Guy's and St Thomas'
NHS Foundation Trust

Infection Prevention and Control Annual Report 2023/24

1. Foreword

This 2023/24 financial year brought with it several important challenges for the Infection Prevention and Control team here at Guy's and St Thomas' NHS Foundation Trust. Epic, our new electronic health record, which includes an IPC module called Bugsy was launched. Epic and Bugsy bring huge potential to improve our ability to identify and manage healthcare-associated infection and to optimise our use of antimicrobial agents. However, the launch of Bugsy has been challenging, and the IPC team are working with Epic and other partners in the Trust to reduce the risks associated with this and to realise the potential of the new system.

Whilst the issues linked to COVID-19 have been less prominent, there have been several other outbreaks that have required a co-ordinated response by the Infection Prevention and Control team. For example, an outbreak of *Candida auris,* a fungus that can cause serious infections in immunocompromised patients, occurred across some of our vascular, cardiovascular, and critical care patient pathways. The response to this outbreak has required close and effective partnership working with internal stakeholders and external agencies, including the UK Health Security Agency. The outbreaks have highlighted some of the challenges within our hospital estates, and we're delighted that some renovation work has been expediated in response.

The Trust retains some of the lowest rates of healthcare-associated infection amongst peer organisations, especially for *Clostridioides difficile* infection. Rates of other healthcare-associated infections, including surgical site infection in most surgical categories, and intensive care unit-associated central venous catheter-associated bloodstream infections remain below national benchmark rates. Some other important successes include the embedding of a single infection prevention and control team serving all of our sites. The vascular access team, a specialist nurse-led team that provides centralised expertise for vascular line insertion and care, has been expanded on our Guy's, St Thomas', and Evelina sites. We have plans to further expand this team to reach all of our hospital sites. Applied research remains central to the aims of the Infection Prevention and Control team, with impactful applied research outcomes influencing local, regional, and national decision making.

The team have ambitious plans for 2024/25, with improvement work planned to reduce the unnecessary use of gloves, and to develop a more effective way to undertake post infection reviews to ensure that learning is captured, shared, and prompts changes in practice. Also, the team are currently piloting a range of interventions to improve the care of vascular catheters and urinary catheters to reduce the risk of infection and other complications related to these devices.

We would like to take the opportunity to thank the IPC team and staff at all levels of our organisation for their continued efforts to reduce the risk from infectious diseases in our patients, and for optimising the use of antimicrobial agents.

Avey Bhatia, Chief Nurse

Dr Jon Otter and Dr Nick Price, Joint Directors of Infection Prevention and Control

Contents

2. Glossary

A&E	Accident & Emergency
AMS	Antimicrobial Stewardship
BAF	Board Assurance Framework
BSIs	Bloodstream infections
CABG	Coronary artery bypass graft
CATS	Cardio Adjustable Thoracic Support
CCQIP	Critical Care Quality Improvement Programme
CITI	Centre for Innovation Transformation and Improvement
CPE	Carbapenemase-producing Enterobacterales
CQUIN	Commissioning for Quality and Innovation
DoI	Directorate of Infection
HCAI	Healthcare Associated Infection
HCAI DCS	Healthcare associated infections data capture system
HCID-A	High Consequence Infectious Disease – Airborne
HDU	High Dependency Unit
HEPA	High Efficiency Particulate Air
ICB	Integrated Care Board
IPC	Infection Prevention and Control
ICU	Intensive care unit
iGAS	invasive Group A Streptococcus
IPC	Infection Prevention and Control
LTV	Long Term Ventilation
MDR	Multidrug Resistant
MRSA	Methicillin-resistant *Staphylococcus aureus*
MSSA	Methicillin-susceptible *Staphylococcus aureus*
NIPCM	National Infection Prevention & Control Manual
PPE	Personal protective equipment
RMcH	Ronald MacDonald House
RSV	Respiratory Syncytial Virus
SEL	South East London
Serious Incident	Serious Incident Assurance Panel
SIU	Surveillance and Innovation Unit
SSI	Surgical site infection
UKHSA	UK Health Security Agency
UTI	Urinary tract infections
VAD	Vascular Access Device
VRE	Vancomycin-resistant enterococci

3. Executive summary

- Guy's and St Thomas' NHS Foundation Trust ended 2023/24 above their NHS threshold for healthcare-associated *Clostridiodes difficile* infections, and bloodstream infections (BSIs) attributable to *Escherichia coli*, *Klebsiella sp.*, and *Pseudomonas aeruginosa*.
- Compared with the Shelford Group of 10 peer Trusts, we have the lowest rate of *C. difficile* and second lowest rate of healthcare-associated *E. coli* bloodstream infection, but the third highest rate of MRSA BSIs.
- A post-infection review is undertaken for each healthcare-associated *C. difficile* infection; no lapses in care due to cross-transmission or antibiotic choices were identified during 2023/24.
- There have been 9 healthcare-associated MRSA bloodstream infections during 2023/24. Learning identified during post-infection reviews of these cases, especially related to vascular access devices, has been shared with clinical leaders in the organisation and frontline clinical teams.
- A multi-professional group is in place to pilot an intervention to improve the management of vascular catheters and urinary catheters, aiming to reduce the risk of infection and other complications. This programme will be piloted on wards at each of our hospital sites, with the aim of a developing a Trust-wide improvement plan to be launched in 2024/25.
- The challenges related to COVID-19 have receded throughout the year, with several changes in local guidance in line with national guidance having been implemented.
- Several outbreaks have been identified and managed across the Trust, including *Candida auris*, CPE, MRSA, and norovirus. We have also seen an increase in contact tracing requirements related to measles and *Bordatella pertussis*, in line with regional and national trends.
- Rates of surgical site infection (SSI) are monitored by a dedicated team within IPC in most surgical specialities across the Trust. The rate of SSI in the following adult services are identified as significant outliers when compared with national data: orthopaedic, cardiac (coronary artery bypass graft), vascular and gastrointestinal (large bowel). A comprehensive set of actions, reviews and checks are ongoing in collaboration with the multidisciplinary teams across these specialisms.
- The rate of intensive care unit-associated central venous catheter-associated bloodstream infections across the Trust remains below national benchmark rates.
- Antimicrobial prescribing indicators and consumption continue to be monitored closely. Overall compliance with prescribing indicators remaining strong but there is elevated consumption of some key agents.
- We are planning to relaunch our campaign to reduce the unnecessary use of gloves ('Gloves Off') during Q1 2024/25, in collaboration with Trust communications and the sustainability teams.
- The implementation of Bugsy, the specialist IPC application with Epic (the Trust's new electronic health record) was challenging and resulted in several IPC risks that required careful management.
- Applied research and innovation remains central to our team, with examples including evaluating the transmission dynamics of key organisms including *C. auris,* CPE, and SARS-CoV-2, exploring the impact of innovative technology and systems, and understanding risks that can predict healthcare-associated infection.
- This report includes a summary of the annual plan for the IPC team for 2024/25.

4. About Guy's and St Thomas' NHS Foundation Trust

- From our 5 main hospitals, and in the community, we provide a full range of lifelong, general and specialist care, as well as clinical research, innovation, education and training.
- We are a diverse and welcoming organisation and are incredibly proud of our around 23,600 staff and the dedication they show to our patients and each other.
- We aim to be outstanding in everything we do and to provide high quality and compassionate care and experience to all of our patients and families.
- As a leading centre of clinical research with a long history of innovation and medical firsts, we are able to provide the latest and most advanced treatments. Together with our partners in King's Health Partners, we form one of the UK's 8 Academic Health Science Centres.
- Our world-famous teaching hospitals train the doctors, nurses and healthcare professionals of the future. GKT School of Medical Education is our medical school, run jointly with King's College London and King's College Hospital.
- We are guided by our values in everything we do and, as one of the largest employers in London, we reflect the diversity, opportunity and ambition of our communities and the people we serve.

5. Healthcare-associated infection (HCAI) surveillance

The IPC Surveillance and Innovation Unit (SIU), established in 2022/23, continues to provide improved insight into the epidemiology of infections to inform IPC activity. Since its inception, there has been increased accessibility of mandatory reportable organism surveillance data within and outside the IPC team.

5.1 Summary of mandatory organism surveillance

- *Minimising Clostridioides difficile and Gram-negative Bloodstream Infections* (NHS, 2023/24), sets out annual thresholds for healthcare-associated *C. difficile* infections and Gram-negative bloodstream infections (BSIs) attributable to *Escherichia coli*, *Klebsiella sp.*, and *Pseudomonas aeruginosa*.
- We ended 2023/24 exceeding the thresholds for all organisms (Figure 2).

5.1.1 *Clostridioides difficile* infection

- In 2023/24, there were 62 healthcare-associated *Clostridioides difficile* (*C. difficile*) toxin-positive (reportable) cases, against the NHS threshold of 47.
- There has been a 1.6% increase in cases since 2022/23, and a 38% increase in cases over the last 5 financial years.
- When compared with the Shelford Group, as of February 2024, we had the lowest rates of *C. difficile* per 100,000 bed days, and have maintained this position throughout 2023/24 (Figure 3).
- A post-infection review is undertaken for each *C. difficile* infection; no lapses in care due to cross-transmission or antibiotic choices were identified during 2023/24.

5.1.2 MRSA bloodstream infections

- In 2023/24, there were 9 healthcare-associated MRSA BSIs; there is a zero tolerance for MRSA BSIs nationally.

