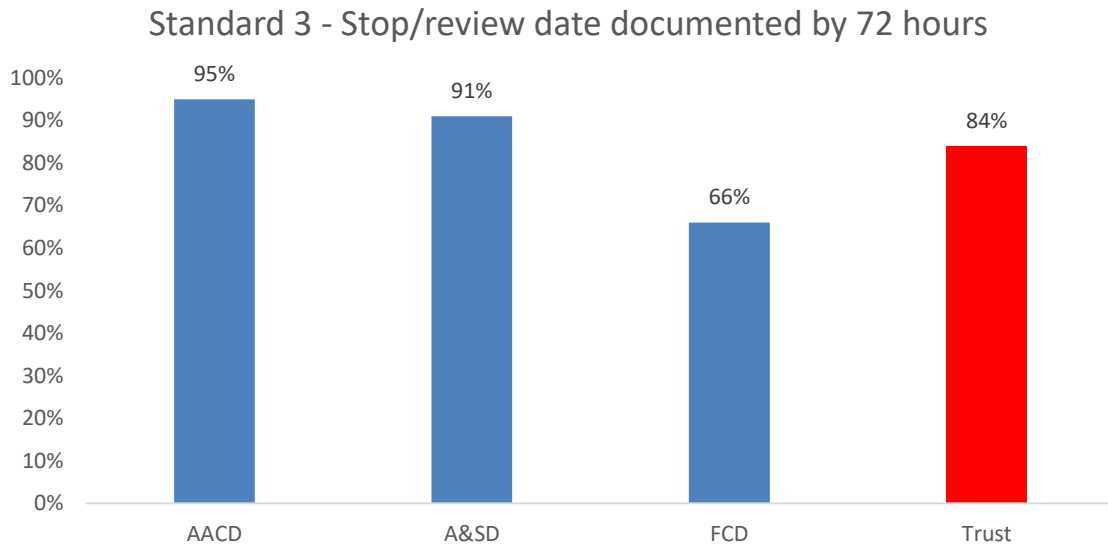
**Fig. 13: Antimicrobial Stewardship Compliance Standard 1**



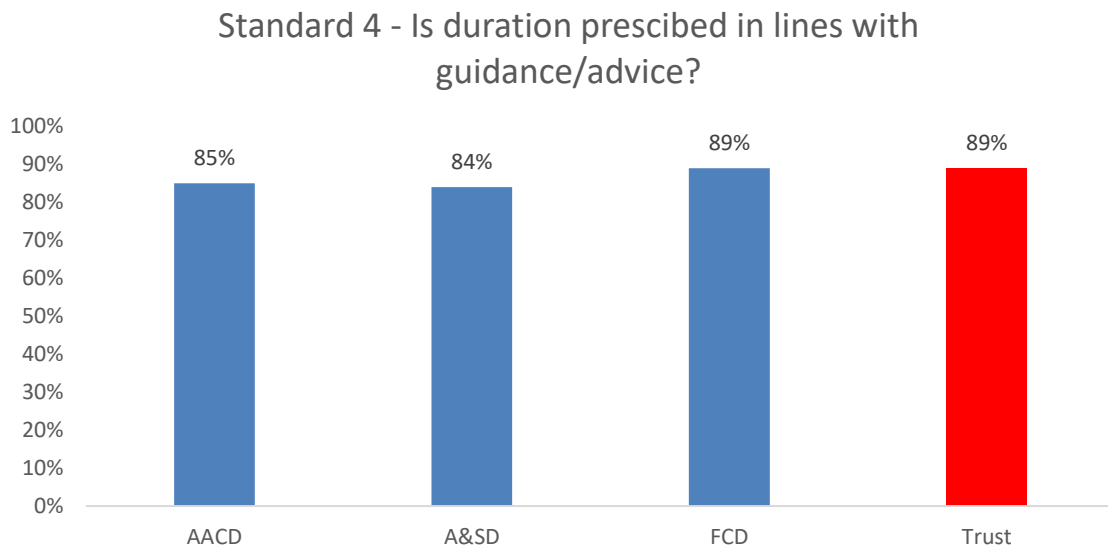
**Fig. 14: Antimicrobial Stewardship Compliance Standard 2**



