

Infection Prevention and Control Annual Report 2022/2023

Contents

- 1. Purpose**
 - Infection prevention and control staffing
 - Staffing structure

- 2. Organisms Subject to Mandatory Reporting**
 - Meticillin-resistant staphylococcus aureus (MRSA Bacteraemia)
 - Meticillin- sensitive staphylococcus aureus (MSSA Bacteraemia) (Hospital onset)
 - Clostridioides difficile
 - E.coli bacteraemia
 - Klebsiella spp. bacteraemia
 - Pseudomonas aeruginosa bacteraemia
 - VRE bacteraemia

- 3. Surveillance of MRSA and Multiple 'Resistant' Gram Negative Organism Including Screening**

- 4. Investigation of Infection Prevention and Control Incidents and Outbreaks**

- 5. Management of Respiratory and Enteric Viral Infections**

- 6. Audit and Compliance to Policy**
 - Hand hygiene and care bundle compliance
 - Surgical site surveillance
 - Neurosurgical surveillance
 - Cardiac surgical site surveillance

- 7. Central Line Surveillance**
 - Data collection
 - Results
 - Recommendations

- 8. Wider Infection Prevention and Control Service**
 - Antimicrobial stewardship
 - Water safety
 - Specialist ventilation
 - Decontamination committee
 - Sepsis

- 9. Board Assurance Framework (BAF)**

- 10. Recommendation**

1. Purpose

1.1 The Director of Infection Prevention and Control (DIPC) Annual Report reports on infection prevention and control activities within Great Ormond Street Hospital NHS Foundation Trust for April 2022 to March 2023. The publication of the IPC Annual Report is a requirement to demonstrate good governance, adherence to Trust values and public accountability.

1.2 A zero-tolerance approach continues to be taken by the Trust towards all avoidable Healthcare associated infections (HCAs).

1.3 The Infection Prevention Control Committee (IPCC) reports to Quality Safety Outcomes Committee (QSOC) formally Patient Safety Outcomes Committee (PSOC) which reports to the Quality Safety Executive Audit Committee (QSEAC) which is a sub section of the Board.

1.4 The DIPC presents the annual report to the Board and attends quarterly to provide a regular update.

Infection Prevention and Control Staffing

1.5 Director of Infection Prevention and Control (DIPC):

Helen Dunn, Consultant Nurse IPC since May 2020- present

Executive lead for IPC:

The Chief Nurse is the Executive lead for IPC; supported for medical issues by the Deputy medical director. The DIPC meets bi-weekly with the Chief Nurse to discuss any issues related to IPC. A highlight report of all acute significant IPC issues is presented weekly to the Safety Team.

1.6 The Infection Prevention and Control Team (IPCT) during 2022/23

Nursing and clinical scientist establishment:

- Consultant Nurse IPC & DIPC - Helen Dunn
- Deputy Lead Nurse in IP&C - Barbara Brekle
- Lead Practice Educator IP&C- Clare Paul (maternity cover for Kate Harkus)
- IPC Nurse – Helen Saraqi
- IPC Nurse- Kate Rennie- commenced April 22
- IPC Nurse- Anna-Lena Waldner- left in Nov 22
- Principal Clinical Scientist in IPC & Infection Control Doctor (ICD)- Dr Elaine Cloutman-Green

Medical Staff:

- Dr John Hartley - Consultant Microbiologist, part time
- Dr Garth Dixon - Consultant Microbiologist: 1PA for IPC
- Dr James Soothill - Consultant Microbiologist:1 PA for IPC

- Dr James Hatcher – Consultant Microbiologist Lead Clinician for the Department of Microbiology, Virology and Infection Control: 1 PA IPC
- Dr Surjo De- Consultant Microbiologist: 1 PA IPC
- Professor Judy Breuer – Consultant Virologist (advisory)

Working with:

- The Infectious Diseases Consultant Team

Antimicrobial stewardship (AMS) -

One WTE pharmacist

Paediatric infectious disease consultant AMS time – Chair of AMS committee

Antimicrobial Policy Group Chair - consultant microbiologist 1 PA (IPC time)

Consultants in microbiology and Paediatric Infectious Diseases (PID) contribute.

Administrative support

Angela McGee Administrator IPC Team & Microbiology and Virology – 1 WTE

IPC Data management

Timothy Best This is a permanent role with support provided across the laboratory but with a focus on IPC activity and data. This year has seen the successful recruitment for a bioinformatician to support the laboratory and IPC with investigations.

1.7 Development of IPC Team

In recognition of the ever-growing demands for IPC services a band 6 role which was fixed term during the pandemic was made substantive this year. A member of the team is currently on a Masters Pathway in IPC supported by a bursary from GOSH charity.

1.8 Quality Improvement Team

Continues to provide invaluable central support for audit and surveillance data display.

1.9 Directorate Responsibility

Under the terms of the Trust IPC Strategy set out previously each Directorate developed a local Directorate group / structure to drive local planning and implementation of IPC actions.

1.10 The Directorate system started in Aug 2019. The trust now functions under 9 directorates:

- Body, Bones & Mind
- Brain
- Research & Innovation
- Blood, Cells & Cancer
- International & Private Care (I&PC) formerly International Private Patients (I&PC)
- Sight & Sound
- Operations & Images
- Heart & Lung
- Medicines, Tests and Therapies

1.11 Governance and reporting

The Infection Prevention and Control Committee (IPCC).

The Terms of Reference were updated in May 2022.

This committee is chaired by the DIPC and meets monthly 10 times a year. Regular reports are submitted to QSOC (formally PSOC) & Trust Board.

Membership by role:

- Consultant Nurse Infection Control & Director of Infection Prevention and Control – the Chair
- Executive lead for infection control – the Chief Nurse
- Medical Director team (TBC)
- IPC Team
- Infection Control Doctor
- Consultant Microbiologist(s)
- Paediatric ID consultant
- Director of Estates & Facilities (or Head of Estates and Head of Facilities as representatives)
- Head of Staff Health & Wellbeing (or representative)
- Representation from each clinical directorate (role not specified)
- Pharmacy/AMS
- Member of Risk team
- Representation from Academic Paediatric Infectious Diseases, ICH
- UK Health Security Agency (UKHSA)
- Additional members may be invited to attend the IPCC as appropriate.

In order to fulfil its requirements, the committee will receive a status report from:

Report	From: (Committee/Group/Individual)	Frequency
IPC Report	IPC Team	Monthly
Estates and Facilities	Director of Estates and Facilities (including ventilation, water, decontamination & domestic services)	Quarterly
Occupational Health	Head of Staff Health & Wellbeing	Quarterly
Directorates	Directorate representation	Quarterly (each directorate)
Built Environment	Deputy Director Redevelopment	As required
UKHSA	UK HAS representative	Monthly, verbal
Genetically Modified Organisms Safety Committee	DIPC	Quarterly
Water Safety Group	DIPC/Director of Estates and Facilities	Quarterly
AMS Committee	Pharmacy/AMS lead	Quarterly
Sepsis Group	Sepsis Lead	Quarterly

Administrative support: provided by IPC Administrator

1.12 Achievements and areas of focus

Key IPC achievements:

The team provided support and input with the design for the Children's Cancer Centre (CCC) including decant and enabling works: the team have continued to support the design of CCC and the associated enabling works.

Management of COVID-19 & face to face audit days: The response to COVID-19 continued this year with guidance being updated and communicated across the organisation. In addition, all other essential work was maintained, and audit days returned to in person with teaching and facilitation provided for links.

Review and RCA of Gram-negative bacteraemias: Early within the year it was observed that we had more Gram-negative bacteraemias than in previous years. As a result, the IPC team proactively completed RCAs which allowed themes to be identified and explored for causes and has led to the introduction of RCAs for all healthcare associated Gram-negative bacteraemias with the multi-disciplinary team this year.

Relaunch of the IPC pages on the hospital intranet: an extensive project was undertaken to rebuild the IPC resources on the new hospital intranet.

Business case completed and approved for microbiological plating following ventilation verification: to improve flow and bed availability an inhouse team to complete microbiological plating was proposed. The case was created and approved and is in the final stages of being set up.

Areas of focus, interventions to mitigate risks and areas of improvement:

Risk	Actions/Mitigation
<p>Ventilation: three trust wide risks are currently in place surrounding both the specialist and the standard ventilation provided in clinical areas.</p> <ol style="list-style-type: none"> 1. Relates the verification of the specialist ventilation (positive pressure ventilation lobby) and theatre areas, which were behind schedule. There was also no AP in post. 2. Chilled beams had not been inspected and cleaned as per the Health Technical Memorandum (HTM) guidance. 3. Newly commissioned standard bedrooms in the trust were not commissioned to 6 air changes despite this being in the design 	<ol style="list-style-type: none"> 1. An AP is now in post and the PPVL schedule is running 90% on plan with a schedule in place which is overseen at decant and the ventilation monitoring meeting. 2. A decant program has been undertaken which has included cleaning of chilled beams and a Computer Aided Facilities Management (CAFM) system has been introduced to monitor and record this work going forward. An SOP is also in progress to support this moving forward. 3. Fallow times within these areas have been increased to reflect the reduced air changes and the IPC team have requested they are checked as part of the chilled beam cleaning in decant.
<p>Estates: it has been identified that there is a lack of assurance around</p>	<p>Significant change in the senior team has been undertaken to address this and change the culture of working. The</p>

management of risk and documentation within estates.	introduction of a CAFM system and manager and the appointment of AP's has assisted but it is anticipated and acknowledged that this progress will need to be monitored closely moving forward.
Increased line infections- 2.3/1000 line days (128 episodes). (Rate 1.3 last year, 66 episodes). Line infection rates this year rose throughout the trust peaking in August 22.	It was identified that from Easter until the summer supply of the wipes used to clean the end of needle-free connectors (on the end of central lines) were in limited supply. It was very likely this led to an increase in line infections. Work was undertaken with pharmacy and materials management as well as the clinical teams to monitor this nationally and improve how this consumable was ordered in the trust. Prior to September 22 this was ordered by the wards and supplied by pharmacy, it is now supplied, and stock is managed by materials management.
Surgical site surveillance: it has been identified the system used to record (RL Datix) spinal surveillance, other general surgery and cardiac cannot be optimised to the desired standard. The system has several issues which means that data cannot reliably be captured in a standardised way presenting a risk to data recording and analysis.	Work is underway with the IT team, performance team and data manager within IPC to specify a system that meets the needs of the trust. For continuity- spinal surveillance continues and we have commenced cardiac surveillance now that a trained individual is in post. Patients who meet the criteria for infection are actively identified and root cause analysis (RCA) completed to identify learning or any gaps in the surgical care bundle.

1.13 There was no KPMG Infection Control Audit internal audit in 2022-23, the last one took place in 2021-22

2. Organisms Subject to Mandatory Reporting

2.1 The following organisms are subject to mandatory reporting. These are MRSA & MSSA bloodstream infections, *Clostridioides difficile* and Gram-negative blood stream infections (*Escherichia coli*, *Klebsiella species*, *Pseudomonas aeruginosa*).

2.2 The table below shows the trends over previous years.

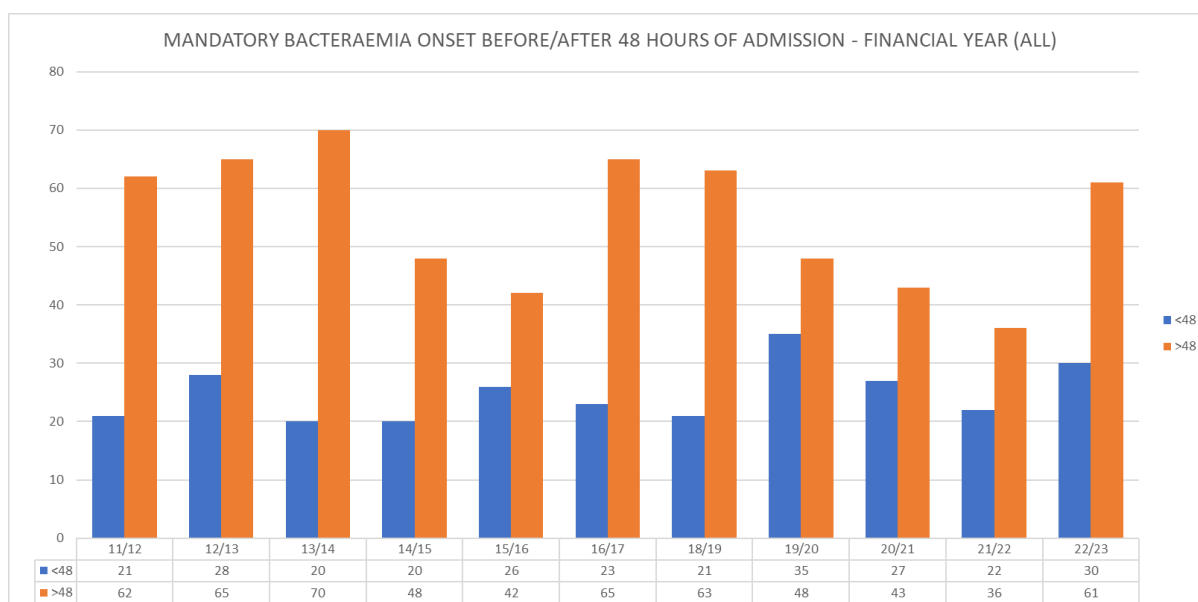
2.3

Year	E. coli		Klebsiella		MRSA		MSSA		P. aeruginosa	
	CAI	HAI	CAI	HAI	CAI	HAI	CAI	HAI	CAI	HAI
19/20	3	7	13	15	1	0	9	13	10	9
20/21	5	14	4	10	1	1	12	9	6	9
21/22	3	5	5	11	0	1	6	13	5	8

22/23	4	16	8	27	0	1	14	11	3	7
Grand Total	15	42	30	63	2	3	41	46	24	33

2.4 The table below displays the thresholds which were set for the year 2022/23 and the trust achievements. Further evaluation of this data is carried out below.

Organism	Threshold set for 22/23	Actual number (HAI)
MRSA	No threshold	1 (1)
MSSA	No Threshold	25 (11)
E-coli	<8	20 (16)
Pseudomonas aeruginosa	<8	10 (7)
Klebsiella sp	<12	35 (27)



2.5 The bar chart demonstrates the overall rise of total reportable bacteraemias. This figure was significantly reduced during the pandemic and care and analysis must be undertaken to look at the root causes for this rise and interpreting this data.

Meticillin-resistant Staphylococcus aureus (MRSA Bacteraemia)

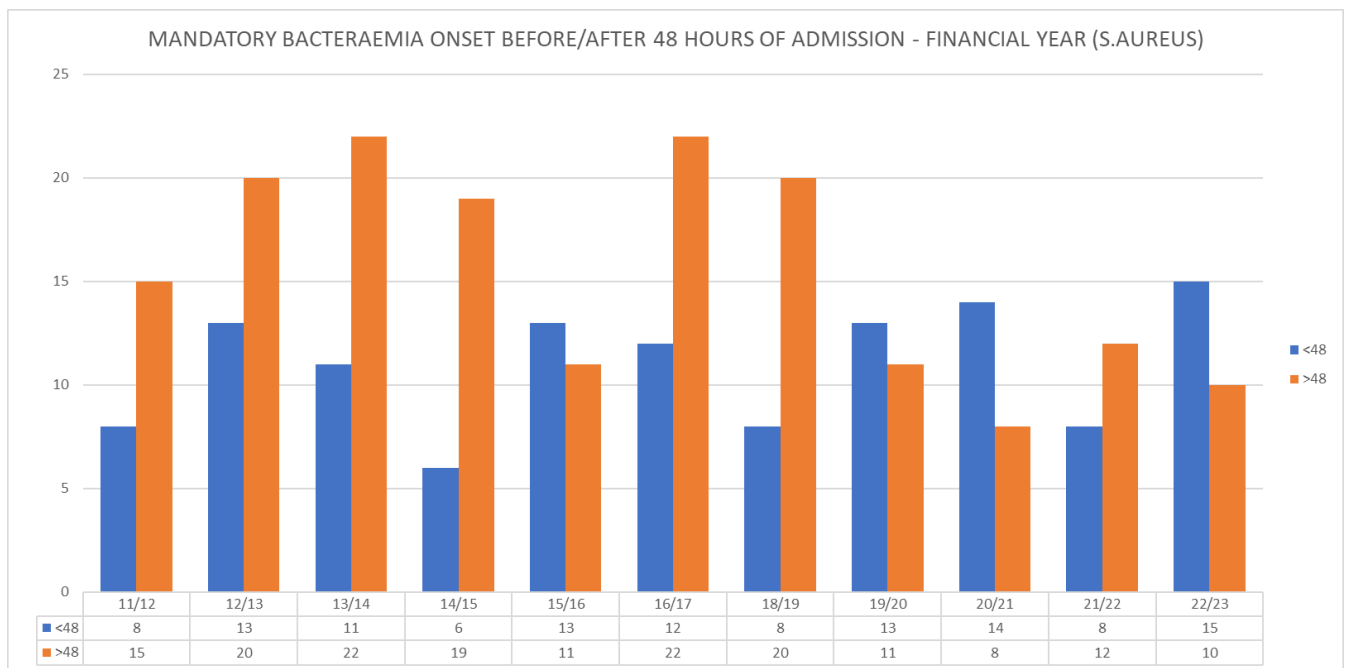
2.6 In 2022/23 financial year 1 child had an MRSA bacteraemia. This was Trust attributable. A full RCA was conducted into the case. Despite admission screening identifying MRSA this was missed by the surgical team and anaesthetic team resulting in the child receiving sub-optimal prophylactic antibiotics for their elective surgery. Decolonisation or suppression treatment (pre-op washing) was also not considered by the surgical or ward team. Learning actions were undertaken and there has been confirmation from the teams that these actions have been completed.