- At the Trust, MRSA cases were decreasing year to year from 2019/20, until this financial year, where there was an increase in cases from 2022/23 (9 vs 4).
- Royal Brompton reported their first healthcare-associated MRSA case this year in over 5 years of no cases.
- When compared with the Shelford Group, as of February 2024, we had the third highest rate of MRSA BSIs per 100,000 bed days.
- A post-infection review is undertaken for each MRSA BSI. Key messages from these reviews include: challenges around intravenous line care and documentation, adherence to MRSA decolonisation pathways, and effective handover between inpatient and outpatient teams especially following the launch of Epic.

5.1.3 MSSA bloodstream infections

- In 2023/24, there were 77 healthcare-associated MSSA BSIs; no national threshold is provided.
- There has been a 40% increase in cases since 2022/23, and a 71% increase in cases over the last 5 financial years. When compared with the Shelford Group, as of February 2024, we had the fifth highest rate of MSSA bacteraemia per 100,000 bed days. Investigations of these cases have identified recurring themes related to peripheral line care practices and record keeping. Key messages to promote best practice have been shared with clinical leaders in the organisation and frontline clinical teams.

5.1.4 Gram-negative bloodstream infections

- Each Gram-negative BSI is clinically reviewed to identify sources, risk factors and determine which cases were potentially avoidable.

5.1.4.1 *Escherichia coli* bloodstream infections

- In 2023/24, there were 176 healthcare-associated *E. coli* BSIs, against the NHS threshold of 118.
- There has been a 54% increase in cases since 2022/23, and a 69% increase in cases over the last 5 financial years (176 vs 104). When compared with the Shelford Group, as of February 2024, the Trust had the second lowest rate of *E. coli* bacteraemia per 100,000 bed days.

5.1.4.2 *Klebsiella sp.* bloodstream infections

- In 2023/24, there were 119 healthcare-associated *Klebsiella sp.* BSIs, against the NHS threshold of 92. There has been an 18% increase in cases since 2022/23, and a 65% increase in cases over the last five financial years (119 vs 72). When compared with the Shelford Group, as of February 2024, we had the fourth highest rate of *Klebsiella sp.* bacteraemia per 100,000 bed days.

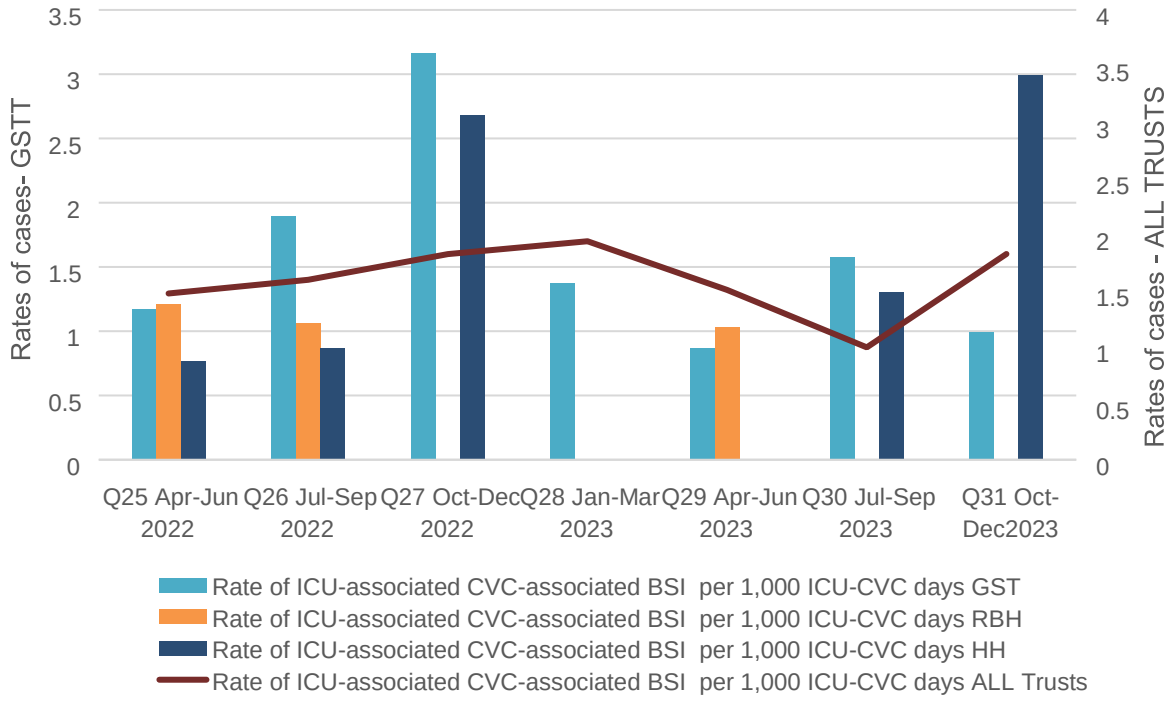
5.1.4.3 *Pseudomonas aeruginosa* bloodstream infections

- In 2023/24, there were 55 healthcare-associated *Pseudomonas aeruginosa* BSIs, against the NHS threshold of 53. There has been a 7% decrease in cases since 2022/23, and a 2% decrease in cases over the last five financial years (55 vs 56). When compared with the Shelford Group, as of February 2024, we have the fourth highest rate of *P. aeruginosa* bacteraemia per 100,000 bed days.

5.2 ICU-associated central venous catheter-associated bloodstream infections

The UKHSA Infection in Critical Care Quality Improvement Programme (ICCQIP) surveillance programme provides data on the rate of BSI and central-venous catheter-associated BSIs in participating adult ICUs. For 2023/24, all sites except Harefield Hospital fell below the national rate derived from participating units (Figure 1). The elevated rate at Harefield Hospital has prompted a review of practices to prevent central-venous catheter-associated BSIs.

Figure 1: ICU-associated central venous catheter (CVC)-associated BSI data from ICCQIP (April 2022 – December 2023, the latest available data)



5.3 Respiratory virus infections

Ahead of the winter months, the Surveillance and Innovation Unit (SIU) developed a "Winter Pressures" dashboard, in order to track the number of respiratory viral infection cases Trust-wide. Mirroring national trends, COVID-19 local prevalence rose and fell throughout the period (Figure 4). Respiratory Syncytial Virus (RSV) started to rise in Q3, reaching its peak during the middle of the quarter; the majority of cases were seen in Evelina. Influenza A saw a steep rise and fall of cases, peaking with 77 weekly cases towards the end of January 2024.

5.4 Digital and epidemiological development in the Surveillance and Innovation Unit

- In line with the digital transformation goals of the wider NHS, the SIU has adopted SharePoint sites for collaborative editing, training and educational materials for continued development and applied research projects.
- Interactive dashboards have been created for Clinical Group stakeholders to provide an overview of IPC data and reports accurate to the previous reporting month.
- An HCAI data caputure system case register has been established to improve the process efficiency and oversight of data that we report nationally – these data feed into reports and dashboards.

- Other registers are available for non-reportable organisms (non-toxin positive *C. difficile,* MRSA acquisitions, and respiratory cases in children, *Mycobacterium tuberculosis* complex, rotavirus and norovirus).
- The SIU is a centre of expertise to use applied epidemiology to support and extend clinical teams within the Directorate of Infection.
- The SIU has worked closely with the Epic teams to tailor the Bugsy (IPC) application within Epic for best IPC utilisation.
- The SIU led the data transformation from our legacy IPC system (ICNet) to Epic, ensuring the extraction of microbiologically relevant cases to Bugsy, ensuring patient reports are historically robust.
- The implementation of Epic brings together a number of data sources, which the SIU plans to use with advanced data analytical tools to gain further epidemiological insight surrounding HCAI.

Figure 2: Trust-wide mandatory healthcare-associated HCAI surveillance case numbers over the last five financial years