**Fig. 15: Antimicrobial Stewardship Compliance Standard 3**

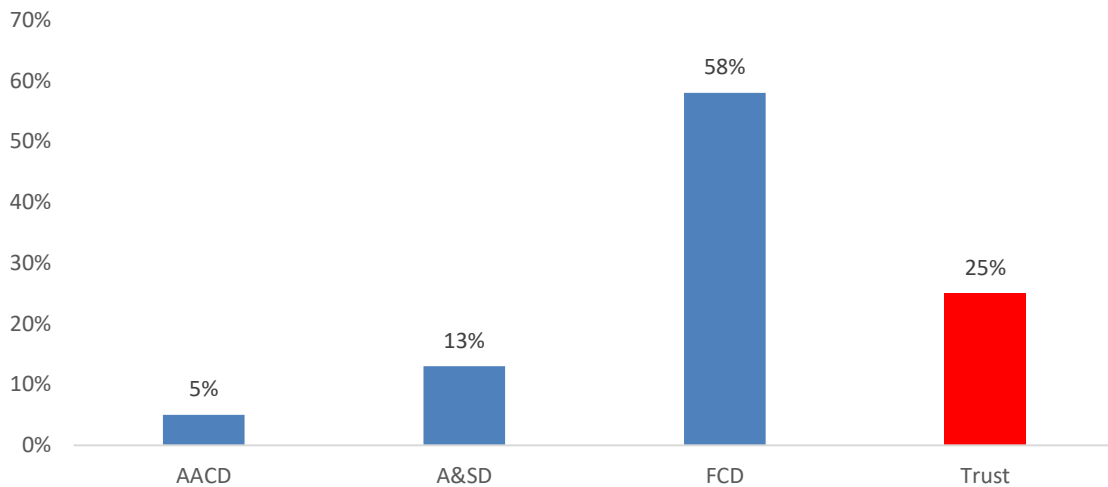


**Fig. 16: Antimicrobial Stewardship Compliance Standard 4**



**Fig. 17: Antimicrobial Stewardship Compliance Standard 5**

Standard 5 - Saline flush administered (IV antibiotics)



This last standard is a new one and improvements are being targeted by the Antimicrobial Stewardship Committee and Drugs and Therapeutic 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 and Group Health and Safety Committee and is invited into other Trustwide groups such as building projects as required.

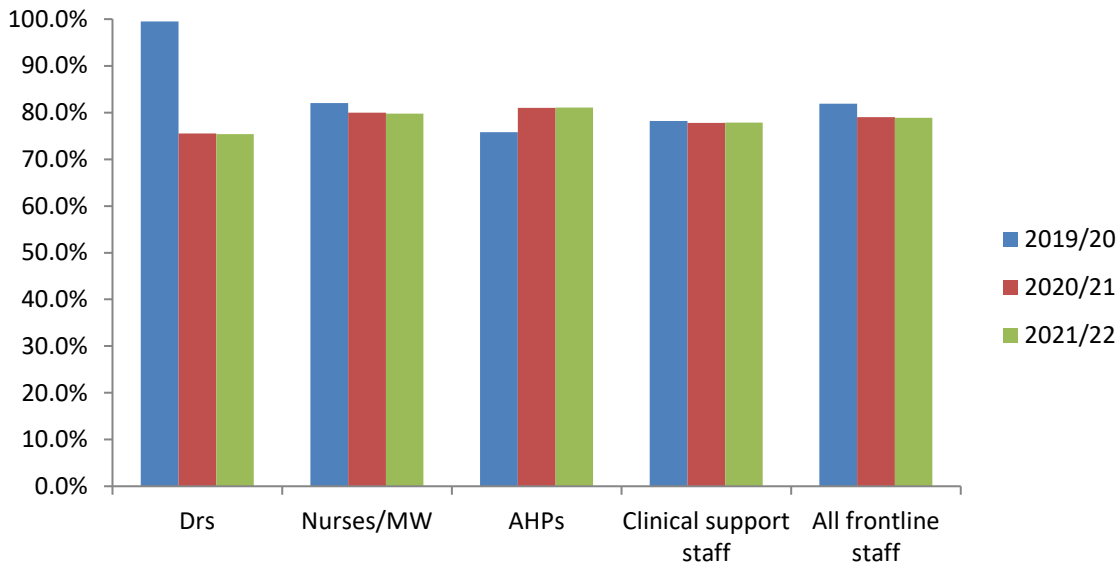
The IPCT also represent the Trust at external meetings including Bolton locality IPC Collaborative, GM IPC Group and North-West IPC Group.

## 6. Influenza and COVID-19 Vaccines

### 6.1. Staff Flu Vaccination Campaign

The HR team supported a successful flu vaccination programme for frontline staff in 2020/21 19/20<sup>7</sup>. Uptake in all frontline staff groups increased based on the previous years. Overall uptake for the Trust for frontline healthcare staff was 79%.

