NHS
Imperial College Healthcare
NHS Trust

2023/24

Infection prevention and control annual report

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Forward

The director of infection prevention and control (DIPC) is required to produce an annual report on the state of healthcare associated infections (HCAI) in the organisation. The Health and Social Care Act 2008: '*Code of Practice on the prevention and control of infections and related guidance'* requires the report to be released and made publicly available.

This annual report presents a summary of the infection prevention and control (IPC) and antimicrobial stewardship (AMS) work programmes for the period from 1 April 2023 until 31 March 2024. It describes Trust activity and targeted IPC and AMS improvements, including in areas where there is still work to do.

This year, as a Trust, we have forged closer working relationships across the North West London IPC system, which has helped strengthen our response to emerging threats. We have seen a return of diseases such as measles and whooping cough, which have once again tested our response and resilience. We have been able to apply those lessons, hard learned from the Covid-19 pandemic, as we continue to recover.

We have introduced several strategies to help us return to the fundamental principles of good IPC practice. We have also introduced improvements allowing us to quickly communicate when issues need attention, whilst we learn from adverse events. Our ageing estate remains a key challenge, and we will continue to support our estates and facilities teams to provide safe, clean accommodation in the provision of high-quality care.

As well as the potentially catastrophic consequences of antimicrobial resistance (AMR), the document reinforces and reminds us how intertwined IPC and AMS are, and how important the collaboration between the disciplines is in providing critical improvements in patient safety. This will be crucial as we look to embed the UK's second 'five-year national action plan,' in support of the 20-year vision for antimicrobial resistance (AMR), published in May 2024.

Lastly, I would like to extend my thanks to the many IPC and AMS experts that contribute to making the care we deliver to our patients safe and effective; their efforts are often unseen, but nevertheless are pivotal contributions. I would also especially like to thank all of those that work beyond the IPC speciality but work extremely hard to adopt and deliver IPC and AMS work streams in their practice. Our progress would not be possible with you.

Mr Tom Jacques
Director of infection prevention and control
June 2024

Abbreviation list

Abbreviation	Meaning
ACC	Acute Care Collaborative
AE	Authorising Engineer
AE(D)	Authorising Engineer for Decontamination
AMR	Antimicrobial Resistance
AMS	Antimicrobial Stewardship
ANTT	Aseptic Non-Touch Technique
AP	Authorised Person
ARG	Antibiotic Review Group
ARI	Acute Respiratory Infection
AVM	Arteriovenous Malformation
BAF	Board Assurance Framework
BBE	Bare Below Elbows
BSI	Blood Stream Infection
CABG	Coronary Artery Bypass Graft
CAP	Community Acquired Pneumonia
CAUTI	Catheter Acquired Urinary Tract Infection
CJD	Creutzfeldt-Jakob disease
CLABSI	Central Line associated Bloodstream Infection
CNS	Central Nervous System
COHA	Community Onset Healthcare Associated
COIA	Community-onset, indeterminate association
CP	Competent Person
CPE	Carbapenemase-producing Enterobacterales
CQC	Care Quality Commission
CQUIN	Commissioning for Quality and Innovation
CTCL	Cutaneous T-Cell lymphoma
CVID	Chronic Variable Immune Deficiency
CX	Charing Cross Hospital
DDIPC	Deputy Direction of Infection Prevention & Control
DIPC	Direction of Infection Prevention & Control
DNA	Did Not Attend
E coli	Escherichia coli
EDU	Endoscopy Decontamination Unit
EFM	Estates and Facilities Management
EMB	Executive Management Board
EMB-Q	Executive Management Board - Quality
FOI	Freedom of Information
FR	Functional Risk
FY	Financial Year
GI	Gastrointestinal
GNBSI	Gram Negative Blood Stream Infection
HAP	Hospital Acquired Pneumonia
HBN	Health Building Note
HBV	Hepatitis B Virus
HCAI	Healthcare Associated Infection
HCID	High Consequence Infectious Disease
HH	Hammersmith Hospital
HOHA	Healthcare Onset Healthcare Associated
HPT	Health Protection Team
HPV	Hydrogen Peroxide Vapour
HSE	Health Service Executive
HTM	Health Technical Memorandum
ICB	Integrated Care Board
ICH	Intracranial Haemorrhage

Abbreviation	Meaning
JAG	Joint Accreditation of Gastroenterologists
KLOE	Key Line of Enquiry
KPI	Key Performance Indicator
LAS	London Ambulance Service
LSMG	Line Safety Management Group
M&M	Morbidity and Mortality
MDMG	Medical Devices Management Group
MDT	Multidisciplinary Team
MERS	Middle East Respiratory Syndrome
MfI	Model for Improvement
MHRA	Medicines and Healthcare Regulatory Agency
MIC	Medicine & Integrated Care
MRSA	Methicillin-resistant Staphylococcus aureus
MSSA	Methicillin-sensitive Staphylococcus aureus
NatPSA	National Patient Safety Alert
NDP	New Drug Panel
NHS	National Health Service Property Service
NHSE	NHS England
NHSPS	National Health Service Property Service
NICE	National Institute for Clinical Excellence
NIPCM	National Infection Prevention and Control Manual
NWL	Northwest London
OPAT	Outpatient Antibiotic Therapy
P&OD	People and Organisational Development
PAQ	Pre-Acquisition Questionnaire
PICC	Peripherally Inserted Central Catheters
PIR	Post Infection Review
PLACE	Patient Led Assessment of the Care Environment
PO	Per oral
PPE	Personal Protective Equipment
PPS	Point Prevalence Survey
PSIRF	Patient Safety Incident Response Framework
Q&S	Quality and Safety
QRM	Quality Review Meeting
RAG	Red, Amber Green
RCA	Root Cause Analysis
RPE	Respiratory Protective Equipment
SCC	Surgery Cancer & Critical Care
SI	Serious Incident
SIPC	Standard Based Precautions
SLA	Service Level Agreement
SMH	St Marys Hospital
SOP	Standard Operating Procedure
SSD	Sterile Services Department
SSI	Surgical Site Infection
STEC	Shinga Toxin Escherichia Coli
TB	Tuberculosis
TBP	Transmission Based Precaution
TIPCC	Trust Infection Prevention & Control Committee
UAE	United Arab Emirates
UK	United Kingdom
UKHSA	United Kingdom Health Security Agency
USA	United States of America
UTI	Urinary Tract Infection

ICHNT	Imperial College Healthcare NHS Trust
ICPG	Improving Care Programme Group
ICS	Integrated Care System
ICU	Intensive Care Unit
IHEEM	Institute of Healthcare Engineering and Estate Management
IPC	Infection Prevention and Control
IPH	Imperial Private Health
ITP	Idiopathic Thrombocytopenic Purpura
IV	Intra Venous
IVAD	Intravenous Access Device
VAP	Ventilator Associated Pneumonia
VIP	Visual Infusion Phlebitis
VSG	Ventilation Safety Group
WCCS	Women's, Cardiac, Clinical Support & Sexual Health Services
WGS	Whole Genome Sequence
WHO	World Health Organisation
WLCH	West London Children's Hospital
WSG	Water Safety Group
WSP	Water Safety Plan
YTD	Year to Date

Introduction

Imperial College Healthcare NHS Trust provides acute and specialist healthcare to over one million people a year with over 15,000 members of staff. Our five hospitals in central and west London – Charing Cross, Hammersmith, Queen Charlotte's & Chelsea, St Mary's and the Western Eye – have a long track record in research and education, influencing care and treatment nationally and worldwide. We offer private healthcare in dedicated facilities on all our sites.

This annual report offers assurance that Imperial College Healthcare is in line with the Health and Social Care Act 2008: code of practice on the prevention and control of infections and related guidance, the CQC Health and Social Care Act 2008 (Regulated Activities) Regulations 2014, regulation 12 (2 (h)), regulation 15 (2), regulation 17 (2 (b)), and the National Infection Prevention and Control Manual for England (2022).

Preventing the spread of organisms that cause healthcare associated infections (HCAI) and ensuring optimal antimicrobial use is fundamentally important for all healthcare facilities. The prevention and control of infection remains a top priority for the Trust and is central to how services are planned, and care is delivered to patients. The IPC service is responsible for ensuring that policies and procedures for appropriate antimicrobial use and reducing the risk of HCAI are in place, that these practices are embedded throughout the organisation and that expert advice is available continuously.

Our patients have increasingly complex care needs, with ageing populations and increasing co-morbidities. This means that for many, the impact and consequences of HCAI are more serious. Over 2023/24, the continued re-mobilisation of services following the Covid-19 pandemic has been the pre-eminent challenge for healthcare organisations. At the same time, the Trust has continued work to address the other infection and avoidable HCAI risks including the more familiar challenges of *Methicillin-Resistant Staphylococcus Aureus* (MRSA), bloodstream infections and *Clostridiodes difficile* (*C. difficile*) infections.

Organisation of our service

The chief executive has overall corporate responsibility for IPC within the Trust. The IPC directorate is a clinical directorate within the office of the medical director and the medical director reports to the Trust board on all aspects of IPC.

The multidisciplinary service is led by the director of IPC, with the support of a deputy director of IPC. Together, they oversee the service comprising of medical staff, nurses, pharmacists, data scientists and other technical and operational experts who work collaboratively across the organisation to ensure patient safety through effective infection control practices (Figure 1). The service also works closely with key external regulatory and public health agencies and experts and provides clinical and operational expertise throughout the Trust.

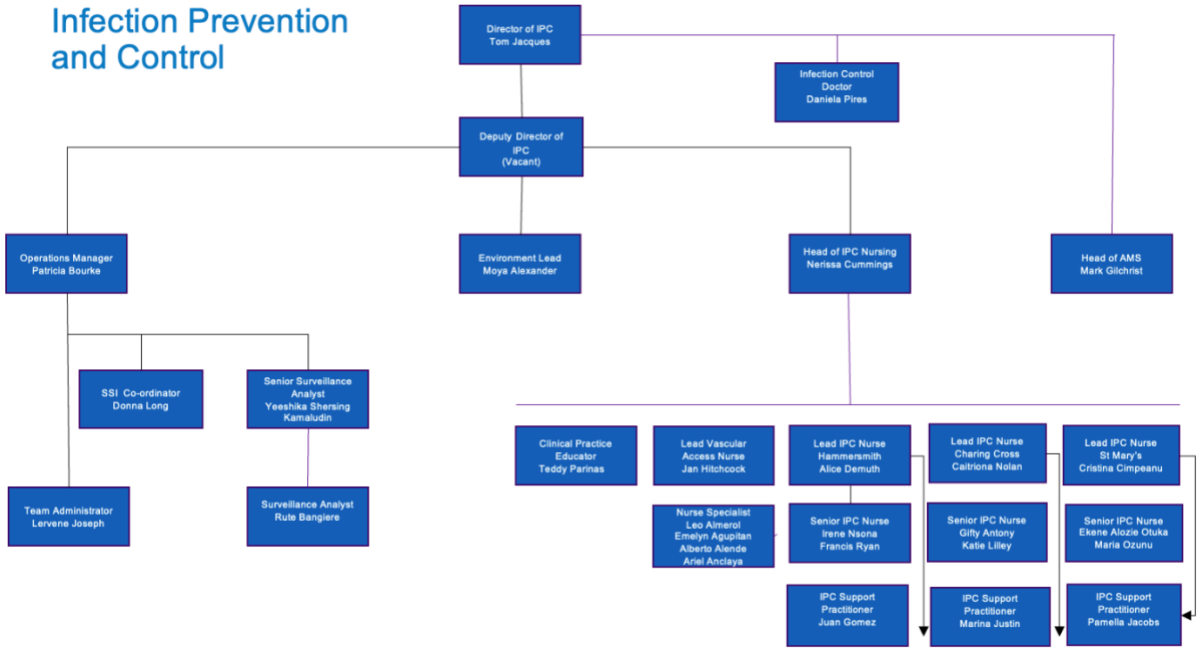


Figure 1: IPC establishment structure

Key activities of the IPC team

The IPC team encompasses aspects of IPC nursing, medicine, vascular access, environmental management, antimicrobial stewardship (AMS) and epidemiology. The team:

- provides expert advice and guidance to staff, patients/relatives and visitors in relation to infection prevention and control;
- participates in surveillance, investigation and management of HCAI and infectious diseases;
- ensures that current legislation in relation to IPC is implemented and adhered to Trust-wide;
- advises and assures the Trust board on IPC legislation, its implementation and compliance;
- plans and implements strategies to reduce HCAI, including mandatory requirements;
- ensures that policies and procedures within the IPC manual are up to date and are readily available on the Trust's intranet;
- provides education for all staff on all aspects of IPC to carry out safe and effective IPC measures, including hand hygiene;
- organises and conducts IPC audits and reports compliance in accordance with IPC policy;
- ensures responsible antimicrobial use through safe, appropriate and economic application, in line with good antimicrobial stewardship;
- records and follows up incidents of infection after surgery, and uses results to review or change practice as necessary;
- provides advice and support to staff on all aspects of clinical care relating to vascular access, including line placement when an expert is required; and
- provides a robust surveillance and epidemiology service to monitor progress on controlling major HCAI and for providing epidemiological evidence to inform action to reduce them.

Governance

During 2023/24, the Trust maintained its compliance with the criteria set out in the Health and Social Care Act codes of practice (2008). The annual plan for IPC for 2023/24 set out the proposed activities for the IPC directorate, ensuring that we continued to meet the expected requirements and standards outlined by regulation and legislation. The plan also accounted for locally agreed actions, as well as internal programmes of work that we planned to deliver throughout the year. We have on-going action plans focusing on the prevention and management of HCAIs and AMS across our hospitals, and these underpin the programmes of work referenced in this report. The plan is reviewed annually through the quality governance framework to assess impact and provide assurance. Progress on actions is also followed up by regular operational meetings. While the Trust has many examples of excellent work and high-quality care, it recognises that there is more to do to achieve its goals and ambitions. The IPC annual plan and associated action plans support the Trust to deliver its strategic objectives.

IPC reporting structure

The IPC team hold several governance and operational meetings to provide oversight and engagement with clinical and corporate services (Figure 2).

Trust infection prevention and control committee (TIPCC)

The role of the Trust infection prevention and control committee is to oversee the delivery of IPC across the organisation. The committee reports to the executive management board – quality group (EMB-Q), executive management board (EMB), and to Trust board through the non-executive director chaired quality committee (QC) through regular reports. Committee meetings are held quarterly, chaired by the IPC director, and attended by external stakeholders representing United Kingdom Health Security Agency (UKHSA) and the North West London Integrated Care System (ICS), as well as key internal stakeholders and lay partners. The committee receives reports from a range of subsidiary committees and groups (Figure 2).

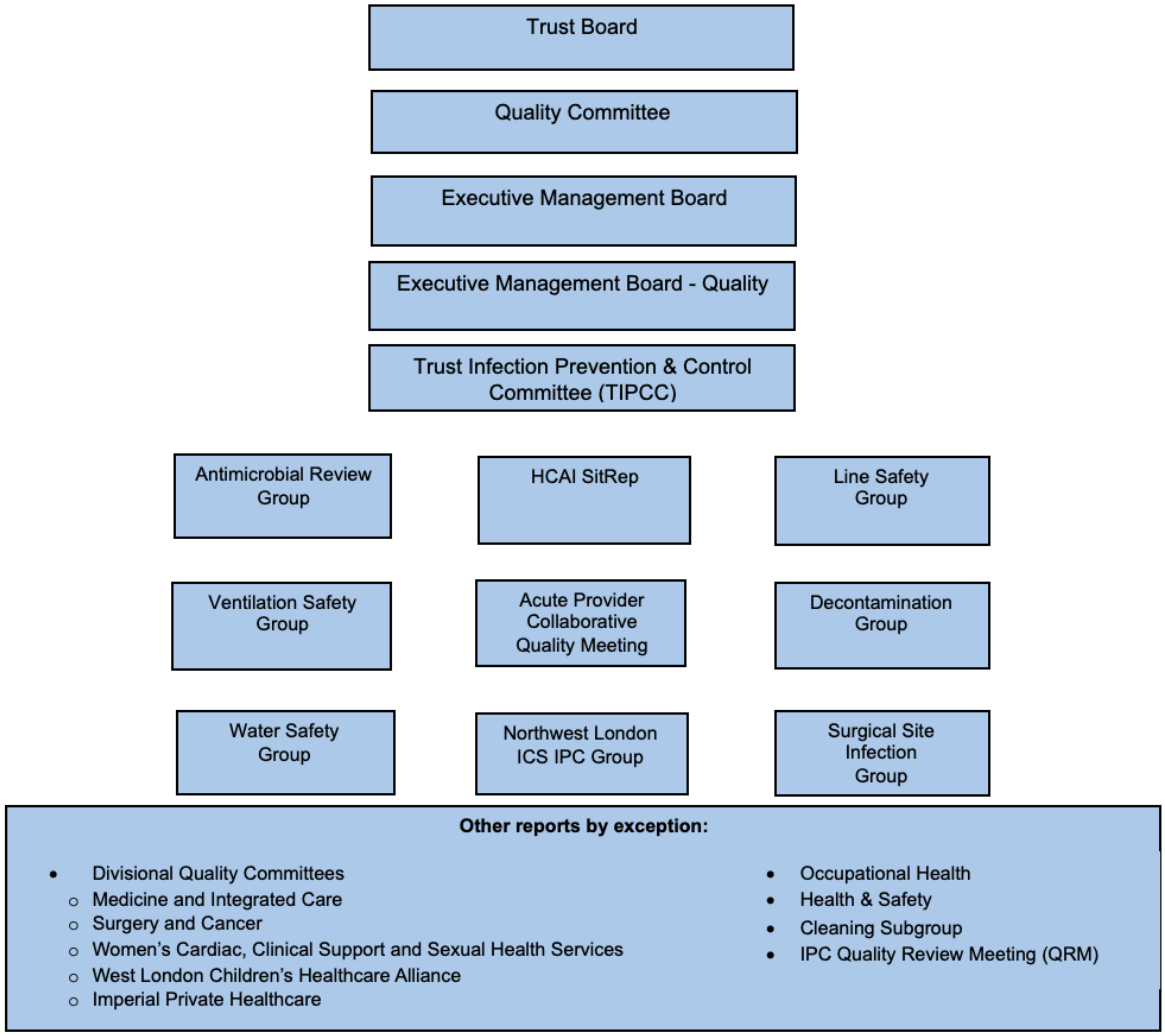


Figure 2: IPC governance structure

External assurance

In July 2023, the trust was awarded level three accreditation and was designated as a 'centre of excellence' for AMS. The Trust underwent an external inspection by the British Society for Antimicrobial Chemotherapy - Global Antimicrobial Stewardship Accreditation Scheme (GAMSAS). This success places the Trust as the first UK NHS organisation to receive this accreditation and the first of three international organisations.

Risk register

The IPC risk register identifies risks to the organisation in relation to IPC practices. As in previous years the key risks in 2023/24 included the lack of side room capacity, limitations of the estates structure contributing to concerns in both ventilation and safe water supply, risk of poor practice relating to vascular access, fragility of antimicrobial supply chain to support effective treatment plans and limited or insufficient staffing across the IPC team. Risks are monitored monthly and reviewed at each Trust infection prevention and control committee meeting on a quarterly basis.

National Infection Prevention and Control Manual (NIPCM)

The National IPC Manual (NIPCM) for England was first published in April 2022. In June 2023 the Trust made a commitment to be fully compliant with the content of the NIPCM by April 2024. To assess compliance, the NIPCM was reviewed, and rated red, amber and green in sections, with key lines of enquiry allocated to each element of each section. There are 28 key lines of enquiry in total.

There are 24 key lines of enquiry rated compliant, with four rated as partially compliant, and none rated as non-compliant. A list of recommendations with associated actions is in place to undertake the necessary work that will improve compliance and to help evidence compliance with the NIPCM. This will be monitored quarterly by reporting to the executive management board quality (EMB-Q).

Whilst the Trust is complaint in most areas there are several additional recommendations offered to make it easier for the Trust to evidence the NIPCM in the future. The Trust will continue to embed the NIPCM by linking relevant local policies when they are next reviewed. This will lessen the burden of continually reviewing and republishing locally what are well established and evidenced national IPC principles already laid out in the NIPCM.

Infection prevention and control board assurance framework

In June 2020, NHS England/NHS Improvement (NHSE/I) published an IPC board assurance framework initially to support the provision of assurance to Trust boards that their approach to the management of Covid-19 was in line with national IPC guidance and that risks had been identified and were mitigated against. The board assurance framework was subsequently revised several times as the pandemic evolved, to align previous key lines of enquiry with a broader focus to account for all seasonal respiratory viruses and wider IPC practices.

The board assurance framework now contains 54 key lines of enquiry over ten domains. An action plan is in place to undertake the necessary work that will improve board assurance related to IPC management. This is being monitored regularly reporting to EMB-Q. The majority of key lines of enquiry are rated green (51), with two rated partially compliant and one rated as non-compliant.

Freedom of information (FOI) requests

During 2023/24, four requests for data and information were received by the Trust under the Freedom of Information Act (2000) relating to IPC. All requests were completed within the legislated timeframe.

Review of policies and guidelines

There is a well-established, comprehensive policy review programme, managed through corporate governance, to ensure all policies, guidelines and patient information leaflets are up to date and reflect the latest evidence-based practice. IPC participate fully in this programme and ensure that all documents owned by or requiring IPC input follow the necessary review and approvals process.

The following policies, guidelines and patient information leaflets have been updated and approved in the previous year:

Policy title	**Date of approval**
The Infection Prevention and Control Management of High Consequence Infectious Diseases Policy	June 2023
Guideline title	**Date of approval**
Central vascular access devices general guidance following insertion in adults	November 2023
Patient leaflet name	**Date of approval**
MRSA – what does it mean?	June 2023
MRSA screening	June 2023
Carbapenemase-producing Enterobacterales (CPEs)	January 2024
Clostridium difficile	January 2024
Norovirus	January 2024
Your role in reducing the risk of infection	January 2024

Table 1: Policies, guidelines and patient information approved 2023/24

Significant and reportable incidents

There were 562 infection control related incidents reported in 2023/24, requiring formal investigation (Figure 3). There were four incidents rated as moderate harm. None of the reported incidents were declared as serious incidents (Figure 4, Table 2).

In 2023/24, we undertook a review of reporting of infection control related incidents. Changes to the way we categorise and report reviews means that this year, when we reviewed our numbers, we were looking at all of our incidents, including no harm, low harm, moderate and severe incidents. That is why we reported a total of 562 infection control related incidents, with four incidents rated as moderate harm, in 2023/24. This compares to 66 incidents rated moderate harm or above in 2022/23, when we only reported incidents of moderate or significant harm.