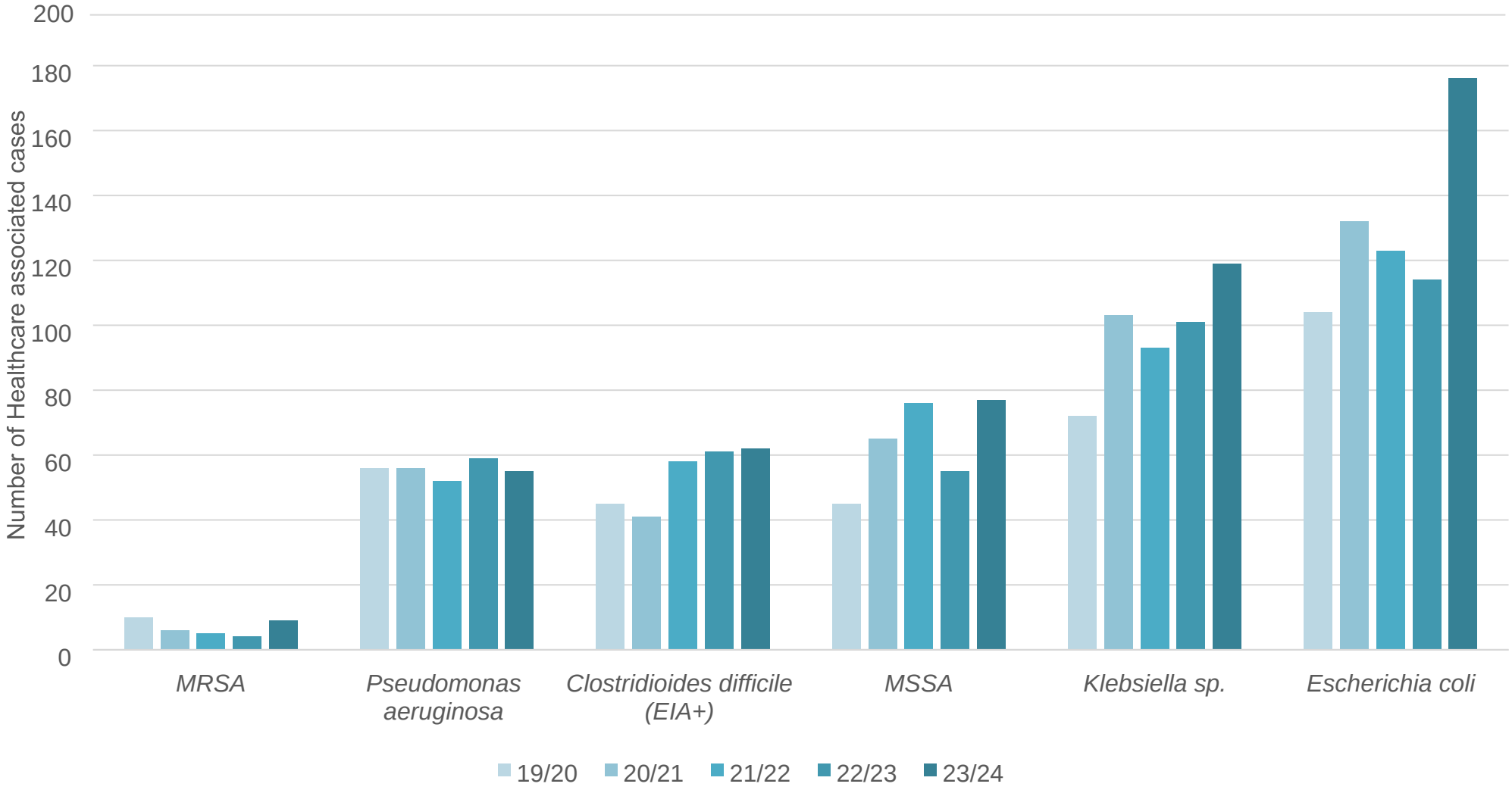


Figure 3: Healthcare-associated HCAI surveillance rates in the Shelford Group (April 2023–February 2024). Bars = Trust-attributable rate per 100,000 bed days. Line = Trust average.

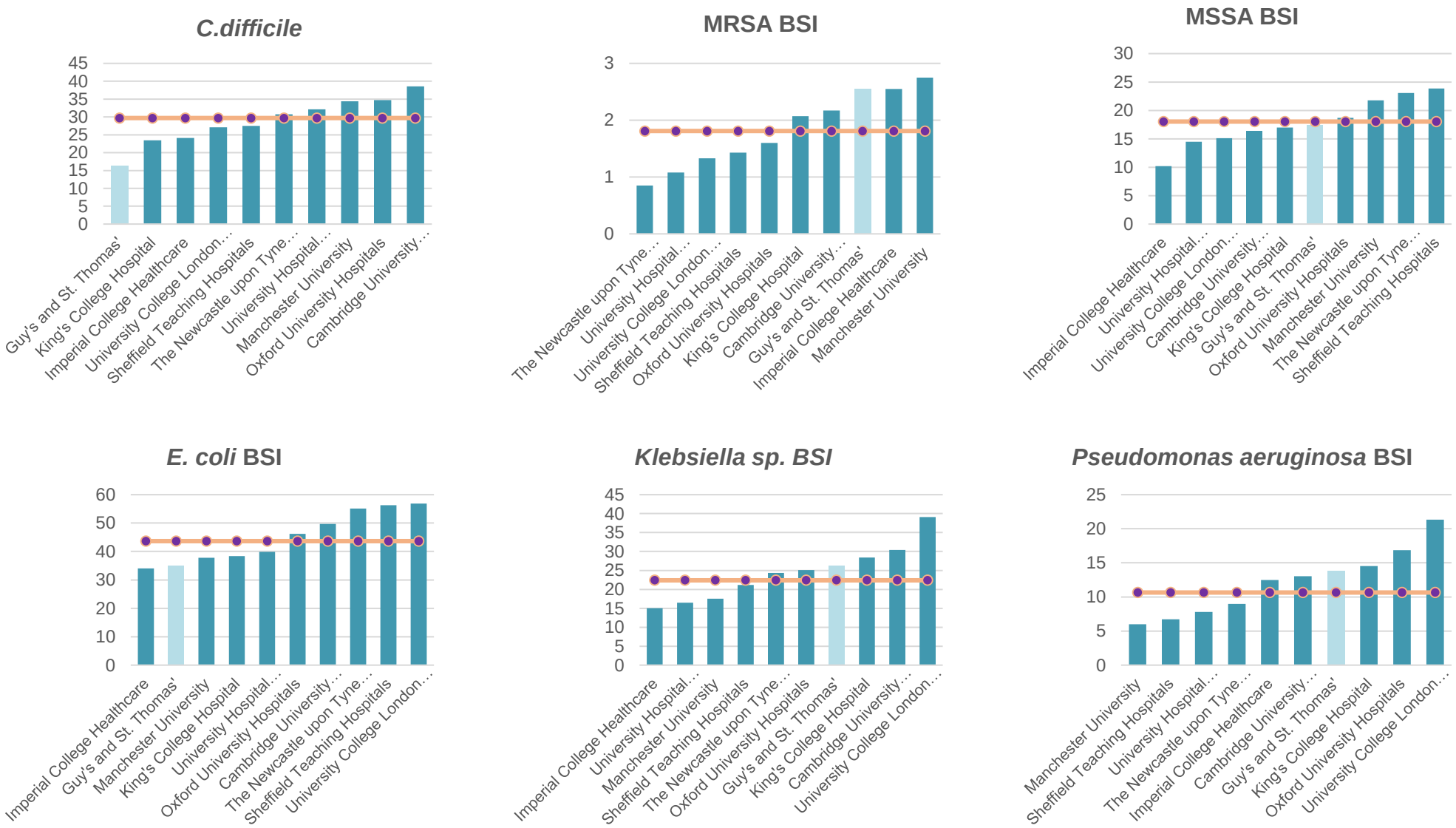


Figure 4: Respiratory virus trends (October 2023-March 2024)

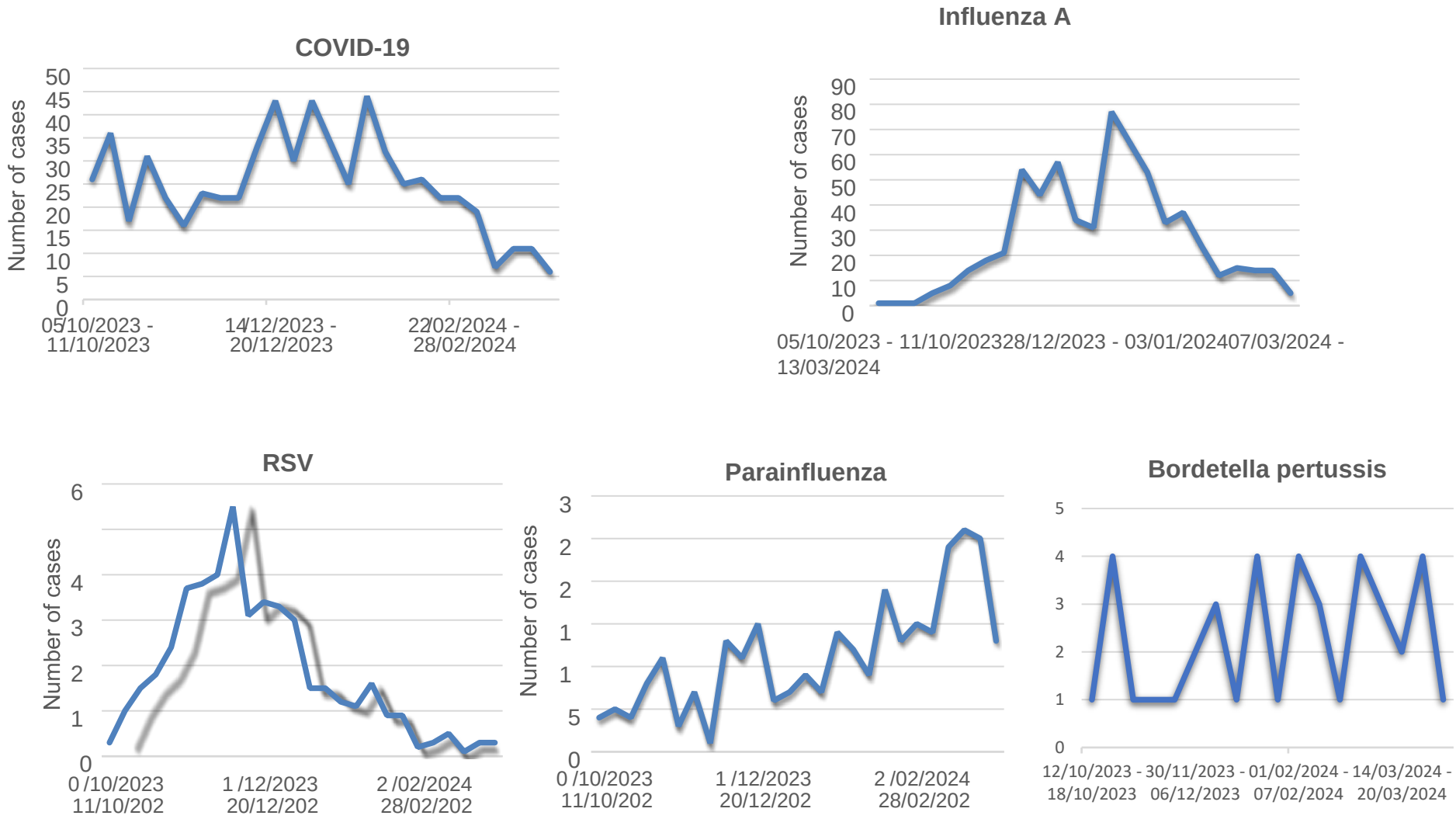


Figure 5: 5-year trend of SSI cases and incidence in surgical specialties at Guy's, St Thomas', and Evelina sites