Meticillin- sensitive Staphylococcus aureus (MSSA Bacteraemia) (Hospital onset)

2.7 In 2022/23 financial year 25 children had an MSSA bacteraemia, 11 were Trust attributable. Whilst this is a rise in total numbers of MSSA there was a slight decrease in those attributable to the Trust. This continues the downward trend in total S.aureus bacteraemias.

Root cause analysis of all S. aureus bacteraemias (MRSA and MSSA)

All S. aureus bacteraemias are reviewed by IPC team and full or mini-RCAs requested for all S. aureus bacteraemias developing after 48 hours of admission and not incubating before admission and those occurring in prior GOSH patients.

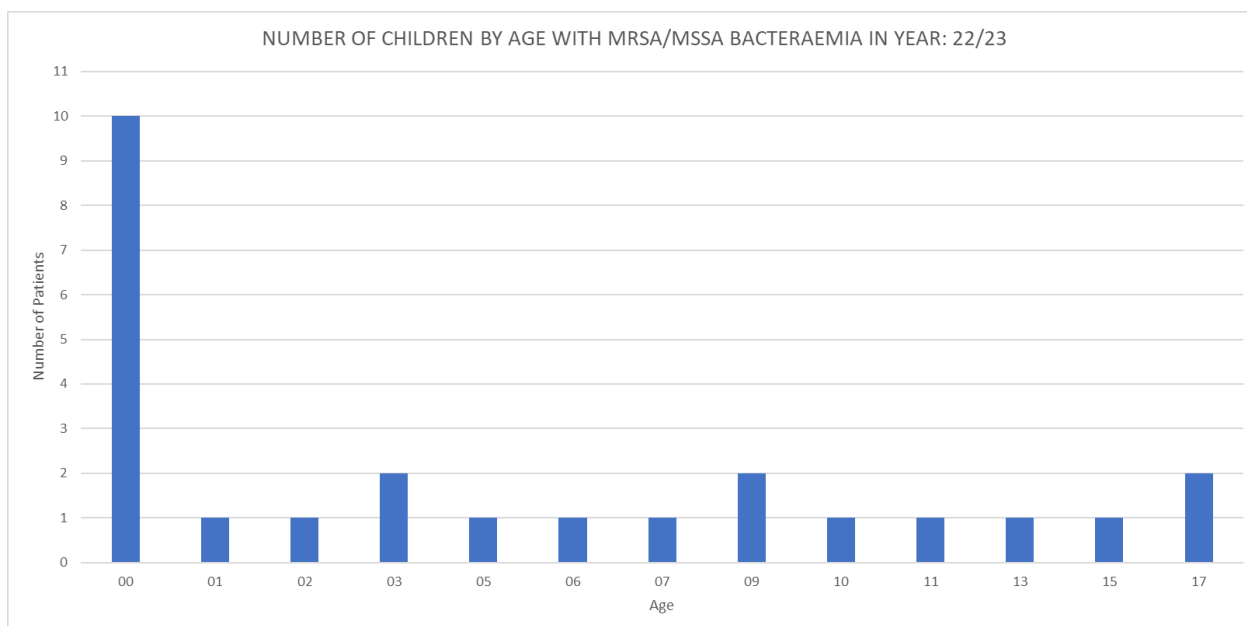


2.8 Seventeen RCAs were requested for completion by clinical teams. Sixteen out of seventeen were completed for the year which was an improvement on the previous year. One was not completed for the year.

Thematic analysis demonstrates that a significant portion of the children were already colonised with MSSA. Pre-operative washing was documented, but the agent used was not always regularly specified in the RCA. Other themes identified included the lack of documentation of line care and delays in cultures being taken as temperatures put down to other causes.

An SOP has been created to ensure all children having elective central lines inserted have a pre-op wash with 4% chlorhexidine bodywash. Ongoing work continues around documentation of line care.

2.9 Previous years data showed the highest proportion of children with MRSA/MSSA bacteraemia coming from <1 year olds. Whilst this is still true there is a much more even distribution over the age groups for this financial year.



Clostridioides difficile

2.10 In line with previous agreement with NHS England, while we test extensively for toxigenic *C. difficile* colonisation and infection, we continue to report all children aged 2 and over who have *C. difficile* toxin in the faeces and diarrhoea with no other cause, or other possible cause but treated. The table below shows testing and reporting over the past five years.

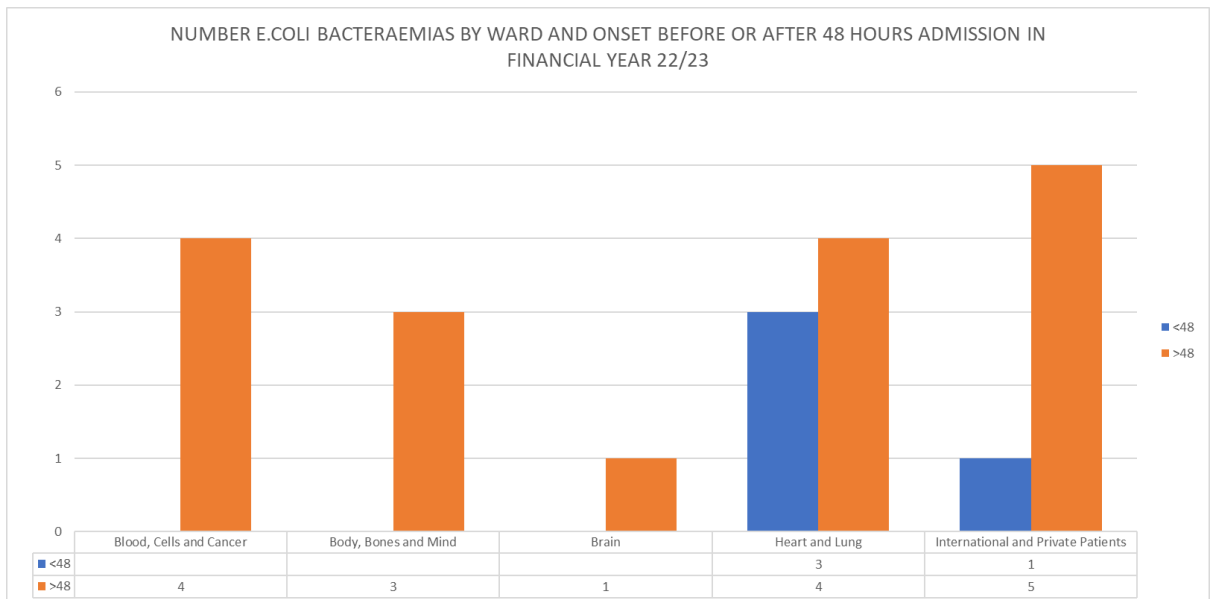
	18/19	19/20	20/21	21/22	22/23
<i>C. difficile</i> 1 st toxin new detections ALL ages and any duration of admission	57	47	48	47	59
CDI notified on HCAI website (total numbers)	7	7	13	8	13
Number 'trust apportioned cases' (aged above 2 years old and in for > 3 days when tested and reported as possible CDI on HCAI site)	7	2	10	5	11
Objective (number below which we aim to keep apportioned cases).	14	5	5	7	8
Possible lapse in care	0	0	0	0	0

2.11 Analysis of every case is undertaken to assess the likelihood of true disease, and any avoidable risk factors or lapses in control measures.

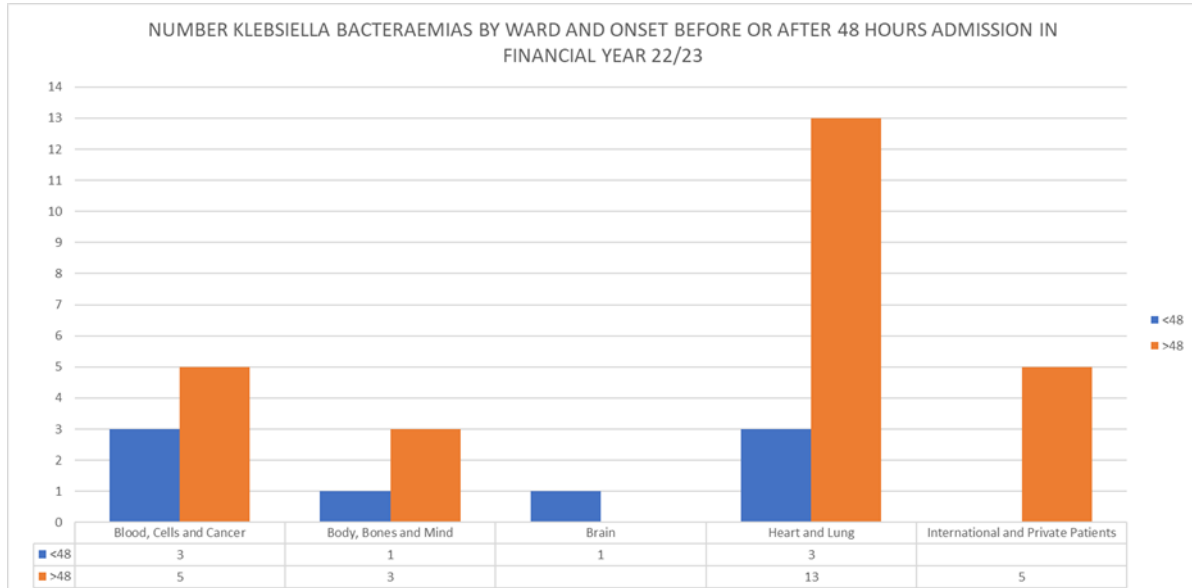
The number of cases reported in 22/23 rose slightly. There were two cases of disease; one case of pseudomembranous colitis which was transferred and treated immediately but testing was not undertaken until day 4 of admission. The second case was queried as a case of CDAD and treated. There were also three cases of <2 year old patients being treated for *C.diff* but not reported. There was a higher than usual number of healthcare associated detections within BCC where gene and toxin were detected but treatment was not required. This could have been a result of enteric virus outbreaks in this area and co-incidental *C.diff* being detected. Further investigation into this is ongoing with the specimens sent for further typing and analysis.

2.12 E.coli & Klebsiella sp bacteraemia

The number of children with E.coli bacteraemia reported rose in 22/23 to 20 with 16 of these being hospital acquired. This is a threefold increase on the previous reported year.



The number of Klebsiella sp. bacteraemia increased from 16 to 35 in the year 2022/23, with 27 of these being attributable to the Trust. This demonstrates another significant increase on the previous year.



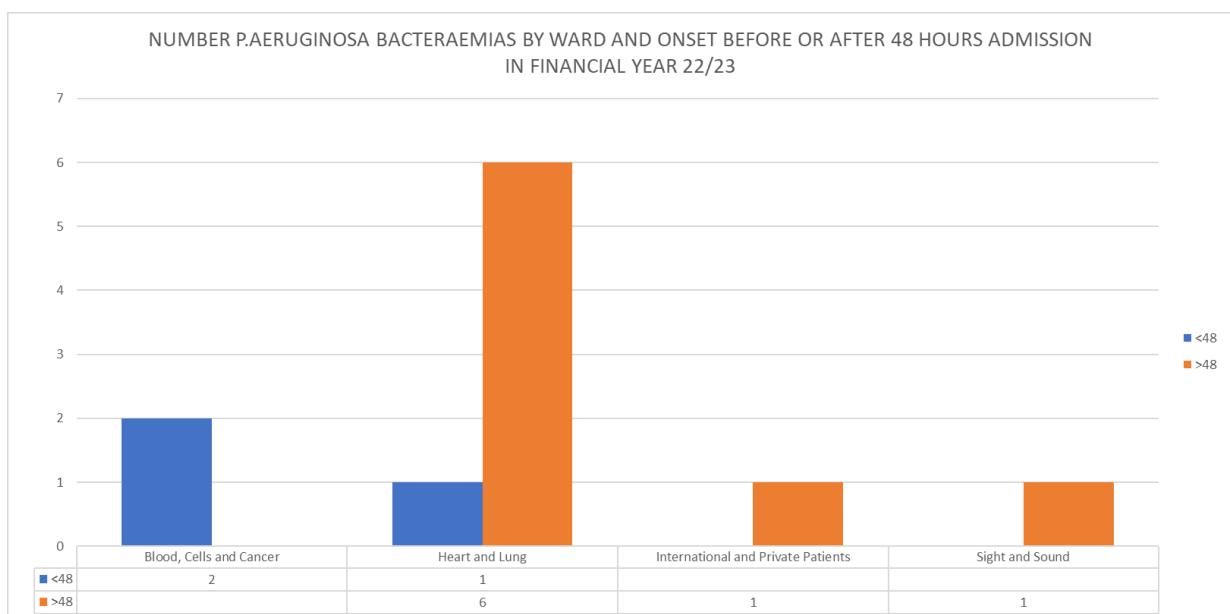
2.13 The distribution of E.coli and Klebsiella sp bacteraemias has changed in the year 22/23. More healthcare associated bacteraemias occur in I&PC than any other directorate although numbers are still high within the Heart and Lung Directorate for both organisms. Thematic analysis shows that colonisation with the organism causing the bloodstream infection is common indicating that gut is an important source. Other commonalities including enteral feeding and immunosuppression. Most of these infections also appear to be in children under the age of one although infection occurs across all age groups in smaller numbers. During

23/24 full root cause analysis will be carried out with the clinical teams to identify further themes and learning.

2.14 Pseudomonas aeruginosa bacteraemia

The number of Pseudomonas aeruginosa bacteraemias decreased to 10 in the year 2022/23, with 7 of these being attributable to the Trust. This demonstrates a small decrease.

It is observed that the majority of the cases occurred in the Heart & Lung Directorate. No clear trends were identified and patient-based Pseudomonas surveillance is in place within the intensive care areas and cardiac ward. No patient clusters of Pseudomonas aeruginosa have been identified.



Mandatory Surveillance of Glycopeptide Resistant Enterococcal bacteraemia (GRE) 2022/23

2.15 The number of children experiencing VRE (Vancomycin-resistant Enterococcus) bacteraemias remains largely unchanged. The numbers, although higher than in recent years, broadly maintain consistency around the overall mean and are reflective of slightly higher numbers of colonised inpatients.

Year	Samples	Patients
12/13	5	5
14/15	2	2

15/16	2	2
16/17	2	2
17/18	6	3
18/19	14	4
19/20	8	5
20/21	8	3
21/22	4	4
22/23	7	7

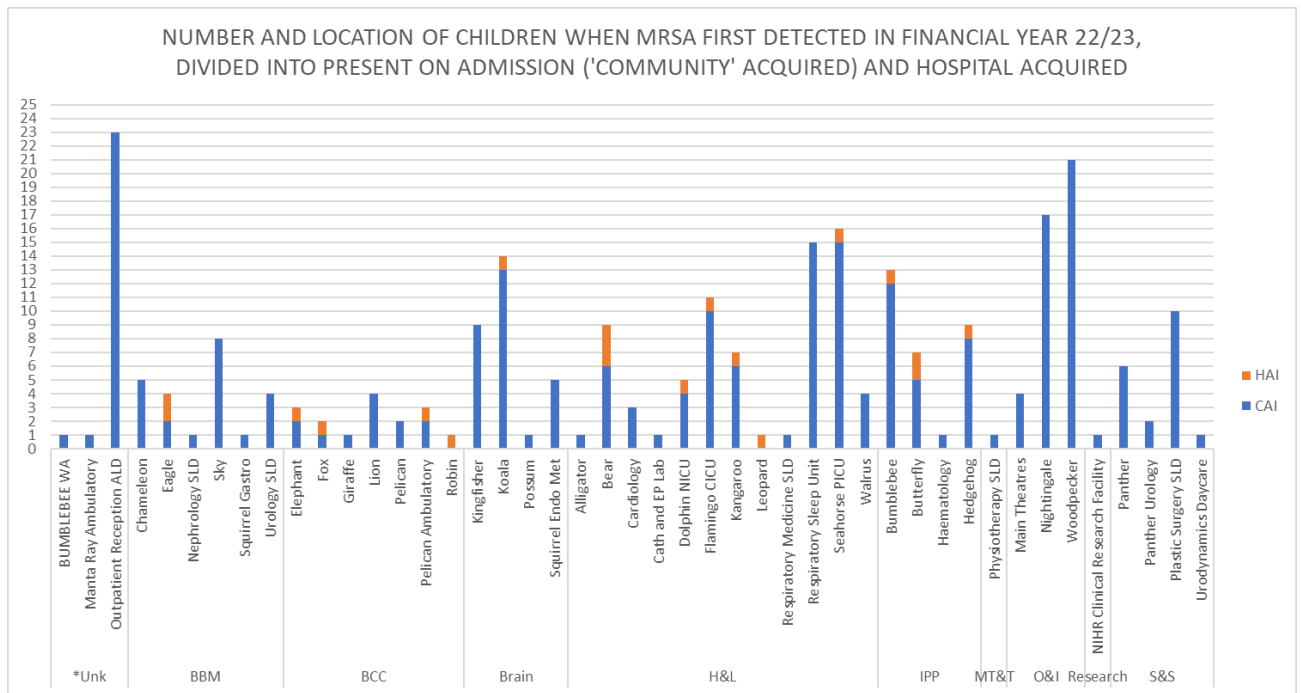
3. Screening for MRSA and Multiple 'Resistant' Gram Negative Organisms

MRSA colonisation by financial year:

3.1 All patients are screened on admission or prior to admission at Great Ormond Street Hospital. Details of newly detected MRSA carriage is shown in the table below.

