

Infection Prevention and Control Annual Report 2017/18



**Heartlands, Good Hope and
Solihull Hospitals**

Content

	Area	Compliance Criterion	Pages
1	Introduction <ul style="list-style-type: none"> • Infection Prevention and Control Team • Laboratory services • IPCT reporting frameworks 	1, 2, 8, 9	3-5
2	<i>Clostridium difficile</i> infection	1, 2, 3, 4, 7, 8	5-6
3	Methicillin resistant <i>Staphylococcus aureus</i>	1, 4, 5, 7, 8	6-8
4	Methicillin sensitive <i>Staphylococcus aureus</i>	1, 4	8-10
5	<i>E. coli</i> bacteraemia	1, 4	10-11
6	Carbapenamase producing enterobacteriaceae	1, 4, 5, 7	11-12
7	Vancomycin resistant enterococci	1, 2, 4, 5	12-14
8	Virology	5, 4, 7, 8, 10, 11	14-15
9	Antimicrobial stewardship	3	15-16
10	Line infection	5	16-17
11	Surgical site infection	1, 4	17-18
12	Outbreaks	1, 2, 4, 5, 6, 7, 10	19-20
13	Renal infections	1, 4	20-21
14	Decontamination of reusable medical devices	2	21-23
15	Water safety	1, 2	23-24
16	Audit and Training	1, 2, 4, 6, 9	24-26
17	Research	1	26-28

1. Introduction

This report summarises the activities of the Infection Prevention and Control Team (IPCT) at the Heartlands, Good Hope, Solihull Hospitals during 2017-2018. The report also demonstrates how the Trust has systems in place for compliance with the *Health and Social Care Act 2008: Code of Practice for the NHS on the prevention and control of healthcare associated infections and related guidance*.

The Trust continues the commitment to improve performance in infection prevention and control practice. The prevention and control of healthcare associated infections (HCAI) remained high on the Trust's agenda.

As required by the Health and Social Care Act 2008 (2015), HGS ensured throughout 2017-18 that the Trust Board had a collective agreement recognising its responsibilities for the infection prevention and control agenda.

During 2017/18 Dr Abid Hussain was the Trust's designated Director of Infection Prevention and Control (DIPC), Consultant Microbiologist, accountable to the Chief Executive and Trust Board. The Lead nurse for IPC is Gill Abbott. The Chief Nurse was the Executive Lead for Infection Prevention & Control (IPC) and was the Chair of the Trust Infection Prevention Committee (TIPC). Trust Executive team job descriptions incorporate a statement detailing their responsibility for infection control issues.

TIPC continued to report to Clinical Governance and EMB, and this report reviews the output of the Infection Prevention Control team, through the quarterly TIPC meetings, where the DIPC quarterly report is tabled, which is used as the basis of the DIPC report to EMB.

The Trust's Decontamination Group is chaired by Janet Freel and is supported by Dr Susan Alleyne (Consultant Microbiologist). The Water Management Group is chaired by Dr Katie Hardy (Clinical Scientist) and Nick Rudge (Compliance officer estates). Both of these groups report regularly to TIPC in addition to their reporting pathway for assurance, and to highlight IPC issues for resolution.