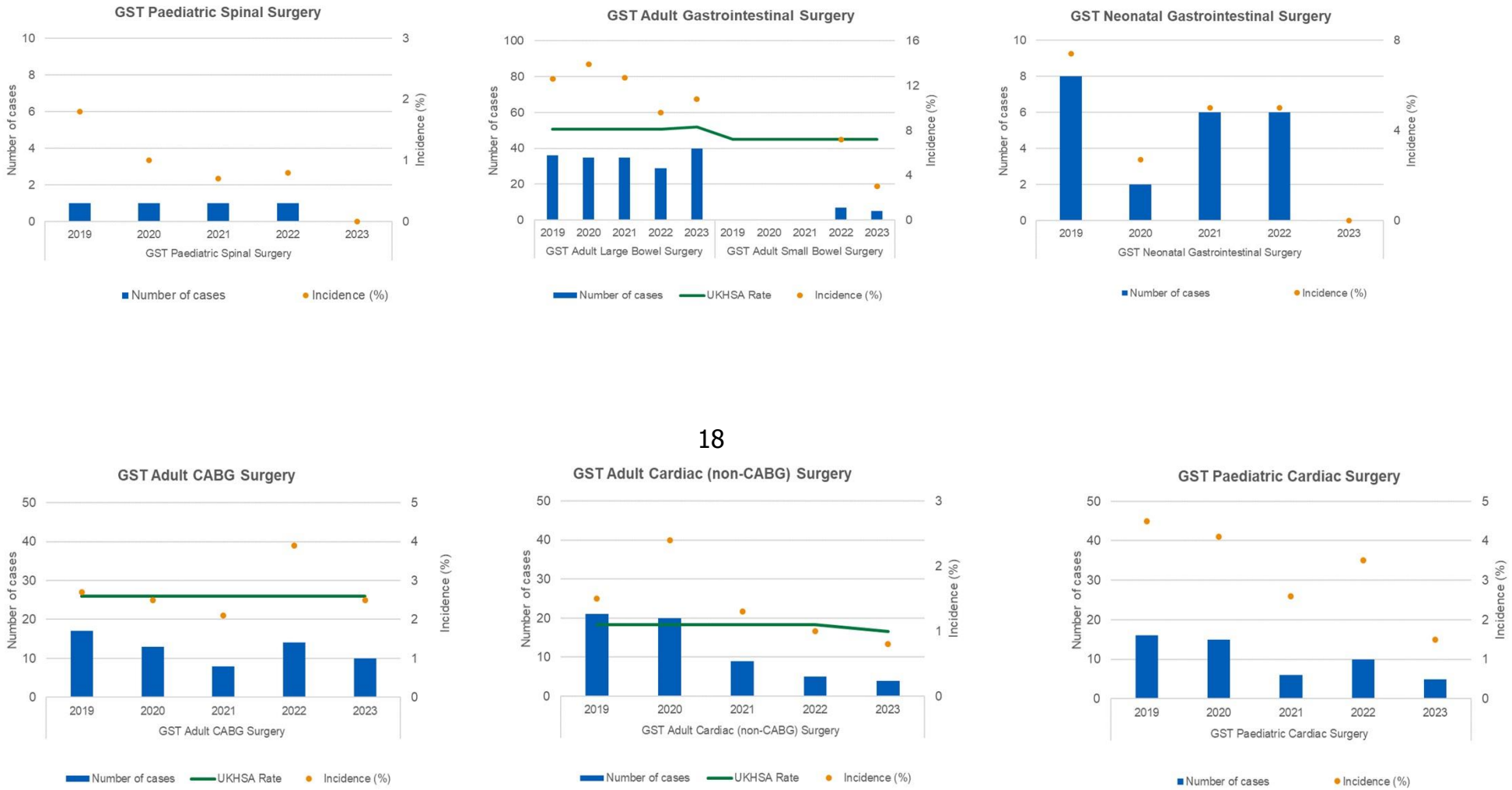
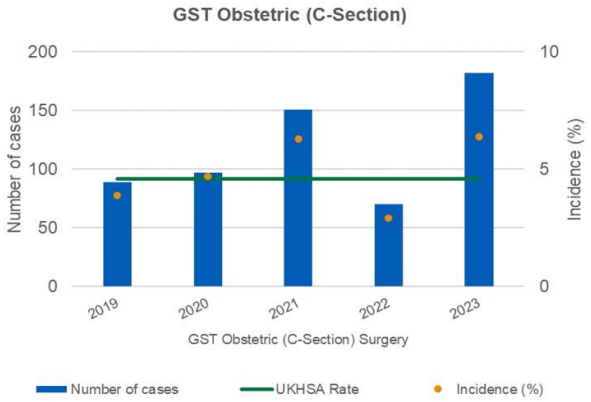
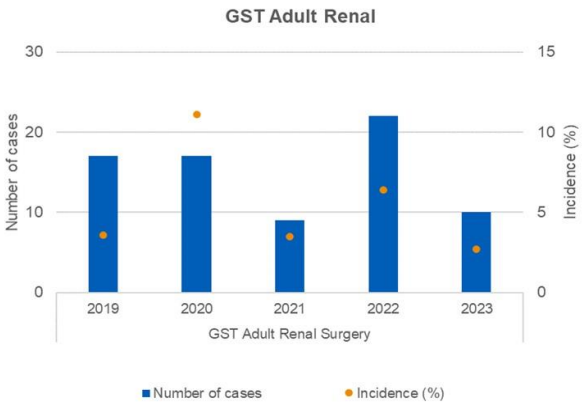
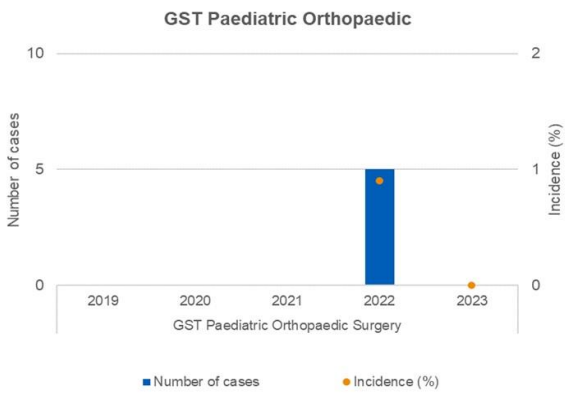


Figure 5 (continued): 5-year trend of SSI cases and incidence in surgical specialties at Guy's, St Thomas', and Evelina sites







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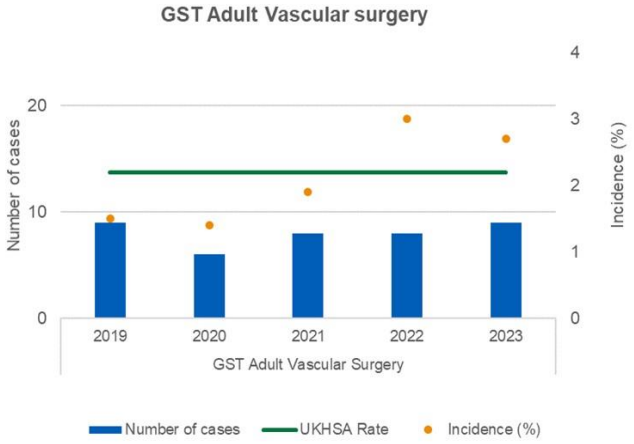


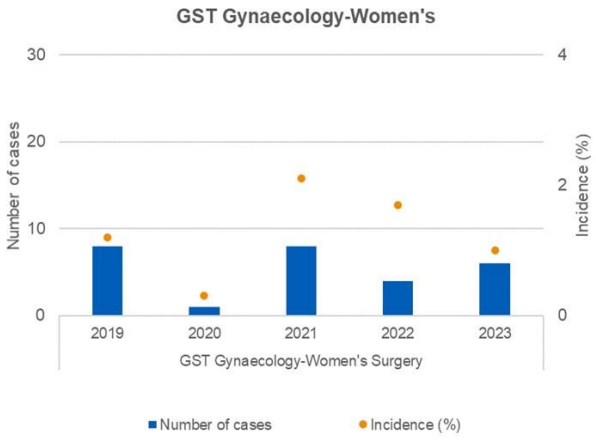


Figure 5 (continued): 5-year trend of SSI cases and incidence in surgical specialties at Guy's, St Thomas', and Evelina sites