**Fig. 18: Flu Vaccine Uptake**

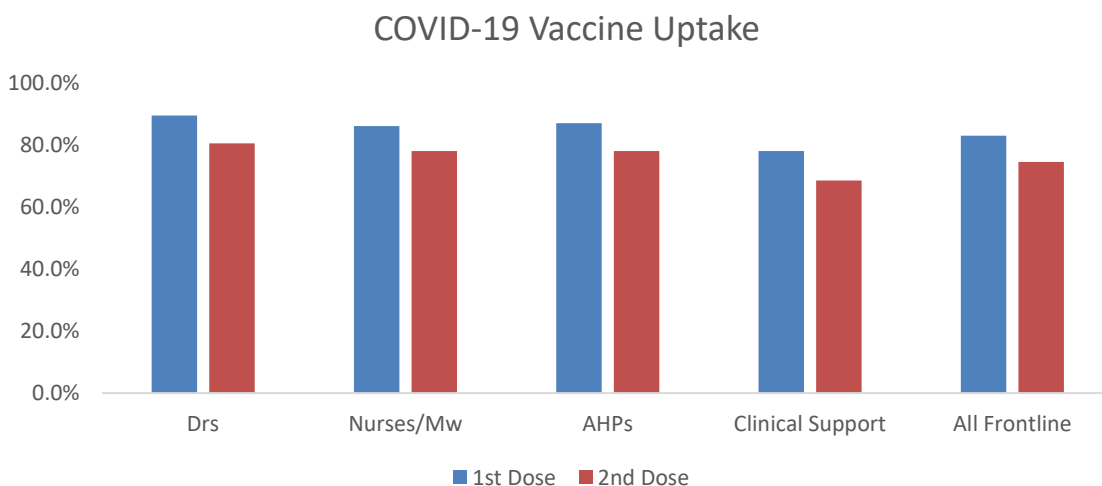


In total 4188 staff were vaccinated of which 3232 were frontline staff.

### 6.2. Staff COVID-19 Vaccination Campaign

The HR team supported a successful COVID-19 vaccination programme for frontline staff in 2021/22.

**Fig. 19: Flu Vaccine Uptake**

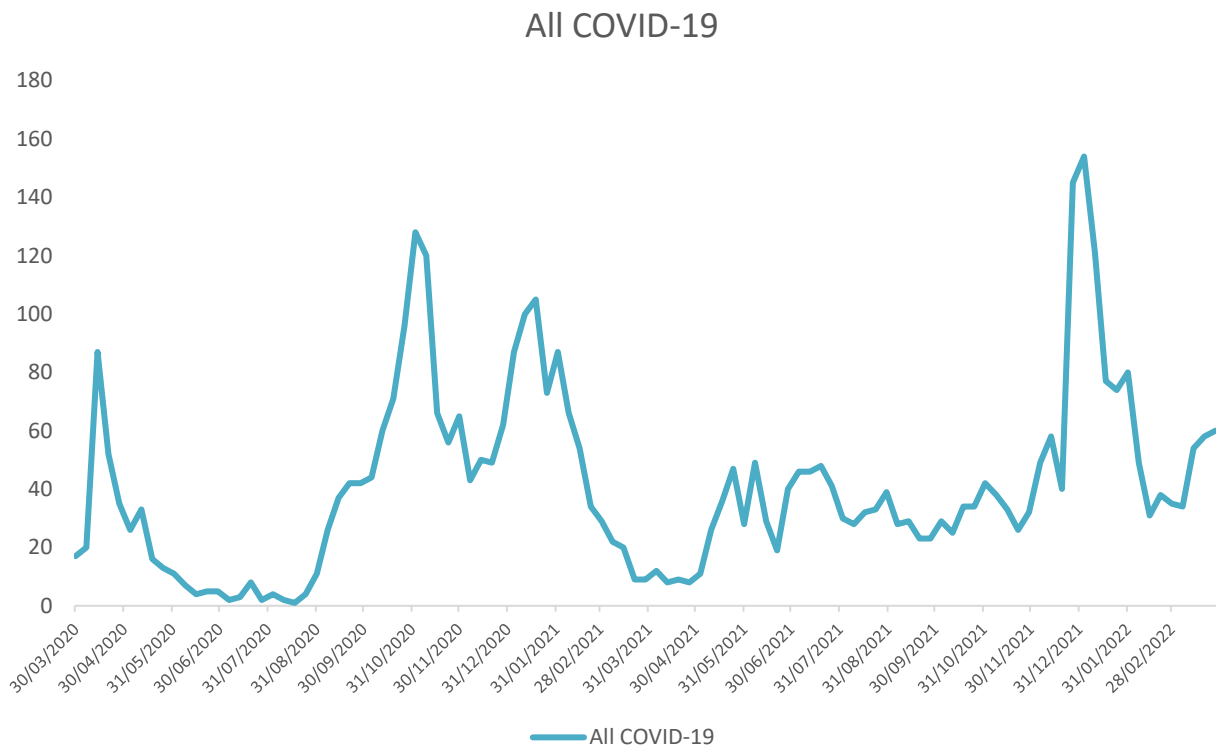


<sup>7</sup> Frontline staff are classified by the DH as: doctors, GPs, qualified nurses/midwives, other registered healthcare professionals and support staff to clinical staff