	CAI	HAI	N/C	UNK	Grand Total
13/14	151	15	2	0	168
14/15	151	8	0	1	160
15/16	166	23	2	2	193
16/17	209	16	3	4	232
17/18	198	9	3	3	213
18/19	207	24	2	3	236
19/20	205	17	0	5	227
20/21	154	10	0	1	165
21/22	196	5	0	0	201
22/23	213	16	0	0	229
Grand Total	1850	143	12	19	2024

3.2 The table below shows the ward location of where both community and hospital first detections were isolated.



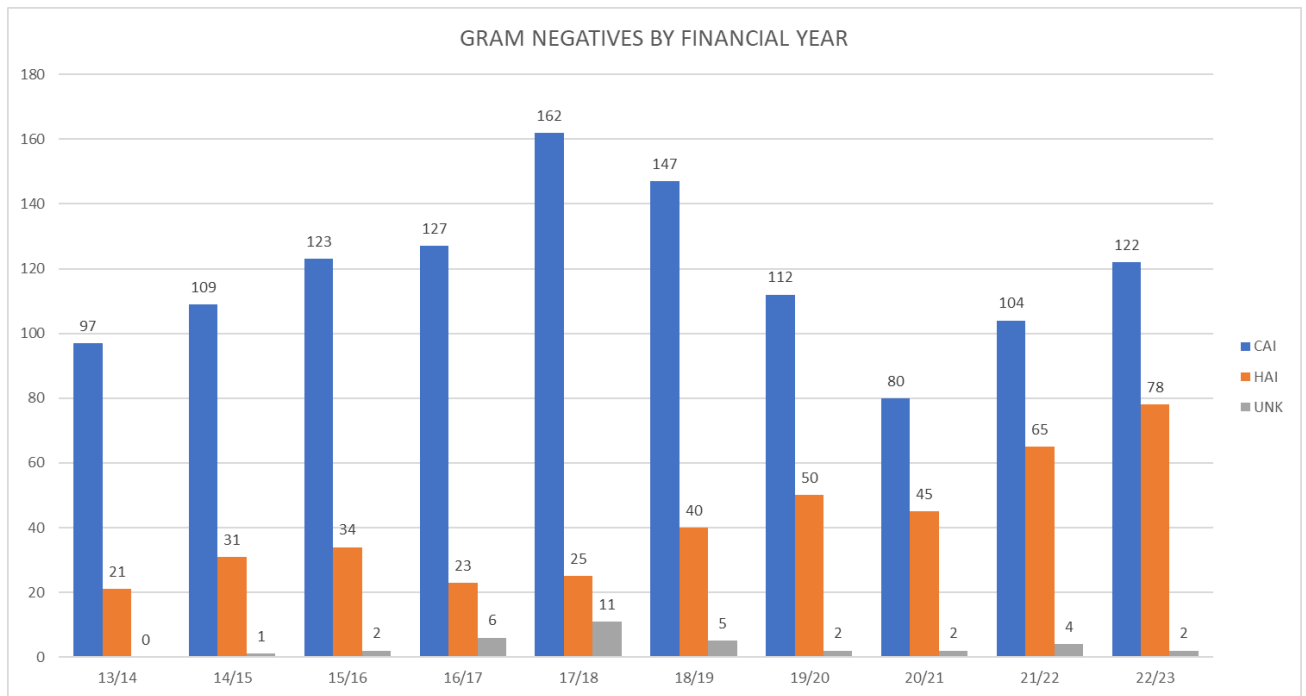
3.3 We aim to investigate every apparent GOSH acquired case. Long term colonised patients are always present and represent ongoing risk.

3.4 In previous years there has been a disproportionately high rate of carriage in the I&PC directorate, but this year we see detections across the organisation.

3.5 Seventeen HAI cases were detected in the year 2021/22 up from five in the year 2020/21. These were all investigated by the IPC team and no source was identified. There were no outbreaks of MRSA reported this year.

Multiple resistant 'gram negative' organisms, including transmissible carbapenemase producing organisms

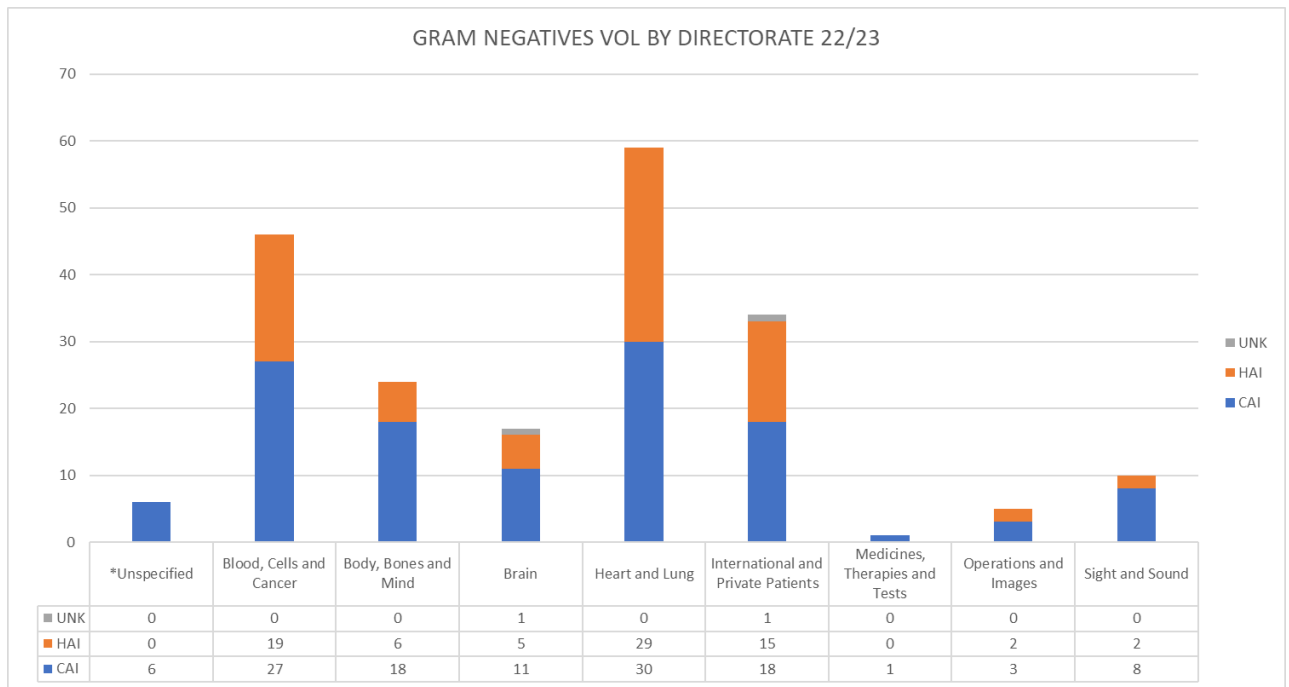
3.6 All patients should have a stool sample sent for screening for resistant Gram-negative organisms on admission. The chart below shows the number of children with newly detected colonisation with multidrug resistant Gram-negative organisms (as defined in GOSH admission screening policy) by financial year.



CAI = those colonised on admission
HAI = those acquiring colonisation in hospital

3.7 The overall numbers of both community and healthcare acquired standard Gram-negative organisms continue to increase year on year following the pandemic but healthcare associated numbers are at a much higher level than we have seen in previous years and are continuing to grow. The high level is due to the continuing national and international increase in antimicrobial resistant organisms, but was also due to cross infection. In addition, stool screening compliance figures are not as high as we would like them to be, meaning children may be allocated as HAI when they arrived with the resistant organism or there may be cases of cross-infection which go unnoticed due to transmission-based precautions not being implemented.

3.8 The chart below shows the location of children when first detected as colonised with multidrug resistant Gram-negative organisms in financial year 2022-23. This year we investigated 37 of the 78 cases of HAI Gram-negatives, but routine typing of these organisms does not take place therefore identifying sources can be more complex. This is made even more difficult if not every child admitted has a stool sample sent as cases of unknown risk may then be present. The prompt screening of patients on admission and every 30 days would reduce the risk of children acquiring Gram-negative organisms within GOSH.



3.9 Potential acquisitions occur throughout the year and not all isolates can be investigated through detailed typing, so complete analysis of source is not possible. Where the initial epidemiological analysis strongly suggests cross infection further typing is undertaken if an outbreak is suspected.

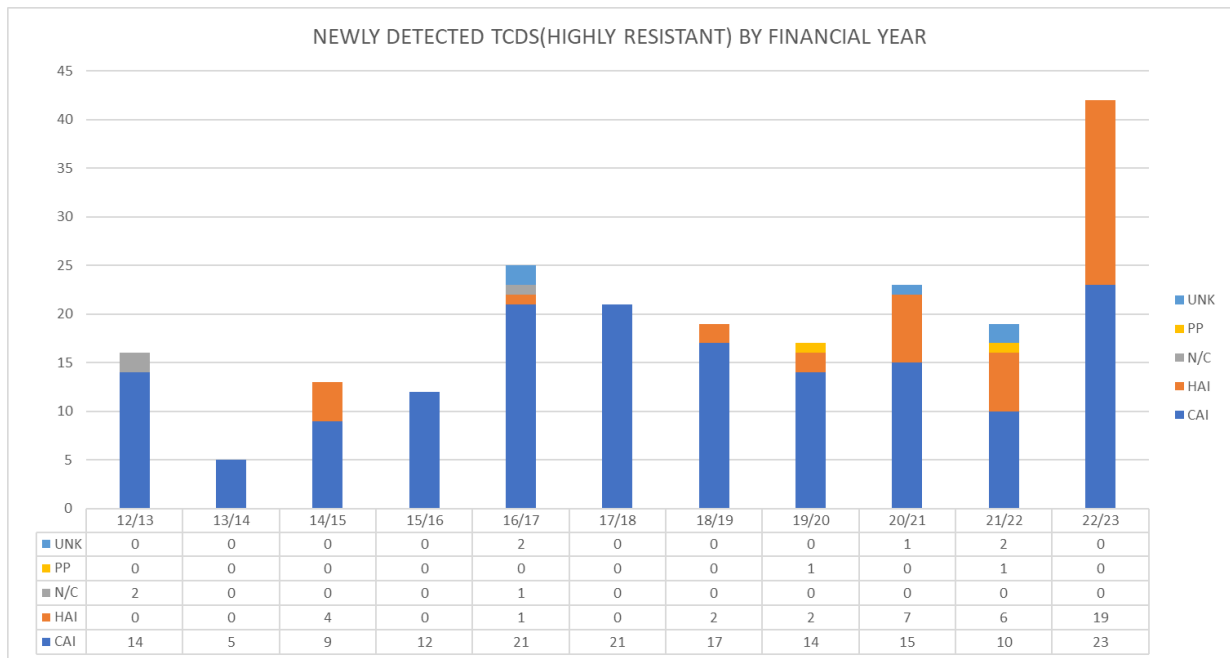
3.10 The organisation is stretched in its ability to apply controls mechanisms without adverse impact on other aspects of care provision; however, we feel it is essential to continue to do so.

Carbapenemase resistant Gram-negative organisms

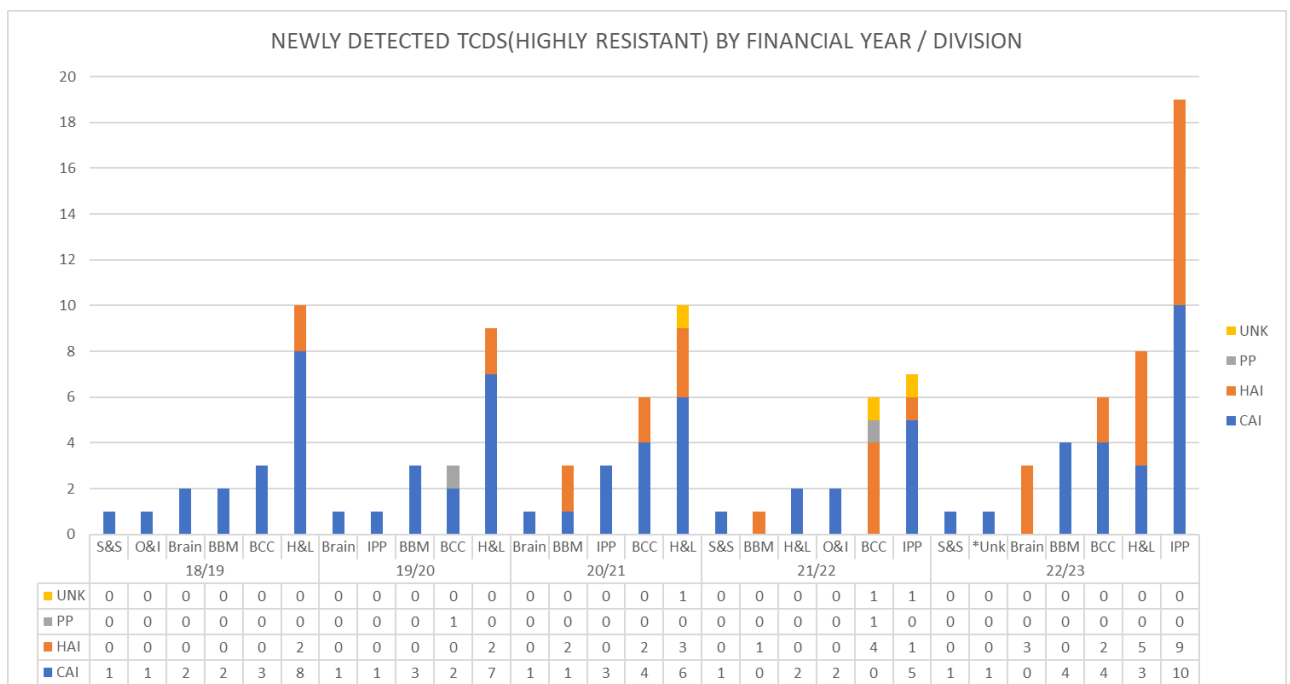
3.11 The transmissible carbapenemase resistance determinants (TCDs; blaNDM, KPC, oxa48, VIM and IMI especially) represents the most serious threat to treatment yet. Organisms carrying this mechanism may become truly untreatable. They are becoming more prevalent in various countries and regions within UK and have been responsible for major outbreaks. We routinely screen for carriage and implement strict control mechanisms when found. Overall rates in 2022/23 have soared from fifteen in 21/22 to forty-three in 22/23. Nearly half of these organisms are healthcare associated suggesting the organisation has reached its limit in the control of these organisms and additional measures and controls need to be implemented.

3.12 Organisms are detected during routine screening and clinical samples. There were 19 unique healthcare associated mechanisms of carbapenemase resistance determinants detected in 17 patients. 2 patients were found to have acquired more than one resistance mechanism.

3.13 Bar chart showing the number of children newly detected as colonised with significant **transmissible carbapenemase carrying organisms**

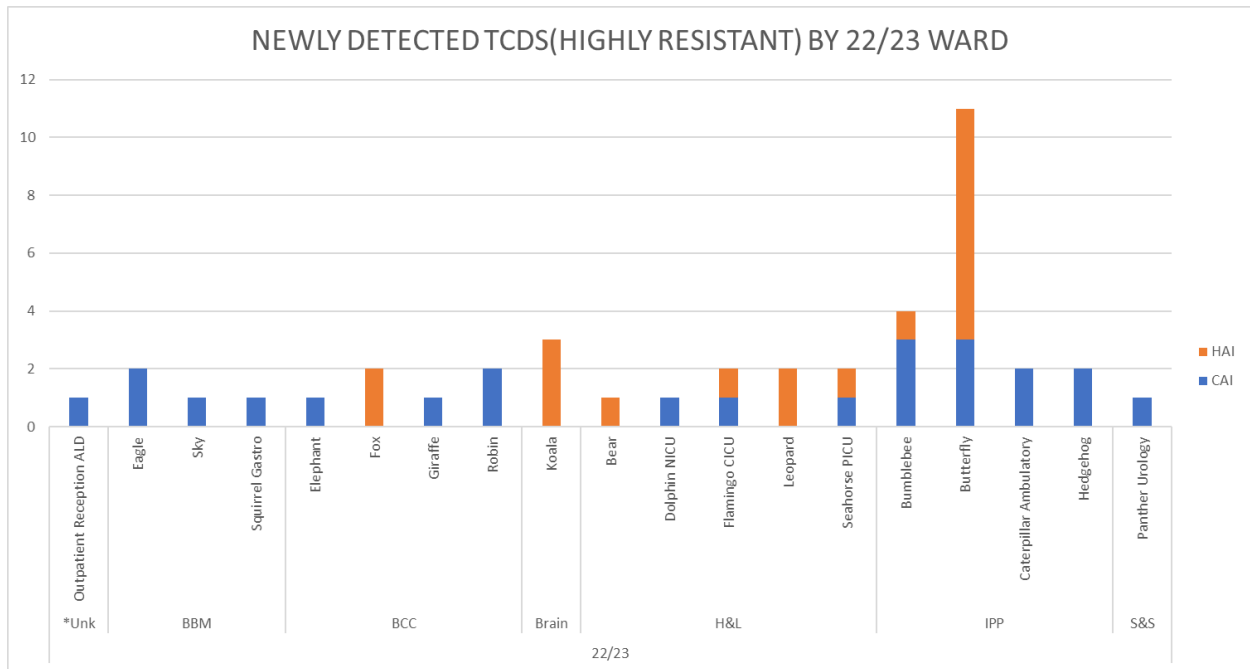


3.14 Just over half the cases are detected on admission. Lack of compliance with stool screening means that there may be cases which we do not know about which are a risk to the trust. Work is ongoing within the trust to increase compliance with stool screening and the IPC team review screening compliance and follow up with wards on a regular basis (usually weekly). Where suspected clusters are identified then typing is requested although this is limited in its capacity both nationally and at Trust level. To date this typing has not shown any TCDs of the same mechanism to be related but this does not rule out cross-transmission.