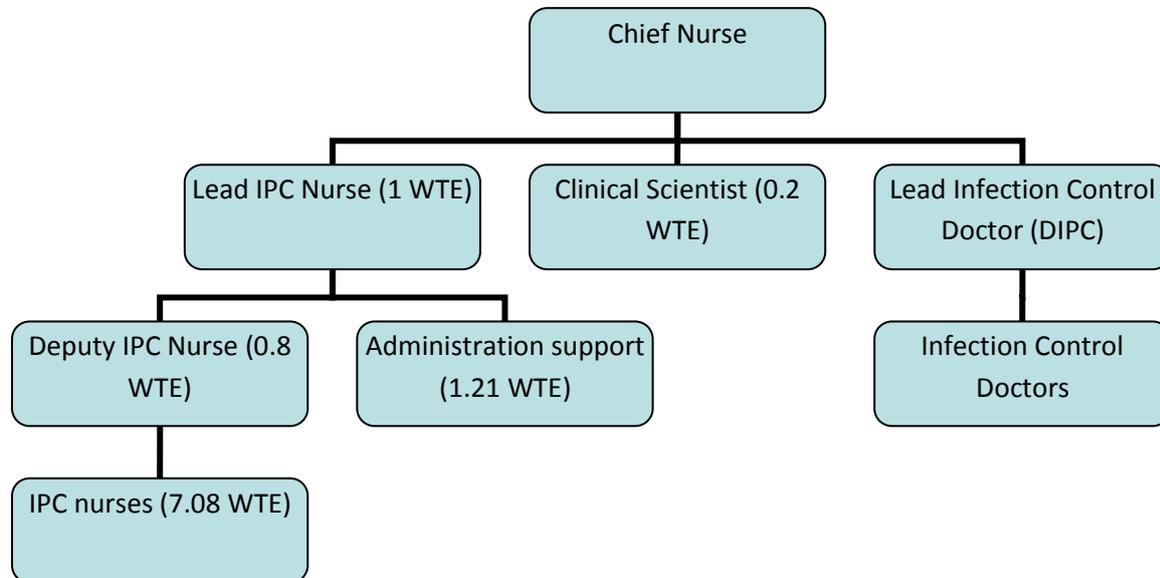
The Infection Prevention and Control service is provided through a structured annual programme of teaching, audit, policy development & review, advice on service development and 24 hour access to expert advice and support.

1a. Infection Prevention and Control Team

The infection control team is multi-disciplinary made up of infection control nurses, clinical scientists and medical microbiologists, supported by antimicrobial pharmacists, virologists and the performance team. The IPC nurses are allocated responsibility for specific ward /departmental areas. All nurses have specific Trust projects e.g. hand hygiene, decontamination, MRSA screening, and sharps safety. The senior IPC nurses were also given specific responsibilities to develop links with the divisions and oversee the continuity management of the site and divisional IPC issues.

The data analytical work which involves performance reporting and mandatory data return requirements, as well as supporting the analysis of surveillance data, is performed by officers in the performance team.

The organisation structure for the team is demonstrated below (Figure 1).



1b. Laboratory services

The IPCT work closely with the clinical microbiology department which provides comprehensive bacteriology, virology, parasitology and mycology services. The department is UKAS accredited and participates fully in external quality assurance schemes. There is an extended day service, with on-call provision overnight. This year has seen the team working closely with the laboratory on the delivery of a new blood culture system for the Trust, screening for CPE and testing of patients for measles.

1c. Infection Prevention and Control Reporting Framework

The IPCT meet formally every weekly to discuss operational issues, including outbreaks, surveillance data and incidents. There is a monthly strategic IPC meeting with senior members of the team discussing the annual programme, governance, complaints. TIPC met quarterly throughout 2017/18.

Members of the IPCT sit on the following groups within the Trust:

- Water safety group
- Decontamination
- Emergency planning committee
- Antimicrobial group

A member of the IPCT also attends the monthly divisional quality and safety groups. IPCNs undertake regular clinical walkabouts with their Matrons for each clinical area.

This report splits the IPCT work into sections and for each of these answers the following questions:

- What were the challenges identified in 2017/18?
- What measures have been put into place?
- What have been the successes/outcomes?
- What's required for 2018/19?

2. Clostridium difficile Infection (CDI)

Introduction

There were 66 cases of toxin-positive post-48 hour cases during 2017/18, against a threshold of 64 (Figure 1). Avoidable/ unavoidable reviews done for the post 48hr cases with the IPCTs from Solihull and Birmingham identified 11 as avoidable (Figure 2).