## 7. COVID-19

### 7.1. COVID-19 Numbers in FY 21/22

**Fig. 20: Weekly COVID-19 cases**



In 2020/21 the Bolton laboratory processed more than 102,003 COVID-19 samples.

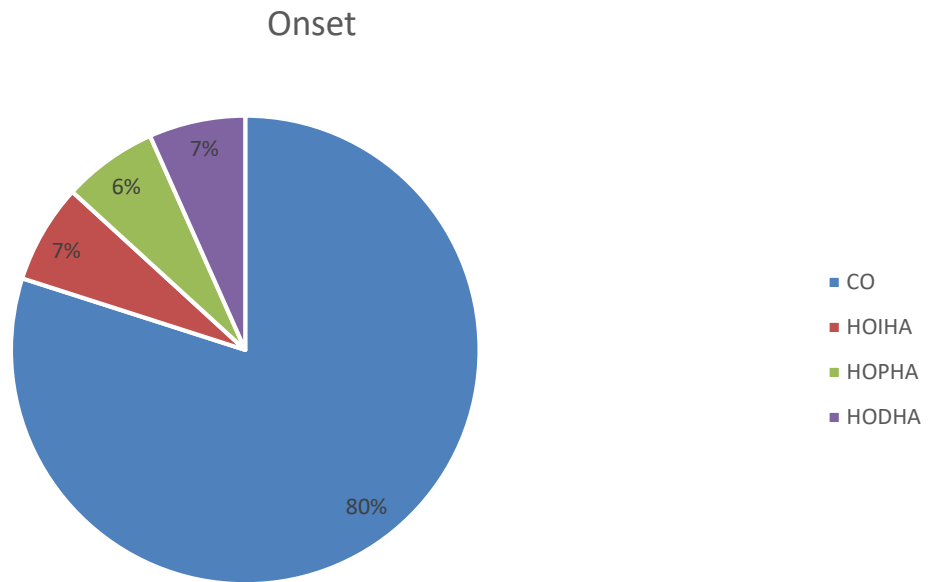
### 7.2. Nosocomial Cases

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

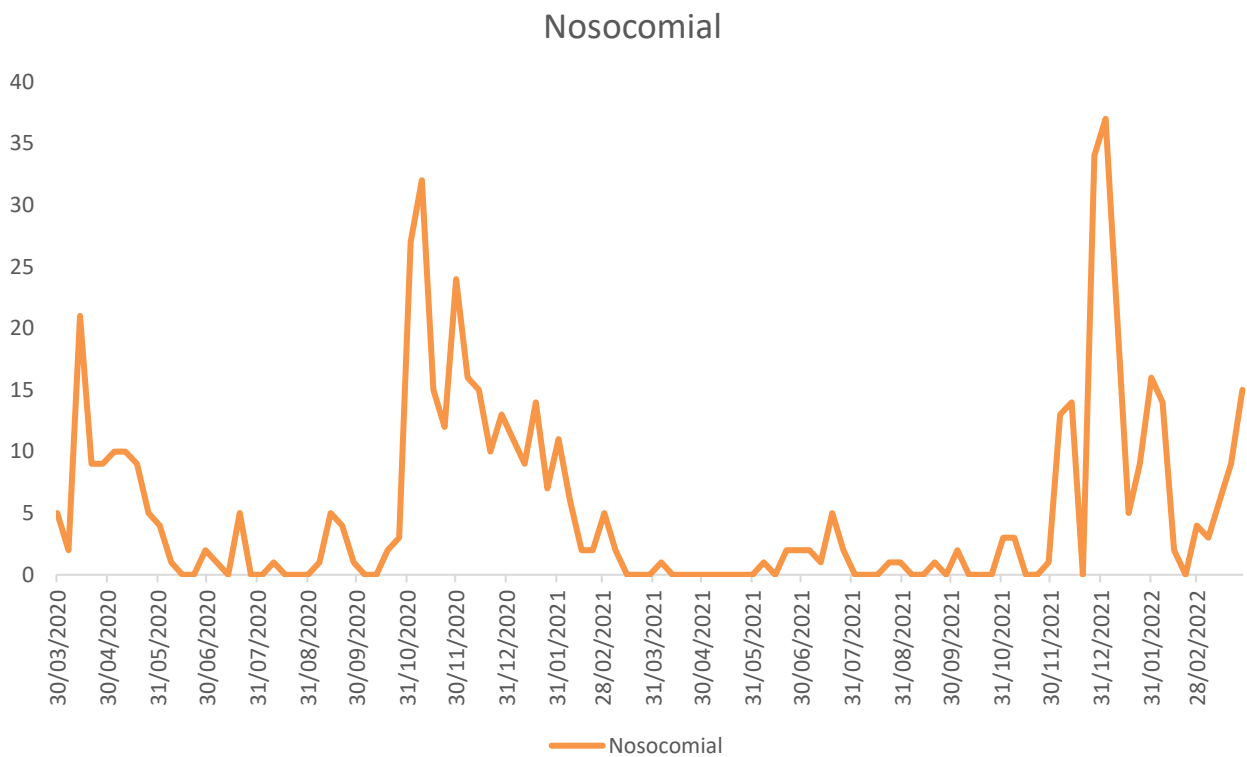
| HCAI Category  | Criteria  |
|--|---|
| Community Onset (CO)                                       | Positive specimen taken date <= 2 days after admission to trust       |
| Hospital-Onset Indeterminate Healthcare-Associated (HOIHA) | Positive specimen taken date 3-7 days after admission to trust        |
| 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. 21: Proportion of COVID-19 Onset**