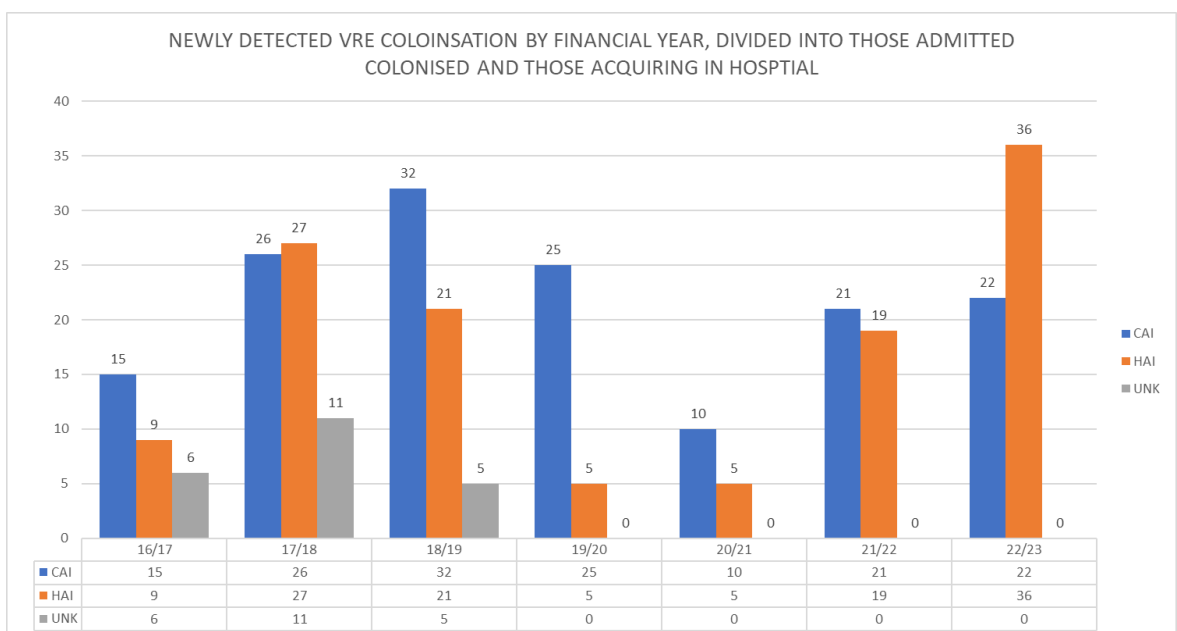
3.15 Within the year we managed several local outbreaks within the I&PC directorate. These were sporadic and associated with three main mechanisms: NDM, KPC and OXA-48,

therefore a major outbreak was not declared at the time. The data demonstrate that the majority of cases of carbapenemase resistance determinants are found both on admission or as acquired organisms within the I&PC directorate suggesting that the current control mechanisms in place are not sufficient in preventing the risk of acquisition of these organisms.



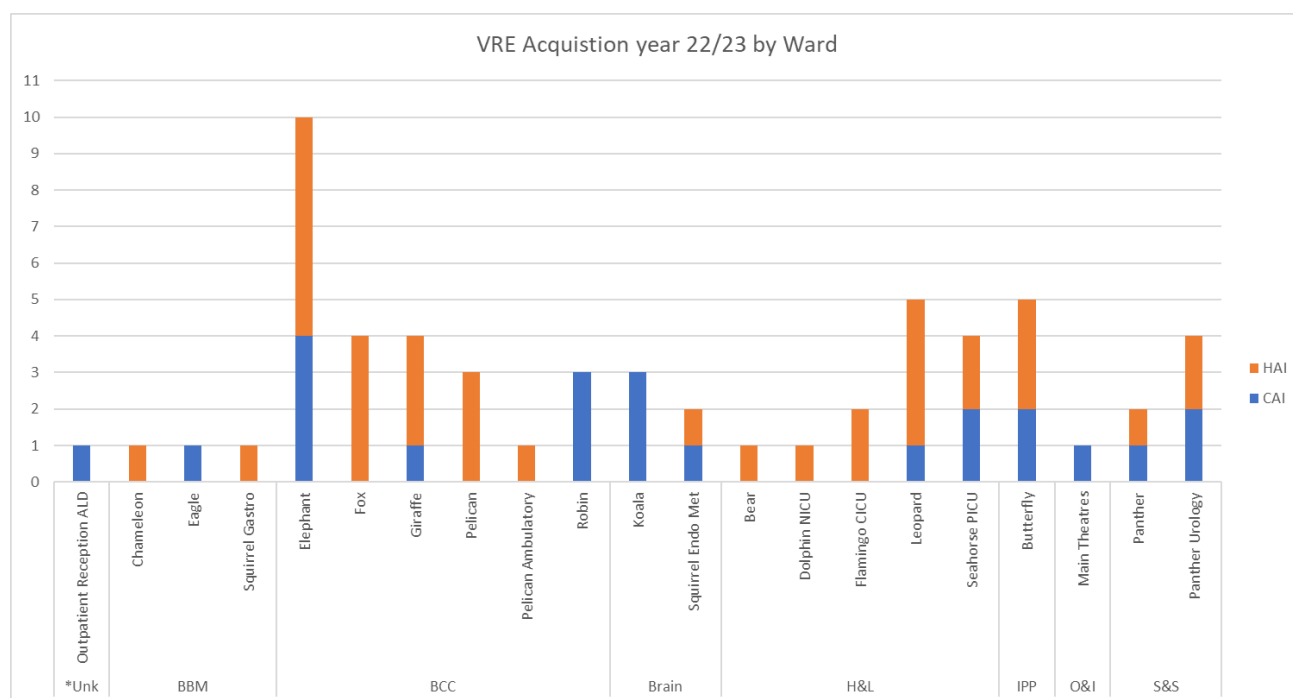
Vancomycin resistant enterococci (VRE)

3.16 VRE colonisation, community and hospital acquired, is shown below. Children may be found in most clinical services.



3.17 As a result of the increase in cross transmission detected in 2017-18, we have increased terminal cleaning after room occupancy and, combined with actions on general cleaning, we hoped to reduce transmission. A small but sustained reduction was seen in hospital acquired cases. This reduction has not been sustained and this year there has been another rise in healthcare associated infections suggesting that current control measures were not sufficient. Fortunately, nearly all these detections are colonisations rather than infections. We continue to monitor this through the IPCC.

3.18 The graph below shows community and hospital acquisitions for 22/23. Most of the healthcare associated cases continue to occur within the BCC directorate, but acquisition occurs across the organisation.



Screening compliance for multiple 'resistant' Gram-negative organisms

3.19 Routine admission faecal surveillance is performed to allow:

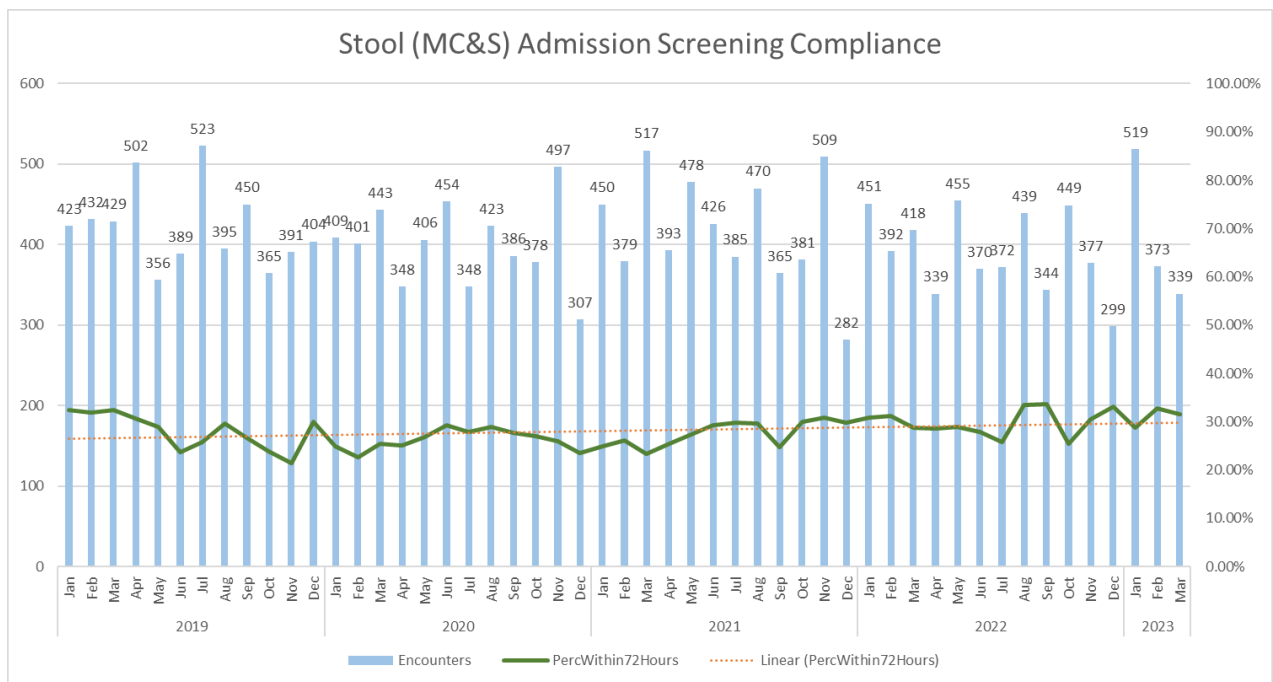
- instigation of isolation procedures in patients who are colonised with multiple antibiotic resistant organisms , including transmissible carbapenemase resistance ('ALERT' organisms as defined in the 'Microbiological screening of patients on admission' guideline) and
- to guide individual antibiotic choice of empirical treatment of serious sepsis.

We also detect colonised or infected children during processing of clinical samples and as part of routine stool screening on admission and after 30 days as an inpatient.

3.20 Screening/testing shows a maintained number of colonised children detected on admission and an increase in those acquired in hospital.

3.21 Reporting definitions have been generated and approved at the IPCC during the year 2020/21 for stool screening. Any child who is admitted for greater than 72hrs who has not had a stool sample will show as non-compliant with the screening programme.

3.22 Work has previously been undertaken to introduce screening alerts on Epic and in 22/23 further work was undertaken to make these alerts live for rescreening at 30 days in the coming year. The IPC team also regularly review any outstanding screens and highlight to wards on a regular basis to improve compliance.

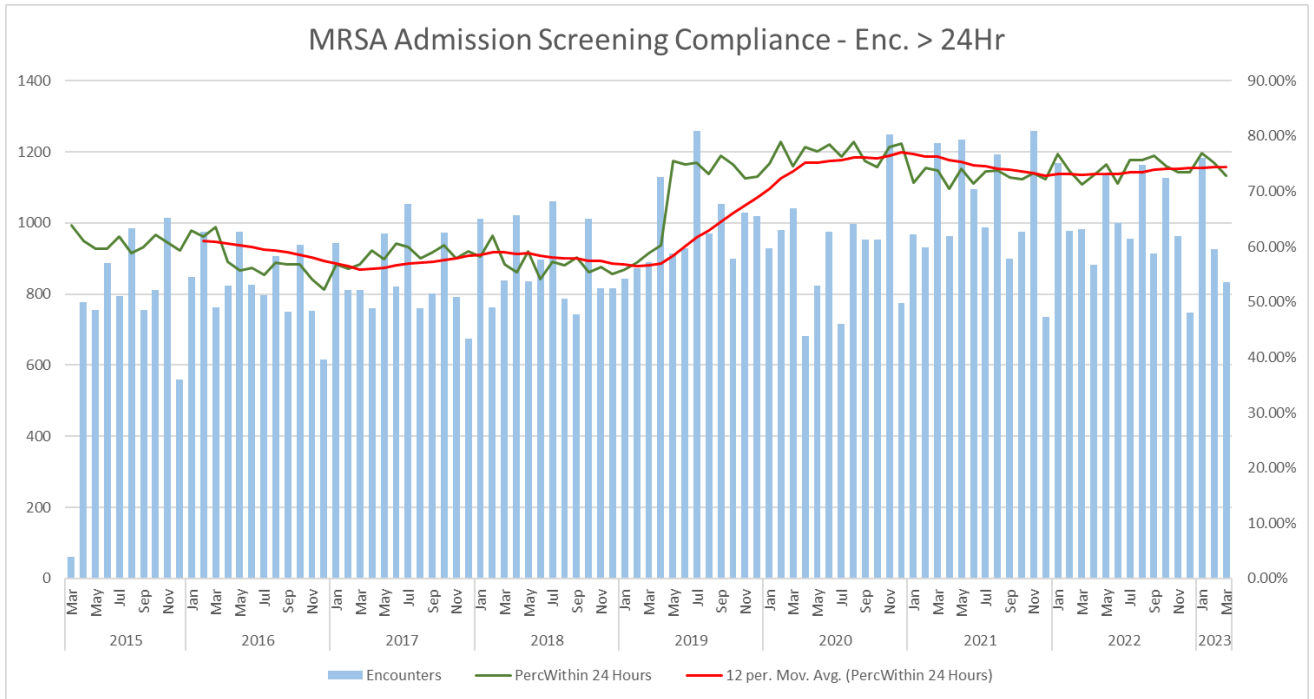


Screening compliance for MRSA

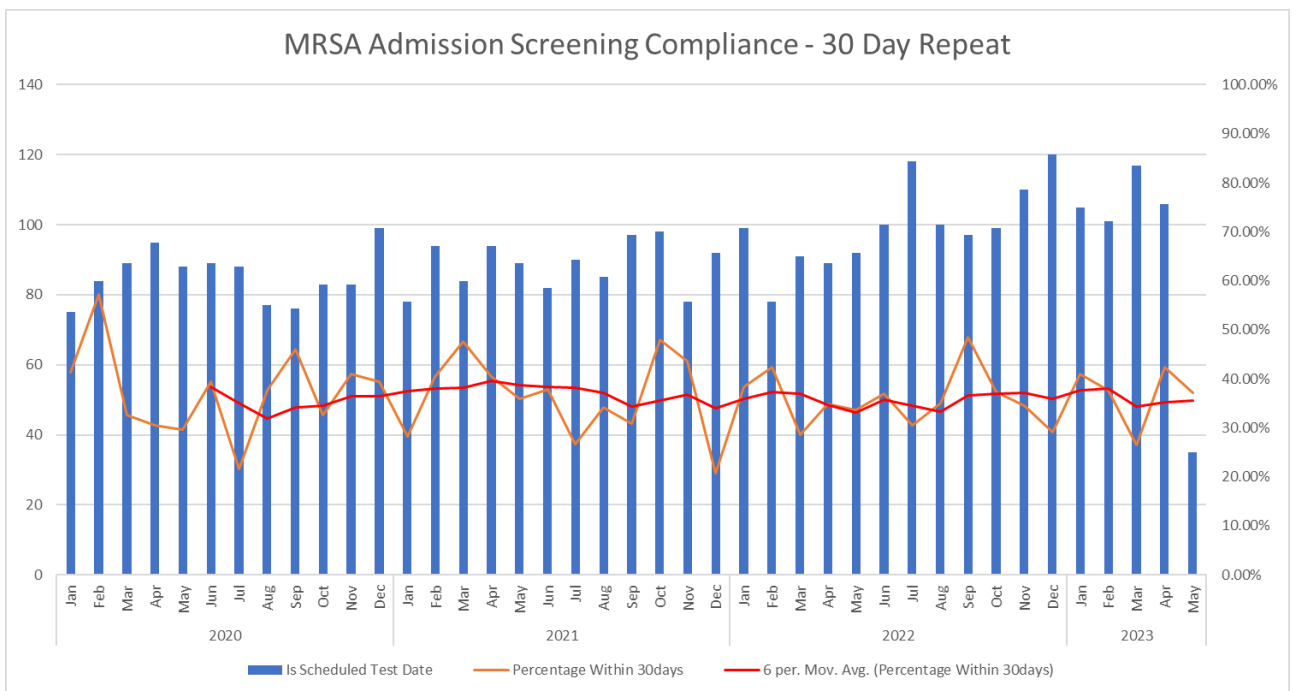
3.23 The Trust MRSA screening policy is universal admission screening (in the 30 days prior to admission (or sooner if admitted elsewhere in those 30 days) or within 24 hours of admission). We aim to achieve > 80% for all admissions, and near to 100% for the ICUs (except some situations it is not appropriate, so > 95% target).

3.24 Wards are provided continuous feedback on completion of screening through the Infection Control Screening Compliance Report located on the Nursing Care Quality Dashboard (which wards monitor daily). In addition, patient alerts and flags are now also present on Epic to highlight to staff if admission screens are missing. Reports are also available within Epic to highlight outstanding screens. The IPC team also regularly review any outstanding screens and highlight to wards on a regular basis to improve compliance.

3.25 The graph below shows compliance with MRSA screening over time. Compliance with screening has improved since the introduction of Epic and has remained stable.



3.26 The graph below highlights the reduced compliance with the 30-day repeat rescreening for long stay patients.



4. Investigation of Infection prevention and control incidents and outbreaks

4.1 Serious Incidents: There was one SI related to IPC in 22/23 – loss of ventilation in Theatres 14 & 15.

4.2 Major outbreaks: There were no outbreaks meeting the definition of a major outbreak in 22/23. However, there have been ongoing detections of healthcare- acquired CPE across International & Private Care.

4.3 The IPC team was involved in the response to the UKHSA Health Protection Briefing Note 2022/058 Mycobacterium Chelonae Contaminated Heart Valves Briefing Note 058.

The IPC team also participated in an external learning review conducted by NICHE on behalf of NHSE.

4.4 There were also no wards closed or on restricted admission due to enteric and respiratory viruses.

5. Management of Respiratory and Enteric Viral Infections

Surveillance of Respiratory virus infection

5.1 Respiratory viruses are common in children and often asymptomatic or only causing mild infection. However, in children with immunodeficiency or other severe illness, normally mild infections may be serious, with even the simplest 'common cold' leading to death. We are aware that children acquire infections while in hospital, with multiple sources among patients, visitors and siblings, staff and other adults. The prevention of cross infection requires good compliance with standard and transmission-based infection prevention procedures, including assessment of risk and low threshold for testing, including in asymptomatic immunocompromised children who shed high loads for long periods.

5.2 First detections are called hospital acquired if the symptoms onset in hospital or if the first test was after 48 hours; some detections will have been incubating. Some children have 2 or 3 viruses so the total number of positive patients is less than the number of viruses.