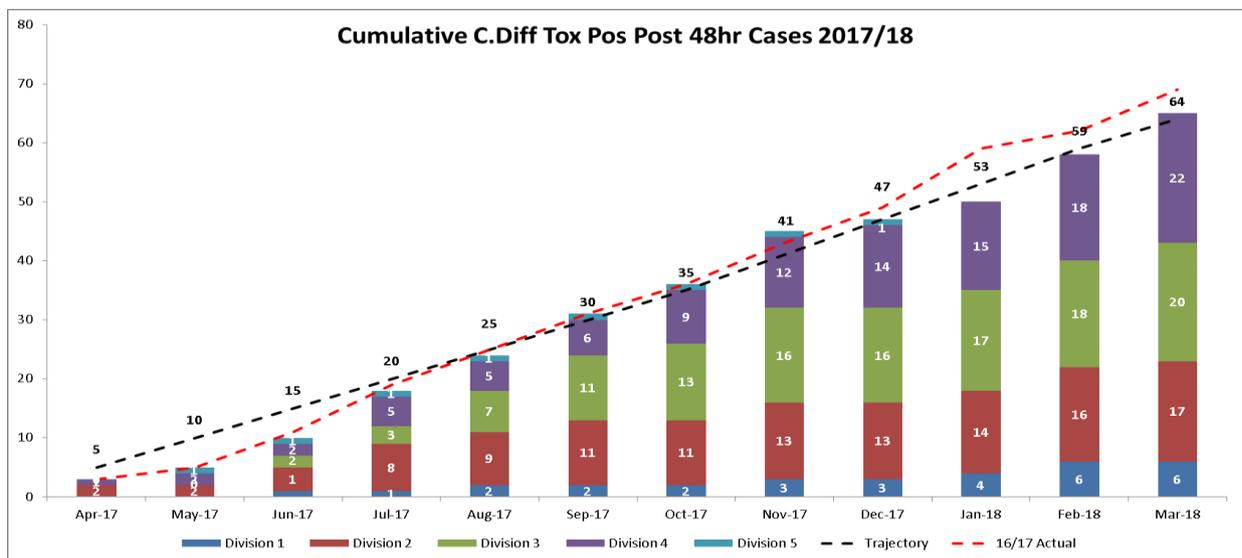


Figure 1: HGS *C. difficile* toxin-positive post-48 hour cases from April 2017 to March 2018, with the annual threshold

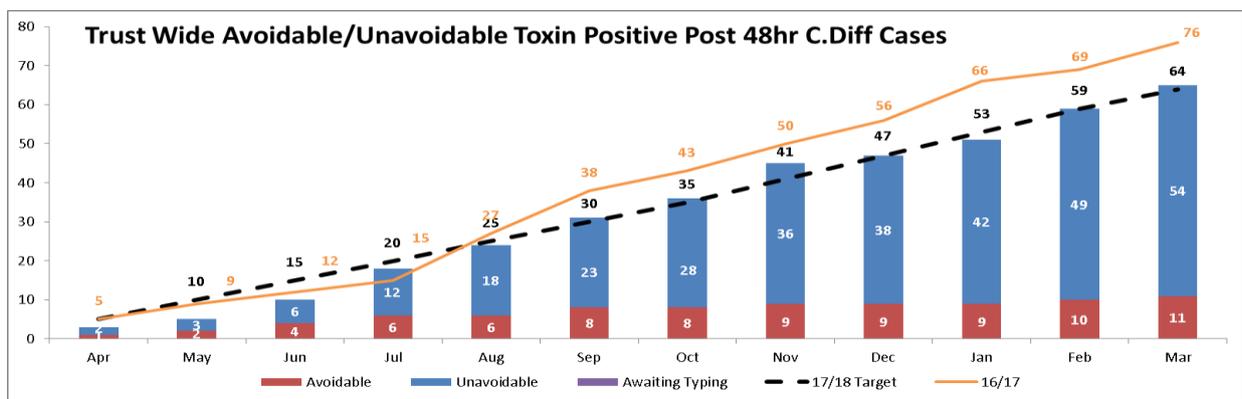


Figure 2: Post 48 hour *C. difficile* toxin positives classified as avoidable and unavoidable.