**Fig. 22: Weekly Nosocomial COVID-19 Cases**



### 7.3. Patient Deaths

During 2021/22 260 patients died with COVID-19 on their death certificate in line with the national guidance. This does not mean that these patients died of COVID-19 but that they died within 28-days of a confirmed COVID-19 positive test.



## 7.4. 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

## 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.

Thanks to a Service Level Agreement with Bolton NHS Clinical Care Group, an IPC service now offered to Primary Care in Bolton. This includes advice, guidance and training for Primary Care staff and audits of practices.

The team also take queries by phone, completes to 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.

|         |          |          |  |               |
|---------|----------|----------|--|---------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 33 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |               |

## 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.



|         |          |          |  |               |
|---------|----------|----------|--|---------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 34 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |               |

## 10. Health and Social Care Act 2008 Code of Practice on the prevention and control of infections and related 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  |
| 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 policies, 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 2022/23. The nomenclature outlined in **Appendix 1** has now been adopted for all HCAI:

|  |                       |
|--|-----------------------|
| <b>CDT Healthcare Associated Cases</b>                               | No more than 80 cases |
| <b><i>E. coli</i> BSI Healthcare Associated Cases</b>                | No more than 53 cases |
| <b><i>Pseudomonas aeruginosa</i> BSI Healthcare Associated Cases</b> | No more than 1 case   |
| <b><i>Klebsiella spp.</i> BSI Healthcare Associated Cases</b>        | No more than 11 cases |

|         |          |          |  |               |
|---------|----------|----------|--|---------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 35 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |               |

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

|                            |                               |
|----------------------------|-------------------------------|
| <b>MRSA BSI HOHA Cases</b> | Zero tolerance for HOHA cases |
| <b>MSSA BSI HOHA</b>       | No more than 15 HOHA cases    |



|         |          |          |  |               |
|---------|----------|----------|--|---------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 36 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |               |

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

### ***Clostridium difficile* Cases**

- **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).

### **All Bacteraemias**

- **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 4 weeks (COCA).
- **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).

### **COVID-19 Apportionment:**

- **Community Onset (CO)** includes inpatients who had a positive swab within 2 days from admission (admission counting as day 1). It also includes patients whose first positive swab was day(s) before admission
- **Hospital-Onset Indeterminate Healthcare-Associated (HOIHA)** includes inpatients who had a positive swab between 3 to 7 days from admission (admission counting as day 1)
- **Hospital-Onset Probable Healthcare-Associated (HOPHA)** includes inpatients who had a positive swab between 8 to 14 days from admission (admission counting as day 1)
- **Hospital-Onset Definite Healthcare-Associated (HODHA)** includes inpatients who had a positive swab 15+ days from admission (admission counting as day 1)

|         |          |          |  |               |
|---------|----------|----------|--|---------------|
| Version | 1        | Document | Infection Prevention and Control Annual Report 2021-22 | Page 37 of 37 |
| Date    | 30/09/22 | Author   | Richard Catlin   |               |