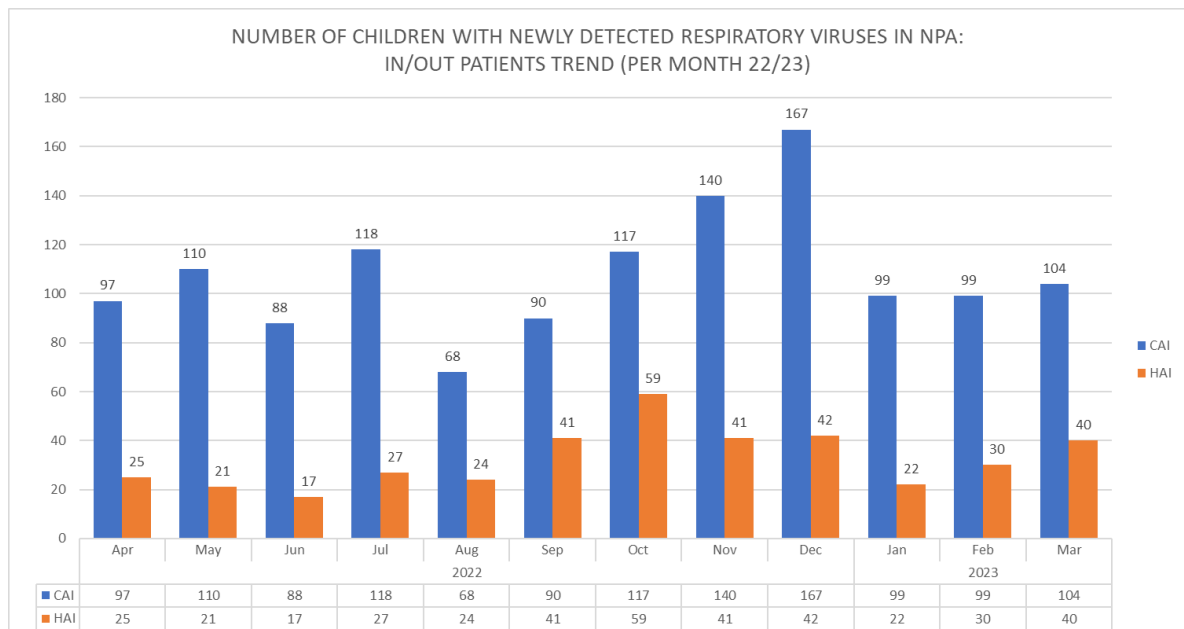
5.3 Comparison of previous years is shown in the table below. The number of positive tests overall remains around the same as the previous year with slightly more children acquiring respiratory viruses while in hospital. Influenza, SARS-CoV2 and Rhinovirus account for the majority of healthcare acquired infections, suggesting risk is still present.

5.4 Adenovirus infection increased slightly but this was largely detected at admission and healthcare associated numbers remained around the same as the previous year.

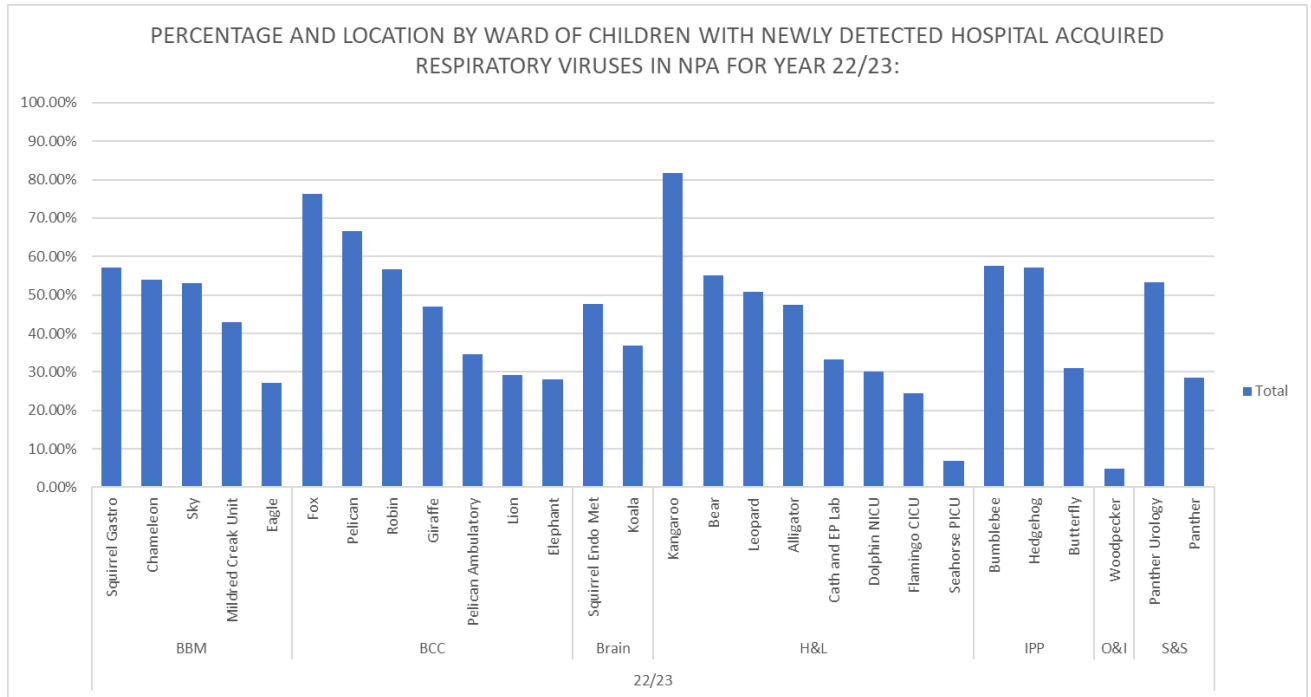
Org	19/20		20/21		21/22		22/23	
	CAI	HAI	CAI	HAI	CAI	HAI	CAI	HAI
Adenovirus	106	61	60	38	62	21	105	28
Bocavirus	28	11	20	4	82	25	45	12
Bordetella Pertussis	3	0	0	0	0	0	0	0
Coronavirus 229E	2	4	1	0	7	1	1	1
Coronavirus HKU1	6	3	5	1	8	1	15	3
Coronavirus NL63	14	2	6	0	32	8	1	1
Coronavirus OC43	5	9	1	0	23	3	13	0
Enterovirus	1	0	0	1	3	1	0	0

hMPV	37	6	0	0	49	4	42	6
Influenza A	32	6	2	0	8	2	67	10
Influenza A H1N1	6	2	0	0	0	0	0	0
Influenza A H3	6	0	0	0	3	0	7	0
Influenza B	10	0	0	0	2	0	17	6
Legionella pneumophila	1	0	0	0	0	0	0	0
Mycoplasma pneumoniae	0	0	1	0	0	0	0	0
Parainfluenza 1	23	6	0	1	0	0	31	9
Parainfluenza 2	13	15	3	0	3	2	15	3
Parainfluenza 3	30	12	5	0	70	14	55	11
Parainfluenza 4	8	5	5	1	26	5	10	0
Rhinovirus	193	120	188	33	589	127	558	241
RSV A	61	54	4	5	21	3	34	9
RSV A/B	9	0	0	0	72	5	66	2
RSV B	14	3	0	1	22	8	20	4
SARS-CoV-2	6	1	190	17	376	24	195	43
Grand Total	614	320	491	102	1458	254	1297	389

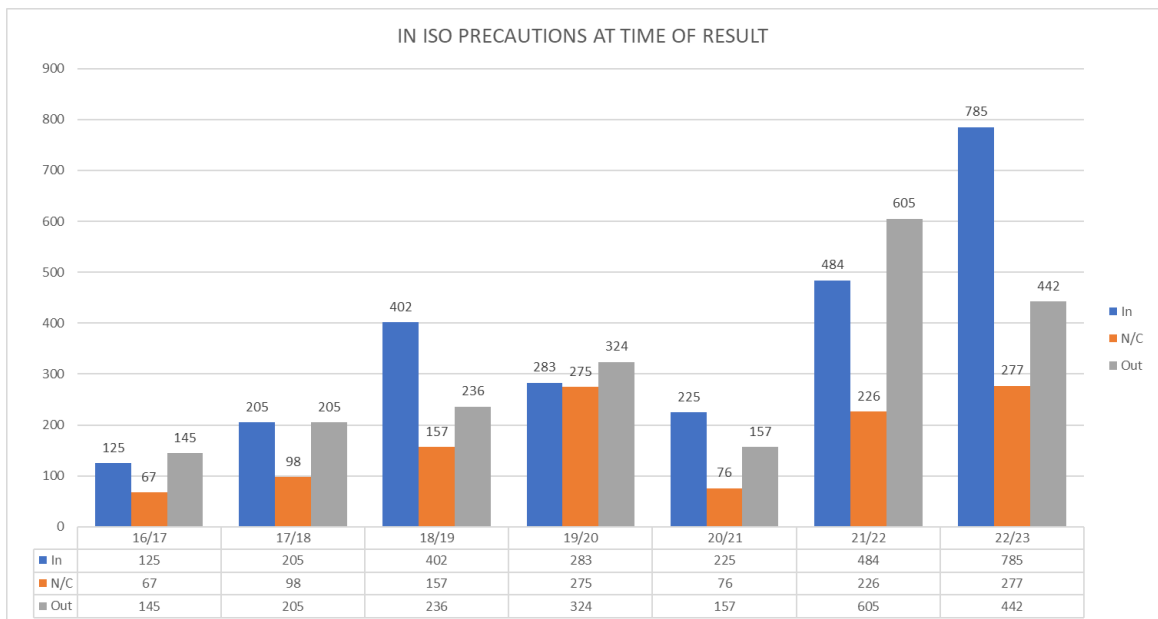
5.5 The charts below demonstrates that respiratory viruses transmit throughout the year. The traditional winter peak has returned but there remain a large number of respiratory viruses which are detected throughout the year emphasising the importance of a robust screening programme on admission and daily symptom check throughout the patient stay.



5.6 The chart below demonstrates that hospital acquired respiratory viruses occur across the trust so intervention is needed in all areas to prevent transmission.



5.7 Data collected demonstrates that staff awareness about putting children in isolation precautions at the time the samples are sent has improved dramatically but does not occur everytime.



Surveillance of Viral Gastro-enteritis

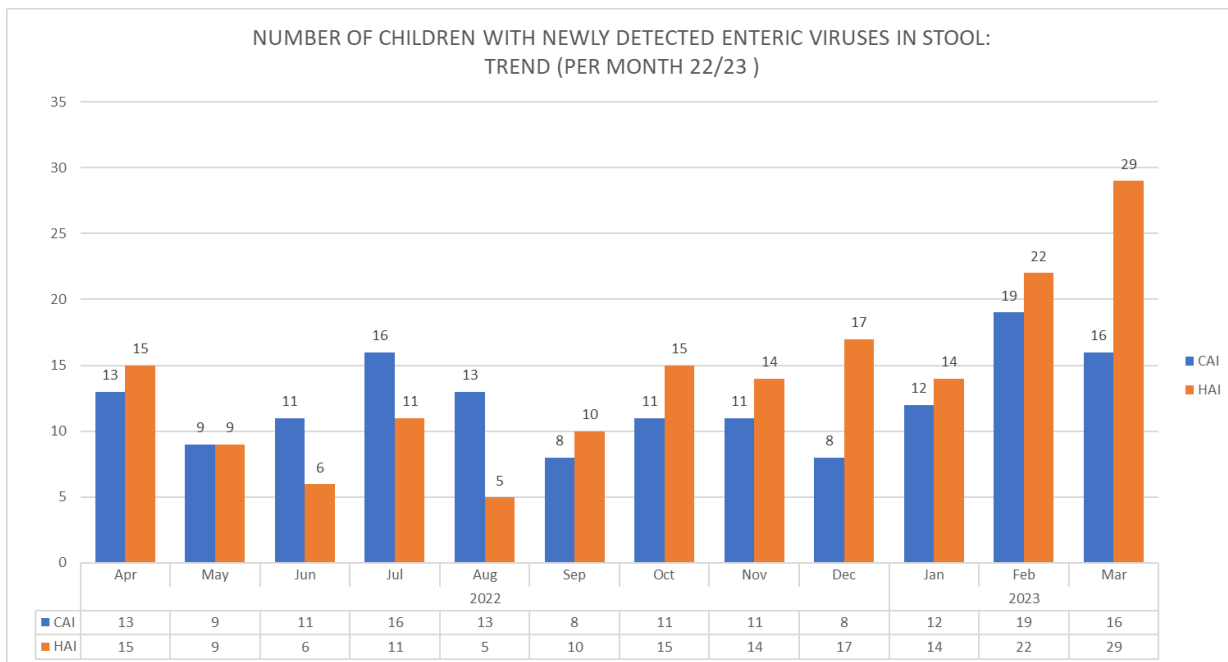
5.8 GOSH Trust outbreak control policy includes isolation of children with suspected viral gastro-enteritis with emphasis on recognition and early intervention.

5.9 As in respiratory infections, children, parents and staff frequently enter the Trust incubating these common infections and act as sources for localised outbreaks. Control of these explosive outbreaks may require closure or restriction of admission to units, along with additional environmental cleaning, as attack rates are high and secondary cases occur. Detailed investigation of these outbreaks and numbers of reported patients, staff or visitors affected are kept by the IPC team and the decision to close wards is based on risk assessment and epidemiological data.

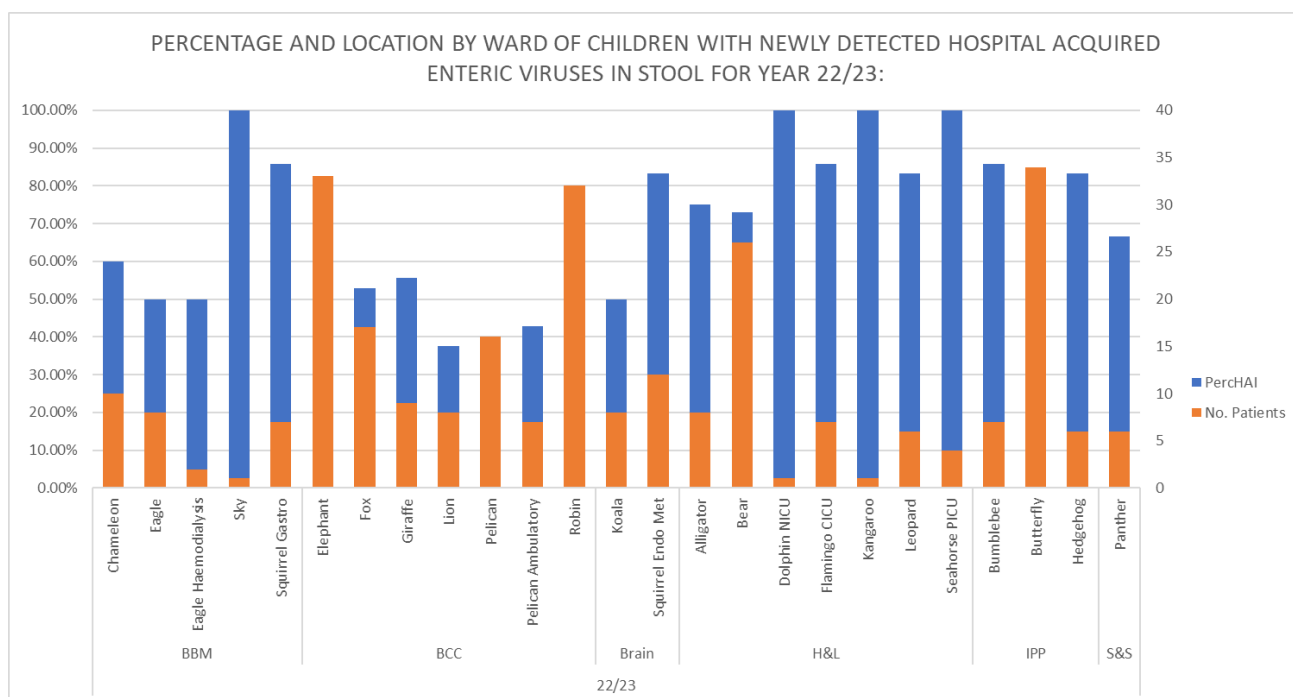
5.10 As shown in the table below the number detected in 2022/23 has increased to 147 (from 127 in 2021/22), with 167 (up from 107) recorded as hospital acquisitions. There was a significant increase in healthcare associated Norovirus and Astrovirus detections linked with localised detections and outbreaks in clinical area.

Org	19/20		20/21		21/22		22/23	
	CAI	HAI	CAI	HAI	CAI	HAI	CAI	HAI
Adenovirus	81	84	38	42	68	49	65	68
Astrovirus	15	8	0	0	6	9	19	18
Norovirus G1	10	4	3	0	2	0	5	1
Norovirus G2	40	28	4	1	29	22	33	49
Rotavirus	13	6	8	3	10	4	6	10
Sapovirus	33	28	18	14	12	23	19	21
Grand Total	192	158	71	60	127	107	147	167

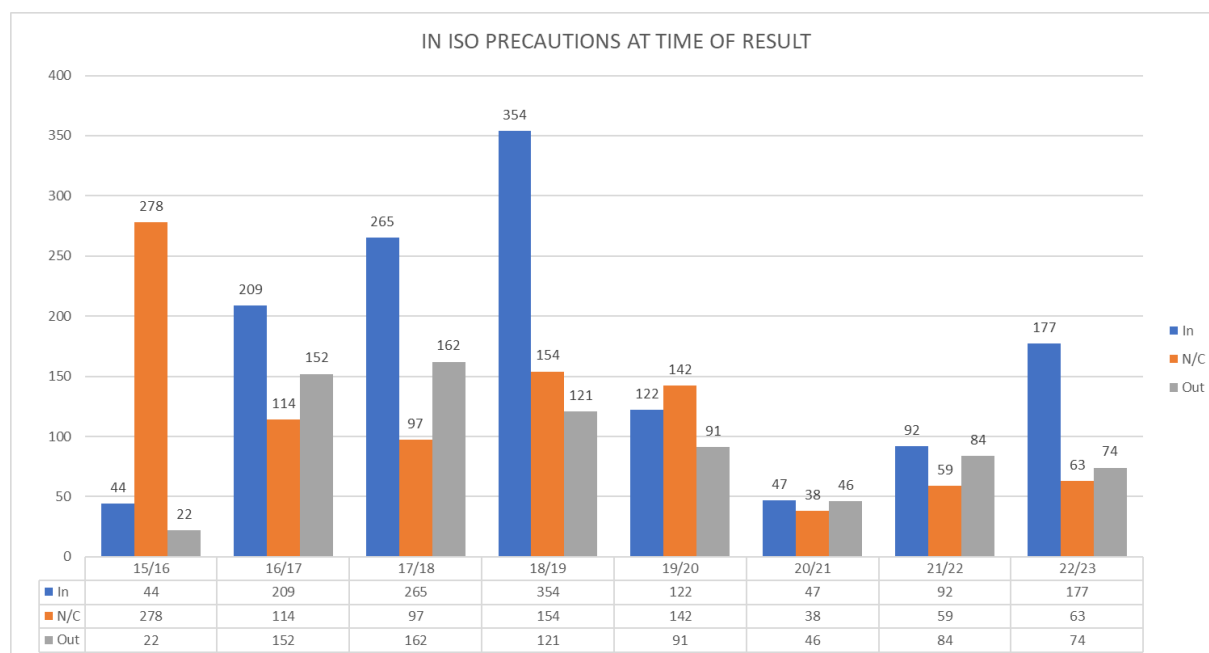
5.11 Enteric viruses remain present throughout the year with more cases during the late winter months. As with respiratory viruses detections occur throughout the year.