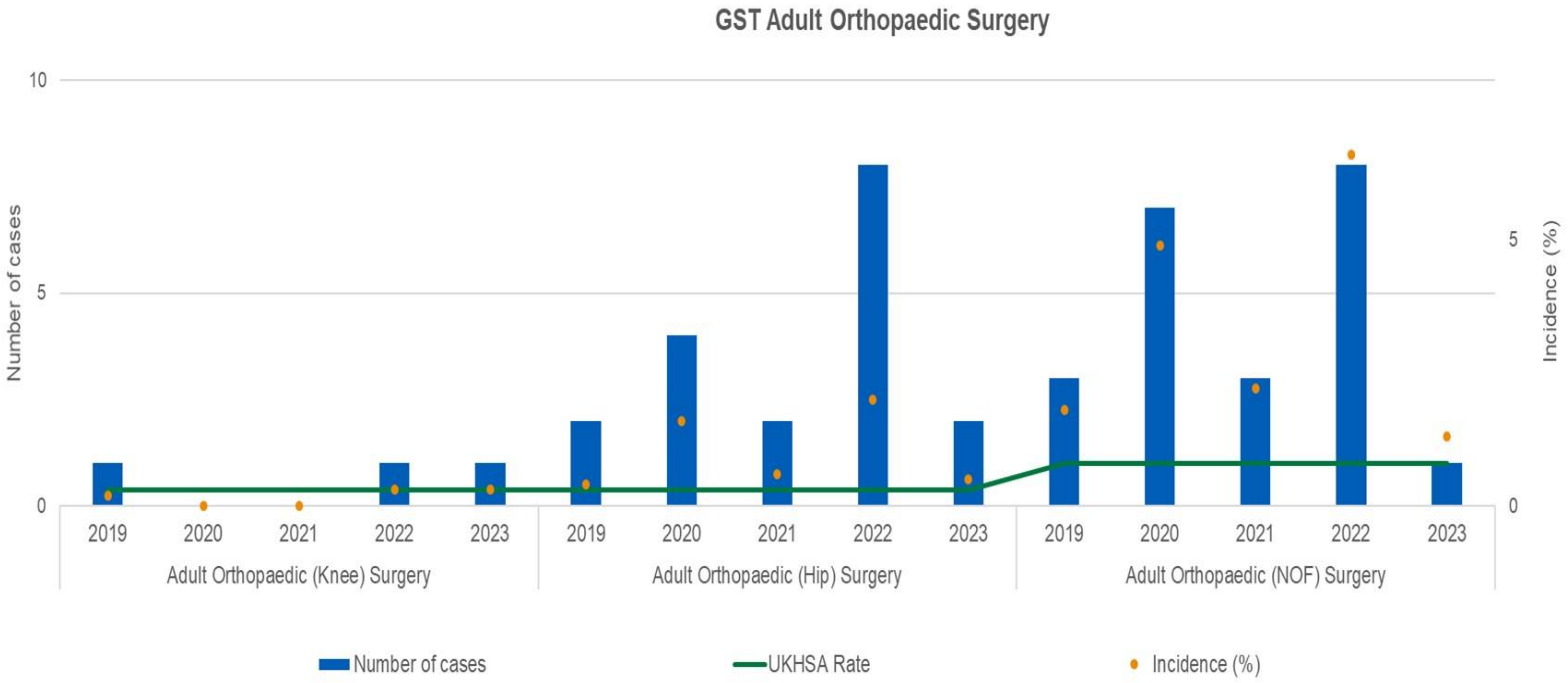
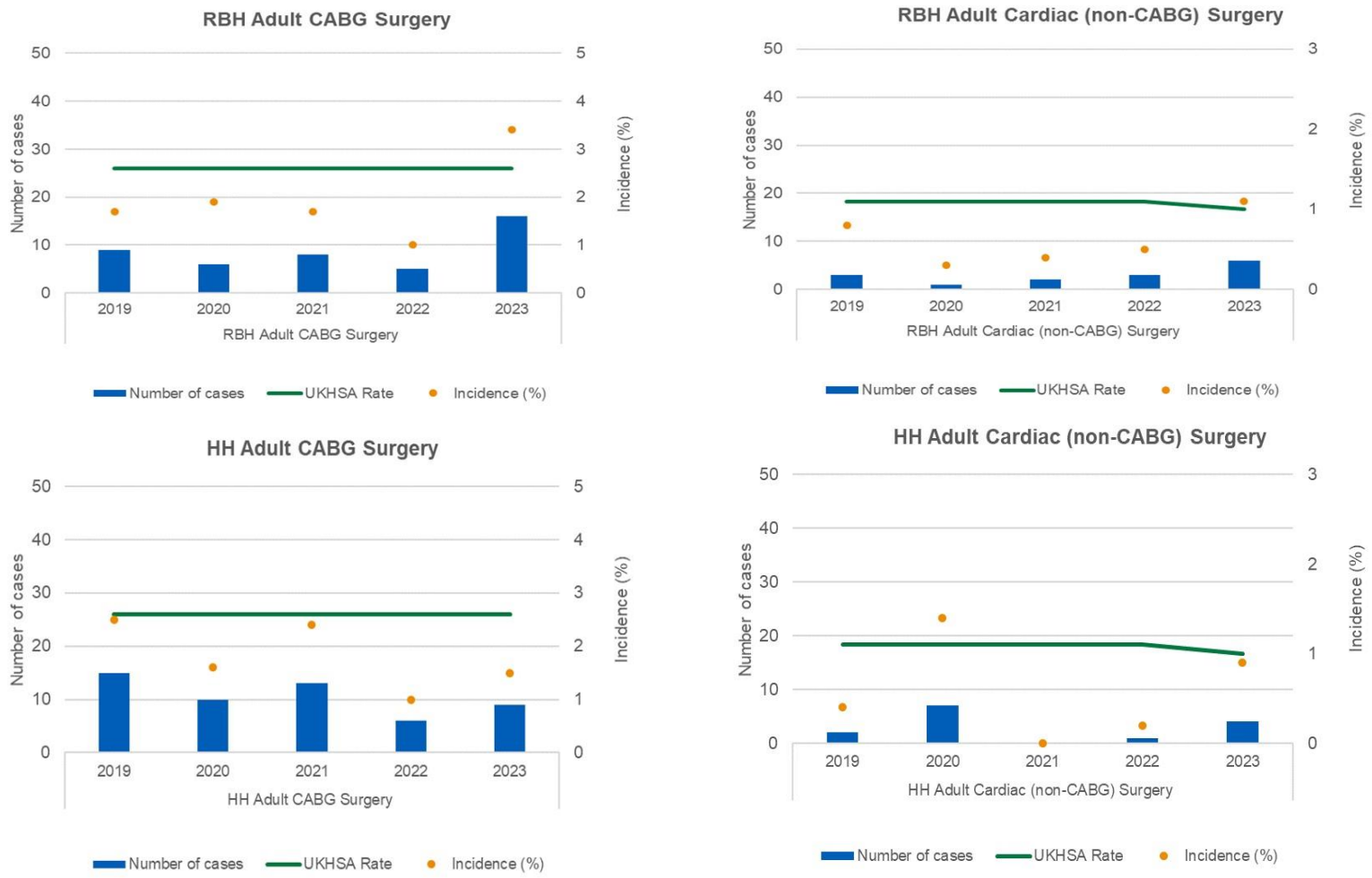


Figure 6: 5-year trend of SSI cases and incidence in surgical specialties at Royal Brompton and Harefield hospitals



5.5 Surgical site infection surveillance

5.5.1 Surgical site infection rates, impact, and prevention

- Rates of surgical site infection (SSI) are monitored by a dedicated team within IPC in most surgical specialities across the Trust.
- The rate of SSI in the following adult services are identified as significant outliers when compared with national data: orthopaedic, cardiac (coronary artery bypass graft), vascular and gastrointestinal (large bowel). A comprehensive set of actions, reviews and checks are ongoing in collaboration with the multidisciplinary teams across these specialisms.
- The introduction of Epic has disrupted our ability to report our SSI rates to UKHSA.
- The Trust uses a remote wound monitoring platform called Isla Care, but this has not yet been successfully integrated into Epic.
- The systems established for automated monitoring of compliance with the SSI prevention measures outlined by NICE, which were in place at Royal Brompton and Harefield sites, have not been available since Epic was launched.
- Recommencing our national reporting of SSI rates to UKHSA, integrating Isla into EPIC, and establishing automated monitoring of compliance with SSI prevention measures will be priorities for 2024/25.

5.5.2 Surgical site infection team innovation

5.5.2.1 Central Digital Wound Hub (CDWH):

- The Centre of Innovation, Transformation and Improvement (CITI) received funding from Guy's & St Thomas' Charity for remote care initiatives that draw on existing best practices and address the organisation's most acute needs.
- We are delighted that the SSI team has been funded to develop an innovative nurse-led Central Digital Wound Hub (CDWH) featuring a rationalised and reprofiled workforce to support patients with a seven-day service, after they are discharged from the ward following surgery. The CDWH bridges the primary care – secondary care gap for wound related queries and management.
- Our aim is to scale remote wound monitoring at the Trust, offer the service to other organisations, and to build capacity for research studies. We are pleased that the CDWH has already secured significant funding to support a large-scale study (currently embargoed).

5.5.2.2 Revenue-generating innovations:

- Products developed by the SSI team continue to sell well. The first five months of cardio-adjustable thoracic support (CATS) vest sales in 2024 have already surpassed that of the 2023 total, and is already being routinely stocked in half of the cardiothoracic units in England. In addition, the vest has been issued with a Declaration of Conformity, which opens up distribution in the EU. Brompton and Harefield Infection Score (BHIS) bra sales in 2024 are up 48% on the previous year. The Trust receives a portion of royalties for the BHIS bra, and the remainder go to the SSI innovation budget.

5.5.2.3 SSI team research:

- The SSI team collaborated with academics and patients for the study 'Patients as Learners and Codesigners: An Examination of Patients' Engagement and Experience of Codesign of an Educational Resource' (IRAS ID: 328243). One of the outputs from the study was a co-designed video about wound healing at home. The video (and an accessible version) are now available on the Trust website and have also been included on the National Wound Care Strategy Programme's Surgical Stream website under resources for patients: National Wound Care Strategy Programme - Surgical Wounds.
- WISDOM i4i NIHR funded study (NIHR204508). https://www.wisdomai.uk/aboutwisdom. We have completed the temporal validation of the artificial intelligence (AI) which identifies healing concerns using wound images, and have submitted the manuscript to an open access journal. The AI will be clinically evaluated in a feasibility study at two hospitals this summer.
- The SSI team are also currently working with the Ears, Nose, and Throat (ENT) team (internally funded study using nasal photo disinfection), Vascular team (to support site participation in the DRESSINg trial), and Microbiology (through to second stage of the NIHR Research for Patient Benefit programme for remote wound swabbing).
- Applied research projects and outputs are summarised in Section 14.