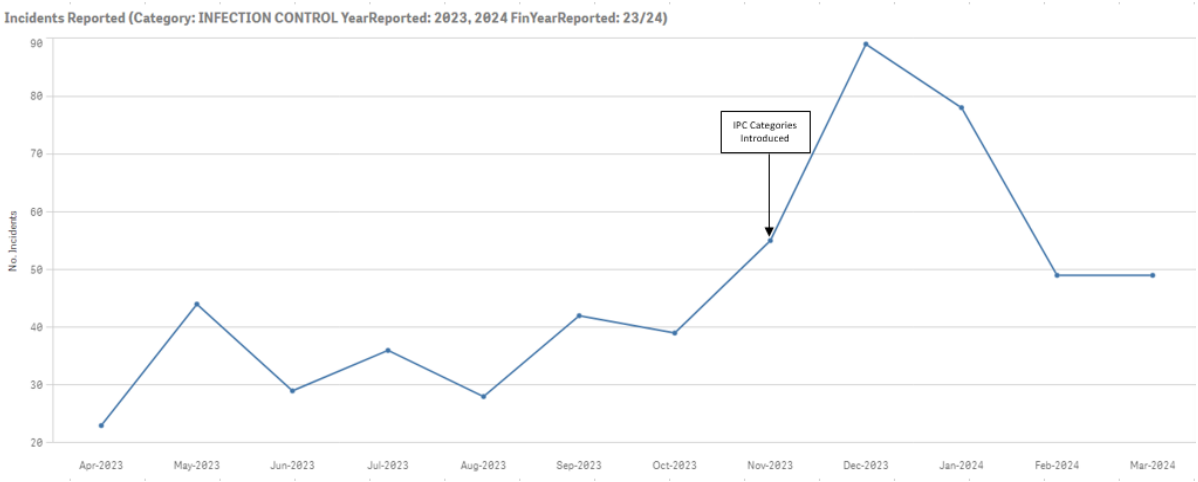


Figure 3: Datix incident rates 2023/24

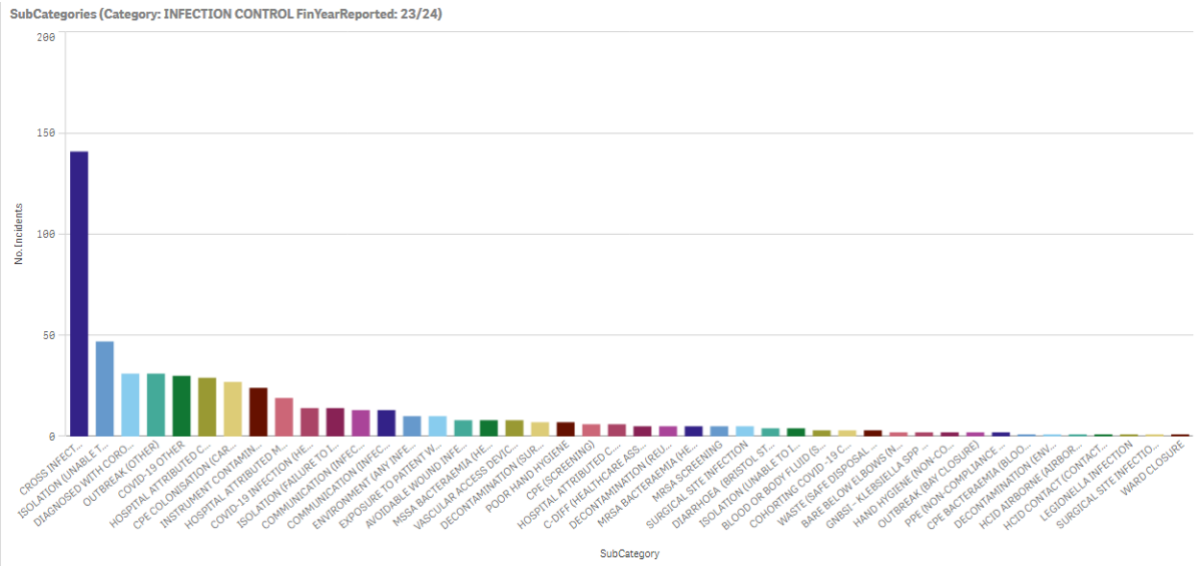


Figure 4: Datix harm categories 2023/24

Harm Category	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Total
Low Harm	4	2	5	2	3	6	6	5	12	10	7	5	**67**
Near Miss	2	7	4	7	2	6	4	4	7	5	5	7	**60**
No Harm	16	34	20	26	23	30	28	46	68	61	36	38	**426**
Moderate Harm	1	1	0	1	0	0	0	0	0	1	0	0	**4**
Null	0	0	0	0	0	0	0	0	2	1	1	1	**5**
Total	**23**	**44**	**29**	**36**	**28**	**42**	**38**	**55**	**89**	**78**	**49**	**51**	**562**

Table 2: Datix incident reports 2023/24

Healthcare associated infections (HCAIs)

All trusts are required under the NHS Standard Contract to minimise rates of both *C. difficile* and of gram-negative bloodstream infections (*E. coli, Klebsiella spp., P. aeruginosa*), so that they are no higher than the threshold levels set by NHS England. The Trust is also required to mandatorily report *Staphylococcus aureus* bloodstream infections (BSI) – both *Methicillin Resistant Staphylococcus Aureus* (MRSA) and *Methicillin Sensitive Staphylococcus Aureus* (MSSA) although they have no set threshold.

A full description of the set thresholds is detailed in Table 3.

Organism	Trust threshold 2023/24
C. difficile	65 cases
E. coli	90 cases
Klebsiella spp.	54 cases
P. aeruginosa	23 cases

Table 3: Imperial College Healthcare set thresholds 2023/24

Thresholds are calculated on the basis outlined below:

Pathogen	C. difficile	Gram-negative bloodstream infections (*E. coli, Klebsiella spp., P. aeruginosa*)
Threshold 1:	If a trust had fewer than or equal to 10 cases during the 12 months ending November 2021, the threshold will be equal to that count. If a trust had more than 10 cases, the threshold will be two cases less than the count.	If a trust had fewer than or equal to 10 cases during the 12 months ending November 2021, the threshold will be equal to that count. If a trust had more than 10 cases, the threshold will be 10 per cent less than the count.
Threshold 2:	If a trust had fewer than or equal to 10 cases during the 12 months ending November 2022, the threshold will be equal to that count. If a trust had more than 10 cases, the threshold will be one case less than the count.	If a trust had fewer than or equal to 10 cases during the 12 months ending November 2022, the threshold will be equal to that count. If a trust had more than 10 cases, the threshold will be five per cent less than the count.
Final Threshold:	For each trust, NHS England has selected the lower of the two thresholds previously described and this has been published as the threshold.	For each trust, NHS England has selected the lower of the two thresholds previously described and this has been published as the threshold.

Note:	All thresholds were rounded down to the nearest whole number and pertain to healthcare-associated cases (i.e. HOHA and COHA cases).

Table 4: Threshold calculation formula

Cases can be classified based on the following prior exposure groups:

Prior healthcare exposure group	Definition
Hospital-onset healthcare-associated (HOHA)	Specimen date is three or more days after the current admission date (where day of admission is day one)
Community-onset healthcare-associated (COHA)	Is not categorised HOHA and the patient was most recently discharged from the same reporting trust in the 28 days prior to the specimen date (where day one is the specimen date)
Community-onset, indeterminate association (COIA)	Is not categorised HOHA and the patient was most recently discharged from the same reporting trust between 29 and 84 days prior to the specimen date (where day one is the specimen date)
Unknown	Is not categorised HOHA and the patient has not been discharged from the same reporting organisation in the 84 days prior to the specimen date (where day one is the specimen date)
No information	The reporting trust did not provide any answers to questions on prior admission

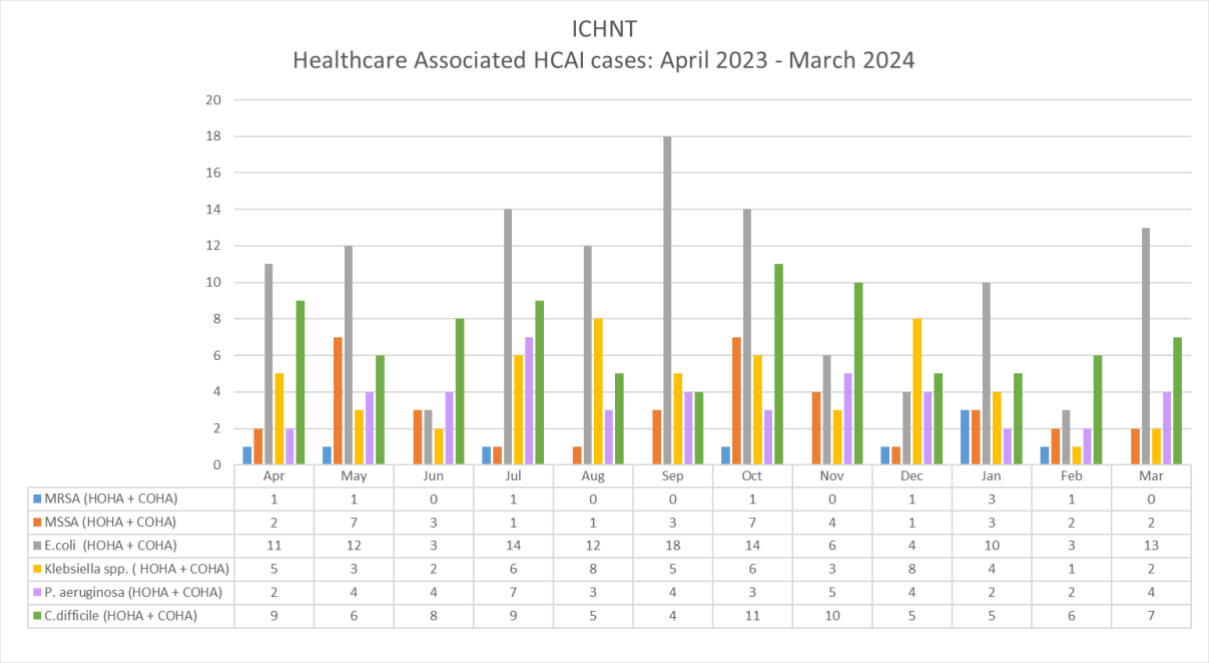
Table 5: Prior exposure groups

Trust position

The Trust's position for 2023/24 across each of the reportable pathogens as well as a comparison to the previous year's performance is demonstrated in Table 6 and Figure 5.

Alert Organism	Apr	Apr ceiling	May	May ceiling	Jun	Jun ceiling	Jul	Jul ceiling	Aug	Aug ceiling	Sep	Sep ceiling	Oct	Oct ceiling	Nov	Nov ceiling	Dec	Dec ceiling	Jan	Jan ceiling	Feb	Feb ceiling	Mar	Mar ceiling
Methicillin-resistant Staphylococcus aureus (all healthcare-associated cases, HOHA + COHA) FY23/24	1	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	3	0	1	0	0	0
Methicillin-resistant Staphylococcus aureus (all healthcare-associated cases, HOHA + COHA) FY24/25	0	0		0		0		0		0		0		0		0		0		0		0		0
Methicillin-sensitive Staphylococcus aureus (all healthcare-associated cases, HOHA + COHA) FY23/24	2	-	7	-	3	-	1	-	1	-	3	-	7	-	4	-	1	-	3	-	1	-	2	-
Methicillin-sensitive Staphylococcus aureus (all healthcare-associated cases, HOHA + COHA) FY24/25	1	-		-		-		-		-		-		-		-		-		-		-		-
E.coli (all healthcare-associated cases, HOHA + COHA) FY23/24	11	7	12	7	3	8	14	8	12	8	16	8	14	8	6	8	4	7	10	7	3	7	13	7
E.coli (all healthcare-associated cases, HOHA + COHA) FY24/25	5	7																						
Klebsiella spp. (all healthcare-associated cases, HOHA + COHA) FY23/24	5	4	3	4	2	4	6	6	6	6	5	5	6	4	3	4	6	4	4	4	1	4	2	4
Klebsiella spp. (all healthcare-associated cases, HOHA + COHA) FY24/25	4	4																						
P. aeruginosa (all healthcare-associated cases, HOHA + COHA) FY23/24	2	2	4	2	4	2	7	2	3	2	4	2	3	1	5	2	4	2	2	2	2	2	4	2
P. aeruginosa (all healthcare-associated cases, HOHA + COHA) FY24/25	2	2																						
C.difficile (all healthcare-associated cases, HOHA + COHA) FY23/24	5	5	5	5	5	6	5	6	5	6	4	6	11	6	10	5	5	5	5	5	6	5	7	5
C.difficile (all healthcare-associated cases, HOHA + COHA) FY24/25	6	5																						

Table 6: Imperial College Healthcare HCAI position 2023/24



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
MRSA (HOHA + COHA)	1	1	0	1	0	0	1	0	1	3	1	0
MSSA (HOHA + COHA)	2	7	3	1	1	3	7	4	1	3	2	2
E.coli (HOHA + COHA)	11	12	3	14	12	18	14	6	4	10	3	13
Klebsiella spp. (HOHA + COHA)	5	3	2	6	8	5	6	3	8	4	1	2
P. aeruginosa (HOHA + COHA)	2	4	4	7	3	4	3	5	4	2	2	4
C.difficile (HOHA + COHA)	9	6	8	9	5	4	11	10	5	5	6	7

Figure 5: Trust position on nationally mandated HCAI reporting 2023/24

The Trust's position in relation to neighbouring hospital trusts within our sector is detailed in Table 7. This table is supplied by the integrated care system (ICS).

Mar-24-2023 NWL ICS HCAI report		E. coli	Klebsiella spp	Pseudomonas aeruginosa	C. difficile	MRSA	MSSA
North West London ICS	Recorded infections	1454	479	195	354	45	339
	Threshold (YTD)	1089	414	169	343	0	294
Chelsea & Westminster Hospital	Recorded infections	127	49	21	33	4	24
	Threshold (YTD)	70	33	19	25	0	29
Imperial College Healthcare	Recorded infections	120	53	44	85	9	36
	Threshold (YTD)	90	54	23	65	0	38
London North West University Healthcare	Recorded infections	138	76	23	76	7	48
	Threshold (YTD)	87	65	33	63	0	31
The Hillingdon Hospitals	Recorded infections	38	22	10	27	1	16
	Threshold (YTD)	27	10	6	23	0	10

Table 7: North West London ICS Providers HCAI position 2023/24

Against a national perspective of increasing HCAIs and in addition to benchmarking against other trusts in the sector, the IPC team has undertaken a detailed review of HCAI metrics against peer provider trusts in the Shelford Group of hospitals (a collaboration between ten of the largest teaching and research NHS hospital trusts in England) as well as our national position against all acute trusts. Table 8 details the Trust position both in respect to the Shelford group, as well as against all acute care providers.

Organisation	Apr-23 to Mar-24	C.diff	MRSA BSI	MSSA BSI	E.coli BSI	Kleb BSI	Pseud BSI
	All Acute Trusts (mean healthcare associated rate)	29.41	1.34	15.89	40.01	16.68	7.16
Imperial College Healthcare	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	24.06	2.55	9.91	33.97	15.00	12.46
	Shelford position	3rd	9th	1st	1st	1st	5th
Guy's & St. Thomas'	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	15.99	2.50	16.99	34.23	25.74	13.49
	Shelford position	1st	8th	6th	2nd	7th	7th
University College London Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	26.53	1.30	14.78	55.66	38.27	20.87
	Shelford position	4th	3rd	2nd	10th	10th	10th
King's College Hospital	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	23.32	2.06	16.92	38.17	28.27	14.44
	Shelford position	2nd	6th	5th	3rd	8th	8th
Sheffield Teaching Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	27.16	1.41	23.54	55.53	20.92	6.64
	Shelford position	5th	4th	10th	9th	4th	2nd
The Newcastle upon Tyne Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	29.80	0.83	22.35	53.39	23.59	8.69
	Shelford position	6th	1st	8th	8th	5th	4th
University Hospitals Birmingham	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	33.14	0.97	15.38	40.45	16.35	8.07
	Shelford position	7th	2nd	3rd	5th	2nd	3rd
Cambridge University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	39.05	2.20	16.50	50.32	30.80	13.20
	Shelford position	10th	7th	4th	7th	9th	6th
Manchester University	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	35.59	2.85	22.52	39.09	18.12	6.21
	Shelford position	9th	10th	9th	4th	3rd	1st
Oxford University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	34.77	1.50	19.72	46.28	25.14	16.85
	Shelford position	8th	5th	7th	6th	6th	9th

Table 8: Imperial College Healthcare, Shelford, Acute provider position 2023/24

Five-year trajectory

Whilst the national thresholds have adjusted year on year, there has been little in the way of significant fluctuation in the numbers observed at trust level. A review of the national trajectory alongside the Trust's annual reported figures is detailed in Table 9.

Organism	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24
C.difficile threshold	77	77	99	67	65
C.difficile cases	101	59	71	90	85
MRSA threshold	0	0	0	0	0
MRSA BSI cases	3	5	11	5	9
MSSA threshold	No ceiling	No ceiling	No ceiling	No ceiling	No ceiling
MSSA BSI cases	32	31	38	46	36
E.coli threshold	No ceiling	No ceiling	152	95	90
E.coli BSI cases	73	60	105	115	120
Klebsiella threshold	No ceiling	No ceiling	68	78	54
Klebsiella BSI cases	54	49	70	61	53
P. aeruginosa threshold	No ceiling	No ceiling	51	44	23
P. aeruginosa BSI cases	35	47	36	38	44

Table 9: Five-year trajectory national set thresholds versus Imperial College Healthcare position

Clostridioides difficile infection

Clostridioides difficile (C. difficile) is a bacterium that is found in people's intestines. It can be found in healthy people, where it causes no symptoms (up to 3 per cent of adults and 66 per cent of babies). *C. difficile* causes disease when the normal bacteria in the gut are disadvantaged, usually by someone taking antibiotics. This allows *C. difficile* to grow to unusually elevated levels. It also allows the toxin that some strains of *C. difficile* produce to reach levels where it attacks the intestines and causes mild to severe diarrhoea. *C. difficile* can lead to more serious infections of the intestines with severe inflammation of the bowel (pseudomembranous colitis). *C. difficile* is the biggest cause of infectious diarrhoea in hospitalised patients. People can become infected with *C. difficile* if they ingest the bacterium (through contact with a contaminated environment or person). People who become infected with *C. difficile* are usually those who have taken antibiotics, particularly the elderly and people whose immune systems are compromised.

The Trust has reported third best position in the Shelford group for the last three consecutive years and maintained a position in the top three in five out of the last six years (Table 10).

Organisation	C.difficile	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24
	All Acute Trusts (mean healthcare associated rate)	20.81	22.61	25.72	25.74	29.59	29.41
Imperial College Healthcare	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	22.50	27.91	21.00	22.19	27.73	24.06
	Shelford position	2nd	7th	2nd	3rd	3rd	3rd
Guy's & St. Thomas'	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	9.76	10.44	13.96	15.98	16.53	15.99
	Shelford position	1st	1st	1st	1st	1st	1st
University College London Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	34.04	29.24	44.19	40.78	49.41	26.53
	Shelford position	10th	8th	10th	10th	10th	4th
King's College Hospital	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	22.58	19.68	22.53	21.77	27.47	23.32
	Shelford position	3rd	2nd	3rd	2nd	2nd	2nd
Sheffield Teaching Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	31.62	30.62	38.60	34.91	38.07	27.16
	Shelford position	9th	9th	8th	7th	6th	5th
The Newcastle upon Tyne Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	23.17	25.16	31.19	38.08	38.76	29.80
	Shelford position	5th	5th	6th	9th	8th	6th
University Hospitals Birmingham	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	25.33	26.45	28.47	26.67	30.73	33.14
	Shelford position	7th	6th	5th	4th	5th	7th
Cambridge University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	26.96	32.34	24.97	36.38	38.46	39.05
	Shelford position	8th	10th	4th	8th	7th	10th
Manchester University	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	22.82	22.15	32.25	29.21	28.78	35.59
	Shelford position	4th	3rd	7th	5th	4th	9th
Oxford University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	24.28	25.09	39.67	30.21	39.80	34.77
	Shelford position	6th	4th	9th	6th	9th	8th

Table 10: *C. difficile* ranking Imperial College Healthcare v Shelford v acute providers (2018-2024)

The Trust has exceeded the set threshold across three of the last five reported years, as shown in Figure 6.

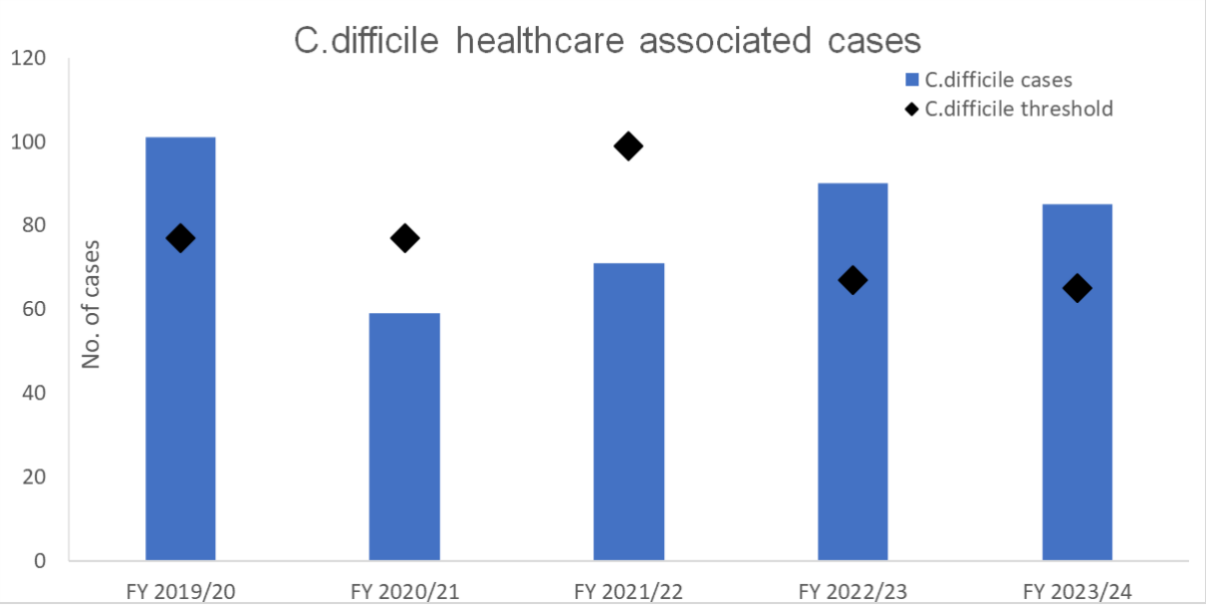


Figure 6: *C. difficile* cases against threshold (2019-2024)

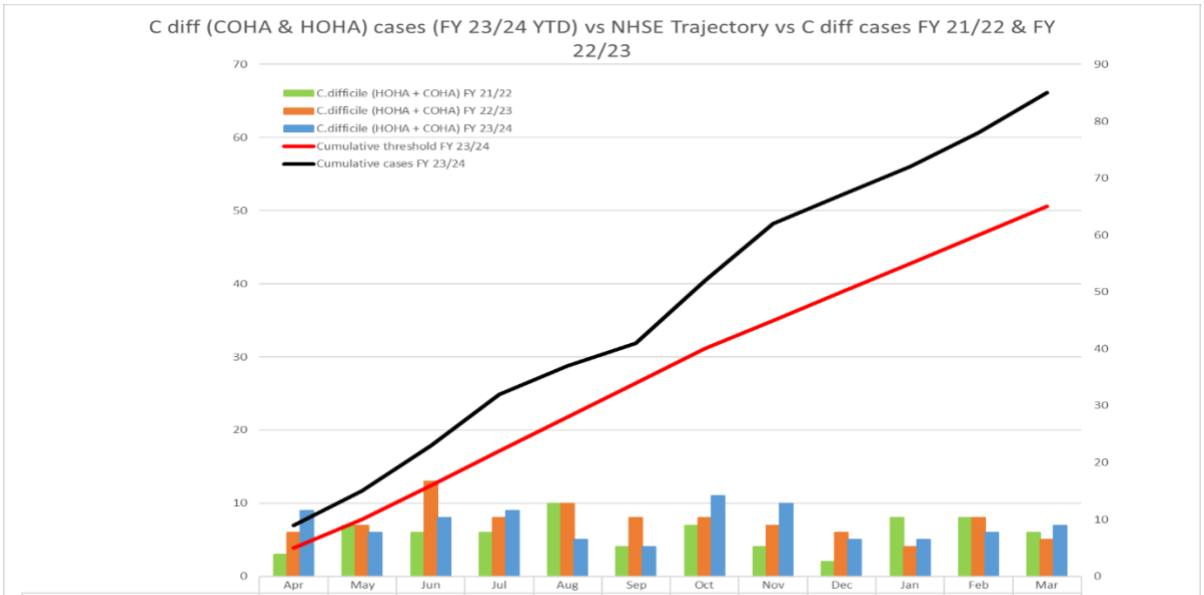
The annual threshold set by UKHSA (UK Health Security Agency) was 65 for 2023/24. The Trust reported 85 cases meaning the Trust surpassed the annual threshold set for the year.