5.12 The graph below demonstrates as with respiratory viruses despite the smaller numbers of enteric viruses, hospital acquired cases occur across the organisation meaning that improvement is required in all areas to detect symptoms and prevent transmission.



5.13 The table below shows that the proportion of patients in the correct transmission-based precautions at the time of a result being available has improved. The IPC team has worked hard this past year to focus on daily symptom-based assessment focusing on both respiratory and enteric virus symptom recognition.



6. Audit and Compliance to Policy

6.1 The infection control trust-wide audit plan is well embedded in the Trust's overall audit programme and registered with the audit department. This plan is based on the internal and external infection control strategy which includes elements of High Impact Interventions from the "Saving Lives" programme. These care bundles were reviewed and updated in 2022/23. Care bundle audits are completed for the associated devices

- Peripheral line care bundle (insertion and maintenance)
- Urinary catheter care bundle (insertion and maintenance)
- Renal dialysis care bundle audited

6.2 Hand hygiene audits are also carried out looking at compliance with 'Bare below the elbows' and the '6 moments of hand hygiene' adapted from the '5 moments' used by the World Health Organisation (WHO).

6.3 Isolation precautions continue to be audited as part of the quarterly audit days.

6.4 The infection control link personnel in the clinical areas take responsibility, with guidance from the IPCT, for performing planned audits. All data is displayed, by the QI Team, on continuous dashboards, although this required modification with the audit process change and switch to Epic.

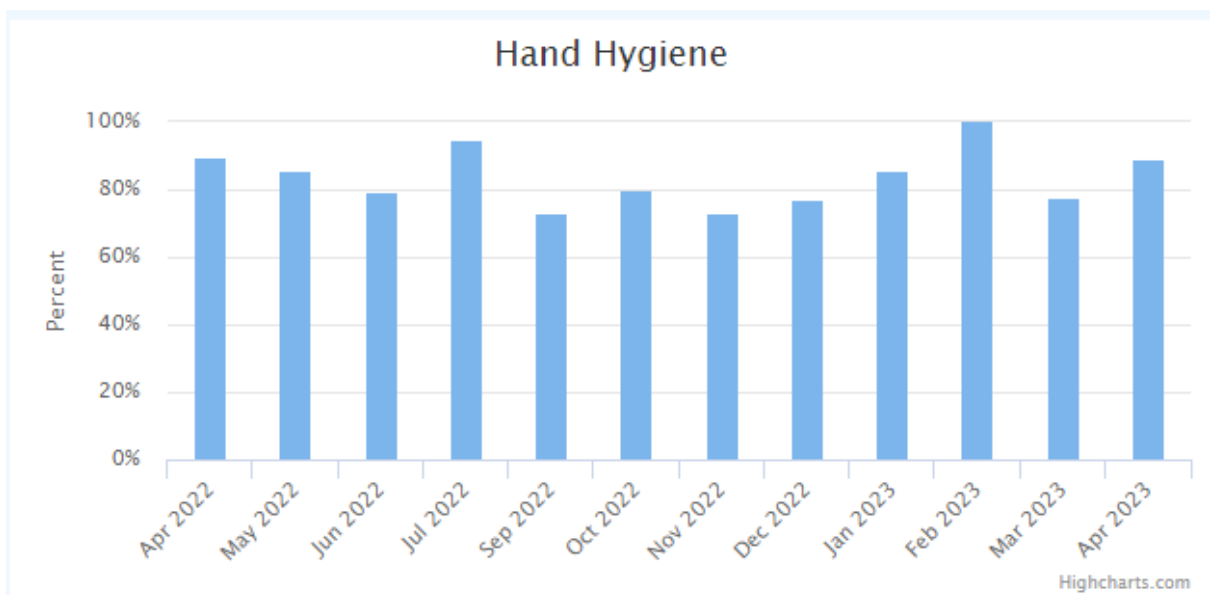
6.5 The infection control trust-wide audit plan undertook a major change in focus and direction in October 2018. In previous years and until the change, hand hygiene (including bare below the elbows) and high impact intervention audits were carried out monthly. Results from both these audits were in the mid to high 90 percentiles and had remained at this rate for many years.

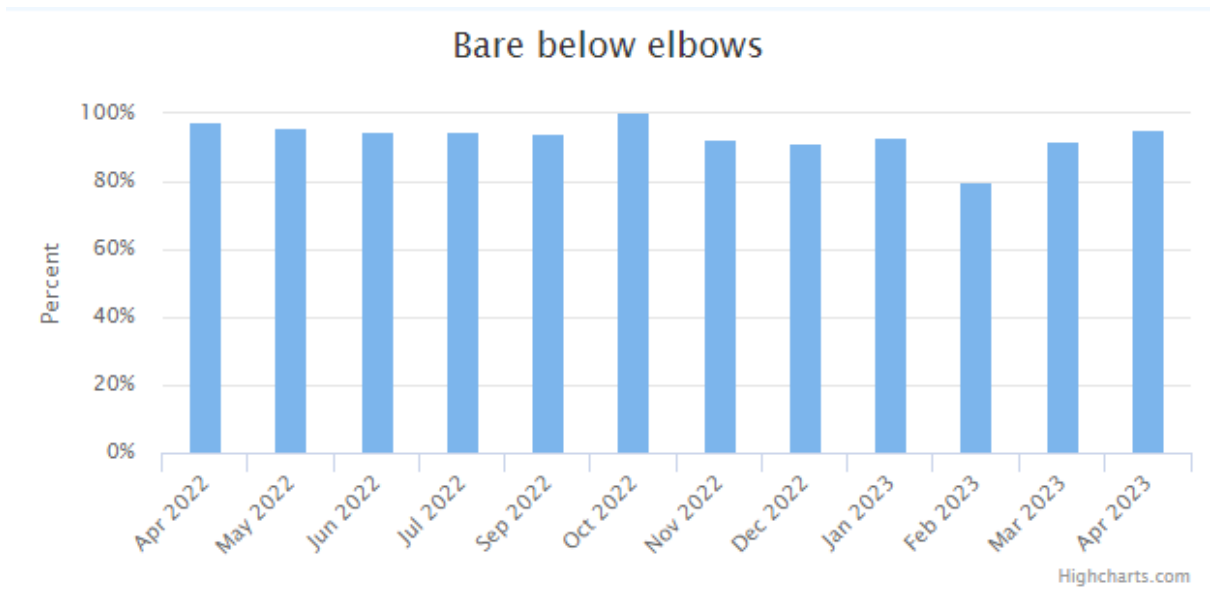
6.6 In October 2018 with approval from the IPCC and the Trust board we moved to quarterly audit days where hand hygiene audits and updated high impact intervention audits would be carried out using point prevalence methods rather than a minimum number of audits per month. In addition to completing the audits and collecting qualitative data as well as quantitative data we implemented the use of action plans to be completed each quarter on the findings from the audit days.

Hand Hygiene Results

6.7 The graph below shows the percentage rates of hand hygiene compliance for the year. Rates have generally remained stable at over 80% when looking at trust wide compliance with ranges from 73% - 100%.

Bare below the elbow's compliance remained above 92% throughout the year at the time of the quarterly audit days. There was a small audit carried out by one department in February 2023 that scored 80% but this was not part of the quarterly audit days.

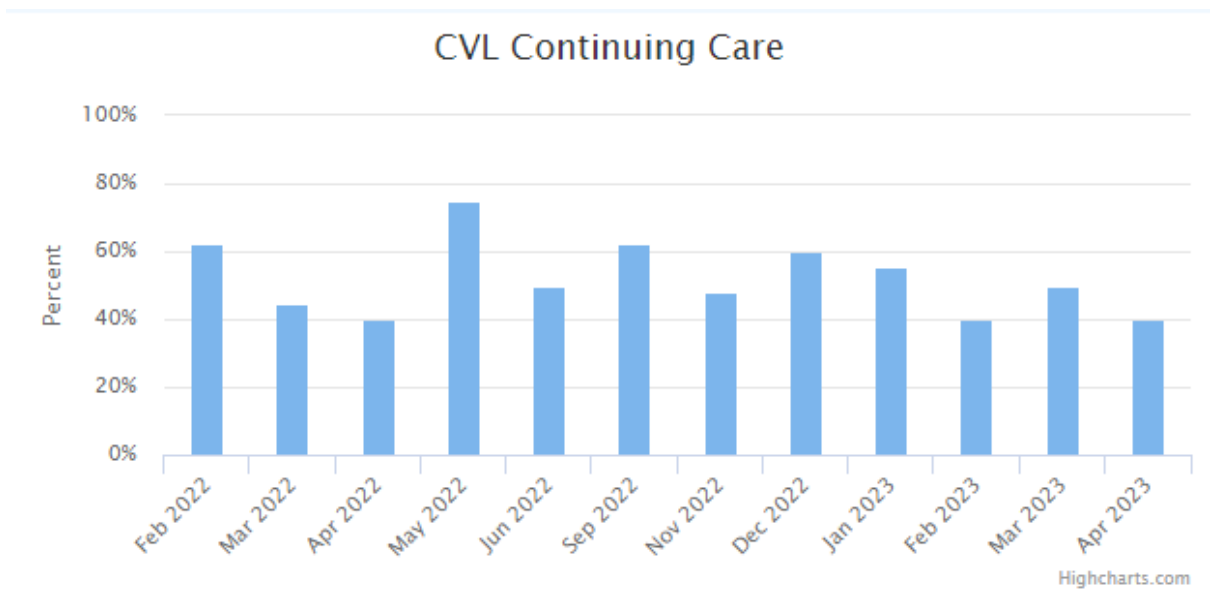




6.8 Action plans are live within the IPC dashboards and compliance is monitored through the directorate IPC meetings and the quarterly audit days.

Central Venous Line Ongoing Care

6.9 The graph and table below show the percentage compliance and numerical values for the past year(s).



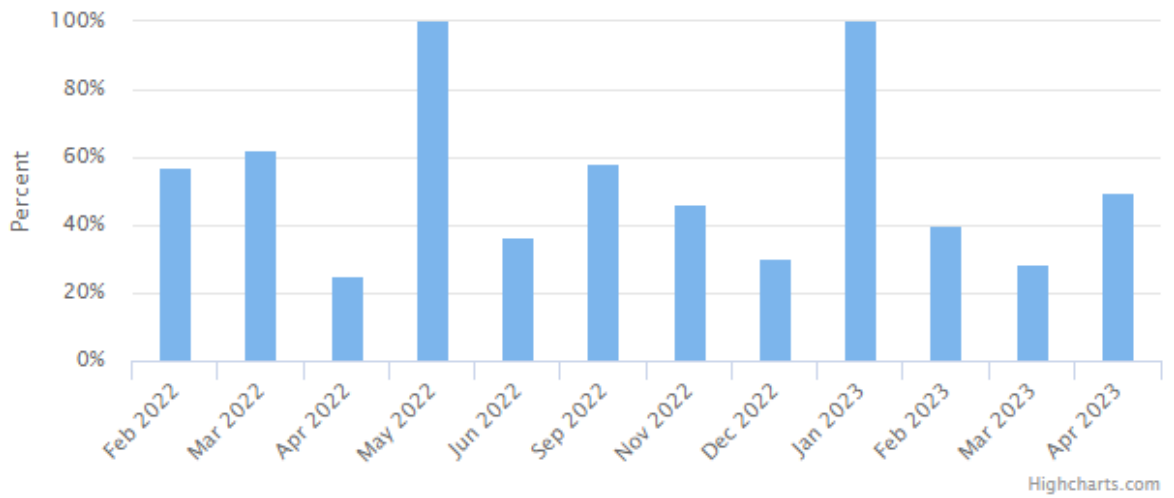
CVL Continuing Care			
Period	Observed	Compliant	Percent
Feb 2022	8	5	63%
Mar 2022	106	47	44%
Apr 2022	5	2	40%
May 2022	40	30	75%
Jun 2022	74	37	50%
Sep 2022	111	69	62%
Nov 2022	54	26	48%
Dec 2022	65	39	60%
Jan 2023	9	5	56%
Feb 2023	5	2	40%
Mar 2023	76	38	50%

6.10 Care bundle compliance remains sub-optimal. There have been previous issues around the recording of information in the Electronic Patient Record (EPR) which have been addressed and continue to be reviewed. Capital Nurse has been implemented as a piece of education around Intravenous care, but more work is required around standardising relevant clinical guidelines to set the standard required for staff and act as a clinical resource.

Peripheral Cannula Ongoing Care

6.11 The graph and table below show compliance with the PVC continuing care bundle. Compliance has been variable across the course of the year. Further work is needed around the recording of flushes when cannulas are not used for 8hrs and around the recording of line care within Epic.

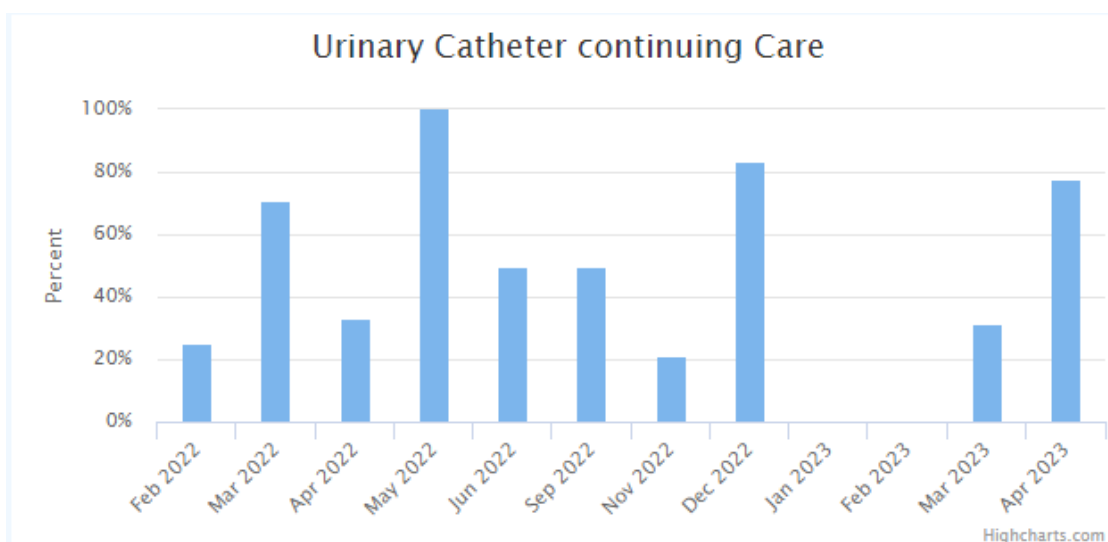
PVC Continuing Care



Period	Observed	Compliant	Percent
Feb 2022	7	4	57%
Mar 2022	48	30	63%
Apr 2022	4	1	25%
May 2022	30	32	107%
Jun 2022	52	19	37%
Sep 2022	62	36	58%
Nov 2022	41	19	46%
Dec 2022	23	7	30%
Jan 2023	1	1	100%
Feb 2023	5	2	40%
Mar 2023	52	15	29%

Urinary Catheter Ongoing Care

6.12 The graph and table below show compliance with the urinary catheter continuing care bundle. There is a high variance in compliance rates due to the small numbers of catheters, making education difficult to roll out in this area. There are also difficulties in recording elements of the care bundle as they are recorded in different places within Epic. Work to address this within Epic was undertaken in 2022/23 and is planned to be launched 2023/24.



Period	Observed	Compliant	Percent
Feb 2022	4	1	25%
Mar 2022	17	12	71%
Apr 2022	3	1	33%
May 2022	14	14	100%
Jun 2022	10	5	50%
Sep 2022	16	8	50%
Nov 2022	14	3	21%
Dec 2022	6	5	83%
Jan 2023	2	0	0%
Feb 2023	0	0	0%
Mar 2023	19	6	32%

Ventilator associated pneumonia (VAP) / Ventilator associated events (VAE).

6.13 VAP reduction plans are in place throughout the ICUs for the reduction of risk of ventilator associated events, but the ICUs do not undertake any systematic surveillance. In the past a review of surveillance had demonstrated rates were comparable to other paediatric units (usually in the US). These are uncommon events compared to adult ITUs, and generally required a lot of input from ITU staff in terms of data gathering, decision making about cases, etc. Therefore, a decision was made not to carry out formal surveillance unless we had more of the classical VAP/HAP in long term ventilated patients, and further intervention was needed.