What were the challenges identified in 2017/18

- Review of post 48 hour *C. difficile* cases highlighted a lack of clarity regarding the prescribing of broad spectrum antimicrobials.

What measures have been put into place?

- A rolling deep-cleaning programme across all divisions.
- Presentations at clinical governance meetings regarding the deviations in prescribing of broad spectrum antimicrobials.

What have been the successes/outcomes?

- Our lead antimicrobial pharmacist, has provided antibiotic audit reports for each post 48-hour *Clostridium difficile* case, which are up-to-date. The current review of the avoidability of each case is made jointly with the CCG, and the process has highlighted a lack of clarity over the prescription of broad spectrum antibiotics. These have been tackled at the divisional clinical governance meetings, with any recurrent deviations being addressed. The level of engagement with senior clinical staff remains poor, but is being address by the Medical Director's Office.
- Continued to use epidemiological typing in a timely manner to identify clusters/outbreaks of *C. difficile*, thereby enabling early targeted actions.

What's required for 2018/19?

- The current non-touch decontamination cleaning technology that the Trust currently has is no longer being maintained by the company and therefore there is a requirement for a business case to be approved to enable continuation of the service.
- During 2017/18 the FMT service previously supplied by the Trust has not been available, the Trust has been working with the University to secure this service for 2018/18.

3. Methicillin resistant *Staphylococcus aureus*

Introduction

There were a total of 8 MRSA bacteraemias from April 2017-18; 2 Post 48 hour (one each at Heartlands and Good Hope site) and 6 Pre-48 hour cases. All cases were investigated as per national mandatory requirements with Post Infection Review by either Trust or CCGs as per requirement. Both Post 48 hour bacteraemias were Trust assigned, with a further pre 48 hr case being Trust assigned, all others were third party assignment.

What were the challenges identified in 2017/18?

Both post 48 hours MRSA bacteraemias highlighted failures to screen, one on admission and the other a long stay patient at 28 days.

What measures have been put into place?

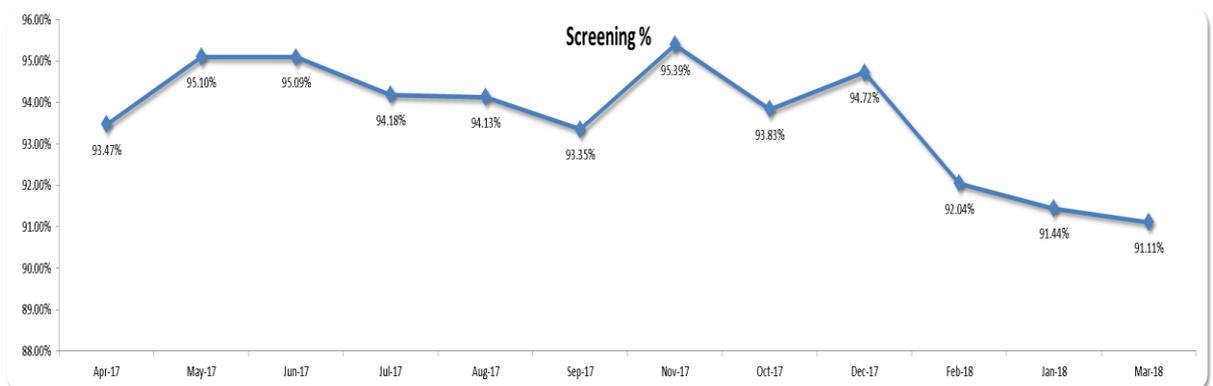
- There is an on-going review of MRSA screening of long stay patients, with IPCT nurses highlighting failed screens to the ward. There is an electronic method for flagging patients available.
- Continued HGS wide usage of octenisan for washing of all patients to reduce the burden of MRSA.