Analysis and learning

A deep dive into the 36 cases of *C. difficile* bloodstream infections in 2023/24 revealed no specific care and service delivery problems but it was identified that many patients from high-risk groups were identified. These include patients with present or past malignancy, existing gastrointestinal disease including Crohn's or ulcerative colitis and/or patients who are immunosuppressed. Pre-existing

colonisation has also been suggested as an important risk factor, with the disease activated by concomitant illness.

In addition to the multidisciplinary team meetings at each hospital site, where all cases of HCAI are reviewed, all cases of *C. difficile* are peer reviewed monthly within a specific *C. difficile* multidisciplinary team. Colleagues from microbiology, pharmacy, North West London Pathology, as well as the integrated care board and primary care are all represented within the group, to ensure a comprehensive review takes place. This also ensures that the Trust maximises all learning opportunities. The presence of the integrated care board and primary care also ensures that issues and learnings can be shared, and other information or practices form partner organisations can be considered.



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
C.difficile (HOHA + COHA) FY 21/22	3	7	6	6	10	4	7	4	2	8	8	6
C.difficile (HOHA + COHA) FY 22/23	6	7	13	8	10	8	8	7	6	4	8	5
C.difficile (HOHA + COHA) FY 23/24	9	6	8	9	5	4	11	10	5	5	6	7
Cumulative threshold FY 23/24	5	10	16	22	28	34	40	45	50	55	60	65
Cumulative cases FY 23/24	9	15	23	32	37	41	52	62	67	72	78	85

Figure 7: Imperial College Healthcare *C. difficile* reported rate – annual comparison

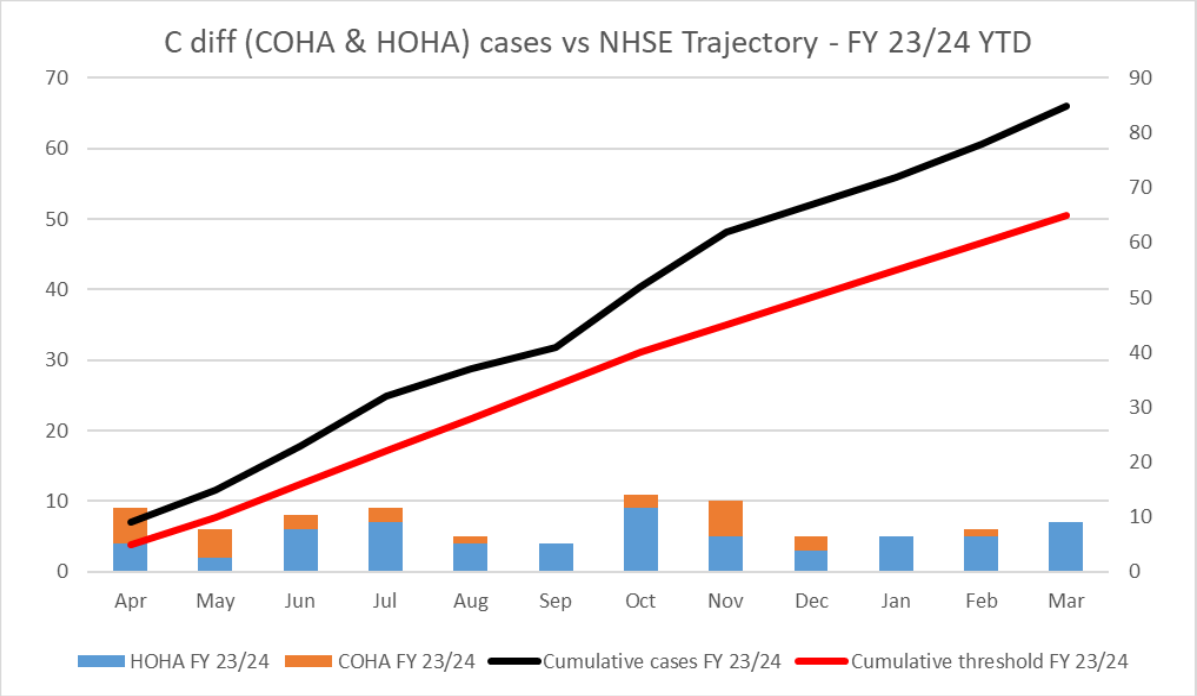


Figure 8: Imperial College Healthcare *C. difficile* infection rates 2023/24

* HOHA = Healthcare Onset Healthcare Associated (Samples taken >= 48 hours into a patient's admission)

**COHA = Community Onset Healthcare Associated (Samples taken < 48 hours into a patient's admission and where the patient was an inpatient at the reporting Trust in the 28 days prior to sample collection date)

Staphylococcus aureus

Staphylococcus aureus (S. aureus) is a bacterium that commonly colonises human skin and mucosa without causing any problems. It can also cause disease, particularly if there is an opportunity for the bacteria to enter the body, for example through broken skin or a medical procedure. If the bacteria enter the body, illnesses which range from mild to life-threatening may then develop. Most strains of *S. aureus* are sensitive to the more commonly used antibiotics, and infections can be effectively treated. Some *S. aureus* bacteria are more resistant. Those resistant to the antibiotic methicillin are termed *methicillin resistant Staphylococcus aureus* (MRSA) and often require distinct types of antibiotics to treat them. Those that are sensitive to methicillin are termed *methicillin susceptible Staphylococcus aureus* (MSSA). MRSA and MSSA only differ in their degree of antibiotic resistance.

MRSA

Those resistant to the antibiotic methicillin are termed *methicillin resistant Staphylococcus aureus* (MRSA) and often require distinct types of antibiotics to treat them. MRSA and MSSA only differ in their degree of antibiotic resistance.

This year, we continued to face challenges with controlling MRSA bloodstream infections. We saw an increase in infections this year over last year. Among Shelford group trusts, we ranked ninth for MRSA bloodstream infections this year, showing we have work to do to improve our position, shown in Table 11.

Organisation	MRSA	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24
	All Acute Trusts (mean healthcare associated rate)	0.74	1.16	1.32	1.01	1.10	1.34
Imperial College Healthcare	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	0.84	1.67	1.78	3.39	1.42	2.55
	Shelford position	7th	7th	6th	10th	7th	9th
Guy's & St. Thomas'	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	0.67	2.32	2.04	1.38	0.75	2.50
	Shelford position	6th	10th	7th	6th	3rd	8th
University College London Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	0.40	1.56	2.24	1.44	2.17	1.30
	Shelford position	2nd	6th	8th	7th	9th	3rd
King's College Hospital	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	1.67	1.21	1.19	1.06	1.86	2.06
	Shelford position	9th	4th	4th	3rd	8th	6th
Sheffield Teaching Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	0.39	0.80	0.78	0.00	0.40	1.41
	Shelford position	1st	2nd	3rd	1st	1st	4th
The Newcastle upon Tyne Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	0.44	0.45	0.28	0.00	0.41	0.83
	Shelford position	3rd	1st	2nd	2nd	2nd	1st
University Hospitals Birmingham	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	0.55	2.20	0.27	1.32	1.08	0.97
	Shelford position	4th	9th	1st	5th	6th	2nd
Cambridge University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	1.78	1.20	1.76	1.49	0.82	2.20
	Shelford position	10th	3rd	5th	8th	4th	7th
Manchester University	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	1.12	1.49	2.44	2.14	2.20	2.85
	Shelford position	8th	5th	9th	9th	10th	10th
Oxford University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	0.56	2.00	3.51	1.13	1.07	1.60
	Shelford position	5th	8th	10th	4th	5th	5th

Table 11: MRSA bloodstream infection ranking Imperial College Healthcare v Shelford v acute providers (2018-2024)

There is no set threshold for MRSA, with a zero-tolerance position. The Trust has reported cases across the last five reported years, as shown in Figure 9.

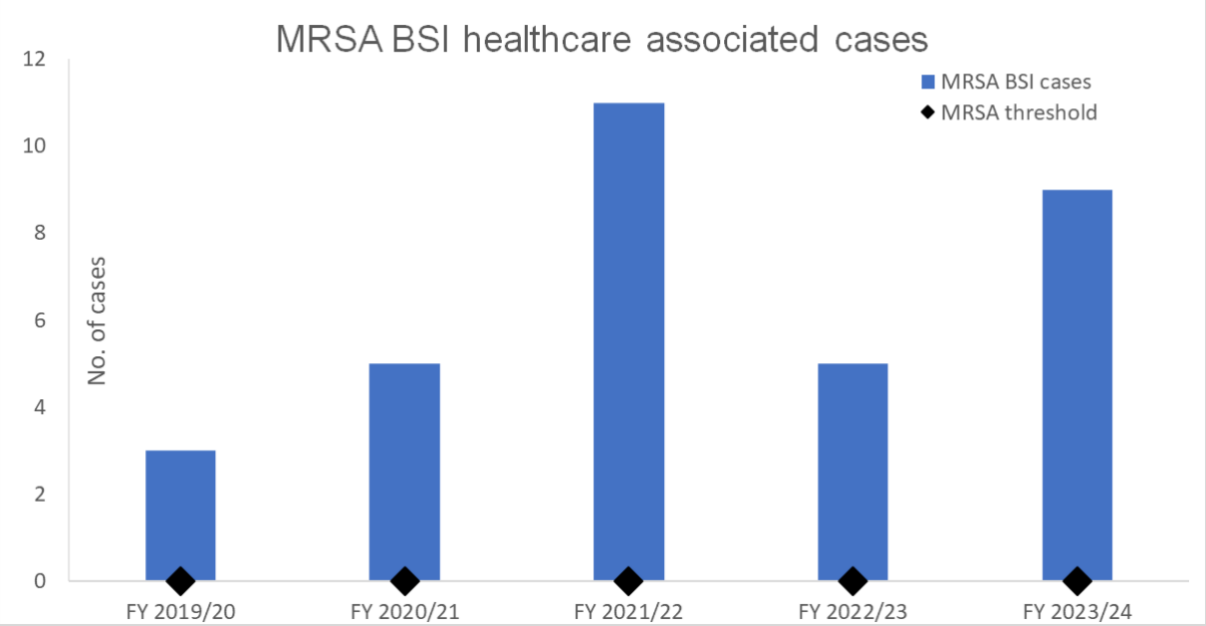
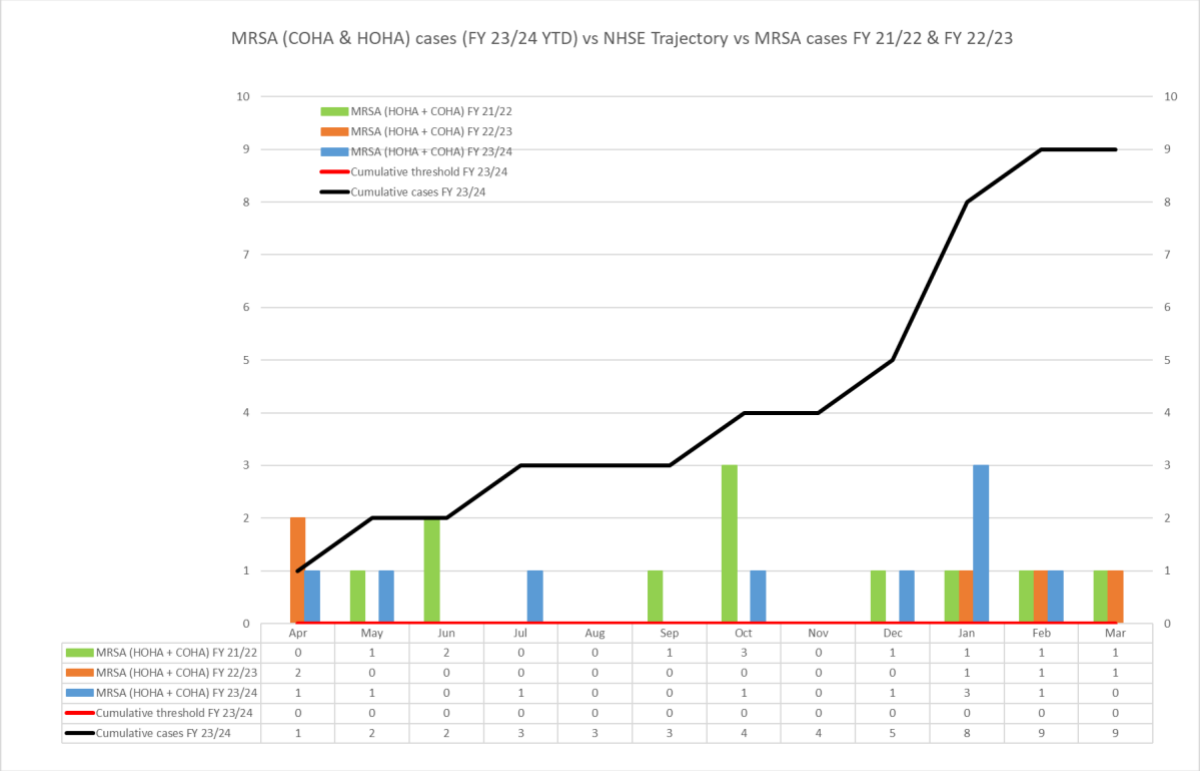


Figure 9: MRSA bloodstream infection cases against threshold (2019-2024)

The Trust figures for MRSA are demonstrated in Figure 10 and Figure 11.



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
MRSA (HOHA + COHA) FY 21/22	0	1	2	0	0	1	3	0	1	1	1	1
MRSA (HOHA + COHA) FY 22/23	2	0	0	0	0	0	0	0	0	1	1	1
MRSA (HOHA + COHA) FY 23/24	1	1	0	1	0	0	1	0	1	3	1	0
Cumulative threshold FY 23/24	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative cases FY 23/24	1	2	2	3	3	3	4	4	5	8	9	9

Figure 10: Imperial College Healthcare MRSA reported rate – annual comparison

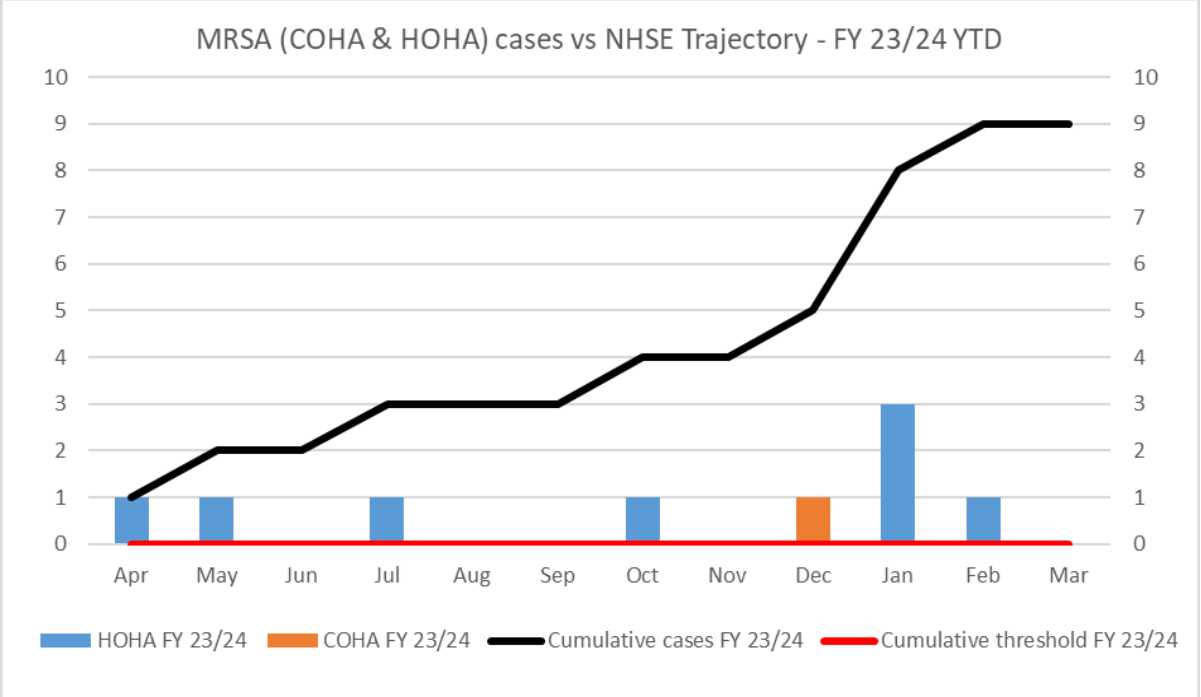


Figure 11: Imperial College Healthcare MRSA infection rates 2023/24

* HOHA = Healthcare Onset Healthcare Associated (Samples taken >= 48 hours into a patient's admission)

**COHA = Community Onset Healthcare Associated (Samples taken < 48 hours into a patient's admission and where the patient was an inpatient at the reporting Trust in the 28 days prior to sample collection date)

MRSA bloodstream infections

The Trust reported nine cases meaning the Trust did not meet the zero-tolerance target.

Analysis and learning

A deep dive into the nine cases of MRSA BSI in 2023/24 revealed that none of the nine cases were microbiologically linked to one another. There were three patients classified as having central line associated bloodstream infections. In six patients there was no obvious primary source of infection identified, following in-depth analysis.

Almost half of cases of MRSA bacteraemia (HOHA) were known to have been previously colonised with MRSA with many cases having documented issues around MRSA suppression therapy. A significant number of cases were classified as being severely immunosuppressed, and almost half of cases were transferred from other NHS trusts. Core themes that emerged from the investigations into all nine cases revealed concerns around vascular access device care or documentation, which is relevant as a third of cases were central line associated bloodstream infections. In terms of personnel or environmental contributors, additional factors included standards of clinical cleaning and compliance with hand hygiene.

MRSA admission screening

The rationale for screening is to identify MRSA carriers at the earliest opportunity. Identification will trigger the prescription and administration of topical MRSA suppression therapy, inform the selection of appropriate systemic antimicrobial prophylaxis for surgical procedures, inform the selection of appropriate empirical antimicrobial treatment in the event of subsequent sepsis, and inform decision making regarding appropriate patient placement in hospital.

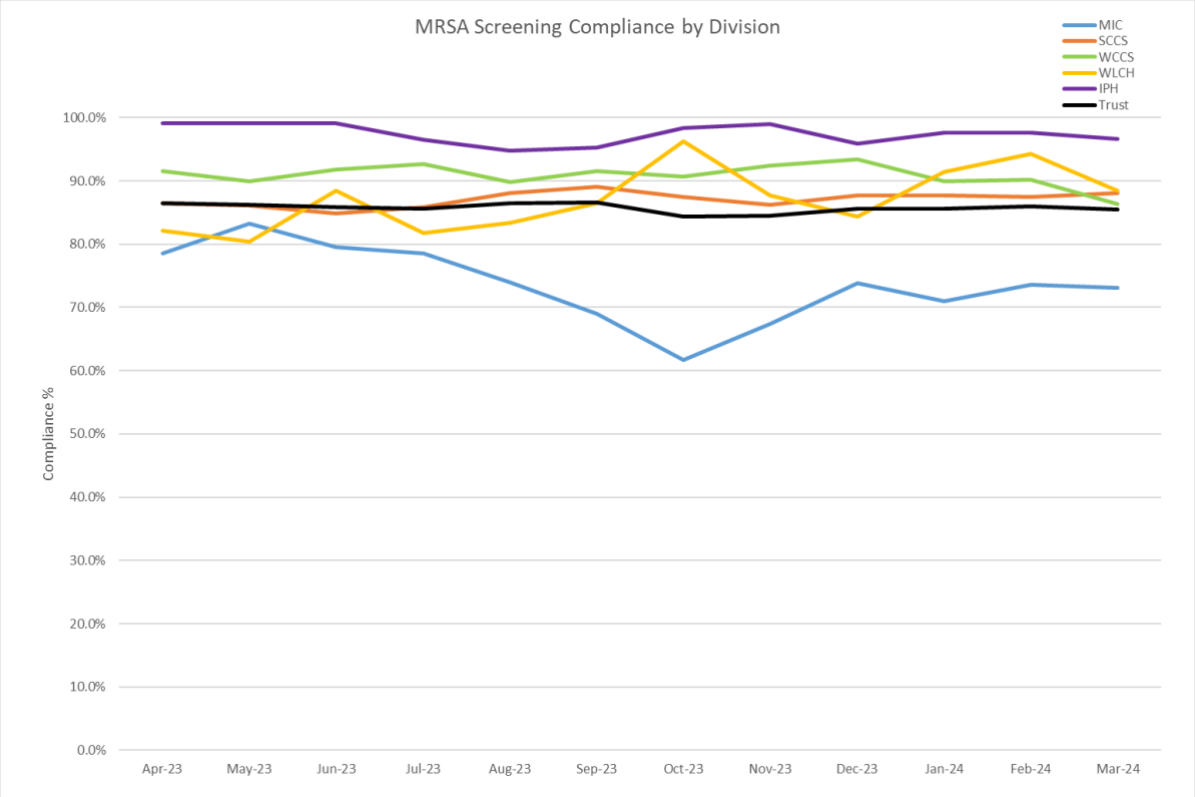


Figure 12: Imperial College Healthcare MRSA screen compliance 2023/24

MSSA

Those that are sensitive to methicillin are termed *methicillin susceptible Staphylococcus aureus* (MSSA). MRSA and MSSA only differ in their degree of antibiotic resistance.

We are proud that for three years, we have reported the lowest rate of MSSA bloodstream infections among all Shelford Group trusts (Table 12).

Organisation	MSSA	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24
	All Acute Trusts (mean healthcare associated rate)	9.64	14.43	17.27	16.00	16.69	15.89
Imperial College Healthcare	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	10.41	12.56	14.24	11.09	14.17	9.91
	Shelford position	3rd	3rd	3rd	1st	1st	1st
Guy's & St. Thomas'	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	9.09	14.15	22.13	20.94	15.70	16.99
	Shelford position	2nd	4th	5th	9th	3rd	6th
University College London Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	12.27	11.31	24.05	13.43	15.83	14.78
	Shelford position	8th	2nd	7th	2nd	4th	2nd
King's College Hospital	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	7.11	8.84	11.62	18.17	17.54	16.92
	Shelford position	1st	1st	2nd	6th	5th	5th
Sheffield Teaching Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	13.27	19.28	24.87	20.50	19.60	23.54
	Shelford position	9th	8th	8th	8th	9th	10th
The Newcastle upon Tyne Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	20.11	21.60	28.10	24.79	22.31	22.35
	Shelford position	10th	10th	10th	10th	10th	8th
University Hospitals Birmingham	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	10.53	14.77	19.16	14.27	15.36	15.38
	Shelford position	4th	5th	4th	3rd	2nd	3rd
Cambridge University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	10.66	14.97	10.90	15.80	19.38	16.50
	Shelford position	5th	6th	1st	4th	8th	4th
Manchester University	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	11.29	17.92	22.49	18.66	19.38	22.52
	Shelford position	6th	7th	6th	7th	7th	9th
Oxford University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	11.29	20.53	25.28	16.37	18.35	18.72
	Shelford position	7th	9th	9th	5th	6th	7th

Table 12: MSSA bloodstream infection ranking Imperial College Healthcare v Shelford v acute providers (2018-2024)

There is no set threshold for MSSA, with a zero-tolerance position. The Trust has reported cases across the last five reported years, as shown in Figure 13.