Surgical site surveillance

6.14 Surgical site surveillance takes place across three directorates within the Trust. Surveillance programmes underway for the year 22/23 included spinal surveillance, cardiac surgery and neurosurgical procedures. It has been identified this year that the system used to record (RL Datix) spinal surveillance, other general surgery and cardiac cannot be optimised to the desired standard. The system has several issues which means that data cannot reliably be captured in a standardised way presenting a risk to data analysis. This was added to the risk register and work is underway to design and build an appropriate system to support and develop this function further. This has not stopped the continued surveillance of spinal surgery which we report to the UKHSA and the commencement of cardiac surveillance in this financial year.

6.15 Neurosurgical surveillance- figures

A total of **1199** neurosurgical procedures were performed within this period.

The overall number of adverse events was **166** with an adverse event rate of **13.8%** (166/1199)

The overall number of Infections was **20** and therefore infections make up **12%** of the adverse events (25/166)

The overall Infection rate for neurosurgical procedures (25/1199) during this time was **1.7%**.

The overall breakdown for surgical site infections (SSIs) is as follows:

<u>Grade</u>	<u>Superficial Incisional (SI)</u>	<u>Deep Incisional (DI)</u>	<u>Organ Space (Not GOSH Shunt)</u>	<u>CSF (Shunt)</u>
<u>Total</u>	7	4	2	7

There have been no specific clusters of infections.

Shunt Infections

A total of **180** shunt procedures was performed.

The overall shunt infection rate was **7** providing an Infection rate of **3.9%** (7/180).

The **NEW** shunt insertion infection rates was: **5%** (3/60)

The **REVISION** shunt infection rates were: **4.5%** (4/120)

6.16 Neurosurgical surveillance- narrative

Regular meetings take place quarterly to review infections as part of audit activity with the Brain directorate. As part of these meetings an in-depth analysis and review of any infection and associated learning is explored with the clinical team, microbiology consultant and the IPC team.

Changes in practice this year have occurred because of learning based on RCA. The changes focused on ensuring antibiotics are given in a timely manner prior to surgery and on ensuring the patients temperature is optimised and patients do not go to theatre cold.

6.17 Cardiac surgical site surveillance- figures

Surgical site surveillance within cardiac surgery recommenced in late 2022 with the new surveillance officer undertaking a wide range of training. As a result there is limited data for the year 22/23.

Data from April 2023 showed that 36 surgical cases were completed of which 27 received surveillance. To date no infections have been identified within this group.

6.18 Cardiac surgical site surveillance- narrative

MRSA pre-operative screening is good with 100% compliance. There was also good compliance with antibiotic prophylaxis.

In the year 23/24 surgical site surveillance within cardiac will be collected in the same standardised way that it is performed within spinal surgery with better data, output and appropriate root cause analysis (RCA) for any infection meeting the definition. The surgical site surveillance officer will be supported in this development by the surgical site surveillance lead for spines and the IPC team.

6.19 Spinal surgery- figures

SSI numbers stable – only x1 *new onset* SSI case in 2022 for a total of 148 operations.

2022 Jan-Dec combined SSI rate risk 0.7% (within national range).

2022 sample size reduced post COVID-19: 148/year – previous 3 years pre COVID-19: +/- 200/year

6.20 Spinal surgery- narrative

Overall key SSI risk factors stable when compared to previous quarters;

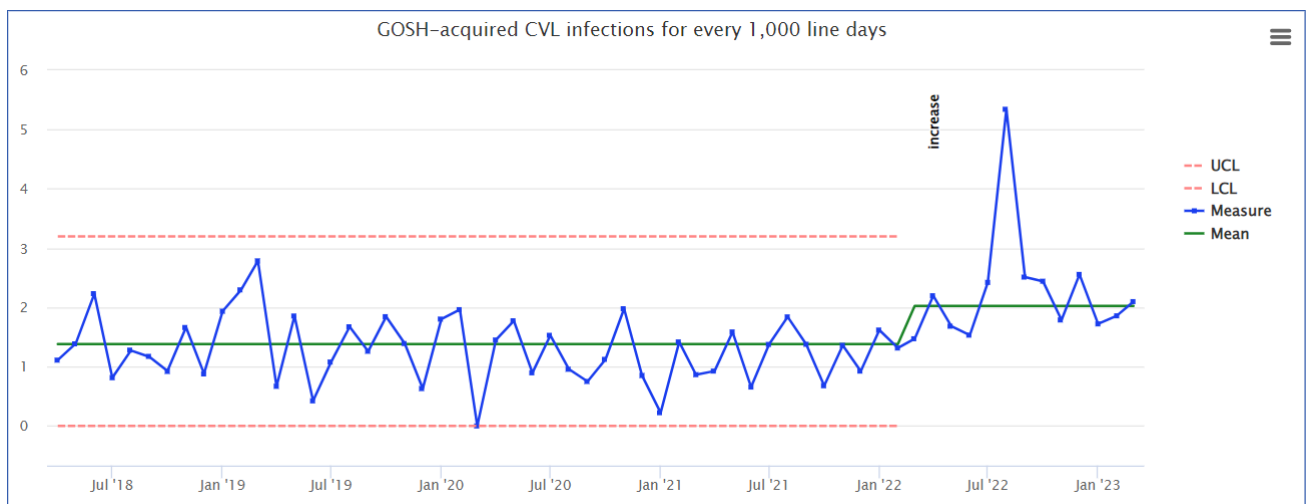
- No significant pattern changes of a series of data points over time for:
 - Timely antibiotics pre KTS (100%); ✓
 - Pre-op wash at ward level (100%); ✓
 - Timely pre-op MRSA screening (100%); ✓
 - Normothermia intra-op (65%). ✓ Historical range before pre-warming started: 30%.

Moving forward the team plan to continue the current spinal surveillance programme and assist the Infection & Prevention Control team to build an inhouse SSI system and associated dashboards as well as expanding the surveillance to include additional surgical specialities.

7. GOSACVCRB (GOS acquired CVC related bacteraemias ('Line infections'))*

7.1 GOSH has been monitoring central line infection rates for several years, using a specific in-house definition which dates back to pre- 'Matching Michigan'. Most recent year's data is shown below in table and SPC graph format and demonstrates a small reduction year on year.

Period	GOSACVCRB_No	DaysRecorded	Rate	Rate_YtD
Year 15/16	75	51976	1.4	1.4
Year 16/17	87	52679	1.7	1.7
Year 17/18	82	50661	1.6	1.6
Year 18/19	82	52303	1.6	1.6
Year 19/20	73	54936	1.3	1.3
Year 20/21	63	53044	1.2	1.2
Year 21/22	66	52396	1.3	1.3
Year 22/23	128	55240	2.3	2.3



Ward location of children with a surveillance definition of a GOSACVCRB:

7.2 Data in the table below splits the rate and numerical count of the line infections by ward. It also includes the number of line days collected by that ward which is now automated from the Electronic Patient Record (EPR).

Directorate	Ward	GOSACVCRB	Total LineDays 22/23	Rate 22/23
Blood, Cells and Cancer	ELEPHANT	6	3606	1.7
Blood, Cells and Cancer	FOX	7	2889	2.4
Blood, Cells and Cancer	GIRAFFE	7	2191	3.2
Blood, Cells and Cancer	LION	1	1242	0.8
Blood, Cells and Cancer	PELICAN	4	1887	2.1
Blood, Cells and Cancer	PELICAN AMB	6	1236	4.9

Blood, Cells and Cancer	ROBIN	6	2890	2.1
Blood, Cells and Cancer	SAFARI DC	0	25	0.0
Body, Bones and Mind	CHAMELEON	3	2414	1.2
Body, Bones and Mind	EAGLE	2	1507	1.3
Body, Bones and Mind	EAGLE HAEMOD	0	102	0.0
Body, Bones and Mind	GIU	0	3	0.0
Body, Bones and Mind	SKY	0	930	0.0
Body, Bones and Mind	SQGASTRO	2	2257	0.9
Brain	KINGFISHER	0	103	0.0
Brain	KOALA	5	1762	2.8
Brain	SQENDOMET	1	1418	0.7
Heart and Lung	ALLIGATOR	3	521	5.8
Heart and Lung	BEAR	16	4159	3.8
Heart and Lung	CATS	0	21	0.0
Heart and Lung	CICU	14	7244	1.9
Heart and Lung	CMRI	0	1	0.0
Heart and Lung	KANGAROO	2	693	2.9
Heart and Lung	LEOPARD	3	2385	1.3
Heart and Lung	NICU	11	2655	4.1
Heart and Lung	PICU	15	3575	4.2
Heart and Lung	RSU	0	93	0.0
International and Private Patients	BUMBLEBEE	6	1606	3.7
International and Private Patients	BUTTERFLY	5	3931	1.3
International and Private Patients	CATER AMB	0	26	0.0
International and Private Patients	HEDGEHOG	2	293	6.8
Operations and Images	IR	0	2	0.0
Operations and Images	THEATRES	0	164	0.0
Operations and Images	WOODPECKER	0	1	0.0
Research and Innovation	CRF	0	24	0.0
Sight and Sound	PANTHER	0	505	0.0
Sight and Sound	PANTHERURO	1	877	1.1
Sight and Sound	URODY	0	1	0.0

Organisms associated with GOSACVCRB

7.3 GOSH central line surveillance programme is important because it monitors over time the infection rates of those with central lines across the trust, not just in ICUs as some national programmes do.

7.4 In 2022/23 128 episodes have been called GOSACVCRB (compared with 66 in 2021/22). This was a significant increase on previous years. There was a significant issue in the summer of 2022 around the supply of 2% chlorhexidine 70% alcohol wipes for the needle free connectors which accounted for some of this rise. There were also further challenges in the supply chain around the supply of parafilm and central venous catheters which occurred at various points in the year.

7.5 The table below shows the breakdown of species cluster. The top 3 species clusters identified were Gram-positive cocci of which coagulase negative staph were the most species identified. Gram-negative resistant (GNR) had a significant increase with Klebsiella pneumoniae increasing from the 6 in 20/21 to 22 in 22/23. Enterococcus faecalis numbers remained around the same. Of note there was a significant decrease in the GOSH CVCRB related to Staphylococcus aureus compared to the previous year which was an outlier with 15 cases identified.

Org	17/18	18/19	19/20	20/21	21/22	22/23
ANO2	1	0	2	0	1	1
Bacteroides sp.	1	0	0	0	0	0
Brevibacterium sp.	0	0	1	0	0	0
Clostridium perfringens	0	0	1	0	0	0
Clostridium sp.	0	0	0	0	1	0
Cutibacterium acnes	0	0	0	0	0	1
FUNGI	4	10	7	3	2	7
Candida albicans	3	6	1	0	0	2
Candida krusei	1	0	0	0	0	1
Candida parapsilosis	0	3	4	3	2	2
Candida sp.	0	0	2	0	0	2
Fungus (undefined)	0	1	0	0	0	0
GNC	2	0	0	0	0	0
Moraxella catarrhalis	1	0	0	0	0	0
Neisseria sp.	1	0	0	0	0	0
GNR	14	15	26	17	11	41
Enterobacter cloacae	3	2	7	0	1	2
Enterobacter sp.	1	1	3	2	4	5
Escherichia coli	5	7	5	3	0	12
Klebsiella oxytoca	0	2	7	4	0	0
Klebsiella pneumoniae	5	3	4	8	6	22
GPR	1	4	4	1	0	5
Bacillus cereus	0	1	2	0	0	0
Bacillus sp.	1	1	0	0	0	2
Corynebacterium sp.	0	0	1	0	0	1
Lactobacillus sp.	0	0	1	1	0	2
Microbacterium sp.	0	2	0	0	0	0
MYCO	0	0	0	0	1	2
Mycobacteria sp.	0	0	0	0	1	0
Mycobacterium abscessus	0	0	0	0	0	1
Mycobacterium chelonae	0	0	0	0	0	1
PSEUDO	6	7	7	14	9	9
Achromobacter sp.	0	0	0	1	2	0
Burkholderia cepacia complex	0	0	0	1	0	0
Pseudomonas aeruginosa	4	4	3	5	3	5
Pseudomonas sp.	0	0	1	1	2	1
Stenotrophomonas maltophilia	2	3	3	6	2	3
STAPH	48	36	59	45	67	106
Staphylococcus aureus	6	5	6	2	15	4
Staphylococcus capitis	1	3	4	4	0	9
Staphylococcus epidermidis	29	22	37	33	48	68
Staphylococcus haemolyticus	3	2	7	4	4	12
Staphylococcus hominis	9	4	5	2	0	13
STREP	17	19	18	18	14	17
Enterococcus faecalis	6	4	5	5	12	6
Enterococcus faecium	5	8	7	4	0	10
Enterococcus sp.	0	1	2	5	0	0
Streptococcus sp.	0	1	0	2	0	0
viridans group Streptococci	6	5	4	2	2	1
Grand Total	93	91	123	98	105	188

Other bacteraemia and sensitivity data.

7.6 Blood culture surveillance is complicated due to mixed cultures and difficulty defined clinical episodes. In the year 22/23 there were:

12,539 separate blood culture sets sent (11,620 in 21/22)
866 were positive (681 in 21/22)

7.7 Removing repeat isolates (same species within 14 days of initial) there were

496 new clinical episodes with (419 in 21/22)

7.8 Regular surveillance has been undertaken of crude bacteraemia episodes defined by any positive blood culture in a child.

GOSH CVC infection reduction programme.

7.9 The programme to reduce GOS acquired CVC related bacteraemias (GOSACVCRB; 'line infections') has used an improvement process based on the universal or focussed introduction of care components combined with continuous process and outcome audit. Initially the 'Saving Lives' standard care bundle was implemented across the entire trust and significant reduction in line infection rate was seen year on year. However, this did not reach zero.

7.10 The main control is implementation of the standard care bundle, which, despite continuous attention has not reached 100%.

Review of additional interventions was also undertaken, and it was decided to introduce Parafilm® and Biopatch® in most areas of the organisation.

7.11 Compliance with good line care has remained lower than the required standard. Work has continued with Epic to improve the ability to document within the patient record and a programme of education will be rolled out once this is finalised to ensure all staff are carrying out line care to the correct standard and documenting this care appropriately.

8 Wider Infection Prevention and Control Service

8.1 The services below all submitted full annual reports to the IPCC. Key achievements and areas of risk are identified and brought to attention within this annual report for review by the board.

Estates & Facilities (including Decontamination)

8.2 Estates

The estates team have experienced a period of positive change that has included improved accountability for its IPC related functions such as ventilation and water quality. While it is fair to say that the team have not reached a point that could be considered as totally satisfactory, a platform now exists that is both stable and improving as we move to a point of excellence within the estate's transformation programme.

In particular, the work undertaken around integrating the estates engineering and operational teams into a single space has improved communications ensuring that IPC related issues such as air flow, room pressure and changes water systems infrastructure condition, have become a shared conversation within subsequent ownership, within the team.

The CAFM (Computer Aided Facilities Management) system is fast becoming a tool for tracking compliance with the PPVL, ventilation and chilled beam scheduling being fully integrated into this automated system.

The cooling tower management has been a long-standing issue and a recent award of a contract to WCS has been made against a scope of works that falls short of the Trusts requirements. However, the contractor has been invited into the Trust and has been extended for a period of 6 months against an enlarged scope that not only covers the correct level of activity but also includes a degree of training.

The management of water quality results has been far from satisfactory with the system parameters within the Compass™ reporting software being completely out of tolerance. As a result, the estates water quality team will shortly make representations to the water quality committee to accept a revised schedule of tolerances that will safely reduce the current 10,000 non-conformances to reasonable workable number that will allow the team to take control of the real issues.

8.3 Facilities

Decontamination 2022-23

8.4 The trust holds a contract with BMI/Circle Health for the provision of sterile services for the reprocessing of surgical instruments and endoscope decontamination business continuity agreement.

The contract has been in place since April 2021 and was terminated by BMI/Circle at the beginning of December (2023), due to increasing demand within their own hospitals limiting available capacity for external contracts. The termination date for the contract is July 31st, 2023. The mobilisation project group was set up in February to engage with the new provider, Royal Free Hospital, and support the transition of the contract.

The service holds the required accreditation for delivering the service – ISO 13485 and is audited annually by the Notified Body (appointed by the MHRA) as well as the trust AE(D) who undertakes an annual audit of the service.

There is in place several meetings in place to allow for the service to be monitored and for clinical engagement with the team providing the service. These include:

- Clinical user group meeting
- Decontamination Contract Review Meeting
- Surgical Infection Control Committee
- Trust Decontamination Committee

The Facilities team who oversees the contract worked closely with the clinical teams in monitoring the KPIs for the service which has seen an error rate of below the industry standard (2%) as well as looking to identify trends from the reported defects (NCRs) which are a record of non-conformances recorded by both the service provider and the service user.

The trust continues to monitor protein levels on instruments post wash in line with the guidance and has a documented process for managing the sampling criteria and monitoring results. The decontamination and clinical teams are working on several projects including the introduction of a protein detection system post instrument wash to help support the introduction on the

current NICE guidance as well as an annual instrument count to monitor the instrument trays and supplementaries that are currently in the system.

	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
Total Trays	2800	3495	3031	3385	2851	3280	3347	3131	2446	3104	2739	2988
Total Supps	1963	2354	2091	2308	2365	2215	2980	2277	1842	2248	2114	2295
Error Rate %	0.73	0.88	0.86	0.94	1.07	0.97	0.80	0.68	0.53	1.05	0.61	0.62

Whilst Sterile Services is provided by an outsourced provider, there are two main services that are provided by in-house teams – Flexible Endoscope Decontamination and Medical Equipment Decontamination. Both services are provided by dedicated staff in recently refurbished units – EDU & MEDU which are monitored by the external AE(D).