6. Antimicrobial stewardship programme

2023/24 has been a challenging year for the antimicrobial stewardship programme (AMS) programme, but where data is available, despite the challenges, the programme continues to deliver against national metrics and expectations.

6.1 Challenges

- Epic – we currently do not have reporting systems within or from Epic to be able to monitor antimicrobial consumption. This means that there is limited intelligence on our consumption patterns, and so reduced opportunity to identify areas for improvement.
- External metrics –the Trust faced an exceptionally challenging external antimicrobial consumption metric, based on pre-pandemic and pre-merger performance.
- Staffing resource – the antimicrobial stewardship programme has lost members of staff over the year, and due to the recent consultation around the organisation of the COVID-19 Prevention and Intervention Service; these staff have not been replaced. In addition, increasing workload, especially at the Royal Brompton and Harefield sites, has put significant pressure on the antimicrobial stewardship team.
- Antimicrobial shortages – this is not a new challenge but the extent and frequency of such shortages is unprecedented. The work involved in managing each one is significant and can have major implications for patient care.

6.2 Successes

- The national antimicrobial consumption data metric showed that the Trust was one of only 3 organisations in London to have a downward trend in consumption

sustained across 2021/22 into the first half of 2023/24 (Figure 7) and compliance with the IV to oral switch CQUIN was exceptionally high, with the last available data showing a 19% compliance (lower = better) against an achievement range of 40-60%.

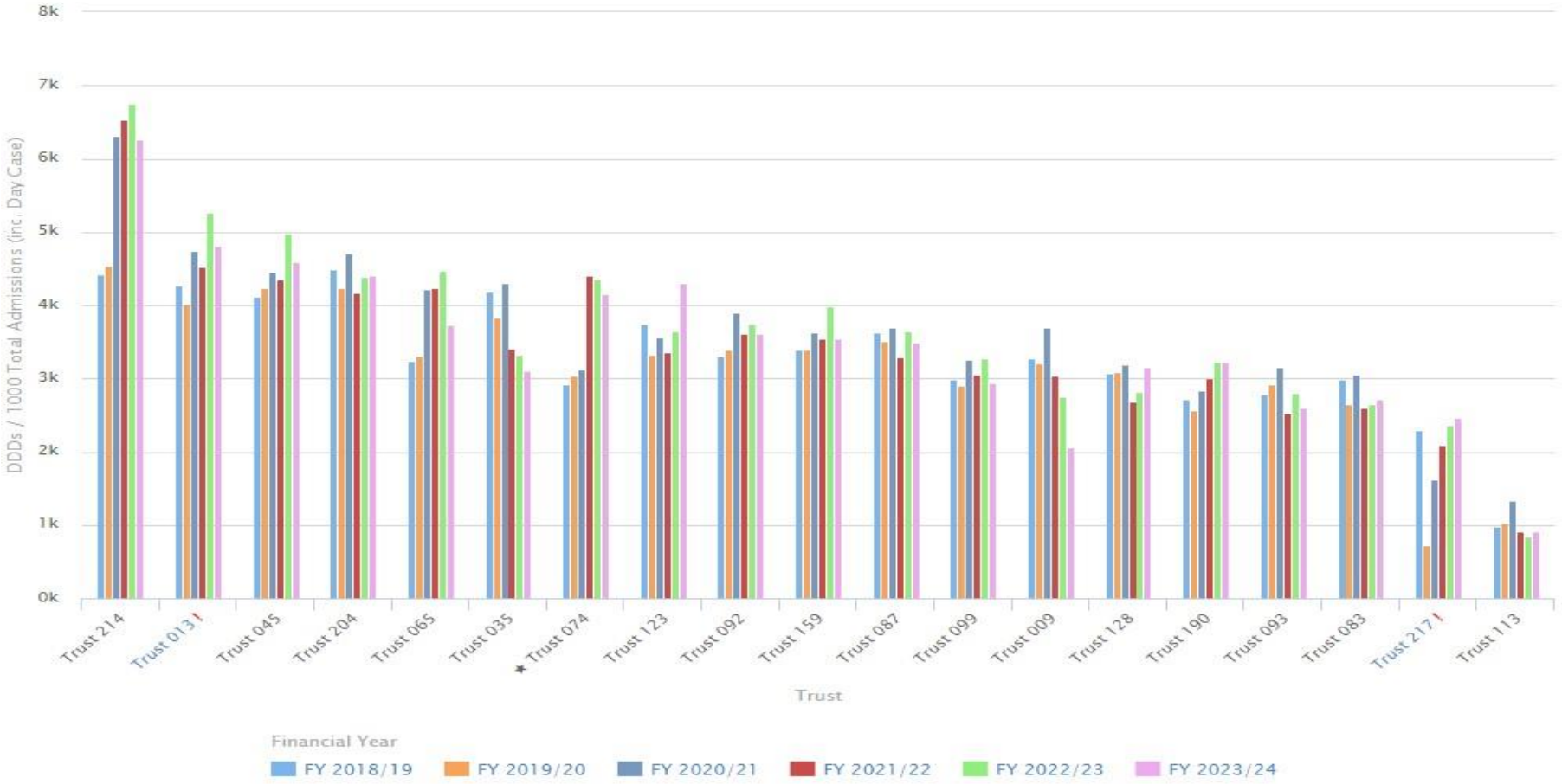
- The team and service supported the implementation of Epic and continues to work with Epic colleagues to ensure that post-go-live, the system is safe and effective for optimal patient care. We have led on improvements in use of aminoglycosides and vancomycin; have developed workbench reports to allow audit and review of selected antimicrobial agents. Epic has also brought about significant partnership working with colleagues at King's College Hospital which will be a beneficial in the future.
- The team and service continue to lead on and support antimicrobial stewardship initiatives across south east London, working closely with primary and secondary care partners to share best practice and harmonise guidance where possible.
- The team have been integral in setting up new systems or projects for better management of antimicrobial blood level results within the Trust and use of antimicrobials within urgent care and walk-in centres across London.

6.3 Future plans

- Complete the antimicrobial stewardship strategy and governance review, which was suspended pending the publication of the new 5 year antimicrobial resistance national action plan.
- Continue to champion the urgent need for usable and timely data on antimicrobial consumption from Epic to allow appropriate targeting of interventions for improvement and mechanisms to share data with the Trust's Clinical Groups to drive change – without this, there is limited potential for the antimicrobial stewardship programme to successfully improve antimicrobial use.
- Continue to work across the Trust to meet external requirements, such as the latest IV to oral switch CQUIN, the national action plan targets, and other ICS-led metrics.
- Fully implement the Microguide app and leverage Epic and other systems to help innovate and optimise patient care and outcomes.

Figure 7. Defined Daily Doses per 1000 Admissions for Acute Trusts Across London. By Financial Year, 2018/19 to End September 2023/24.

Trust 074 = GSTT; Trust 092 = KCH; Trust 099 = LGT.



7. Vascular access team

- The expansion of the team, including introducing a new Matron post, has increased capacity to meet current and future demand.
- Scoping of further expansion of the vascular access service to cover the Royal Brompton and Harefield sites is in progress.
- Significant advances have been made in upskilling all team members in advanced peripheral cannulation skills and investment in increased numbers of peripherally inserted central catheter (PICC) inserters.
- Point prevalence audits of intravascular access devices (IVADs) in the inpatient areas are undertaken each month on the Guy's, St Thomas' and Evelina London sites. Overall compliance is 85% across the 5 domains audited.
- In order to drive improvements in care and management, 'Vascular Access Champion' study days have been restarted and revamped with regular educational updates provided.
- The team is integral to the 'Caring for our catheters, loving our lines' campaign, aiming to reduce the risk of catheter-related BSIs and other complications.
- Clinical acuity and activity remain high with 3,622 clinical encounters for 2023/24.
- Patient surveys continue to demonstrate high satisfaction with the service.

8. Decontamination, water, ventilation, and environmental hygiene

8.1 Decontamination

- A diagnosis of probable sporadic Creutzfeldt-Jakob disease was identified but did not require formal notification since no reusable surgical instruments or devices had been used. However, it did identify a vulnerability in our ability to track instrument sets since the migration of tracking software (from Scantrack to Fingerprint in September 2020). This prevented the interrogation of archived data files from Scantrack. These files have now been successfully extracted and saved on Trust drive allowing full tracking capability (up to 8 years prior to the onset of patient symptoms).
- A near-miss incident, relating to a dental chair in the cleft clinic at St Thomas', occurred in August 2023 as a result of a contractor fitting an incorrect valve to the dental unit water line. This could have allowed contaminated fluids from the oral cavity of one patient to be drawn back into the water line and be transferred to that of another, however the error was discovered prior to patient use. The standard operating procedure for testing and microbiological surveillance of heater cooler units (which is associated with a longstanding risk of infection from Mycobacteria) has been adopted across all Trust sites. UKHSA reissued a safety alert on this matter in December 2023.
- A potential bronchoscope incident occurred when 3 patients had an unusual organism (*Chryseobacterium pallidum*) isolated from respiratory specimens taken at the time of bronchoscopy. The same bronchoscope was used in all 3 cases. A laboratory lookback exercise indicated that this organism had not been isolated from any Trust patient in the preceding 6 months, so it was very likely that the bronchoscope was contaminated and was the source of the bacteria isolated from these patients. The bronchoscope was removed from service, a culture of the device did not identify any contamination and it was returned to the manufacturer

for a service, with a report awaited. No further cases of *Chyseobacterium* sp. have been identified.