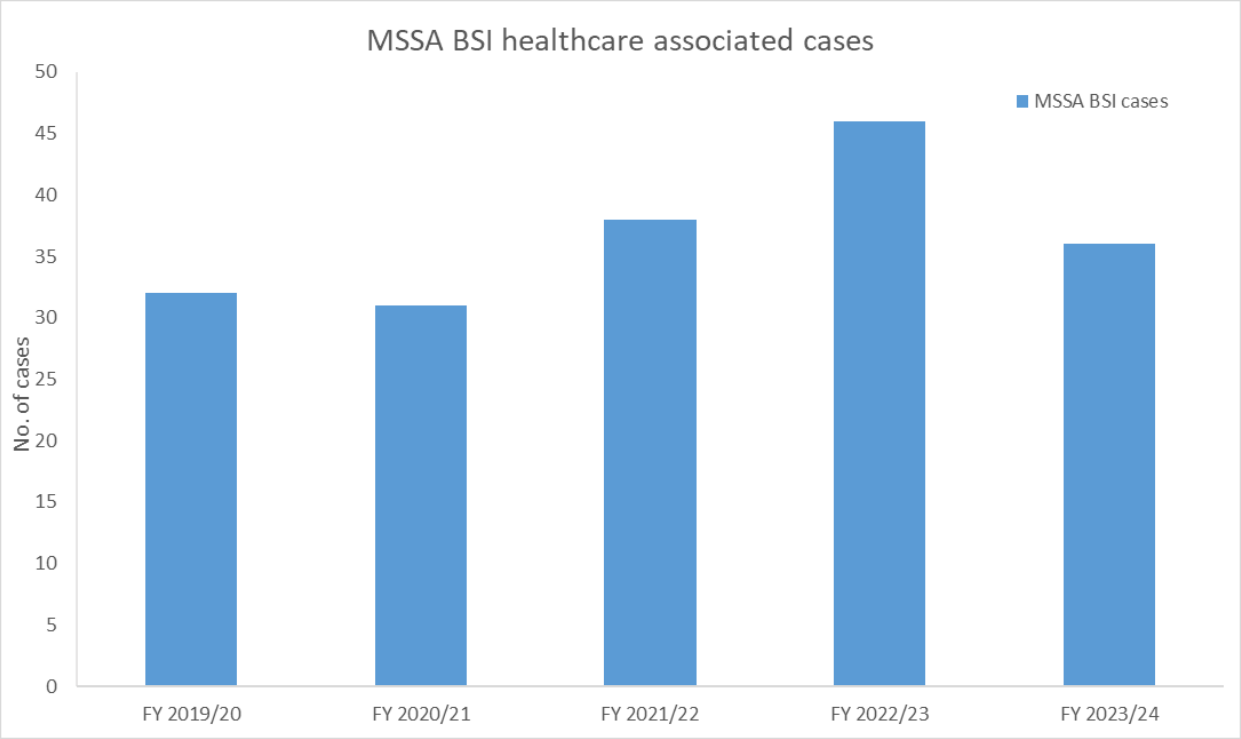
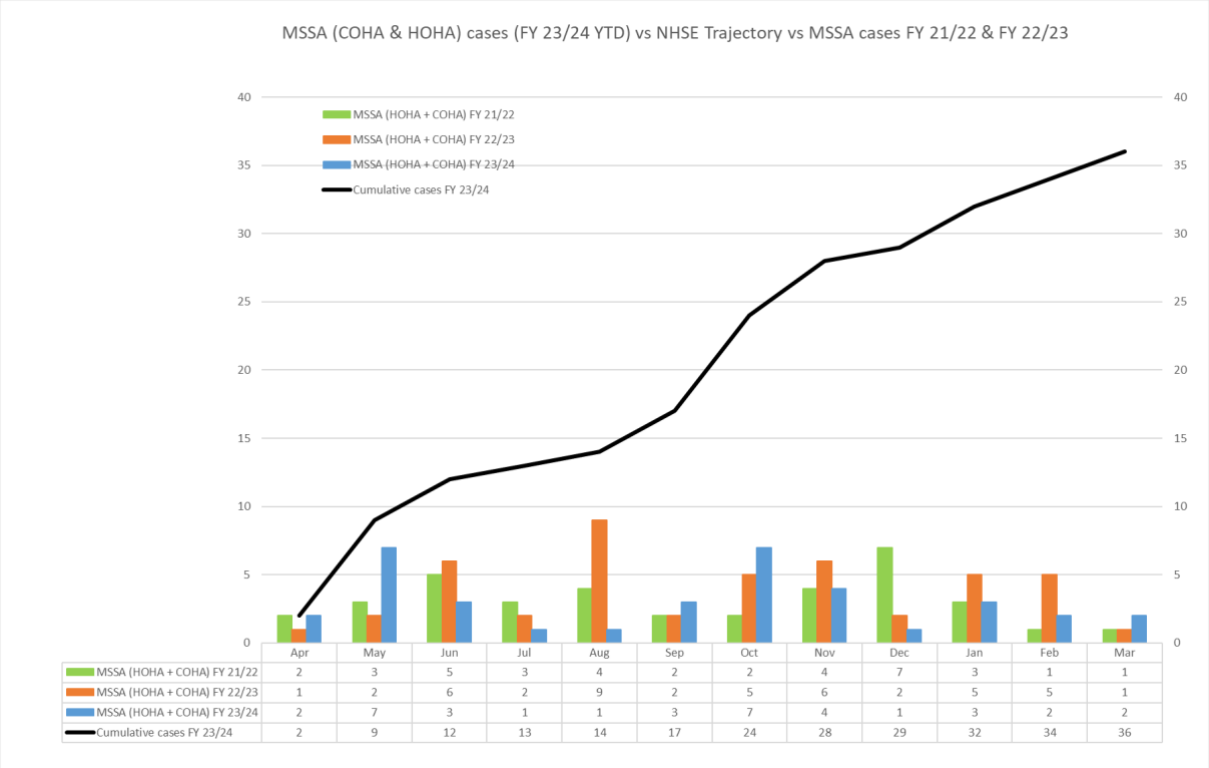


Figure 13: MSSA bloodstream infection cases against threshold (2019-2024)

The Trust figures for MSSA are demonstrated in Figure 14 and Figure 15.



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
MSSA (HOHA + COHA) FY 21/22	2	3	5	3	4	2	2	4	7	3	1	1
MSSA (HOHA + COHA) FY 22/23	1	2	6	2	9	2	5	6	2	5	5	1
MSSA (HOHA + COHA) FY 23/24	2	7	3	1	1	3	7	4	1	3	2	2
Cumulative cases FY 23/24	2	9	12	13	14	17	24	28	29	32	34	36

Figure 14: Imperial College Healthcare MSSA reported rate – annual comparison

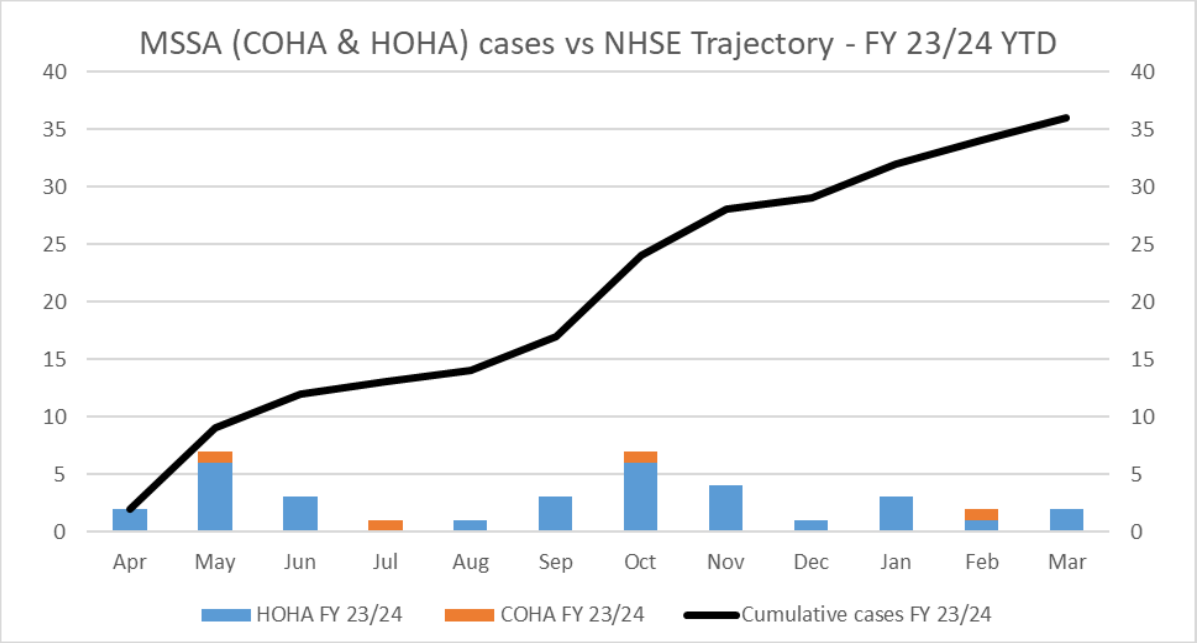


Figure 15: Imperial College Healthcare MSSA cases 2023/24

* HOHA = Healthcare Onset Healthcare Associated (Samples taken >= 48 hours into a patient's admission)

**COHA = Community Onset Healthcare Associated (Samples taken < 48 hours into a patient's admission and where the patient was an inpatient at the reporting Trust in the 28 days prior to sample collection date)

MSSA bloodstream infection

The Trust reported 36 cases in 2023/24, meaning the Trust did not meet the zero-tolerance target. However, this is an improvement in performance over 2022/23, when the Trust reported 46 cases.

Analysis and learning

A deep dive into the 36 cases of MSSA in 2023/24 revealed that cardiovascular or intravascular sources accounted for 17 cases of MSSA. Of these, eight patients had a peripheral cannula. Other sources included skin or soft tissue (seven patients), bone or joint infection (five patients), lower respiratory tract (three patients), and urinary sources (one patient, who had a catheter acquired urinary tract infection). One patient had an infected deep venous thrombosis. In two patients there was no obvious primary source of infection identified. Key themes for improvement were around vascular access and line care.

As almost half of cases of MSSA Bacteraemia (HOHA) had a peripheral cannula a core theme that emerged from the investigations were concerns around vascular access device care or documentation. In terms of personnel or environmental contributors, additional factors included compliance with hand hygiene.

Gram negative bloodstream infections

There are several types of gram-negative bacteria that can be resistant to antibiotics. These infections are associated with an increased risk of sepsis and mortality. The most common healthcare associated gram-negative bloodstream infections are related to *Escherichia coli (E. coli), Klebsiella species (Klebsiella spp.) and Pseudomonas aeruginosa (P. aeruginosa).* Some key healthcare-associated

risk factors include invasive procedures (e.g. biopsy and surgery), in-dwelling vascular access devices and other devices such as urinary catheters.

Escherichia coli

Escherichia coli (E. coli) is the most common pathogen causing bacteraemia both in the community and in healthcare settings. A bacteraemia usually develops as a complication of other infections, with the most common sources being urinary tract, gastrointestinal and hepatobiliary infections.

The Trust has reported In four of the last six years, the Trust has reported the lowest rate of E. coli infections among Shelford group trusts (Table 13).

Organisation	E.coli	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24
	All Acute Trusts (mean healthcare associated rate)	22.07	38.65	42.17	37.99	40.10	40.01
Imperial College Healthcare	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	23.35	25.40	31.68	30.51	35.44	33.97
	Shelford position	4th	1st	1st	1st	2nd	1st
Guy's & St. Thomas'	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	23.29	31.79	44.94	33.89	31.68	34.23
	Shelford position	3rd	2nd	4th	2nd	1st	2nd
University College London Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	41.56	43.28	66.57	52.29	53.73	55.66
	Shelford position	10th	6th	10th	9th	7th	10th
King's College Hospital	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	23.83	38.56	38.90	36.35	37.19	38.17
	Shelford position	6th	4th	2nd	4th	3rd	3rd
Sheffield Teaching Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	32.59	54.27	61.66	44.60	58.56	55.53
	Shelford position	8th	9th	9th	6th	9th	9th
The Newcastle upon Tyne Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	39.35	49.43	54.79	46.42	51.15	53.39
	Shelford position	9th	8th	6th	7th	6th	8th
University Hospitals Birmingham	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	20.84	35.71	47.50	40.71	41.59	40.45
	Shelford position	2nd	3rd	5th	5th	4th	5th
Cambridge University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	30.51	43.42	55.92	52.78	56.95	50.32
	Shelford position	7th	7th	7th	10th	8th	7th
Manchester University	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	20.71	39.57	39.58	34.05	42.32	39.09
	Shelford position	1st	5th	3rd	3rd	5th	4th
Oxford University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	23.43	58.17	56.87	47.71	58.72	46.28
	Shelford position	5th	10th	8th	8th	10th	6th

Table 13*: E. coli* ranking Imperial College Healthcare v Shelford v acute providers (2018-2024)

National thresholds for *E. coli* were introduced in 2021/22. Since implementation, the Trust has exceeded the set threshold for the last two consecutive years, as shown in Figure 16.

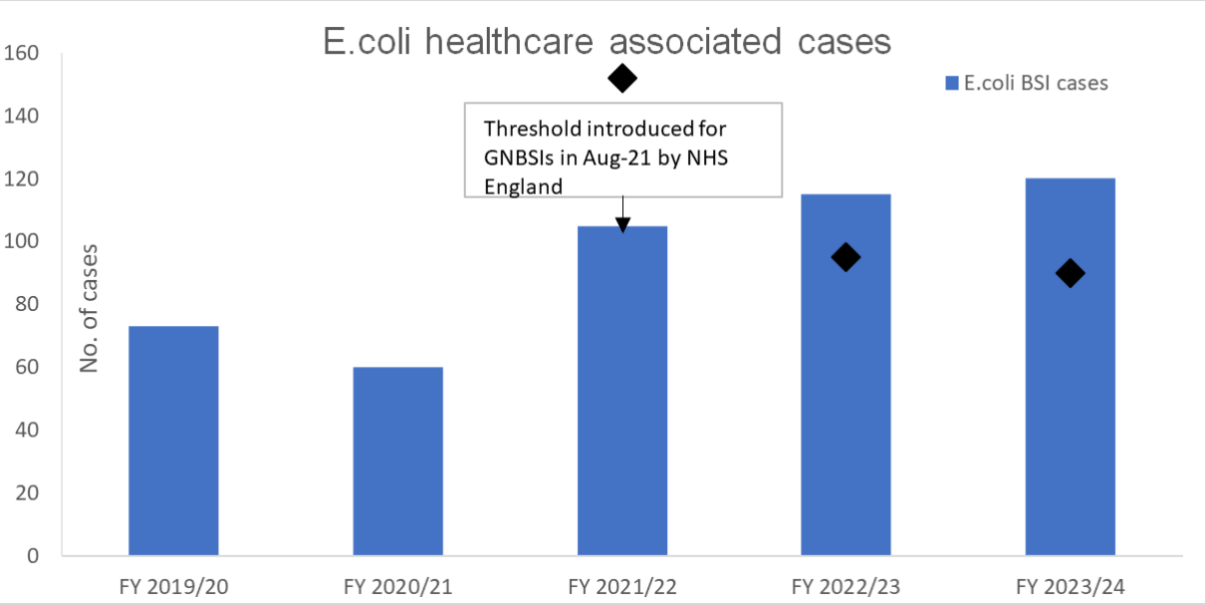


Figure 16: *E. coli* cases against threshold (2019-2024)

The annual threshold set by UKHSA was 90 for 2023/24. The Trust reported 120 cases meaning the Trust surpassed the annual threshold set for the year.

Analysis and learning

A deep dive into the 120 cases of *E. coli* bloodstream infections in 2023/24 revealed that urinary sources accounted for 43 cases of all *E. coli* bloodstream infections attributed to the Trust. Amongst those patients with a urinary source, just over half had a urinary catheter in place in the 28 days preceding diagnosis. Other sources included gastrointestinal or intraabdominal (21 patients), hepatobiliary sources (16 patients), cardiovascular or intravascular (six patients), lower respiratory tract (five patients), bone or joint infection (two patients), skin or soft tissue infection (two patients). Whilst some patients had multiple potential sources, and a considerable number of patients across all categories were severely immunocompromised, 25 patients (20 per cent) had no obvious source identified.

Up to 40 per cent of patients with *E. coli had* some form of invasive (vascular / urinary etc.) device in place or had recent surgery. In addition, between 19 per cent and 25 per cent of patients were severely immunocompromised.

Sources for cases reported in December 2023 can be found in Figure 17. The Trust figures for *E. coli* are demonstrated in Figure 18 and Figure 19.

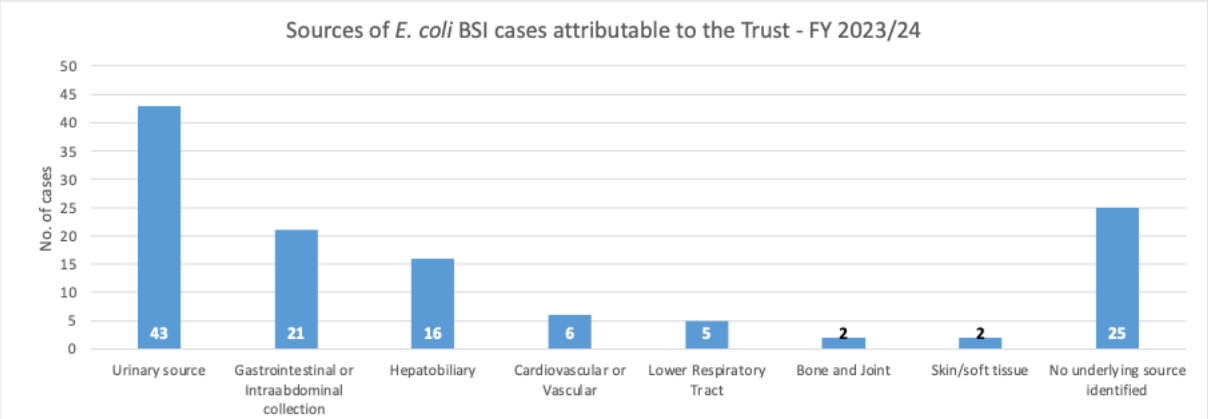
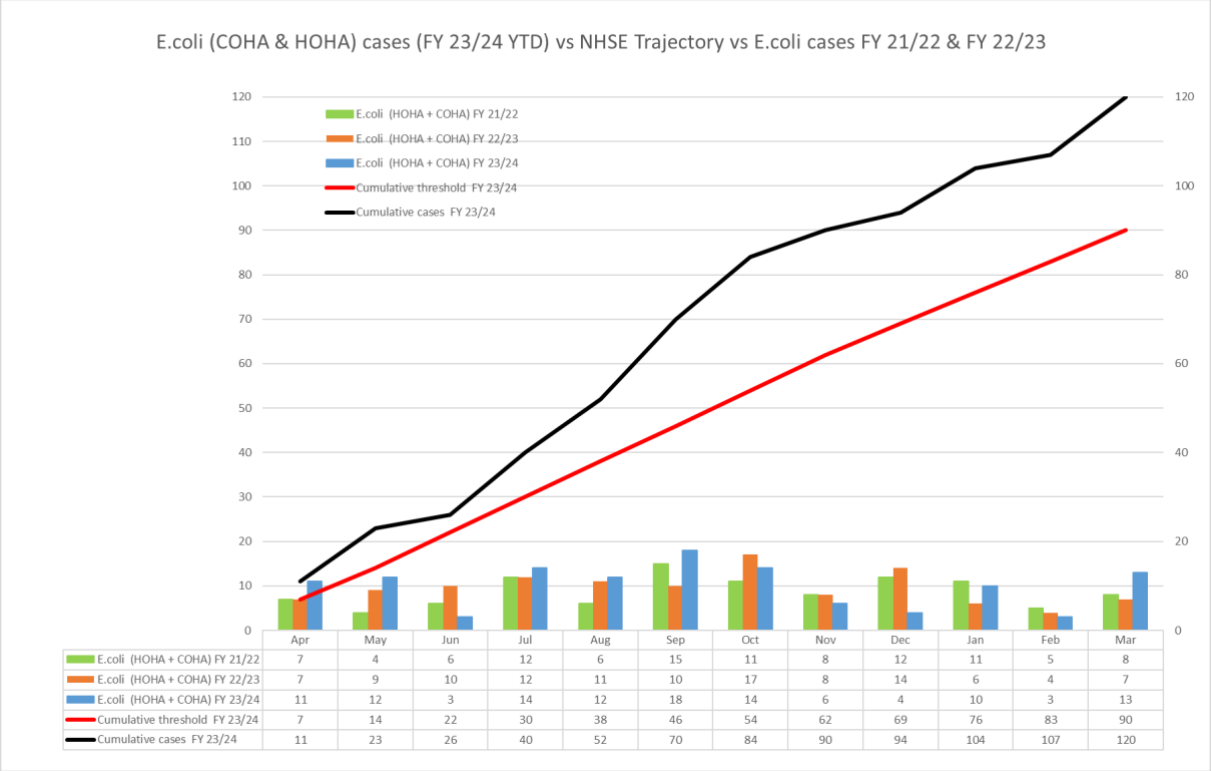


Figure 17: *E. coli* source data (2023/24)



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
E.coli (HOHA + COHA) FY 21/22	7	4	6	12	6	15	11	8	12	11	5	8
E.coli (HOHA + COHA) FY 22/23	7	9	10	12	11	10	17	8	14	6	4	7
E.coli (HOHA + COHA) FY 23/24	11	12	3	14	12	18	14	6	4	10	3	13
Cumulative threshold FY 23/24	7	14	22	30	38	46	54	62	69	76	83	90
Cumulative cases FY 23/24	11	23	26	40	52	70	84	90	94	104	107	120

Figure 18: Imperial College Healthcare *E. coli* reported rate – annual comparison

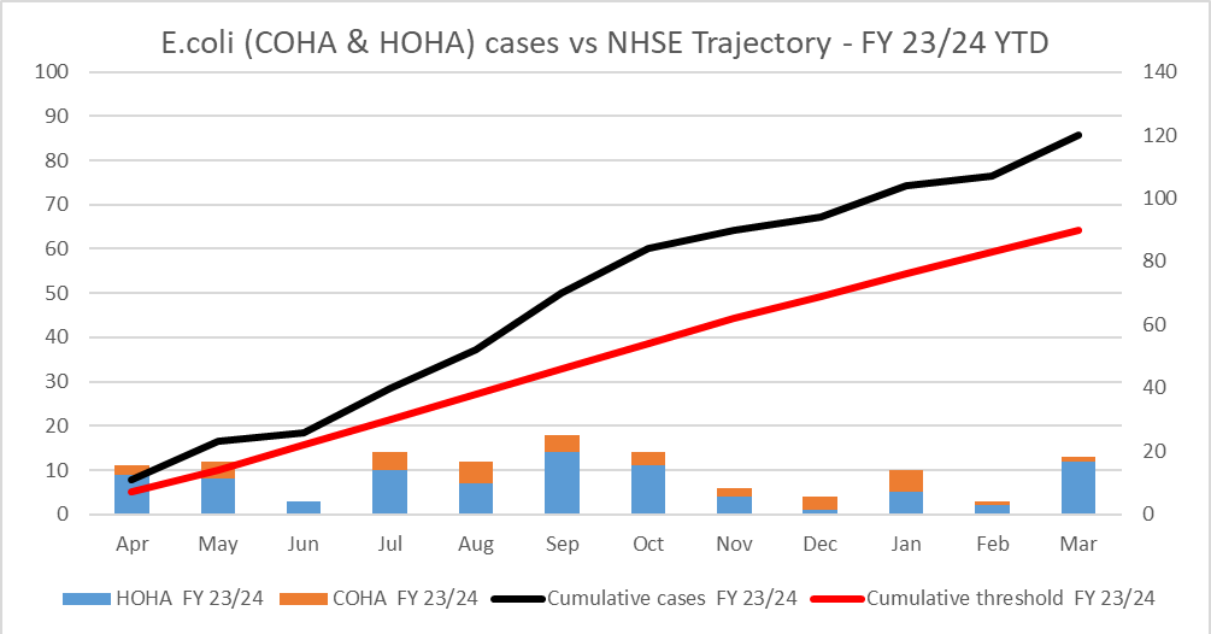


Figure 19: Imperial College Healthcare *E. coli* cases 2023/24

* HOHA = Healthcare Onset Healthcare Associated (Samples taken >= 48 hours into a patient's admission)

**COHA = Community Onset Healthcare Associated (Samples taken < 48 hours into a patient's admission and where the patient was an inpatient at the reporting Trust in the 28 days prior to sample collection date)

Klebsiella spp.