As part of the monitoring for the inhouse service the following areas are managed and reported on in line with HTM and the relevant standards:

- Water Quality
- Validation of equipment – washer disinfector (MEDU), endoscope washer disinfectors (EDU), scope storage cabinets (EDU), Vac a Scope storage system (EDU), Environmental audits/testing (EDU/MEDU)

Activity for the services are shown below and are in line with previous years, to note MEDU has a dedicated fogging room which was commissioned in April 22 and all compatible equipment from BCC and ICUs now undergo hydrogen peroxide decontamination when processed via MEDU:

	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
EDU	322	341	302	373	346	332	322	353	273	342	310	357
MEDU - Manual	874	739	1189	757	402	614	867	662	561	607	596	675
MEDU - Automated	3179	4649	1277 1	4941	4481	3797	4481	3797	4159	3218	2878	1779

Domestic Services

8.5 The trust has a domestic service that is provided by an in-house team and in line with the relevant standards and guidance documents.

The National Standards of Cleanliness 2021 were introduced in August 2022 and the team have implemented the following in recognition of the new requirements:

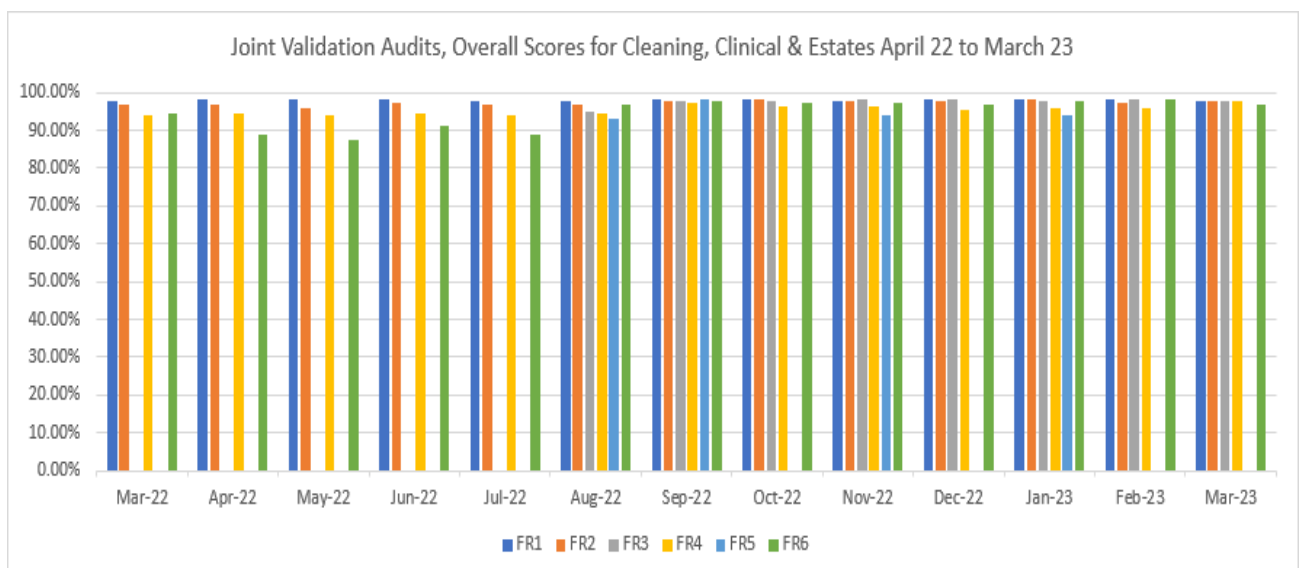
- Star rating poster that indicates the rating given from the most recent audit. The new standards convert the percentage audit score achieved into a star rating for the overall score achieved. These posters display this star rating and are displayed in the facilities noticeboard/s for each area
- ‘Audim’ which is the electronic audit tool was changed to reflect the new standards and the addition of one further element. There are now technically 50 elements which was implemented to allow for both the audits to be recorded in line with the new standards as well as providing the star rating after each audit
- SLAs now include information about the NCS 21. This includes the new responsibility matrix and the patient associated ward equipment cleaning matrix.

The Facilities team continue to monitor the number of cleans undertaken in the hospital (table below) which has continued to see the number of Level 2 plus cleans rise compared to 21/22:

Requested Clean	April to July 2021	August 2021 to March 2022	April 2022 – March 2023
Level 1	1	6	
Level 2	4921	16008	12587
Level 2 plus	76	218	669
Level 3	213	518	679
Level 4	168	491	645

The service carries out audits in line with the standards, with the results reported on at the monthly Domestic Services Review meeting which is attended by both facilities, clinical and Infection Prevention and Control colleagues. During the review of the information, rectifications are discussed and trends reviewed.

The audit scores for 2022/23 are tabled below:



Linen & Laundry

8.6 The Trust works in partnership with Elis who are contracted to provide a linen and laundry service. The contract was tendered in 2022 which saw the Elis awarded the service for a further 3 years.

The contract has a robust monitoring process which includes audits of areas where linen is stored and quality checks (monthly), site visits (annually) and monthly contract meetings where the service that has been delivered and contractual KPIs are monitored.

Below is the table for the total number of items delivered and rejects which is reviewed on a monthly basis to ensure that it is both in line with industry standards as well as looking to identify trends and action rectifications:

	April	May	June	July	August	September	October	November	December	January	February	March
Used hired linen	127000	150000	128920	121190	136000	128350	140000	144000	130270	136090	123000	146830
Rejects	1120	1006	924	1073	779	1096	1084	1245	1292	1044	1083	1319

Antimicrobial Stewardship

8.7 The terms of reference for the AMS committee and membership are in line with NICE guidance on antimicrobial stewardship and the 'Start Smart then Focus' initiative. Our team continue to collaborate nationally via UK-PAS and our yearly START meeting. The Lead Antimicrobial Pharmacist returned from maternity leave in March 2023.

8.8 The AMS committee meets quarterly via a virtual platform. There continues to be 4 main work streams identified (Policy, Resistance reporting, Education and Audit).

8.9 Policy

The antibiotic policy group continue to meet monthly to ensure review and updating of all Trust guidelines pertaining to antimicrobials.

8.10 Prescribing audits

CQUIN reporting for the year was focussed on adult infection and resistance. Consumption data is part of the standard contract and consumption reduction is only for watch and reserve antibiotics. We have a 4.5% reduction target from 2018 baseline to March 2023 and 6.5% by March 24. The AMS team, work with the digital research environment (DRE) to automate some audit functionality.

8.11 Resistance reporting

Individualised micro-susceptibility charts continue to be widely used in the trust; these are regularly reviewed in the AMS rounds. A Trust-wide antibiogram has been developed which also continues to allow live data and important pre-emptive switches in antibiotic policy.

8.12 Education and Research

The START meeting continues to be held annually. The AMS team continue to share their work through publications and poster presentations at conferences. The team continue to be involved in local and national public engagement events highlighting the importance of AMS.

Sepsis

8.13 In December 2022 the DIPC was appointed as the interim sepsis lead. Since then, the Sepsis steering group has reformed initially meeting monthly and then bi-monthly reporting into the IPCC.

8.14 Workstreams focus on guidance updates, audit of compliance with the sepsis 6 bundle, bundle optimisation and education. The auditing and reporting of the bundle compliance was not available within Epic until February 2023. An initial audit into bundle compliance was undertaken where areas of good practice and areas for bundle optimisation were identified. These will form part of clinical education and feedback on areas of good practice into bundle usage. This will be alongside work with the lead practice educator for patient safety on the recognition and management of sepsis for all clinical staff. This education will be constructed in the summer of 2023 ready for launch in September 2023.

Occupational Health

8.15 Occupational Health new starters

The Occupational Health (OH) Service is an in-house service. All applicants on receipt of a conditional job offer are assessed by occupational health prior to commencement to ensure that they fulfil the requirements around immunisation status for healthcare workers as per the Green Book.

Staff Immunisations

In line with the Green Book guidance, we screen all new starters to assess immunity to measles and chicken pox.

A total of 394 occupational vaccinations were administered (excluding Influenza and COVID-19 which are not occupational vaccinations) during 2022/23.

Influenza Vaccine

The Flu Planning group co-ordinated an active vaccination programme for all staff. Flu vaccinations were offered centrally within the hospital for 9 weeks running alongside the Covid Boosters. Staff were able to book appointments to be given both the Covid booster and flu vaccination together or book just to receive either vaccine separately. After the nine-week programme flu vaccines were available from OH.

Final flu uptake figures for Healthcare Workers 2022/23 was 52%. Whilst this was a drop compared to recent years it was acknowledged that across the NHS staff remained vaccine weary. GOSH had the highest uptake amongst HCWs within NCL and were fourth highest across all London Trusts. We were for a second year congratulated by the NHSE Immunisation Commissioning Manager and asked to share how we achieved good uptake.

Year	Percentage uptake of flu vaccinations for HCWs	Percentage increase/decrease
2015/16	48%	-
2016/17	62%	14% increase
2017/18	61%	1% decrease
2018/19	61%	0 change
2019/20	59%	1% decrease
2020/21	71.6%	12.6% increase
2021/22	57.5%	14.1% decrease
2022/23	52%	9.5% decrease

Exposure to blood borne viruses

During 2022/23 there were 56 attendances at OH following needlestick injuries. It is pleasing to see a 15% decrease in needlestick injury exposures compared to last year, this reflects the work that has taken place to ensure safer sharps are available within the Trust.

On exploring the data recurring themes remain unchanged.

Most incidents occur during disposal – the themes are that sharps are initially discarded onto a tray post procedure and then an individual sustains an injury when picking up and discarding into the sharps box. We have seen several of these types of injuries involving butterfly needles. With the introduction of safe butterfly needles, we will hopefully see a reduction in these types of injuries. We continue to see occasional injuries caused by re-sheathing, which is not in line with Trust guidance, additional preventable injuries have been due to accessing a sharps box that was too full with a needle protruding out and incidents where staff were passed a sharp from a colleague and sustained an injury during the process.

The Safe Sharps working group continues to monitor the use of sharps within the Trust in line with the HSE Safe Sharps directive, recommending the use of safe alternatives where practicable to implement a safer alternative for paediatric use.

Skin Surveillance:

Dermatitis is an occupational hazard for health care workers. As such we review and advise all staff who have any skin reactions. Generally, the work related skin reactions we see are linked to frequent handwashing and wearing of gloves. The wearing of gloves is classified as wet work.

Overall attendances at OH with skin issues continue to reduce year on year with 13 new attendees 2022/23 compared with 35 in 2021/22 and 95 new attendees 2020/21. Much of the advice provided 2020/21 was associated with skin issues associated with mask wearing rather than hand issues associated with wet work.

9. Board assurance Framework (BAF)

9.1 Effective infection, prevention and control has been fundamental in our efforts to respond to the COVID-19 pandemic and return to normal activity levels as we emerge from the pandemic. The purpose of the BAF is to provide assurance that Infection Prevention and Control (IPC) Measures have been reviewed considering changes in national guidance to support management of Covid-19, other respiratory viruses and measures beyond these aspects of IPC.

The Assurance Framework was first published on 4th May 2020. The framework was updated in Sep 2022 to reflect the ten criteria used within the Health & Social Care Act (2019) and support the introduction of the National Infection Prevention Control Manual (NIPCM).

Use of the framework is not compulsory, however its use as a source of internal assurance will support the organisation to maintain quality standards.

9.2 Board Assurance Framework (BAF)

The BAF is a live document and has been presented regularly to the trust board and executive management team since it was published in May 2020. Based on our self-assessment against the Assurance Framework, we identified a programme of work to support further implementation and improvement in our ways of working. This is ongoing and iterative based on updates on the BAF and the NICPM as published by NHS England.

The largest area of risk currently identified is the around the lack of assurance around the identification that not all standard bedrooms in the trust were commissioned to 6 air changes when they were opened despite them being designed to 6 air changes. Mitigations in place to control this risk include extended fallow times in these areas. This was last reviewed in April 23.

9.3 COVID-19 response

There were 41 hospital acquired COVID-19 cases in the last year compared with 24 the previous year. Guidance from NHSE/I was changed to recommend cases were only investigated if harm was caused. We continued to monitor our cases and look for sources were possible. We continued to find parents and visitors a common source. We attribute the increase in numbers due to a lack of awareness by families as testing was stepped down in the community and social distancing ended. We worked with clinical teams to update guidance as required and as asymptomatic testing ended in Sep 2022 in line with national guidance, we focused our education on symptom recognition and testing. Staff continued to universally mask in clinical areas, but this requirement was removed from staff only and public areas in June 2022.

9.4 Isolation audits

Compliance with isolation precautions for patients is audited as part of the quarterly audit days. It assesses patient, family and staff awareness of isolation, the use of care plans and information leaflets, the availability, use, risk assessment and disposal of PPE, and the cleaning of equipment and the environment.

Compliance with isolation audits have generally remained above 70%. Overall, there was good compliance with most areas within the isolation audit.

Areas of good practice included staff awareness and knowledge of their patient's infection status and isolation requirements as well as patient/family awareness of the rationale for isolation. Compliance with PPE was also good.

Areas identified as requiring improvement included a lack of posters displayed on doors of isolated patients, the majority of the posters missing were the respiratory viral pathway posters which have since been retired from use. Compliance with admission screening was also a recurrent theme and highlighted by teams as an area for improvement.

9.5 Fit Testing

Fit testing is recognised as a key element of protection for staff. This is all recorded on a central database. The key challenges which we have faced are around consistency in the brand/make of FFP3 masks supplied centrally, particularly where this has meant we need to re-fit-test all relevant staff. There has also been a higher failure rate in some of the masks provided through the central system. A dedicated fit testing is in place providing fit testing to the organisation. The BAF recommends that staff are fit tested to more than one mask, this has been challenging due to staff not wanting to attend multiple times for mask fitting. It is also recommended that staff who fail fit testing have this documented within their occupational health record. Currently this is not held within that record but is held by line managers.

9.6 Care Quality Commission (CQC)

There was no on-site visit from the CQC this year.

10. Recommendation

The Trust Board is asked to receive this report and note the content.

Part B - Programme of work

New projects:

Programme of Work of new project	Lead	Time frame	Progress to date	Complete/ Action required	Hygiene code
Implementation of in-house plating service	IPC Team/Space & Place	Sep 23	Business case approved- awaiting equipment	No	1, 2, 8
Surveillance-creation of a trust wide surveillance oversight group which will monitor all aspects of the surgical pathway	IPC Team	Commence ASAP	Business case for system	Yes	1, 6
IPC input into Children's Cancer Centre, including the	DIPC/ICD	Ongoing	Input ongoing	No	1, 6, 7, 9

decant and enabling					
Decontamination contract (new contract due to go live) and NICE implementation around protein testing	ICD	Started April 23	Ongoing	No	1, 6, 8, 9
Review the electronic filing system to ensure the system is clearly labelled and data is robustly stored	IPC PA	Ongoing	Commenced and ongoing	Yes	1
Surveillance- All required data reported to PHE. RCA's currently taking place for HCAI Staphylococcus aureus & Gram-negative infections with clinical teams	IPC team/ Divisions	Commence April 23	This has started and input from clinical teams is good	No	1,3,5,8
Planning and delivery of bitesize teaching for practice educators at ward level on subjects related to IPC (MRSA, CPE etc)	IPC team	Start Summer 23	Not commenced yet	No	1, 4, 5
Review of mandatory IPC education level 1 & 2	IPC Educator	Commenced 22/23	Underway and review awaiting before planning go live	No	1, 3, 4, 5

Programme of work: Ongoing

Programme of ongoing Work	Lead	Time frame	Progress to date	Action required	Hygiene code
IPC continuous Quality Improvement Programme- Implementation of IPC link nurse programme to support a hand hygiene and care bundle quality improvement programme with action plans driving improvement	IPC Team	On-going	Undertaken quarterly	No	1, 6, 9, 10
Audits- conduct regular audits with the facilities and clinical users to assess the environment and standard of cleaning & be involved with the PLACE process	IPC Team/Facilities	Ongoing	Undertaken quarterly	Yes	1, 2
Audits- carry out IPC best practice audits which include environmental elements within inpatient wards	IPC Team/Ward teams	Ongoing	Annually	Yes	1, 2, 4, 7, 9, 10
Audit- the team/IPC Links will audit compliance against policies in place across the trust should be monitored through audit. Examples of this include the isolation audit.	IPC team	Completed as part of IPC Link audit days	Undertaken at least annually	No	1, 7
Training- The IPC team will monitor and feedback training compliance	IPC Team	On-going	Feedback monthly at IPCC	No	6

with level 1 & 2 training					
Information dissemination- The team will update/create patient/staff infection leaflets pertinent to infection prevention control	IPC team	On-going	Updated bi-annually	Yes-ensure up to date	3
Information dissemination- the team will review and update policy and guidelines to ensure they reflect new evidence and best practice	IPC team	On-going	Updated as required	Yes-ensure up to date	1, 5, 6, 9
Surveillance- The team will continue to report and collect information on mandatory surveillance categories required by PHE. Where the infections are healthcare associated a root cause analysis +/- RCA review meeting will take place.	IPC Team	On-going	Updated in and submitted to PHE Thresholds for 22/23: C.diff <7 E.coli <8 Pseudomonas aeruginosa <8 Klebsiella sp <11	No	1, 5, 9
Work with the EPR teams to ensure the successful development and rollout of EPIC and RL solutions	IPC team/ EPR	Ongoing	Regular twice monthly meeting	No-ongoing	1, 2, 4, 9
Water & ventilation oversight- the team will ensure that the Space & Place Team co-ordinate the testing and management of	IPC team	On-going	Monthly monitoring meeting and quarterly water safety group	No	1, 8, 9

these environments through engagement and support at the Water & Ventilation Safety Groups.					
Divisional IPC support- the team will provide infection control support to the divisions at divisional infection control meeting and on a day to day basis. In order to facilitate this the team will each lead on certain divisions.	IPC Team	On-going.	Monthly meetings	No	1
The team will continue to manage the fit testing service which sits within Core Clinical Services	IPC Team	On-going	Compliance reported to the IPCC.	No	10
Maintenance of hospital intranet- IPC webpages	IPC Team	Ongoing	Ongoing	No	4, 6, 9
Support Higher Education and external learning activities related to IPC	IPC Team	Ongoing	Ongoing	No	1, 4, 9