What have been the successes/outcomes?

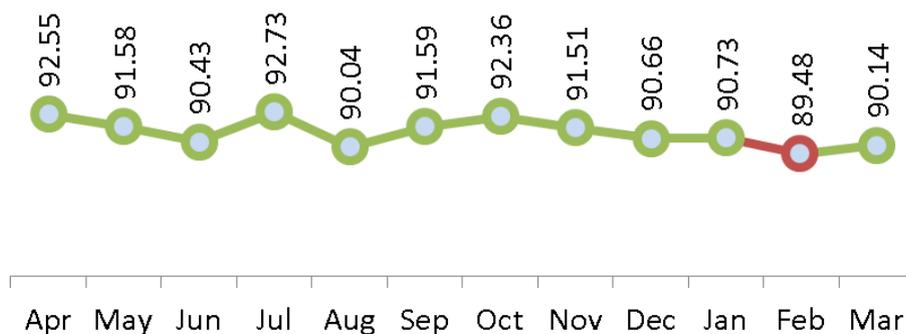
Screening

Universal Emergency MRSA Screening remains the mainstay to detect MRSA colonisation at time of admission and investigate MRSA bacteraemias and inform assignments to either Trust or CCG. It is also an integral part of MRSA Acquisition programme. MRSA screening for both elective and emergency patients has remained above 90% over the year, with just Feb falling below 90% for emergency MRSA screening.

a)



Compliance with elective MRSA screening.



Compliance with emergency MRSA screening.

MRSA acquisitions

MRSA acquisition is defined as a patient who was screened negative on admission to HGS and is subsequently identified as being colonised or infected with MRSA from either a clinical or screening sample.

On identification of a new MRSA acquisition all contacts of the patient within the bay are screened for MRSA, which includes a dual swab (nasal and groin) and any clinical sites. If any positives are identified following screening the patients are prescribed decolonisation treatment and isolated if possible. Isolates from the index patient and contacts are epidemiologically typed using in-house SIRU typing at Heartlands. Transmission is declared if there are two acquisitions in the same clinical area in a 28 day period and they are indistinguishable by SIRU typing. An outbreak is declared if there are three or more acquisitions in the same clinical area within a 28 day period and the typing is indistinguishable.

The number of MRSA acquisitions across HGS remained low. Incident and outbreak meetings were held as applicable and all clusters investigated.

2017-18 - Quarters	Acquisitions Mainly colonisations	Number of contacts screened	Number of potential clusters investigated	Number of transmissions/outbreaks
Q1	16	60	3	1 (Solihull)
Q2	10	32	0	0
Q3	9	41	4	4*
Q4	9	24	1	1 (Heartlands)