Klebsiella spp. species are gram-negative bacteria belonging to the *Enterobacteriaceae* family. These species can cause a range of HCAI, including pneumonia, bloodstream infections, wound or surgical site infections (SSI) and

meningitis. Infections can be associated with the use of invasive devices or following medical procedures.

This year, we have reported the lowest rate of *Klebsiella spp.* infections among the Shelford group trusts (Table 14).

Organisation	Klebsiella	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24
	All Acute Trusts (mean healthcare associated rate)	9.29	14.11	19.15	16.26	16.94	16.68
Imperial College Healthcare	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	13.50	18.70	22.43	21.57	18.49	15.00
	Shelford position	4th	4th	1st	3rd	2nd	1st
Guy's & St. Thomas'	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	16.86	19.72	35.07	25.62	28.38	25.74
	Shelford position	7th	6th	7th	5th	7th	7th
University College London Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	25.73	27.29	40.83	27.34	36.46	38.27
	Shelford position	10th	9th	10th	6th	10th	10th
King's College Hospital	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	21.95	23.30	38.43	29.16	32.54	28.27
	Shelford position	9th	7th	9th	7th	9th	8th
Sheffield Teaching Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	14.83	18.49	23.06	22.75	28.16	20.92
	Shelford position	5th	3rd	3rd	4th	6th	4th
The Newcastle upon Tyne Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	20.11	35.18	36.25	32.90	32.00	23.59
	Shelford position	8th	10th	8th	10th	8th	5th
University Hospitals Birmingham	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	8.99	12.12	22.67	15.25	17.01	16.35
	Shelford position	1st	1st	2nd	1st	1st	2nd
Cambridge University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	9.48	18.87	32.71	29.22	25.05	30.80
	Shelford position	2nd	5th	6th	8th	4th	9th
Manchester University	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	12.40	15.68	25.80	20.37	19.52	18.12
	Shelford position	3rd	2nd	4th	2nd	3rd	3rd
Oxford University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	15.81	27.09	31.95	29.92	25.69	25.14
	Shelford position	6th	8th	5th	9th	5th	6th

Table 14: *Klebsiella spp.* ranking Imperial College Healthcare v Shelford v acute providers (2018-2024)

National thresholds for *Klebsiella* were introduced in 2021/22. Since implementation, the Trust exceeded the set threshold for the first year but is within threshold for the last two consecutive years, as shown in Figure 20.

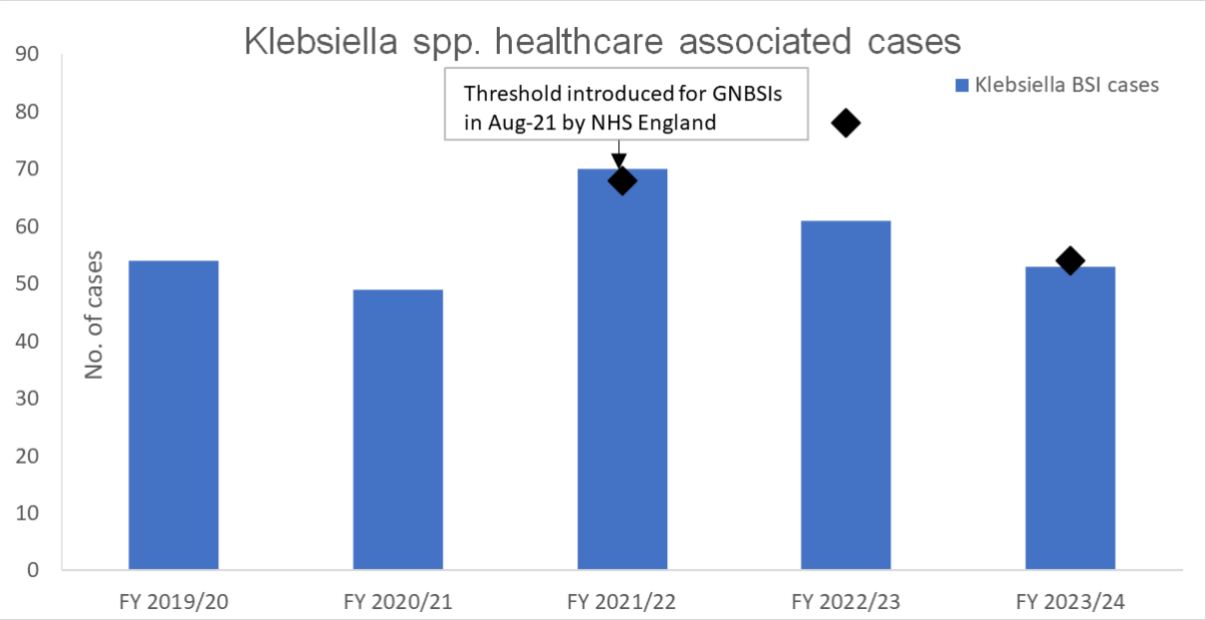


Figure 20: *Klebsiella spp.* cases against threshold (2019-2024)

The annual threshold set by UKHSA is 54 for 2023/24. The Trust reported 53 cases meaning the Trust was just under the annual threshold set for the year.

Analysis and learning

A deep dive into the 53 cases of *Klebsiella spp.* bloodstream infections (Figure 18) in 2023/24 revealed that urinary sources accounted for 16 cases attributed to the

Trust. Amongst those patients with a urinary resource, two thirds had a urinary catheter in place in the 28 days preceding diagnosis. Other sources of infection identified included hepatobiliary (10 patients), gastrointestinal or intra-abdominal (eight patients), lower respiratory tract (three patients), cardiovascular or intravascular devices (three patients), and central nervous system infection (one patient). Whilst some patients had multiple potential sources, and a considerable number of patients across all categories were severely immunocompromised, 12 patients (23 per cent) had no obvious source identified.

Up to 55 per cent of patients with *Klebsiella spp.* had some form of invasive (vascular / urinary etc.) device in place or had recent surgery. In addition, between 19 per cent and 25 per cent of patients were severely immunocompromised.

Sources for cases reported in 2023/24 can be found in Figure 21. The Trust figures for *Klebsiella* are demonstrated in Figure 22 and Figure 23.

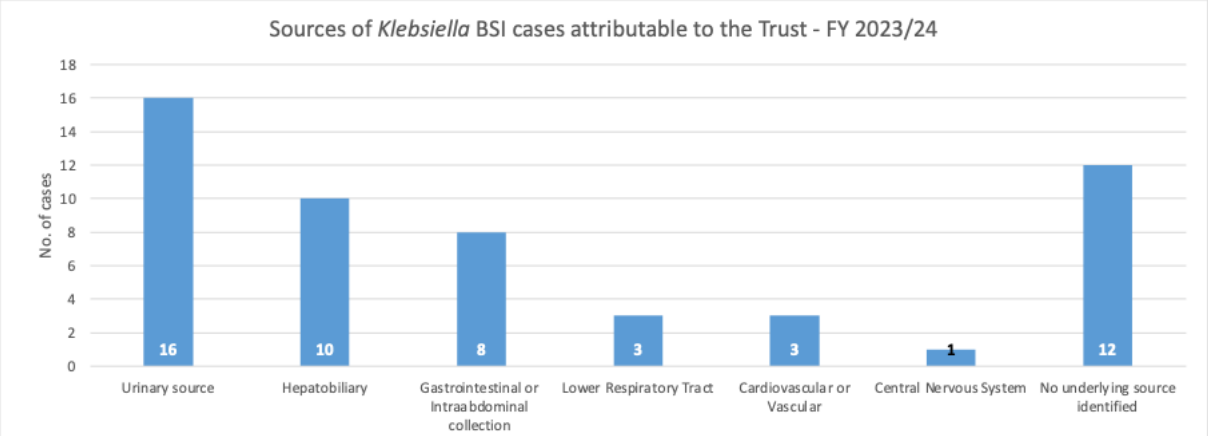
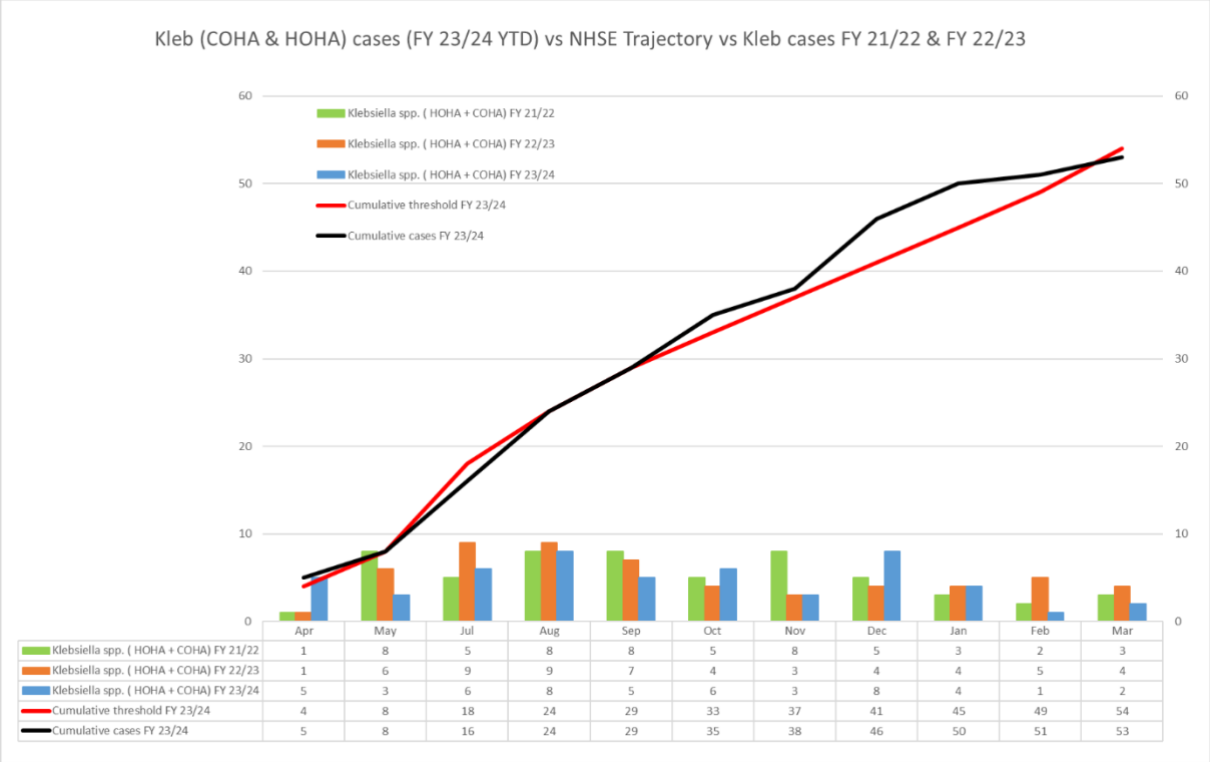


Figure 21: *Klebsiella spp.* source data (2023/24)



	Apr	May	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Klebsiella spp. (HOHA + COHA) FY 21/22	1	8	5	8	8	5	8	5	3	2	3
Klebsiella spp. (HOHA + COHA) FY 22/23	1	6	9	9	7	4	3	4	4	5	4
Klebsiella spp. (HOHA + COHA) FY 23/24	5	3	6	8	5	6	3	8	4	1	2
Cumulative threshold FY 23/24	4	8	18	24	29	33	37	41	45	49	54
Cumulative cases FY 23/24	5	8	16	24	29	35	38	46	50	51	53

Figure 22: Imperial College Healthcare *Klebsiella spp.* reported rate – annual comparison

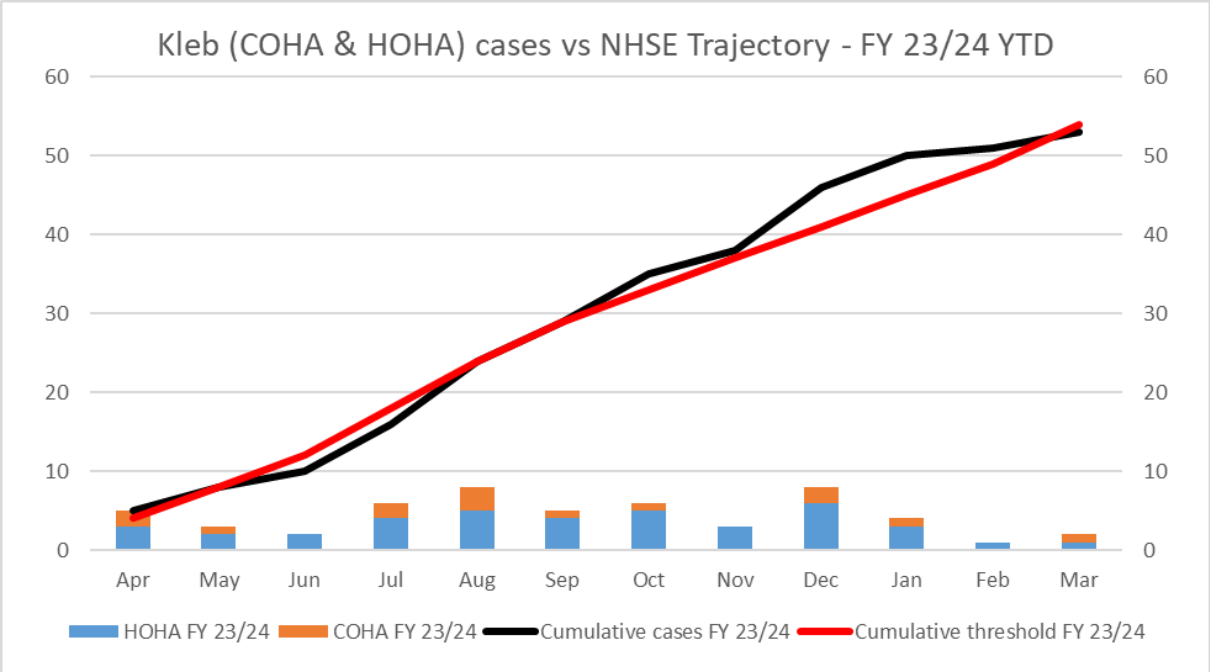


Figure 23: Imperial College Healthcare *Klebsiella spp.* cases 2023/24

* HOHA = Healthcare Onset Healthcare Associated (Samples taken >= 48 hours into a patient's admission)

**COHA = Community Onset Healthcare Associated (Samples taken < 48 hours into a patient's admission and where the patient was an inpatient at the reporting Trust in the 28 days prior to sample collection date)

Pseudomonas aeruginosa

Pseudomonas aeruginosa is a gram-negative opportunistic pathogen which rarely affects healthy individuals, but can cause a wide range of infections, particularly in

those with a weakened immune system. In hospitals, the organism can contaminate devices that are left inside the body such as respiratory equipment and catheters. *P. aeruginosa* is resistant to many commonly used antibiotics.

We recognise room for improvement in managing the rate of *pseudomonas aeruginsa* infections. This year, we rank in the middle of all Shelford group trusts in managing this infection (Table 15).

Organisation	Pseudomonas aeruginosa	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24
	All Acute Trusts (mean healthcare associated rate)	4.40	6.66	8.77	7.46	7.42	7.16
Imperial College Healthcare	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	10.41	10.61	20.29	11.09	11.71	12.46
	Shelford position	7th	5th	9th	5th	5th	5th
Guy's & St. Thomas'	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	10.65	13.92	19.07	14.33	15.98	13.49
	Shelford position	8th	7th	7th	7th	9th	7th
University College London Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	20.98	16.77	34.68	20.63	19.19	20.87
	Shelford position	10th	8th	10th	10th	10th	10th
King's College Hospital	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	13.38	17.88	19.69	16.69	15.21	14.44
	Shelford position	9th	9th	8th	9th	7th	8th
Sheffield Teaching Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	5.85	6.76	6.48	7.21	6.98	6.64
	Shelford position	3rd	3rd	1st	2nd	1st	2nd
The Newcastle upon Tyne Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	7.00	12.02	12.64	9.69	11.49	8.69
	Shelford position	5th	6th	4th	4th	4th	4th
University Hospitals Birmingham	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	4.94	5.18	8.10	8.12	7.13	8.07
	Shelford position	2nd	1st	3rd	3rd	2nd	3rd
Cambridge University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	5.92	6.89	16.88	12.82	15.21	13.20
	Shelford position	4th	4th	5th	6th	6th	6th
Manchester University	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	3.10	5.72	7.50	6.70	8.83	6.21
	Shelford position	1st	2nd	2nd	1st	3rd	1st
Oxford University Hospitals	Healthcare associated (HOHA + COHA) rate per 100,000 bed-days	8.19	19.96	18.25	14.40	15.81	16.85
	Shelford position	6th	10th	6th	8th	8th	9th

Table 15: *P. aeruginosa* ranking Imperial College Healthcare v Shelford v acute providers (2018-2024)

National thresholds for *P. aeruginosa* were introduced in 2021/22. Since implementation, the Trust was within threshold for the first two reporting years but has exceeded the set threshold for the most recent reported financial year, as shown in Figure 24.

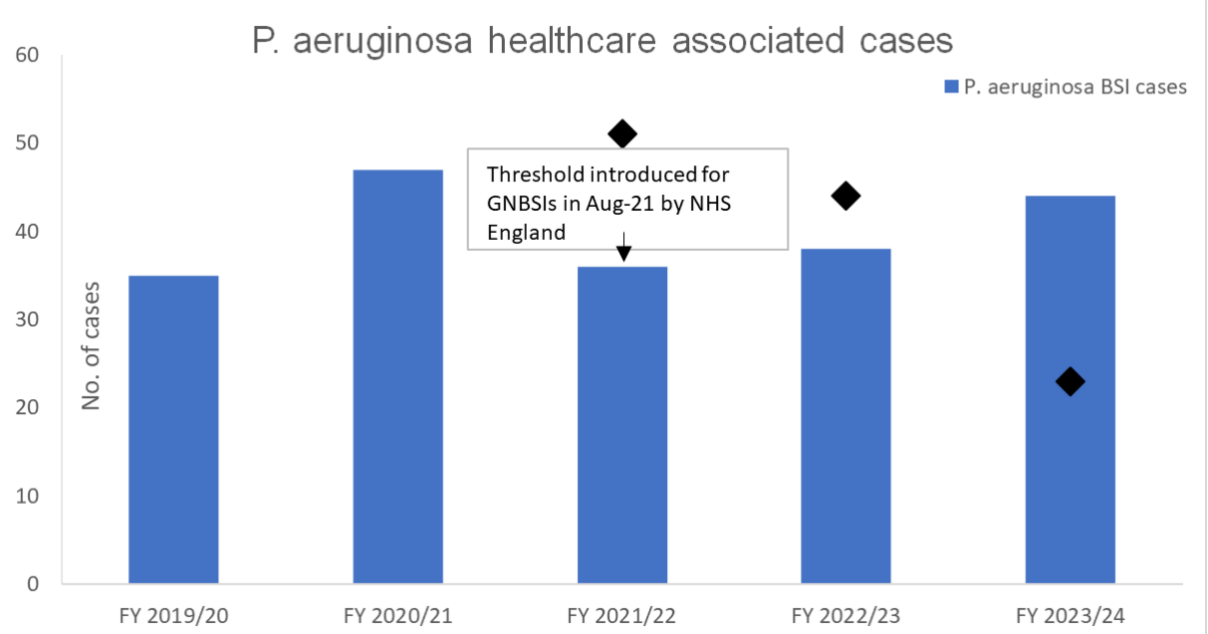


Figure 24: *P. aeruginosa* cases against threshold (2019-2024)

The annual threshold set by UKHSA is 23 for 2023/24. The Trust reported 44 cases meaning the Trust surpassed the annual threshold set for the year.

Analysis and learning

A deep dive into the 44 cases of *P. aeruginosa* bloodstream infection (Figure 22) in 2023/24 revealed that cardiovascular or intravascular sources were the most common sources of infection with 14 patients. Other sources of infection included skin or soft tissue infection (six patients), urinary sources (six patients), gastrointestinal (GI) or intraabdominal (three patients), hepatobiliary (two patients), lower respiratory tract (two patients), and bone or joint infection (one patient). Whilst some patients had multiple potential sources, in nine (20 per cent) patients there was no obvious primary source of infection identified.

Up to 48 per cent of patients with *P. aeruginosa* had some form of invasive (vascular / urinary etc.) device in place or had recent surgery. In addition, between 19 per cent and 25 per cent of patients were severely immunocompromised.

Sources for cases reported in 2023/24 can be found in Figure 25. The Trust figures for Pseudomonas aeruginosa are demonstrated in Figure 25 and Figure 26.