8.2 Water

- The water safety risk on the corporate risk register was escalated from a score of 10 to a score of 15 in July 2023, reflecting significant issues related to the poor estate and management of risks associated with water supply across the Trust.
- The Trust internal audit team issued a report on water safety in February 2024, which made 21 recommendations to Essentia which are being monitored by the Essentia Director of Quality and Improvement.
- All legionella risk assessments for buildings across the Trust have now been completed/updated, generating a large number of remedial actions which are being prioritised by Essentia. There are a number of areas that are high risk and where remedial actions have been slow to progress, and point of use filters are being maintained until sustained improvements have been made.
- A case of legionnaires disease was diagnosed in a renal patient on Patience ward in July 2023. The incubation period fell outside of the definition for hospital association (26 vs. 2-10 days), however given the level of risk, this was investigated as a potential hospital-associated case. Although the investigation revealed a number of issues with the water distribution system within Borough Wing, the investigation concluded that there was no evidence that the hospital was the source of legionella. The investigation was supported by South London Health Protection Team, who agreed with our findings.
- A lack of water safety assurance in some properties, which are not owned by the Trust, which we use to provide community services was identified in September 2023. This results from the complex relationships between the multiple partners involved. Following escalation, the organisations involved have become more responsive and are now providing the necessary assurance data.
- An incident involving excess biocide (chlorine) dosing of the water system was identified in November 2023, potentially exceeding WHO maximum exposure limits. This did not result in any harm, however a review of the maintenance and operation of all biocide dosing systems across the Trust has been undertaken to prevent future occurrences.

8.3 Ventilation and environmental hygiene

- The commissioning of 2 new modular operating theatres in Nuffield House at Guy's has been delayed, due to technical difficulties in validating airflows and other parameters. This required installation of additional monitoring equipment which is now complete.
- Infection control is participating in a Trust-wide Ward Investment Task and Finish Group, which assesses water, ventilation and general environmental condition risks in order to prioritise wards for future refurbishment. IPC also continues to feed into other major projects still in the planning stages.

9. High consequence infectious diseases – airborne (HCID-A) centre

- We continue to provide ongoing training to ensure preparedness for HCID-A cases. 371 staff members have completed the mandatory face-to-face PPE training and 271 staff members have completed the e-learning component. In addition, we provide a comprehensive package of support, including in-situ simulation, simulation centre training, AI based training, and table-top exercises. Details of our training programme will be presented at the 2025 European Congress of Clinical Microbiology & Infectious Diseases (ECCMID).
- Our HCID clinical lead sits on the steering committee for the UKHSA Avian Influenza research project.
- Unfortunately, the tender we submitted for the paediatric HCID-C contract from NHS England was unsuccessful. However, this provided a valuable learning experience for all involved.
- NHSE Specialist Commissioners visited to view potential development opportunities in the Evelina for family friendly care. Special acknowledgement was given to how closely our team works with the Trust and Evelina London executive teams.
- We have provided extensive technical support to new HCID-A units opening in both Oxford and Bristol, sharing practical resources, hosting visits, and visiting proposed facilities on sites.
- We have shared our Model of Care with colleagues establishing their HCID service at Westmead Hospital in Western Sydney Local Health District, Australia.
- As a Trust we continue to support the HCID network centres and our HCID Clinical Nurse Specialist group share learned experiences and best practice.

10. Hand hygiene and PPE auditing

Overall compliance from hand hygiene auditing was 90.0% (36,645 observations). Audits undertaken by infection prevention nurses showed a lower level of overall compliance rate at 79.4% (8,262 observations). This difference suggests that link practitioners are overestimating compliance and these findings are being addressed via monthly audit training, increased infection prevention nurses' hand hygiene validation observations, and escalations via the monthly Infection Control Committee. Overall compliance from PPE audits undertaken by both infection prevention nurses and link practitioners was 90.3% (8,165 observations). The compliance rate for donning was 91.0%, whilst compliance for doffing was 89.5%.

11. Clinical activity and Incidents

11.1 COVID-19

During 2023/24, the number of COVID-19 cases decreased across the organisation. The Directorate of Infection continues to support with the development of guidance for managing the risk of COVID-19 alongside other infectious diseases that are updated in response to changes in local prevalence and national guidance.

- **Q1 – April 2023.** During this quarter, we implemented changes to patient and staff testing in response to changes in national guidance. This included changes to

isolation duration for inpatients with COVID-19. And supported the Trust's elective recovery programme. During this quarter, outbreaks of COVID-19 continued to occur, but at a relatively low frequency. This also coincided with the World Health Organisation (WHO) declaring COVID-19 as no longer a global emergency on 5 May 2023.

- **Q2 - August 2023.** Changes to patient testing and masking were implemented. Only patients with symptoms consistent with COVID-19 were tested, and there was no longer a requirement for asymptomatic testing of patients in any setting (including prior to elective procedures) except for patients on a transplant pathway or a discharge/transfer to care homes/hospices. Universal masking was no longer required in any areas and masks were only required when caring for patients with respiratory symptoms or other standard indications for masks. COVID-19 outbreaks have continued to occur at low frequency. The COVID-19 action cards and guidelines were integrated into existing respiratory and other policies.
- **Q3/4 - November 2023.** The ongoing success of the vaccination programme, increased access to treatments, and high levels of immunity amongst the population have allowed us to scale back testing and other measures. This brings our approach to the management of the risk of SARS-CoV-2 transmission into line with our management of other infectious diseases. There have been relatively few outbreaks of COVID-19 reported during Q4 compared with previous quarters.

11.2 Candida auris

An outbreak of *C. auris* was first identified in Q3 and continued throughout Q4 across some vascular, cardiothoracic, and ICU clinical areas. By the end of 2023/24, 59 patients had been identified as colonised, with two of these patients being treated for *C. auris* infection. None of these patients have experienced a candidemia or were reported to have had an adverse outcome due to *C. auris* infection. Whilst, at the time of writing, the outbreak is still ongoing, the following key learnings were highlighted during outbreak reviews:

- Long inpatient stays and frequent readmission prolonged the outbreak.
- Patients regularly had several negative screens before their first positive.
- It was challenging to encourage some patients to comply with isolation.
- It was challenging to get messages around changes in patient screening out clearly.
- Cleaning of ventilation grilles were problematic due to lack of specialist equipment and staff training.
- Cleaning roles and responsibilities were not always clear (between clinical and housekeeping staff).
- Managing issues across the patient pathways including rehabilitation units and readmissions was difficult.
- Laboratory turnaround time (3-7 days) led to several patient exposures; on investigation, most of the delay was related to the time between ordering on electronic systems and sample collection.
- Workforce cohorting for patients with known *C. auris* was unfeasible.
- The start of the outbreak coincided with the launch of Epic, October 2023, although there was good organisational and executive engagement and support.

The outbreak control measures involved a number of IPC interventions including ward decant and environmental improvement works, environmental sampling and genotyping of isolates. Peer reviews of the Trust response by UKHSA and by an IPC team from outside the organisation reported that the response to the outbreak was comprehensive. Some recommendations on how cleaning and environmental challenges can be improved were made.

11.3 MRSA outbreak

An outbreak of MRSA occurred on our neurological rehabilitation ward at St Thomas', affecting 10 patients. This followed recent outbreaks of CPE and COVID-19 on the same ward. A review of the physical environment of the ward identified issues that may have contributed to transmission, and as a result, the ward was refurbished.

11.4 *Enterobacter cloacae* CPE outbreak

An ongoing outbreak of CPE (NDM-producing *Enterobacter cloacae*) occurred, affecting the ITU and Transplant Unit at Harefield Hospital, with 31 patients affected since January 2022 (which included a lookback exercise). The outbreak presents a complex epidemiological picture suggesting some periodic related clusters; UKHSA are assisting with the review and interpretation of the typing results. Outbreak management measures have focussed on enhanced screening, review and audit of IPC practices, and cleaning and decontamination of the environment.

11.5 Norovirus outbreaks

7 outbreaks of norovirus occurred across the Trust in 2023/24. 3 occurred in Q1 and affected both paediatric and care of older people wards, one occurred in Q3 on a paediatric ward, and the remaining 3 occurred on paediatric wards in Q4. In total, 22 children and 4 adults were affected. Outbreak management measures included temporarily closing bays to admissions and transfers, enhanced cleaning, and a review of IPC practices. Learning focussed on prompt recognition of symptoms and early isolation. No additional treatment was required and all patients recovered.