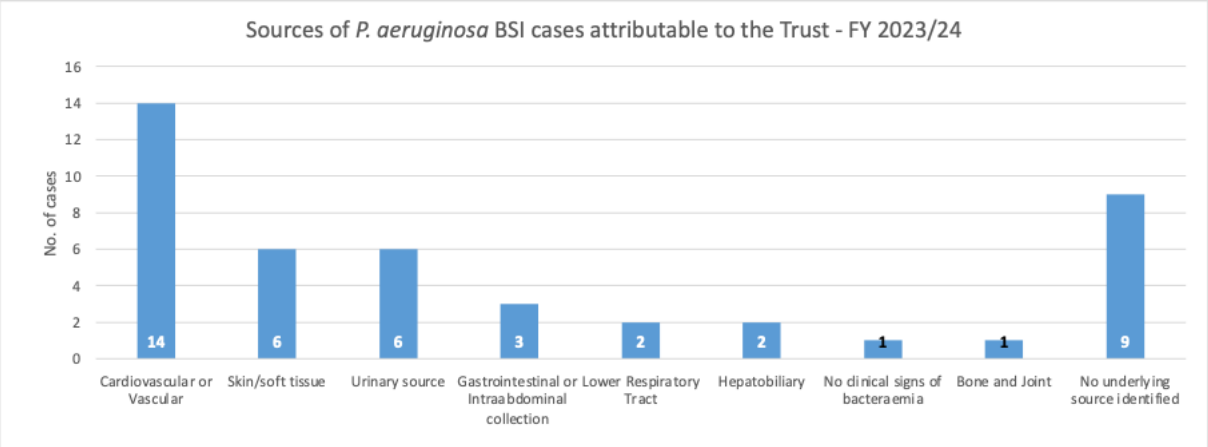
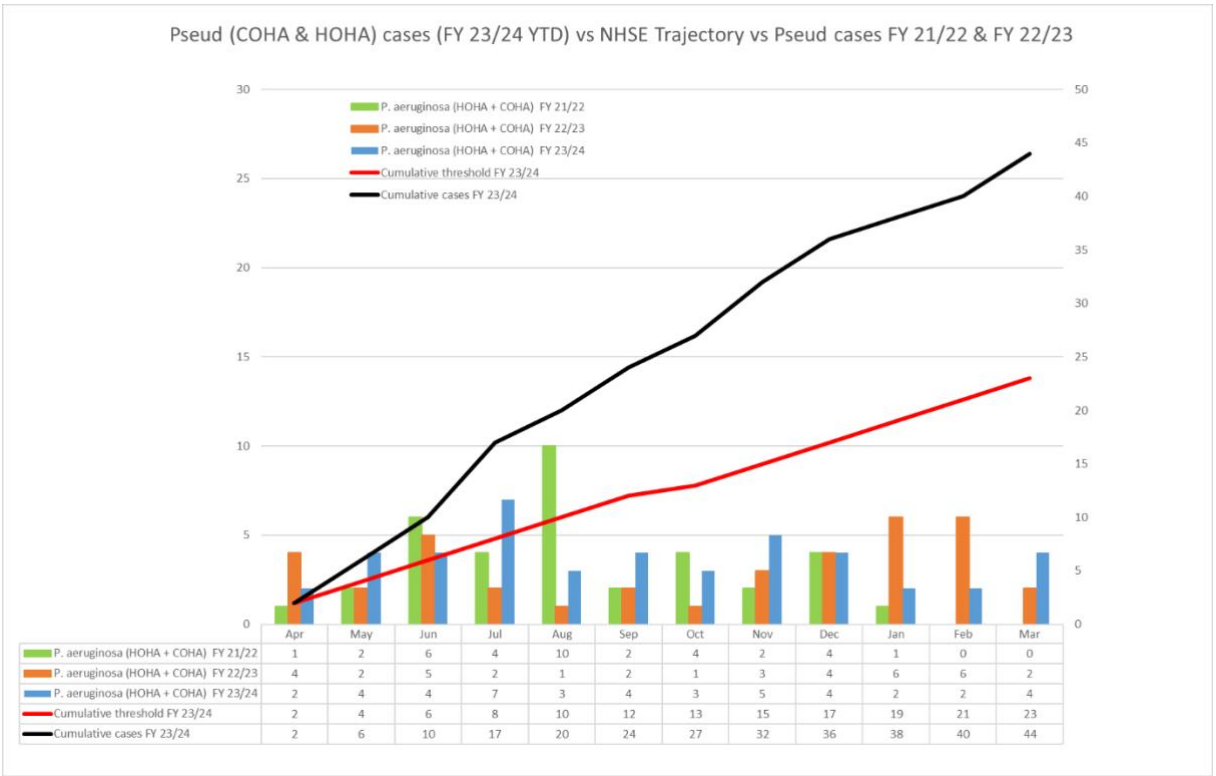


Table 25: *P. aeruginosa* source data (2023/24)



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
P. aeruginosa (HOHA + COHA) FY 21/22	1	2	6	4	10	2	4	2	4	1	0	0
P. aeruginosa (HOHA + COHA) FY 22/23	4	2	5	2	1	2	1	3	4	6	6	2
P. aeruginosa (HOHA + COHA) FY 23/24	2	4	4	7	3	4	3	5	4	2	2	4
Cumulative threshold FY 23/24	2	4	6	8	10	12	13	15	17	19	21	23
Cumulative cases FY 23/24	2	6	10	17	20	24	27	32	36	38	40	44

Figure 25: Imperial College Healthcare *P. aeruginosa* reported rate – annual comparison

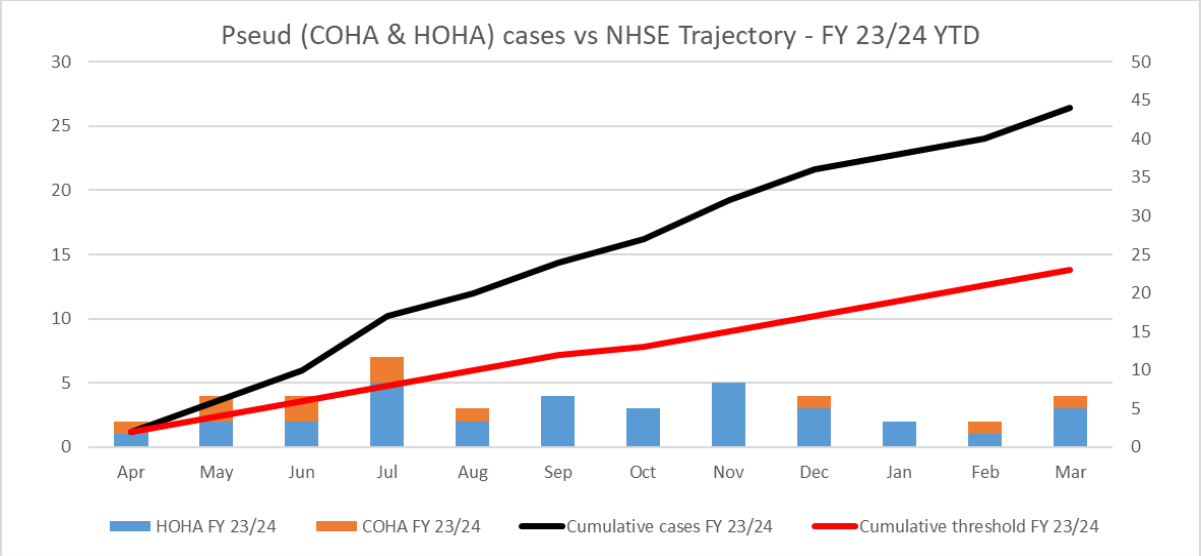


Figure 26: Imperial College Healthcare *P. aeruginosa* cases 2023/24

* HOHA = Healthcare Onset Healthcare Associated (Samples taken >= 48 hours into a patient's admission)

**COHA = Community Onset Healthcare Associated (Samples taken < 48 hours into a patient's admission and where the patient was an inpatient at the reporting Trust in the 28 days prior to sample collection date)

HCAI deep dive summary

The Covid-19 pandemic affected the incidence rates of bacteraemia across all surveillance groups reported between 2020 and 2022. The variations seen are not completely understood, but some reasons that may have contributed to this include changes in healthcare practices (more severely ill patients, longer critical care stays, changes in hospital and intensive care admission rates, capacity, culture sampling,

as well as screening practices). There were also significant changes in community behaviours during the pandemic, such as lockdown, and the use of face masks. These significant factors mean that data regarding this period should be interpreted with caution.

Monitoring thresholds set within the NHS standard contract in 2023/24 for Gram negatives bacteraemia and *C. difficile* are calculated based on performance data from the years of 2021 or 2022. Caution should therefore be applied in its interpretation and its use as a benchmark, given the significant changes in healthcare that occurred within those years because of the pandemic.

The results of the deep dive undertaken of all cases are in line with expectations from the published literature with respect to risk factors and epidemiology. Results are also in line with the UKHSA's last available "Annual epidemiological commentary: Gram-negative, MRSA, MSSA bacteraemia and *C. difficile* infections up to and including financial year 2022 to 2023."

The Trust reviews all HCAIs at weekly multidisciplinary team meetings at each hospital site, and includes the IPC nurses and infection control doctor, as well as the SSI clinical co-ordinator, and colleagues from vascular access, microbiology, and infection pharmacy. All mandatory reportable HCAIs are reviewed within these meetings, where they are classified (HOHA / COHA), the likely source of infection is confirmed, as well as reviewing opportunities for learning and identifying any actions required. In addition to the weekly multidisciplinary team meetings, for cases of MRSA or MSSA, these also undergo post infection reviews that include a detailed review by the full multidisciplinary team.

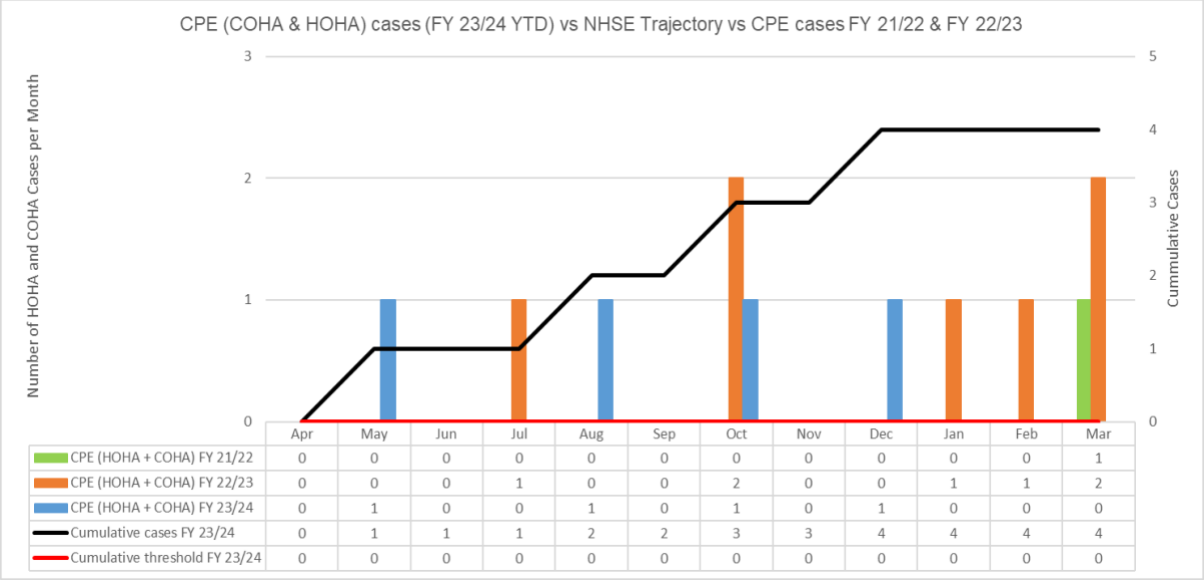
Though the epidemiology of *E. coli* and *Klebsiella* spp. are different, the primary sources of infection are similar. The risk factors for *P. aeruginosa* follow a different pattern, as expected given the nature of this micro-organism.

This information gained through the deep dive exercise provides opportunities for targeted improvement across several aspects of clinical care including invasive device care, and compliance with hand hygiene.

Other infections of note

Carbapenemase-producing enterobacterales (CPE)

Enterobacterales are a large family of bacteria that usually live harmlessly in the gut of humans and animals. They include species such as *E. coli, Klebsiella spp.* and *Enterobacter*. *Enterobacterales* producing acquired *carbapenemases* are referred to as CPE. KPC, OXA-48-like, NDM, VIM, and IMP enzymes are the most prevalent enzymes in the UK. Increasing gut colonisation with these resistant bacteria will inevitably lead to an increase in difficult-to-treat infections. Unless action is taken and lessons are learnt from experiences elsewhere in the world, rapid spread of CPE will pose an increasing threat to public health and medical treatment pathways in the UK. These resistant bacteria can spread rapidly in healthcare settings.



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CPE (HOHA + COHA) FY 21/22	0	0	0	0	0	0	0	0	0	0	0	1
CPE (HOHA + COHA) FY 22/23	0	0	0	1	0	0	2	0	0	1	1	2
CPE (HOHA + COHA) FY 23/24	0	1	0	0	1	0	1	0	1	0	0	0
Cumulative cases FY 23/24	0	1	1	1	2	2	3	3	4	4	4	4
Cumulative threshold FY 23/24	0	0	0	0	0	0	0	0	0	0	0	0

Figure 27: CPE bloodstream infection cases (2023/24)

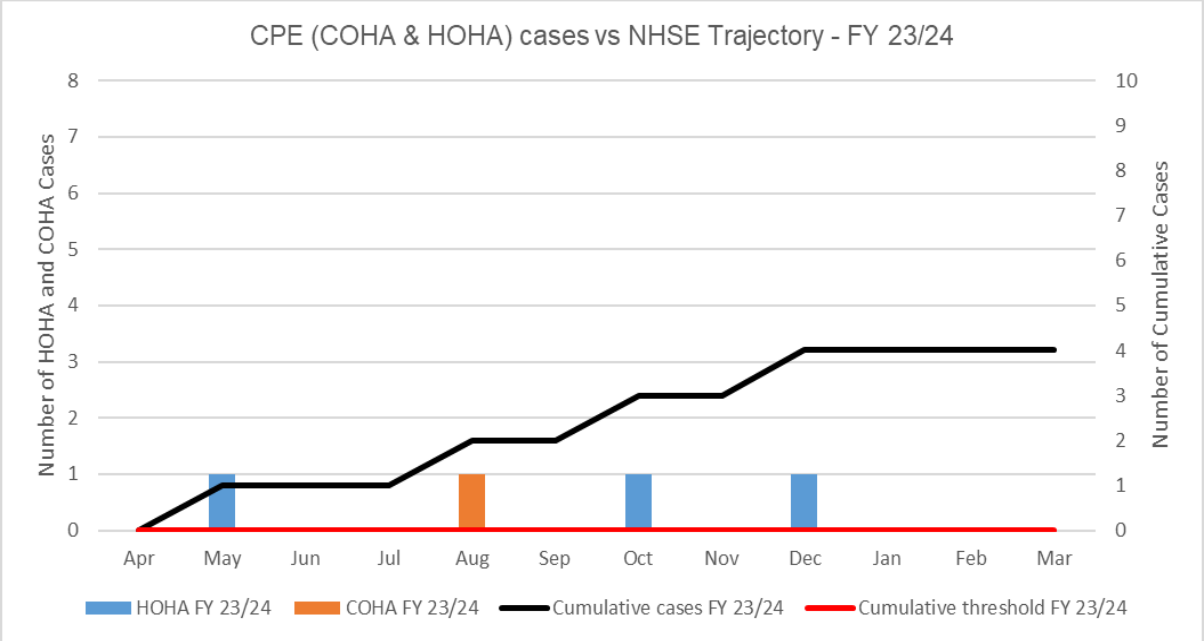


Figure 28: Imperial College Healthcare CPE cases 2023/24

* HOHA = Healthcare Onset Healthcare Associated (Samples taken >= 48 hours into a patient's admission)

**COHA = Community Onset Healthcare Associated (Samples taken < 48 hours into a patient's admission and where the patient was an inpatient at the reporting Trust in the 28 days prior to sample collection date)

CPE bloodstream infection

There is no threshold set by UKHSA for CPE. The Trust reported four cases in 2023/24.

CPE screening

The rationale for screening is to identify CPE carriers at the earliest opportunity. Identification will inform decision making regarding appropriate patient placement in hospital isolation facilities, and the addition of an alert flag to the patients care record. Early identification of patients colonised of infected with CPE will help to

reduce the risk of cross transmission, inform treatment therapies, and reduce invasive infections.

Screening is required for:

- all patients who have had an overnight stay in any hospital (UK or abroad) within the last 12 months
- all patients who are resident abroad
- had known epidemiological link to a known carrier of CPE
- patients admitted to augmented care or high-risk units.

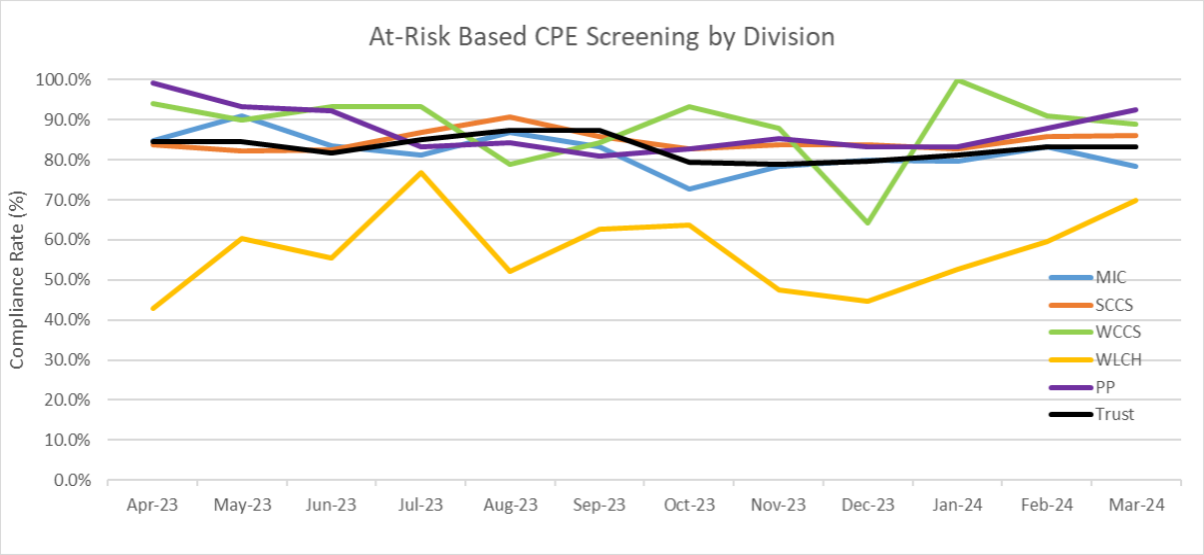


Figure 29: Imperial College Healthcare CPE at risk screening compliance 2023/24
*Applies to patients meeting screening criteria admitted to any part of the Trust

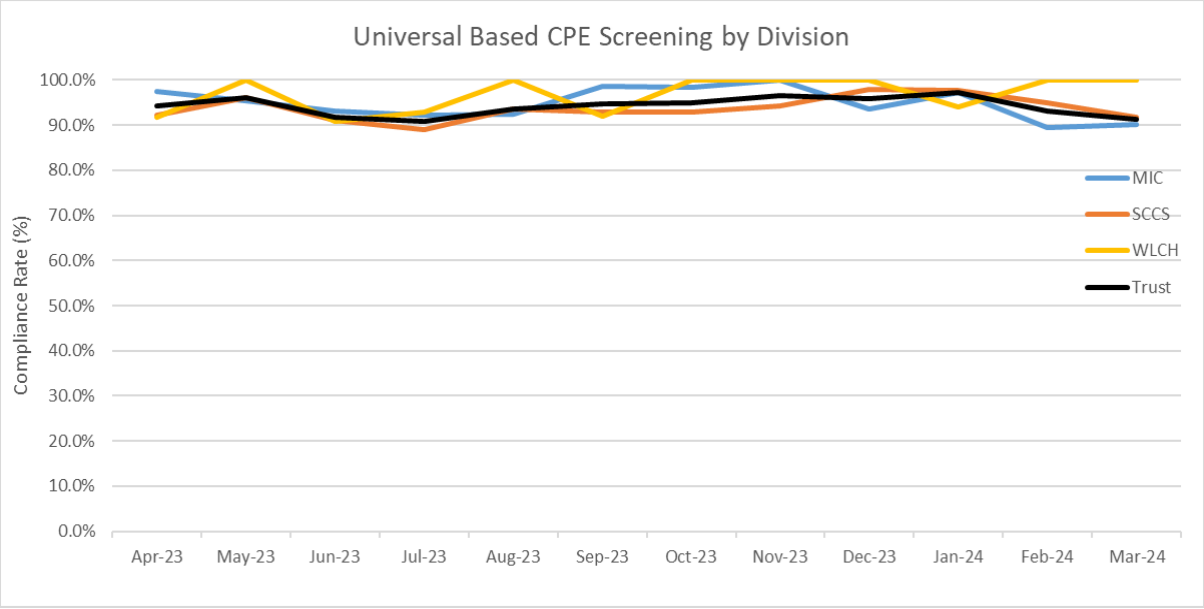


Figure 30: Imperial College Healthcare CPE universal screening compliance 2023/24
*Applies to patients admitted to augmented care or high-risk units (adult and paediatric critical care, haematology, renal and vascular specialities)

Outbreaks

The Trust reported 74 outbreaks or periods of increased incidence of infection in 2023/24:

Number of Outbreaks by Organism in FY 2023/24													
Organism	**Apr-23**	**May-23**	**Jun-23**	**Jul-23**	**Aug-23**	**Sep-23**	**Oct-23**	**Nov-23**	**Dec-23**	**Jan-24**	**Feb-24**	**Mar-24**	**Total**
COVID-19	3	2	1	2	1	4	2	9	8	5	1	0	**38**
CPE	0	0	3	0	0	0	2	1	3	0	2	1	**12**
Influenza A	0	0	0	0	0	0	0	1	0	0	4	3	**8**
MRSA	0	1	0	1	0	0	0	0	0	0	0	0	**2**
C. difficile	0	0	0	0	0	0	1	0	1	0	0	0	**2**
Norovirus	0	0	0	0	0	0	0	1	0	0	1	0	**2**
RSV	0	0	0	0	0	0	0	0	2	0	0	0	**2**
Candida auris	1	0	0	0	0	0	0	0	0	0	0	0	**1**
VRE	0	0	1	0	0	0	0	0	0	0	0	0	**1**
Parainfluenza 4	0	0	0	0	1	0	0	0	0	0	0	0	**1**
MSSA	0	0	0	0	0	1	0	0	0	0	0	0	**1**
Enterobacter	0	0	0	0	0	1	0	0	0	0	0	0	**1**
Pseudomonas aeruginosa	0	0	0	0	0	1	0	0	0	0	0	0	**1**
Acinetobacter baumanii	0	0	0	0	0	0	1	0	0	0	0	0	**1**
Rhinovirus	0	0	0	0	0	0	0	0	0	1	0	0	**1**
Total	**4**	**3**	**5**	**3**	**2**	**7**	**6**	**12**	**14**	**6**	**8**	**6**	**74**

Table 16: Declared outbreaks and periods of increased incidences of infection – by pathogen 2023/24

Number of Outbreaks by Site in FY 2023/24													
Site	**Apr-23**	**May-23**	**Jun-23**	**Jul-23**	**Aug-23**	**Sep-23**	**Oct-23**	**Nov-23**	**Dec-23**	**Jan-24**	**Feb-24**	**Mar-24**	**Total**
CX	1	2	1	3	0	1	1	2	4	3	1	0	**19**
HH	2	0	1	0	2	3	1	6	4	1	3	1	**24**
SMH	1	1	3	0	0	3	4	4	6	2	4	3	**31**
Total	**4**	**3**	**5**	**3**	**2**	**7**	**6**	**12**	**14**	**6**	**8**	**6**	**74**

Table 17: Declared outbreaks and periods of increased incidences of infection – by site 2023/24

Surgical site infection (SSI)

The Trust has actively participated in the nationally mandated surveillance in orthopaedic surgery since 2004. Data is continuously tracked and formally reviewed on a quarterly basis with information submitted on SSI rates to UKHSA's national surveillance platform. In addition to the mandatory requirements, the Trust commenced voluntary surveillance in cardiothoracic surgery via the national portal in 2011.

In 2021 the IPC team created the SSI clinical co-ordinator post, to work with specialities to standardise data collection, and to enhance the quality of patient care by encouraging the use of data obtained from surveillance. This allows services to compare rates of SSI over time, and to benchmark rates against nationally available data. This information is then used to review and guide clinical practice.

Neurosurgery and obstetrics surgery have recently commenced SSI reporting, currently via in-house data collection, with an aim to move to the national reporting portal once systems and processes are established.

Process for reporting and validating SSI

For those specialties reporting on the UKHSA portal (orthopaedics and cardiothoracic) specialty level activity data is uploaded directly by the specialty for all cases. For neurosurgery and obstetrics where activity data is still locally reported, this information is accessed via QlikView. When a patient is identified with a potential SSI, either due to re-admission or following review in clinic the SSI service should be notified so that a timely root-cause analysis may be conducted. Once the root-cause analysis is completed this is reviewed in conjunction with microbiology at site-based multidisciplinary team meetings. Specialty based teams are invited to participate in these meetings and are involved in reaching a decision on confirmed SSI status. Only confirmed SSI cases are then validated on the UKHSA portal.

SSI group

Work to re-engage specialties is now underway with the aim to re-establish a bi-monthly Trust SSI meeting in Q1 2024/25. This meeting will have a stronger focus on shared learning and improvements across services.

Whilst the principles of SSI review and reporting are standardised, the application and engagement across specialties is varied. To ensure that the programme is robust and aligned to good governance principles work is underway to standardise the application for the Trust, by developing a standard operating procedure. This will ensure that all specialties are supported in delivering against the SSI programme, as well as clearly defining the remit of the service to any other specialties wishing to voluntary report in the future.

Clinical services

The following services report on SSI performance with activity shown in Table 18.

Orthopaedic surgery

Orthopaedic surgery submit data under two clinical categories: Hip replacement (primary and revision), and knee replacement (primary and revision).

The Trust reported four cases of SSI in a hip replacement patient in 2023/24. The Trust reported five cases of SSI in a knee replacement patient in 2023/24.

SSI rates following orthopaedic surgery (knee / hip) have risen above the national average.

In February 2024, the Trust received a formal notification letter from UKHSA regarding the increased rates in Orthopaedic surgery. A formal response letter has been returned.

Actions implemented include:

- primary and revision patients are now admitted to separate areas of the ward and cared for by separate teams to reduce the risk of transmission
- not placing urinary catheters for routine knee replacements
- a care bundle for all patients with oozing post-operative wounds being developed by the matron for trauma and orthopaedics
- a new clinical lead (consultant) for orthopaedic SSI has now been appointed
- a review of prophylactic antibiotics and updated local antimicrobial guidance has been completed
- enhancing and mandating (for certain patient cohorts) a patient education programme, “joint school”, where they learn about the procedure, including pre- and post-operative risks and how best to avoid negative outcomes

Cardiothoracic surgery

Cardiothoracic surgery submit data under two clinical categories: coronary artery bypass graft (CABG) (primary and revision surgery), and non-CABG (primary and revision).

The Trust reported seven cases of SSI in a CABG patient in 2023/24. The Trust reported zero cases of SSI in a non-CABG patient in 2023/24.

Cardiothoracic surgery is currently above the national average for CABG. It is below the national average for non-CABG.

Neurosurgery

Neurosurgery locally submitted data in 2023/24 on all post-operative patients with SSIs.

The Trust reported 21 cases of SSI in a neurosurgery patient in 2023/24.

Neurosurgery is currently within the national average; however, they did experience a rise in SSI numbers in Q4 2023/24.

An SSI action plan is in place and regularly monitored and added to through SSI working groups, quality and safety meetings, and morbidity and mortality meetings that are occurring regularly with good attendance.

Actions include:

- completion of a ward based environmental audit, identifying several areas of remedial estate actions (now complete)
- implementation of an enhanced environmental cleaning program (in place)
- enhanced wound care documentation (in place and improving)
- change of wound dressing to a breathable, waterproof dressing instead of Mepore (tissue viability consulted and advised)
- wound dressings no longer taken down on ward rounds to avoid prolonged exposure (nursing staff facilitating appropriately timed wound reviews so wounds are promptly redressed)
- hand hygiene has improved by 32 per cent (21% - 53%) this year thanks to focused IPC training and education
- improvement in operating theatre etiquette, ensuring theatres are not used as a thoroughfare, bare below the elbow's compliance, and prompt removal of personal protective equipment
- aseptic non-touch technique compliance (currently 88 per cent)
- consultant-led work on standardising antimicrobial therapies across the service

Whilst the specialty originally submitted data on all neurosurgical cases, the service is refining the inclusion for 2024/25. They have proposed to report on two clinical categories (spinal procedures and cranial procedures) only moving forward, which is in keeping with national reporting templates.

Obstetric surgery

The obstetric team voluntarily submit data on postoperative caesarean section patients.

The Trust reported 58 cases of SSI in a caesarean section patient in 2023/24.

SSI rates and their Caesarean section surgery SSI rate is currently below the national average.

The obstetric team have embarked on a quality improvement project with the aim of reducing post-operative wound infections. They are changing their standard post-operative wound dressing from Mepore to the Lukomed Sorbact, which is also in compliance with NICE guidance. The SSI team, alongside tissue viability colleagues are collaborating with the clinical service to review the impact. Initial data will be compiled following an initial four-week trial to establish any implications or improvements, prior to expanding or continuing further. Data is expected in Q1 2024/25, but early indications are optimistic.

Specialty	Procedure	Status	Q1 Total	Q2 Total	Q3 Total	Q4 total
Cardiothoracic	CABG	SSI readmission/admission numbers	0	3	3	2
		SSI non readmisson numbers	1	1	1	3
		No of Operations	77	72	67	56
		SSI readmission rate	0.00%	4.17%	4.48%	3.57%
		SSI non-readmission	1.30%	1.39%	1.49%	5.36%
		All SSI rate	1.30%	5.56%	5.97%	8.93%
		Inpatient/readmissions National average	3.80%	3.80%	3.80%	3.80%
		FY 2022/23 ICHT SSI rate	8.10%	4.40%	5.80%	7.10%
	Non-CABG	SSI readmission/admission numbers	0	0	0	0
		SSI non readmisson numbers	0	0	0	0
		No of Operations	43	48	49	43
		SSI readmission rate	0.00%	0.00%	0.00%	0.00%
		SSI non-readmission	0.00%	0.00%	0.00%	0.00%
		All SSI rate	0.00%	0.00%	0.00%	0.00%
		Inpatient/readmissions National average	1.30%	1.30%	1.30%	1.30%
		FY 2022/23 ICHT SSI rate	1.80%	3.10%	2.90%	1.00%
Orthopaedic	Hip	SSI readmission/admission numbers	1	2	0	1
		No of Operations	75	74	51	54
		SSI readmission rate	1.33%	2.70%	0.00%	1.85%
		Inpatient/readmissions National average	0.60%	0.60%	0.60%	0.60%
		FY 2022/23 ICHT SSI rate	0.00%	2.78%	0.00%	0.00%
	Knee	SSI readmission/admission numbers	1	2	2	1
		No of Operations	75	74	79	61
		SSI readmission rate	1.33%	2.70%	2.53%	1.64%
		Inpatient/readmissions National average	0.60%	0.60%	0.60%	0.60%
		FY 2022/23 ICHT SSI rate	0.00%	2.78%	0.00%	0.00%
Neurosurgery		SSI readmission/admission numbers	4	4	8	4
		No of Operations	354	298	342	253
		SSI readmission rate	1.13%	1.34%	2.34%	1.58%
		Inpatient/readmissions National average	1.4- 2%	1.4- 2%	1.4- 2%	1.4- 2%
		FY 2022/23 ICHT SSI rate	1.13%	1.34%	2.34%	1.58%
Obstetric	Caesarean Section	SSI readmission/admission numbers	17	10	21	8
		No of Operations	1002	942	1043	1010
		SSI readmission rate	1.70%	1.06%	2.01%	0.79%
		Inpatient/readmissions National average	3.0 - 15%	3.0 - 15%	3.0 - 15%	3.0 - 15%
		FY 2022/23 ICHT SSI rate	2.40%	0.40%	1.40%	1.60%

Table 18: Imperial College Healthcare SSI position (2023/24)

Antimicrobial stewardship

The overarching aim of antimicrobial stewardship (AMS) is to optimise safe, appropriate and economic use of antimicrobial agents to improve patient outcomes from infection whilst minimising negative consequences such as healthcare-associated infections and the development of antimicrobial resistance (AMR). The AMS programme allows us to control and maintain antimicrobial use and respond to the rising global resistance threat of AMR.

The AMS programme reported on several key achievements in 2023/24. These include:

- the first Trust within the UK, (and joint first globally) to be awarded AMS Level 3 and centre of excellence from the Global Antimicrobial Stewardship Accreditation Scheme
- the successful implementation of the antifungal stewardship programme to develop and drive this area of the AMS programme
- strengthened AMS ward rounds across St Mary's, Charing Cross and Hammersmith hospitals, which form a core part of the AMS programme, aiding the optimisation of antimicrobial therapies and reducing the likelihood of unintended consequences
- maintaining oversight of Trust antimicrobial guidelines and infection smart phone application including ongoing expansion of the guidelines available
- delivering a successful IV to oral switch campaign reducing intravenous use and optimising oral switch criteria, which has resulted in economic, sustainability and health workforce savings
- strengthening the Trust's collaboration with North West London acute partners to agree a shared AMS ambition, which sharing best practice, reducing redundancy, and creating a learning space
- contributed to over 15 peer review articles in collaboration with partners at Imperial College, both nationally and internationally

There are a series of national AMS indicators and prescribing quality indicators to give assurance around the AMS agenda and are detailed into AMS assurance and AMS safety.

AMS assurance

The effectiveness of AMS is measured by evaluating quantity, type, and quality of antimicrobial prescriptions via several nationally mandated measures.

Point prevalence survey

Prescribing standards and the safety and quality indicators are usually monitored through bi-annual point prevalence survey, based upon standards advised by Department of Health and Social Care 'Start Smart then Focus' antimicrobial stewardship guidance. Two surveys were undertaken during 2023/24, the most recent survey being in January 2024 (Table 26). An overall compliance of over90 per cent was achieved in all antimicrobial prescribing indicators during 2023/24. Survey results were circulated via the divisional triumvirates. The infection pharmacy team continue

to work with the specialist areas to develop local action plans to help drive improvement.

Key interventions for 2023/24 included:

- Presenting results at local quality and safety meetings to ensure discussion of results
- Local ward-based stewardship training
- Supporting specialities to gain infection team advice at the earliest opportunity for complex infections

To sustain compliance with AMS prescribing metrics, the point prevalence survey improvement action plan will be taken forward into 2024/25.

Division	Number of patients on antimicrobial(s)/total patients seen (%)		Number of antimicrobials prescribed		INDICATOR A % antimicrobials in line with policy or approved by Microbiology/ID		INDICATOR B % review within 72 hours of initial prescribing		INDICATOR C % duration in line with policy or approved by Microbiology/ID	
	Sept 2023	Jan 2024	Sept 2023	Jan 2024	Sept 2023	Jan 2024	Sept 2023	Jan 2024	Sept 2023	Jan 2024
Trust Results	488/1307 (37%)	507/1362 (37%)	824	864	91%	91%	94%	93%	91%	91%
Medicine & Integrated Care	200/651	234/703	307	352	93%	93%	91%	96%	92%	92%
Surgery and Cancer	216/435	199/361	391	395	89%	89%	94%	89%	89%	91%
Women's, Cardiac, Clinical Support & Sexual Health Services	48/174	46/247	69	67	90%	88%	100%	98%	94%	82%
West London Children's Healthcare	21/38	24/39	53	45	100%	100%	100%	100%	100%	100%
Private	3/9	4/12	4	5	75%	80%	75%	75%	100%	80%
Trust Target 2023/24					90%		90%		90%	

Table 19: Overview of Trust and divisional performance on the appropriate use of systemic antimicrobial use

NHS England contract reduction

In line with previous years, the nationally mandated NHS Standard Contract for 2023/24 required acute providers to demonstrate a reduction in the usage of antibiotics from the 'Watch and Reserve' categories of the World Health Organisation (WHO) list.

In line with the UK five-year AMR National Action Plan target, for 2023/24, an ambitious target of a 10 per cent cumulative reduction against a 2017 baseline was proposed, instead of a 6.5 per cent reduction against a 2018 baseline. Overall, the Trust reduced overall use of antimicrobials in 2023/24. When compared to the 2017 baseline target, the Trust achieved a one per cent reduction. (Figure 31). Whilst the Trust was above the stretch target, primarily due to an increase in drug resistant infections requiring the use of last resort antibiotics, the positive outputs of the AMS programme that have supported a reduction include:

- downward trajectory in usage of 'watch and reserve' during Q1 and Q2 2023/24, with an overall two per cent reduction 'watch and reserve' agents during 2023/2024
- monthly review of antimicrobial usage targets with site specific mitigations
- regular weekly site based antimicrobial stewardship rounds

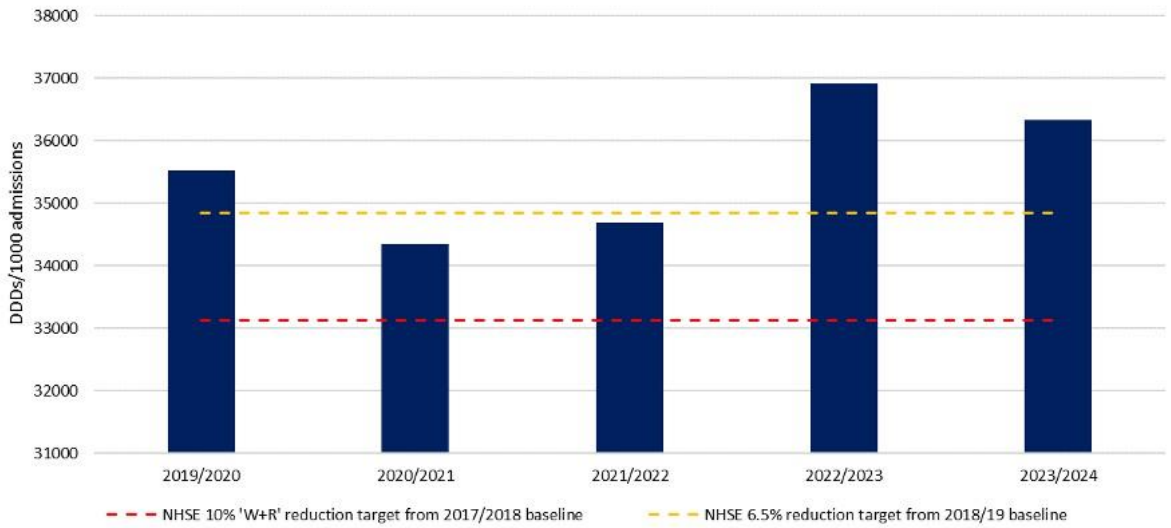


Figure 31: NHS contract reduction in WHO (World Healthcare Organization) 'Watch and Reserve' antimicrobials

The NHSE contract will continue into 2024/25, however no specific percentage targets have been set due to the renewal of the UK AMR National Action Plan this year. The AMS programme will continue work in 2024/25 to minimise broad-spectrum antibiotic usage across the organisation.

Intravenous (IV) to oral (PO) switching including NHSE 2023/24 CQUIN03

Switching appropriate patients from IV to PO therapy is a core AMS intervention. The Trust has an active IV to PO switch policy which is embedded in the Trust antimicrobial treatment guidance and antimicrobial app.

For 2023/24, NHS England set a CQUIN that focused on the prompt switching of IV to PO as soon as patients meet the national switch criteria. Overall, the Trust has consistently achieved below the set target of 40 per cent, with visible improvement over the course of 2023/24 (see table 20).

An end of year report to summarise and review the impact of all IV to PO activity across the Trust for 2023/24 has been produced. Key next steps will inform the AMS programme for 2024/25 to ensure there is ongoing improvement, but notable impacts include:

- reduced intravenous antimicrobial use by five per cent
- cost savings of about £58,000 from drug and nursing time
- approximately 1,940 hours of nursing time saved
- good adherence to Trust intravenous to oral switch (IVOS) guidance – moving patients to oral antibiotics as soon as is appropriate

	Q 1 2023/24	Q 2 2023/24	Q 3 2023/24	Q 4 2023/24
% of patients receiving an IV antibiotic past the point at which they meet switching criteria	18%	12%	6%	10%

Target < 40% **Lower % = better performance**				

Table 20: IVOS CQUIN results per quarter (2023/24)

Safety of antimicrobial use

Due to their nature of action and risk of toxicity associated with antimicrobials, the AMS programme ensures there are measures in place to minimise these risks. This is principally via the antimicrobial review group (ARG), frequent clinical infection ward rounds and bespoke project work.

Medicines and Healthcare products Regulatory Agency (MHRA) fluroquinolone alerts

The presence and severity of fluoroquinolone-induced adverse events led the MHRA to re-issue an alert in January 2024, outlining restrictions on fluoroquinolones use to minimise the risk of harm. The Infection Pharmacy team undertook a full review of the MHRA alert to gain a better understanding of the potential impact at the Trust. This included an evaluation of the risks associated with fluroquinolone use, a comprehensive review of how fluroquinolones are utilised at the Trust, including consumption and place in therapy. Recommendations from this review have been shared within the acute care collaborative and NHSE.

Antimicrobial review group

The antimicrobial review group is responsible for overseeing all Trust antimicrobial stewardship activities to ensure their safe, appropriate, and economic use, in line with good antimicrobial stewardship. This includes the review of anti-infective policies and clinical guidelines, AMS performance targets, unintended consequences and support of formulary applications and research and development. The group met bi-monthly in 2023/24. They reviewed 17 clinical guidelines, approved six research studies, and added one new antimicrobial to the Trust formulary.

Key outputs from the antimicrobial review group for 2023/24 include:

- full review of Trust surgical antibiotic prophylaxis guideline and malaria guidelines
- successful new drug panel posaconazole application for haematology prophylaxis which will improve patient outcomes through switching to an agent which is better tolerated and safer to ensure is in therapeutic range
- review of nitrofurantoin risk of pulmonary and hepatic adverse drug reactions

Anti-infective incidents for 2023/24

The majority of reported infection incidents for 2023/24 were in the no harm or near miss categories, and all were reviewed by the antimicrobial review group and medication safety group to ensure ongoing risk mitigation. In recent years, the medication safety committee have observed three infection themes arising from reported incidents (penicillin allergic patients receiving penicillin, vancomycin dosing and administration in critical care and aminoglycosides in paediatrics). The antimicrobial review group, together with the medication safety committee and medical

directors' office are collaborating to identify quality improvement relating themes relating to these topics for 2024/25.

AMS audits/projects 2023/24

To support the improvement of systems and processes for effective AMS the following audits and projects were undertaken during 2023/24:

- an audit assessing the compliance of community acquired pneumonia antibiotic prescriptions to specified treatment durations outlined in the Trust's "treatment of infection (adults)" guideline
- a service evaluation on the use of co-trimoxazole from a prescribing and safety perspective in adult patients at the Trust
- Meropenem usage across the adult intensive care unit sites at the Trust
- Meropenem audit into the prescribing patterns, the indications for use, durations of treatments and approval for use

Antifungal stewardship

The successful participation in an antifungal CQUIN allowed the Trust to write a successful business case to secure funding for dedicated medical and pharmacy anti-fungal support in 2023/24.

Key outputs for antifungal stewardship 2023/24 include:

- Trust-wide echinocandin switch to caspofungin from anidulafungin to date led to cost savings exceeding £100,000
- creation and addition of neonatal fungal chapter into antifungal guideline for adult, paediatric and neonates in response to an SI
- the fungal multidisciplinary team have continued to review complex patients advising on diagnostics, coordinating speciality input, treatment monitoring, and identifying opportunities for antifungal de-escalation
- recommencement of weekly antifungal stewardship rounds because of implementation of the fungal business case

AMS priority objectives

AMS objectives have been set for the next year. Core objectives run annually and seek to give assurance to national indicators. Priority objectives are set in line with any emerging issues together with advice from NHSE and the acute care collaborative.

Priority objectives for 2024/25

The Trust's priorities for 2024/25 are to:

1. review adult treatment of infection guidelines, particularly around durations of therapy
2. develop Cerner antifungal diagnostic templates
3. develop a penicillin de-labelling allergy service (for non-specialists)
4. undertake the NICE AMS Guidance Audit review to identify gaps and use with the new NAP to develop the Trusts AMS strategy for 2025-2028

5. review, consider and redevelop AMS education packages available to staff within the Trust (and cross fertilise across organisations within the acute care collaborative)
6. understand if AMS technology can be shared across acute care collaborative organisations for example using IT solutions

Antimicrobial Stewardship Portfolio	AMS Objective 2024/55	Target	NHSE Objective 2024/25	ACC Shared Ambition
Clinical	To maintain clinical infection reviews (ward round / MDT / OPAT / infection clinic)	Active		
	To review adult Treatment of Infection Guidelines, particularly around durations of therapy	Q2 2024/25		
	To focus on developing strategies for IV to oral switches	Active	√	
	To develop a penicillin de-labelling allergy service (for non-specialists)	Q3 2024/25		√
	To develop Cerner antifungal diagnostic templates	Q3 2024/25		
	To develop pharmacist led clinics as part of wider infection MDT e.g. Penicillin de-labelling / fungal / OPAT	Q2 2024/25		
Governance and Policy	To continue to regularly review guidelines, policies, new therapies via ARG in accordance with review dates / as the clinical need arises	Active		√
	To work develop and foster relationships with primary care / NHSE partners around the AMS agenda sharing practice and innovation	Active		√
	To undertake the NICE AMS Guidance Audit review to identify gaps and use with the new NAP to develop the Trusts AMS strategy for 2025-2028	Q2 2024/25	√	
Education and Training	To develop, promote and maintain the newly developed Antimicrobial App	Active		
	To review, consider and redevelop AMS education packages available to staff within the Trust (and cross fertilise across organisations within ACC)	Q1-3 2024/25		√
	To support infection audit and quality improvement projects	Active		√
Surveillance	To explore the most efficient mechanism to feedback prescribing data to specialities, particularly emergency department / urgent treatment centres	Q2-3 2024/25	√	

Table 21: AMS priority objectives 2024/25

Personal protective equipment (PPE), hand hygiene and aseptic non-touch technique (ANTT) improvement

The Trust's approach to quality improvement is to use the Model for Improvement methodology. It is an intuitive, simple, and evidence-based model that the IPC team has adopted to continue to drive hand hygiene improvements throughout 2023/24. The IPC team developed an extensive hand hygiene improvement plan. A number of those projects were delivered throughout 2023/24, with any outstanding continuing into 2024/25.

An update on each of the strategies is listed in Table 22.