11.6 Measles/pertussis

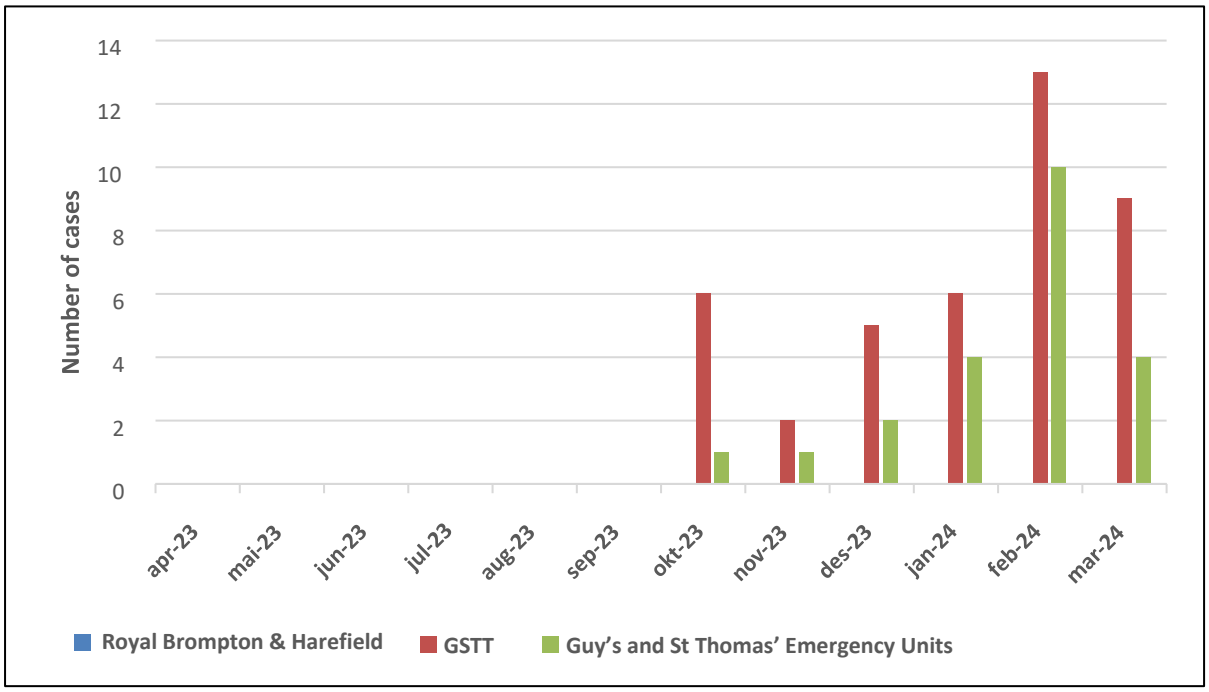
In line with the London region and across the UK, we have seen an increase in suspected and confirmed measles and *Bordetella pertussis* across both adult and paediatric areas (Figure 8). This has resulted in a significant increase in contact tracing of patients and staff who may have been inadvertently exposed. We have worked closely with the Emergency Department to manage this process.

11.7 Other

- A multi-professional group is in place to develop a pilot intervention to improve the management of vascular and urinary catheters, aiming to reduce the risk of BSI. This programme will be piloted on wards at each of our hospital sites, with the aim of a developing a Trust-wide improvement to be launched in 2024/25.

- The Directorate of Infection has responded to support the response to the industrial action from nurses, doctors, and other professional groups.
- We are planning to relaunch our campaign to reduce the unnecessary use of gloves ('Gloves Off') during Q1 2024/25, in collaboration with Trust communications and the sustainability team.
- We are reviewing our PIR process to streamline it and bring it into line with the new Patient Safety Incident Response Framework (PSIRF) framework.

Figure 8: Confirmed *Bordetella pertussis* cases, April 2023 to March 2024



12. Training and education

- At Guy's and St Thomas', mandatory IPC training continues to be delivered online to all new starters as well as a return to monthly face to face updates for some staff. Overall, Trust compliance (including hand hygiene) training for clinical staff is 81%, which is above the lower level Trust target of 75% but below the upper level target of 95%. Plans are in place to improve compliance with mandatory training across the Trust.
- Bespoke education sessions are delivered regularly by IPC, often in clinical settings.
- Active IPC link practitioner programmes are in place across the Trust.
- The Trust Annual IPC Conference was held in September 2023 involving 10 speakers and more than 200 delegates coming from across the Trust and some external partners.

13. Governance, policy, and risk

13.1 Team structure

The IPC team is a multi-professional team comprising nurses, doctors, scientists, pharmacists, and others to support the Trust in meeting its obligations under the *Health and Social Care Act 2008 code of practice for prevention and control of infections and related guidance* and other relevant legislation and guidance from, for example, the Department of Health and Social Care, UKHSA, and the Care Quality Commission. The service is led by two Joint Directors of Infection Prevention and Control, with the Chief Nurse as executive lead.

13.2 Governance and assurance arrangements

A quarterly Trust Infection Control Assurance Committee is chaired by the Chief Nurse and reports to the Trust Board. It receives regular reports and updates from each Clinical Group and the following sub-committees:

- Trust Infection Control Committee
- Clinical Group specific Infection Control Committees
- Surgical Site Infection (SSI) Committee
- Water and Ventilation Safety Committee
- Decontamination Committee
- Antimicrobial Stewardship Committee
- Intravenous Line Governance Committee.

- The Trust Infection Control Assurance Committee also receives reports or updates from our UKHSA Consultant in Communicable Disease Control, Clinical Commissioning Group and/or Integrated Care Board IPC lead, Essentia (estates and facilities), Occupational Health, and Health and Safety teams.
- IPC publishes a bi-annual and annual report. Any interim exceptional reporting to the Trust board is undertaken via existing reports from the Chief Nurse's Office.
- Occupational Health continue to record information on infectious diseases in staff, occupational exposure of staff to body fluids (including sharps injuries), fit testing for respiratory PPE, and any issues with processes for occupational healthcare work clearance related to infectious diseases.
- The Trust Infection Control Assurance Committee includes a representative from the pathology laboratory to ensure that appropriate laboratory support is in place for our services.
- IPC policies are agreed via either the quarterly Trust Infection Control and Decontamination Assurance Committee or the monthly Infection Control Committee. During 2023/24, work on combining the key IPC policies to cover all sites following the merger with Royal Brompton and Harefield continued.

13.3 Risk management

- IPC risks are included on a risk register, which is reviewed quarterly at the Trust Infection Control Assurance Committee.
- A new risk was added in 2023/24 related to the implementation of Bugsy, the IPC module in Epic. The implementation was challenging and resulted in several IPC

risks that required careful management. These included some significant organisms not being reported by Bugsy or delays in results coming through, challenges with mandatory reporting to UKHSA and internal reporting, and patients with known IPC risks not being flagged if readmitted.

- Control of potential pathogens in water remains an ongoing risk. Essentia colleagues are leading the response to various internal and external reviews, including a letter of concern from UKHSA, which have highlighted risks related to our water hygiene risk management processes.
- The IPC Board Assurance Framework has been updated throughout 2023/24. Actions arising from the framework are being monitored via the Infection Control Committee.
- The Trust has adopted the new *National Infection Prevention and Control Manual* (NICPM) to guide its policies and procedures.
- Concerns noted about cleaning some areas of the Trust have been identified via star rating audits, which have prompted local action plans to improve practice. Royal Brompton and Harefield sites will be moving to an in-house service for cleaning, which will present challenges and opportunities.

13.4 Applied research

The IPC team is committed to the goals of the Trust as an Academic Health Science Centre in undertaking and implementing the findings of applied research. The Department of Infection hosts the King's College London Centre for Clinical Infection and Diagnostics Research, which is focussed on applied research in healthcare associated infection and antimicrobial resistance. During 2023/24 the IPC team contributed to several applied research projects resulting in peer-reviewed papers on topics including SARS-CoV-2 genomic analysis, epidemiology, serology, and diagnostics. Recently completed, presented or published applied research projects for 2023/24 include:

- An evaluation of the dynamics of SARS-CoV-2 contact conversion.
- An analysis of plasmid spread of carbapenemase-encoding mobile genetic elements in CPE.
- An evaluation of factors that affect SSI, including an analysis of sex differences in SSI risks.
- A qualitative analysis of barriers and facilitators for SSI prevention.
- A review of clinical prediction models for the early detection of patients with SSI.
- Using Smartphone technology to increase post-discharge patient response-rate (ISLA).
- Epidemiological analyses related to our *C. auris* outbreak.
- In-use evaluation of a novel hypochlorous acid-based hand sanitiser.
- An investigation into microbial contamination of sinks and drains, and the role of a drain disinfectant in reducing this risk.

14. Annual plan

Table 1. IPC team objectives for 2024/25.

Mapped against the Trust's strategic priorities; 1=Patients, 2=People, 3=Partnerships.

People and workforce

- Ensure that training and development opportunities are available, including developing applied research skills (2)
- Develop systems to ensure internal and external recognition for our team (2)
- Continue to develop resources to support the mental and physical health of our team (2)

Improvement projects

- Co-lead the re-launch of the 'Gloves off' campaign in partnership with the Trust sustainability team, and the wider sustainability agenda (1,2)
- Focus on the IV to oral switch CQUIN objectives (1,3)
- Pilot and roll out a Trust-wide intervention to improve our care of vascular and urinary catheters in order to reduce the risk of catheter-associated infections (1)

Service review and redesign

- Scope a vascular access service for our Royal Brompton and Harefield sites (1,2,3)
- Review and align policies and procedures as a merged organisation in reference to the national IPC policy set (2,3)
- Review and update our Post Infection Review process across our sites in line with the new PSIRF framework (2,3)

Digital / surveillance / innovation

- Ensure that Bugsy, the IPC module in Epic, is stabilised and its use is standardised across our sites (1,3)
- Develop the functionality of Epic to report on antimicrobial stewardship indicators (1,3)
- Undertake an epidemiological evaluation of the recent *Candida auris* and CPE outbreaks (1,3)
- Evaluate the potential of sporicidal alcohol-free hand hygiene products (1,3)

Table 2. Strategic aims for the service over: 2021-2025

Patients

- Involve patients in the prevention and management of infection, including the involvement of patient representatives in Trust committees and service development
- Move from ‘control’ to ‘prevention’ of healthcare-associated infection, with a focus on optimizing the use of antimicrobial agents, improving patient safety around the use of vascular lines, reducing the risk of infection from the environment (especially water, air, and medical devices), and reducing the risk of surgical site infection

People

- Invest in training and education to remain an expert advisory clinical academic service
- Maintain a reputation that will attract a world class, diverse, multi-disciplinary team
- Implement a service model that meets the needs of our organisation / ICS

Partnerships

- Work more closely across the Integrated Care System to reduce infection risk
- Become an established centre for hospital epidemiology and implementing technology and innovation to reduce healthcare-associated infection and antimicrobial resistance and improve patient outcomes
- Develop equitable services across all sites, including community, which are well integrated with the new clinical groups.