No.	Improvement	Description
1	Hand hygiene audit tool	Launched 16 October 2023, and now well embedded. Positive feedback from staff and managers, and analytics from the app usage show the dashboard was the highest used across the Trust in March 2024.
2	Point of care hand rub dispenser audit	Trust-wide audit of bed mounted gel dispensers completed with the assistance of facilities monitoring officers.
3	In-department training	Project to deliver in-situ training by Ecolab. This training is now underway. Sessions have been completed at Hammersmith intensive care unit and have now started at Charing Cross intensive care unit. The education programme will continue as a rolling programme until all critical care areas have been completed.
4	Behavioural nudging stickers	Change Lab pilot – behavioural nudging low adherent stickers were placed on all PPE-dispensers and bed frames.
5	Bare below the elbows) escalation and adaption of hand hygiene policy	Non-adherence to policy – draft policy was completed, however following a request from the improving care programme group policy now needs to contain an approved framework for delivering challenge and accepting challenge on non-compliance. Work is underway with colleagues from people and organisational development and behavioural sciences experts.
6	Patient hand hygiene	Use of disposable wipes: - prior to meals, empowering patients to challenge clinical staff - after toileting, particularly after commode use To link with corporate nursing team and patient safety partners.
7	Gloves off campaign	Collaboration with 'green team' – pilot in operating theatres currently being planned.

Table 22: Hand hygiene improvement projects 2023/24

Point of care hand rub dispenser audit

The point of care hand rub audit was conducted in February and March 2024, with the assistance of the facilities team monitoring officers. In summary, 71 per cent of the trust bed base was audited, against a target of 70 per cent. Of the beds audited 83 per cent contained a dispenser bracket. Of those beds with a bracket 98 per cent contained a gel bottle, with 97 per cent of those being within the permitted expiry date. The overall results provide a satisfactory level of assurance that there is good provision of gel dispensers available at the point of care in acute bed ward settings.

Hand hygiene audit:

The Trust launched a new hand hygiene audit tool and reporting platform in November 2023. The audit tool is via a digital form, hosted on Microsoft Teams, and accessible to both departmental staff as well as the IPC team. Results are displayed in bespoke dashboard within QlikView.

Since launching, the tool has received positive feedback. This replaces the previous annual point prevalence audits and gives a continuous reporting cycle.

The overall Trust compliance with hand hygiene is shown in Figure 32.

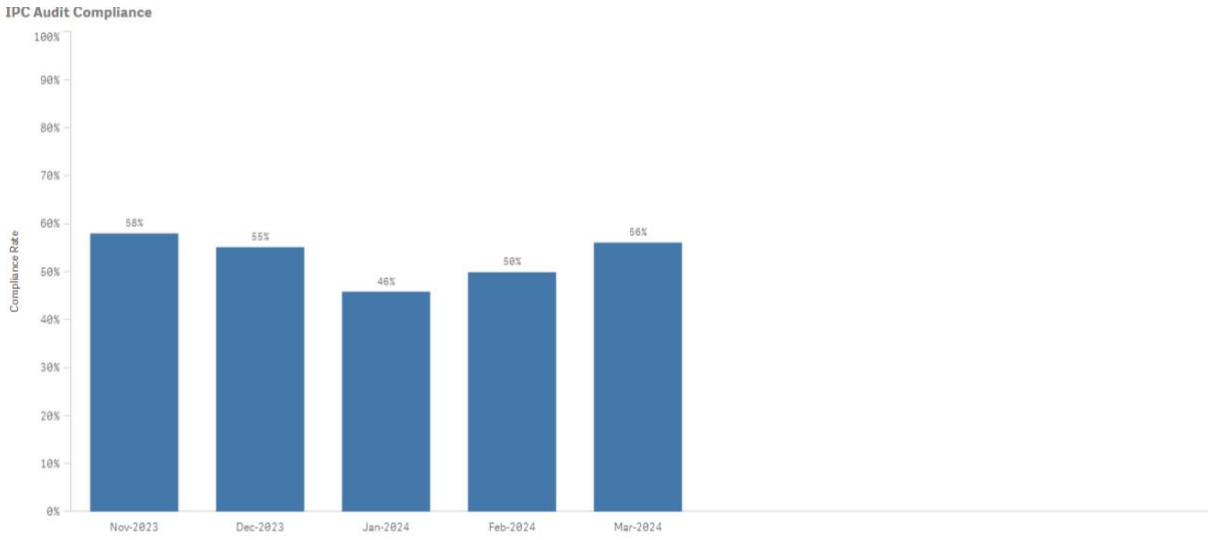


Figure 32: Hand hygiene compliance – Trust wide (November 2023 - March 2024)

Education

The Trust implemented the UK Core Skills Training Framework in 2013. This is now well embedded across the organisation. In 2022/23 the Trust increased the frequency of the Level 2 IPC module. Moving from three yearly to an annual update provides clinical staff with more regular and up to date education and brings the Trust in line with the Skills for Health Framework. In 2023/24 the average compliance with training was:

Level 1 is completed by all staff, bank and volunteers (unless compliant at a higher level) every three years. The average Trust compliance in 2023/24 is 91.1 per cent.

Level 2 is completed by all healthcare workers every year. The average Trust compliance in 2023/24 is 87.3 per cent.

ANTT Training: An additional module is completed by staff who undertake ANTT as part of their role. The average Trust compliance in 2023/24 is 87.9 per cent.

National IPC education framework

The IPC education framework was commissioned by NHS England and published in March 2023. It is a national framework which aims to strengthen IPC knowledge and skills in the NHS workforce by supporting the delivery of safe and effective care within all healthcare settings. It is directed at all staff working within a healthcare setting whether their interaction with patients is direct or indirect. This framework will be used to develop and deliver the Trust IPC education strategy and contribute to delivering high quality care set out in the Trust strategy.

The framework was developed by Skills for Health with some the overall key strategic objectives:

- to create an ongoing culture of development and learning in IPC and AMR
- align practice to the national IPC manual
- align practice to evidence-based best practice
- and support the professional development of the IPC practitioner

In March 2023, a new IPC clinical practice educator post was appointed, following the formal consultation and restructure in late 2022. The role has been designed to support practice education in IPC across all professional disciplines. The establishment of this post will support the team to embed the national IPC education framework and enhance IPC training to the Trust.

Vascular access

The vascular access service provides expert advice and support to staff on all aspects of clinical care relating to vascular access. The team consists of a lead nurse and four clinical nurse specialists. The team supports both inpatient and outpatient services in various clinics across the Trust.

The primary activity of the team involves the insertion of peripherally inserted central catheters (PICC), midlines, and on occasion, some peripheral cannula, where expertise is required for securing vascular access in the most challenging patients. The team also provide follow up insertion care, ensuring that vascular access devices are managed in-line with Trust guidance.

Intravascular device insertions

The vascular access service receives referrals for a variety of clinical indications.

Therapeutic referrals cover four main clinical indicators (to administer IV antimicrobials, to administer IV chemotherapy, to administer IV medications, and to administer IV parenteral nutrition. The service saw 1,374 patients referred in 2023/24 for line insertion (Table 30).

Referrals to the vascular access service for other indications are varied and often relate to patients already known to the service, where support with vascular access care is required. The service saw 971 patients referred in 2023/24 for supportive care (Table 30).

The vascular access service site several invasive device types, with most lines sited being PICC. Details of the various lines placed in 2023/24 are in Table 23.

Reason for referral (all patients)	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Total
Vascular Access Review	**67**	**68**	**70**	**67**	**89**	**57**	**82**	**53**	**54**	**108**	**187**	**69**	**971**
Dressing change	1	6	7	3	6	1	9	7	0	23	79	15	**157**
Other	17	14	13	11	19	11	11	2	9	10	13	14	**144**
Poor vasculature	28	22	19	21	27	17	23	19	13	18	32	9	**248**
Portacath Access	4	3	6	7	12	8	8	6	5	8	17	6	**90**
Removal	1	3	9	5	6	5	14	5	11	14	23	6	**102**
Troubleshooting devices	16	20	16	20	19	15	17	14	16	35	23	19	**230**
Therapaeutics	**120**	**102**	**132**	**106**	**115**	**110**	**134**	**138**	**113**	**122**	**97**	**85**	**1374**
IV Antimicrobials	28	26	39	34	18	38	24	31	15	33	24	25	**335**
IV Chemotherapy	60	40	64	35	45	36	55	53	54	43	31	25	**541**
IV Other Medication	18	11	5	15	28	19	33	34	23	24	9	12	**231**
Other	0	0	0	1	2	1	0	1	0	1	1	2	**9**
Parenteral Nutrition	14	25	24	21	22	16	22	19	21	21	32	21	**258**
Vascular Access Device	**104**	**85**	**107**	**114**	**110**	**85**	**109**	**106**	**108**	**141**	**144**	**80**	**1293**
PICC	92	64	86	99	80	69	76	85	85	118	118	65	**1037**
Midline	11	19	18	11	20	13	20	15	14	17	15	10	**183**
Cannula	0	2	2	2	8	1	9	0	3	1	2	0	**30**
Hickman	0	0	0	0	0	0	1	0	0	1	0	0	**2**
Other VAD	0	0	0	2	1	0	0	1	0	0	0	0	**4**
Port	1	0	1	0	1	2	3	5	6	4	9	5	**37**

Table 23: Vascular access referral data 2023/24

Intravascular device education

In addition to operating a clinical service, the Vascular Access team also provide several educational courses designed to minimise the risk associated with the insertion, maintenance, and prompt removal of peripheral cannula. Demand for this training often outweighs supply and the vascular access team are looking at ways to expand this programme.

Despite a waiting list for the course the team continue to see high rates of failure to attend on the day, or last-minute withdrawals from the course. This is compounding the high demand for training and is resulting in a lot of wasted time and training resources, such as room bookings. A review of all late withdrawals and do-not-attends which occurred in Q3 and Q4 2023/24 has been compiled and was shared with divisional colleagues. This led to a significant improvement in attendance on these courses.

The team continue to provide blood culture assessments workshops for medical staff in critical care. These were initiated due to a noted increase in sample contaminates. The team continue to explore sustainable models such as a train the trainer model for medical staff due to the high turnover of this staff group. This will ensure that the current efforts are sustainable, due to the limited resources within the team. There has also been a request to extend this training to nursing staff in several other areas.

Ultrasound-guided deep vein cannulation training has also been piloted in a small number of restricted areas. Once the pilot is complete, the programme will be assessed for viability and patient satisfaction prior to any decision on implementation. Any implementation plan is likely to be limited to small numbers due to the constraints of the service.

Line safety management group

The line safety management group is the Trust-wide group with responsibility for reviewing matters relating to the safety of intravascular devices. This includes the review of incidents relating to vascular access devices and IV therapy to ensure adherence to best practice and make recommendations where appropriate. The clinical divisions are represented on this group by senior clinical staff who contribute to the multidisciplinary group reviews of all bacteraemia related to vascular access devices. Trends are noted and acted upon to provide safe practice for our patients.

The group continued to note challenges throughout 2023/24 due to fragile supply chain of consumables associated with vascular access and IV therapy. They continue to collaborate with colleagues within the North West London sector to have standardisation of product selection, as well as establishing agreed alternatives which can be used when supply issues occur. The group also review new products prior to implementation.

IPC in the built environment (water, ventilation, and decontamination)

Water safety

The IPC team have a pivotal role in keeping patients safe and are often the conduit between clinical and estates teams and contractors. Water safety is an integral feature in all healthcare settings and the Trust continues to experience increasing challenges in the management of water safety due to several factors:

- age of the estate
- age and condition of the water systems
- number of adaptations made to original water systems
- number of water results exceeding normal ranges
- expense associated with required works
- complexities required to operationalise required maintenance
- operational capacity pressures versus the ability to carry out maintenance in clinical areas

The water safety group

The water safety group is a multidisciplinary group tasked with discharging the responsibility of commissioning, maintenance, development, implementation, and review of the water safety plan. The aim of the water safety group is to ensure the safety of all water used by patients, residents, staff, and visitors across all Trust premises, minimising the risk of infection associated with waterborne pathogens in-line with Health Technical Memorandum 04-01: Safe water in healthcare premises Part B 'Operational Management' and the HSE's technical guidance HSG274 Part 2.

The water safety group provides a forum where people with a range of competencies come together to share responsibility and take collective ownership for ensuring water-related hazards are identified, risks are assessed, control measures are monitored, and to develop incident protocols, guidance and other documentation as required. The WSG meets bi-monthly and is subordinate to the Trust infection prevention and control committee. Additional site-specific water safety meetings to review the finer detail or site-specific issues are also held monthly, or more frequently when required. The water safety group sits within the IPC governance reporting structure and has clearly identified lines of accountability up to the Trust's chief executive.

Associated risks in relation to water safety are managed via risk registers in both the estates department and IPC. Risks are reviewed and managed at pre-determined intervals to ensure they are continually minimised. The Trust employs the services of an independent authorising engineer for water. They provide unbiased expert guidance to the water safety group. In addition, site-based authorised persons for water are in post across the Trust. Sub-contractors are used to monitor and carry out remedial works where required. An IPC environmental advisor works closely with all teams involved in water safety to ensure there is strong clinical representation in all forums.

Ventilation safety

The Trust has adopted recommendations in the revised Health Technical Memorandum 03-01: Specialised ventilation for healthcare premises Part B: The management, operation, maintenance and routine testing of existing healthcare ventilation systems, and a new Trust ventilation safety group was established in 2022/23.

Ventilation safety group (VSG)

Ventilation systems across the Trust are overseen by the ventilation safety group, which is embedded in the Trust's governance structure, subordinate to the Trust infection prevention and control committee. It is chaired by the associate director of health, safety and working environment.

The ventilation safety group is a multidisciplinary group with a remit to assess all aspects of ventilation safety and resilience required for the safe development and operation of healthcare premises.

The main aims of the group are to oversee the following:

- ventilation elements in design process for new healthcare premises;
- ventilation elements in design process for modifications to existing premises;
- commissioning and validation process;
- management and maintenance of specialist and non-specialist ventilation;
- annual verification and performance testing;
- prioritising the plant replacement programme; and
- decommissioning and removal of redundant equipment.

All decisions affecting the resilience, safety, and integrity of the ventilation systems at the Trust and its associated equipment are made with the agreement of the ventilation safety group.

Decontamination

Sterile services department

The Trust's sterile services department is sub-contracted to IHSS Ltd. a third-party supplier as part of the North West London collaboration. They are accredited to ISO 13485: Medical Devices Quality Management. The contract is managed by the Imperial College Healthcare estates and facilities team. The sterile services department operates to standards set in health technical memoranda 01-01: decontamination of surgical instruments. This guidance offers best practice on the whole decontamination cycle, including the management and decontamination of surgical instruments used in acute care.

The sterile services department team includes a decontamination manager, quality manager and receipt and dispatch operatives for each site. IPC provide supplementary advice and expertise when required.

IHSS Ltd, as part of its contractual and governance arrangements hold customer contract management meetings, as well as a joint management board. These report into the estate's quality meeting which in turn reports to the Trust infection prevention

and control committee. As part of the service level agreement the Trust has set key performance indicators which are reported monthly. Issues such as fast track activity, quality of service, and turnaround times are all monitored. In accordance with the health technical memoranda, all surgical sets are electronically tracked and are tracible. Additionally, individual instruments which are high value or for high-risk surgery are also laser marked.

In addition to the regular monitoring of key performance indicators the Trust conducts an annual audit which takes place between the Trust and IHSS Ltd. and involves IPC team representatives. The IPC team also work collaboratively with sterile services department services and the external contractors when service or product changes are required.

Endoscopy decontamination units

The Trust has endoscopy facilities on all three of the main hospital sites. These departments continue to maintain accreditation against ISO 13485 in 2023/24. This is evidenced by both internal and external audits conducted through their quality management system. The Trust appointed authorising engineer as an independent external person who performs yearly Institute of Healthcare Engineering and Estate Management (IHEEM) audits. They are also part of the Joint Accreditation of Gastroenterologists) accreditation process. Assessments are conducted to the standards specified in health technical memoranda 01-06.

The authorising engineer assesses each authorised persons authorised person's competence and will sign them off accordingly. The authorised person is then responsible for endorsing the weekly and quarterly reports. In turn, the authorised persons sign the competent persons off to perform tasks.

Competent persons perform weekly water testing to ensure each washer or disinfector is considered fit for purpose. All technicians are trained and signed off as competent and their training is updated annually. Additional training and competency assessment can be deployed when necessary.

The quality management systems in place have both work instructions and standard operating procedures, which provide assurance and standardisation of all three endoscopy decontamination units. This is substantiated with an annual internal audit. In accordance with the health technical memoranda, all endoscopes are electronically tracked and are tracible.

Other decontamination areas

Medical devices outside of designated sterile services departments and endoscopy decontamination units may also require decontamination. Staff in those areas must also comply with health technical memoranda requirements. Local equipment such as ultrasound probes may require local decontamination with high level disinfection. This is monitored by staff within those areas who have been trained and assessed as competent and who undergo annual update and revalidation of competence.

Equipment, such as bedpan washers, is monitored daily, weekly, quarterly, and yearly This is provided both internally by end users and externally using sub-contractors when required.

Laboratory areas are required to have sterilisers to render discarded specimens inactive and safe for waste disposal. These are also subject to health technical memoranda 01-01, with weekly, quarterly, and annual testing takes place by a competent person. These are also signed off by the authorised person and have a yearly audit conducted by the authorising engineer who is independent to the Trust.

Medical devices

All medical devices purchased, loaned, or acquired by the Trust for trial purposes have a pre-acquisition questionnaire supplied by the manufacturer. The questionnaire supplies decontamination instructions and how the equipment should be treated to comply with safety requirements. All pre-acquisition questionnaires are assessed by IPC team to ensure they can be processed in the Trust. Oversight for medical devices is via the medical device management group of which the IPC team is a member.

Redevelopment and capital projects

The Trust's redevelopment team part fund a post within the IPC team. This post was implemented to ensure expert advice can be provided at the conceptual phase of new projects, right through to completion of redevelopment works. The implementation of this role aims to ensure a greater understanding and communication between both teams as well as an appreciation for IPC requirements in new builds.

IPC play an important part in the Trust's capital programme which incorporates building works, water safety and ventilation. Health Building Note 00-09 (HBN 00-09) 'Infection Control in the Built Environment' is used to risk assess the environment within the healthcare sectors. The various stages of a capital project are covered, from initial concept through to post-project evaluation with particular focus on aspects such as dust control measures that may be required. Other health technical memoranda and health building notes are consulted when needed.

Cleaning services

The provision of a clean and safe healthcare environment remains a key priority for all healthcare organisations. It provides not only a foundation for effective IPC, but also promotes patient confidence and demonstrates the existence of a positive safety culture. The absolute requirement to provide clean, safe healthcare is now written into a range of key legal processes and documents which govern the delivery of NHS funded care.

Accountabilities

The delivery of cleaning services and monitoring arrangements are delivered through the Director of estates and facilities. The Chief nurse is the designated board nominee responsible for Estates and facilities services, and thus is responsible for ensuring that there are effective arrangements throughout the Trust as stated in the National Standards of Healthcare Cleanliness 2021. The board nominee with responsibility for the overall delivery of IPC is the Director of infection prevention and control.

The National Cleanliness Standards

In setting cleanliness standards, the Trust uses the National Standards of Healthcare Cleanliness 2021 as its reference point. The Facilities department has responsibility for the operational cleaning services to our five main hospital sites, all of which are managed and delivered by an in-house service. NHS Property Services (NHSPS) provides facilities and cleaning services to our services managed on external sites, such as satellite units and community services operated by the Trust.

Monitoring arrangements

Monitoring is conducted as per the requirements of The National Standards of Healthcare Cleanliness 2021. The facilities department is responsible for monitoring cleaning procedures and standards. A programme of audits is in place to monitor the performance and effectiveness of the service being delivered and to validate achievement of cleaning standards.

The system has three objectives, to:

1. maintain consistently exacting standards and meet the required specification by means of inspection analysis and action
2. identify any failures to meet the required level of service
3. rectify any such failures

The audits include items cleaned by clinical staff, as well as estates and facilities staff. Table 31 details the scores per hospital site for all functional risk categories and includes both clinical and non-clinical areas across the Trust. The table demonstrates the average individual audit score by Functional Risk (FR) category, where FR1 is the highest risk (95 per cent pass mark, acute areas such as operating theatres) and FR6 is the lowest risk (75 per cent pass mark, non-clinical administrative areas) and across the sites for NHS and private teams.

Part way through the year a target of 95 per cent for all areas in FR categories 1-4 was set by NHS England through the Premises Assurance Mode. The table below has had that RAG rating applied throughout the data table.

Date / Site		Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Average
FRs 1-6	SMH/WEH	95.34	96.28	95.79	97.08	96.80	96.74	96.73	96.48	97.07	96.36	96.90	95.91	**96.46**
	CXH	91.60	92.86	95.93	93.51	93.54	93.34	94.39	93.65	96.15	93.87	93.37	95.24	**93.95**
	HH/QCCH	94.14	93.22	91.25	94.26	94.58	95.56	95.33	94.48	95.81	94.72	95.94	97.21	**94.71**
	IPH SMH	97.49	96.35	96.68	96.97	96.64	96.89	97.32	97.42	96.65	97.38	96.68	96.92	**96.95**
	IPH CXH	95.45	97.66	96.39	97.66	97.66	98.11	98.17	99.12	97.24	97.96	97.27	98.00	**97.56**
	IPH HH	92.01	90.59	95.70	93.08	96.16	95.93	96.74	95.86	92.78	97.46	96.71	95.42	**94.87**
	Average	**94.34**	**94.49**	**95.29**	**95.43**	**95.90**	**96.10**	**96.45**	**96.17**	**95.95**	**96.29**	**96.15**	**96.45**	**95.75**
FRs 1-4 % of areas achieving 4 or 5 stars (reportable quarterly)		**87.40%**			**90.30%**			**94.60%**			**94.60%**			

key	
	>95%
	93-95%
	<93%

Table 24: National Standards of Healthcare Cleanliness results 2023/24 for all areas

Patient-led assessments of the care environment (PLACE)

The Department of Health and Social Care and the NHS Commissioning Board requires all hospitals, hospices, and independent treatment centres to undertake an annual PLACE.

The aim of PLACE assessments is to provide a snapshot from a service users perspective of how an organisation is performing against a range of non-clinical activities which impact on the patient experience of care, which include cleanliness, the condition, appearance and maintenance of healthcare premises, the extent to which the environment supports the delivery of care with privacy and dignity, how well the needs of patients with dementia are met, how well the needs of patients with a disability are met and the quality and availability of food and beverages.

The Trust conducted full PLACE inspections at both the St Mary's and Charing Cross hospital. The inspections were conducted by small teams, comprised of Facilities monitoring officers, clinical representatives, and patient assessors. These full assessments were formally submitted within the prescribed timeframes and the results appeared in the Estates and Facilities Management (EFM) System table, which is published nationally. The planned assessment of Western Eye Hospital was completed, however last-minute sickness on the day meant that the composition of the inspection team was not quorate for official reporting and so the result was treated as a PLACE lite inspection. The scheduled Hammersmith PLACE inspection was cancelled on the day as none of the Patient Assessors were able to attend.

Despite the difficulties encountered, valuable information was obtained through the assessments and a regular steering group, involving patient assessors, has been established to steer the Trust towards improving upon the already good standards in place.

Plans are already in an advanced stage for a full PLACE programme to run in 2024/25. Several meetings have taken place with existing PLACE Patient Assessors and a programme is planned for this year's PLACE inspections. The Trust is actively

recruiting additional Patent Assessors in advance of October 2024 when this year’s inspections are likely to be scheduled for.

This 2023/24 infection prevention and control annual report was written on behalf of Tom Jacques, Director of infection prevention and control.

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