*Solihull, Heartlands (2) and Good Hope Sites

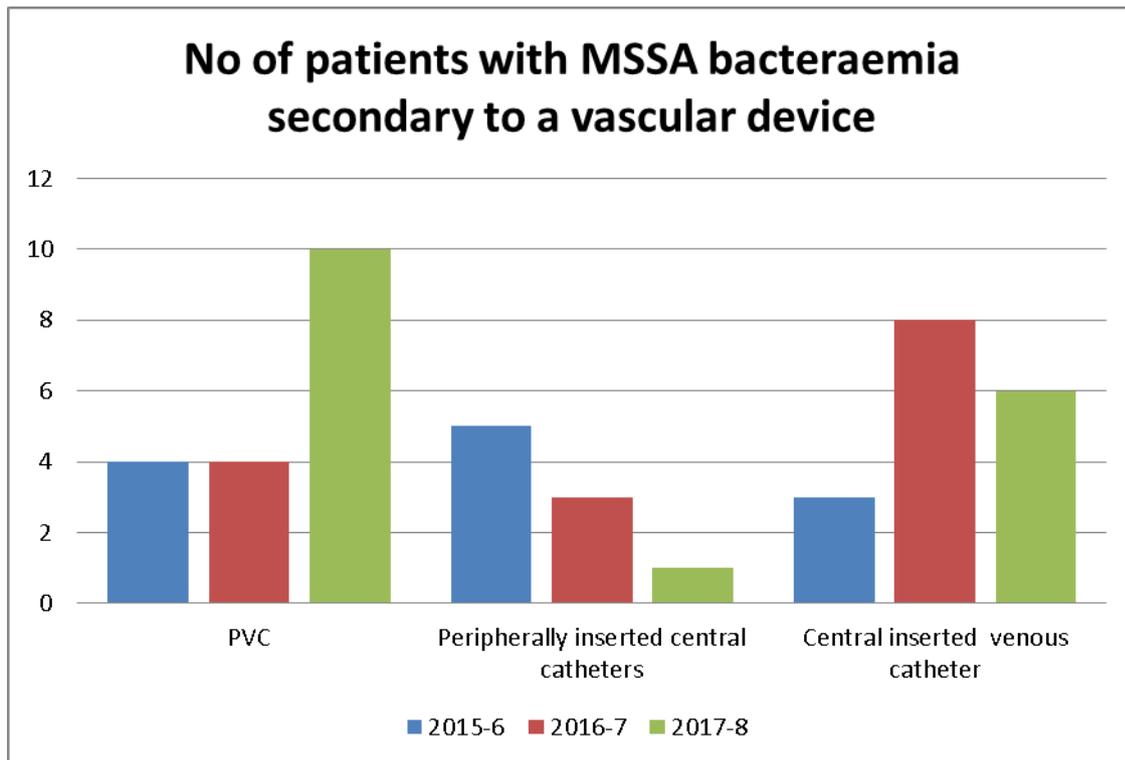
What's required for 2018/19?

- Education to increase compliance with rescreening of long stay patients.
- To continue the epidemiological typing of MRSA acquisitions to further understand the transmission dynamics.
- Audit of usage of octenisan, and education in areas where usage is low.

4. Methicillin sensitive *Staphylococcus aureus*

What were the challenges identified in 2017/18

The rate of MSSA bacteraemia (pre and post 48 hours) increased by 11% from 2016/7. The ratio of pre 48h and post 48 hr remains approximately 75% vs 25 % respectively. In the last year there has been an unusual spike in the MSSA bacteraemias associated with peripheral venous catheters.



What measures have been put into place?

A new flow chart has been designed so all Infection Prevention control nurses (IPCN) can quickly instigate a post infection review of new cases of MSSA bacteraemia as soon as they are identified. Ward based measures are put into place; information passed to Ward manager/ matron, audits conducted and teaching where concerns have arisen. Each case is discussed at a weekly operational Infection control meeting. It is decided either at the meeting or in discussion with an Infection Control Doctor whether to have a full Root Cause Analysis (RCA) meeting. RCAs remain mandatory for renal and neonatal MSSA bacteraemia infections.

What have been the successes/outcomes?

An increase in feedback and improvement activities are taking place between the IPCN linked to the specific ward associated with the bacteraemia and the nurses.

What's required for 2018/19?

There needs to be a reduction in MSSA bacteraemia, particularly those which are PVC and CVC related. We are conducting a case review of PVC related bacteraemia which will be fed back to the medical divisional directors to ensure strong leadership in reducing avoidable PVC related MSSA bacteraemia rates.

We must conduct a data analysis of other causes of MSSA bacteraemias (both pre and post) to see if there is any scope to reduce the rate in specific groups

5. *E. coli* bacteraemia

Introduction

Reporting of *E. coli* bacteraemia is a mandatory requirement for all Trusts with an ambition for a 50% reduction throughout the healthcare economy by 2021.

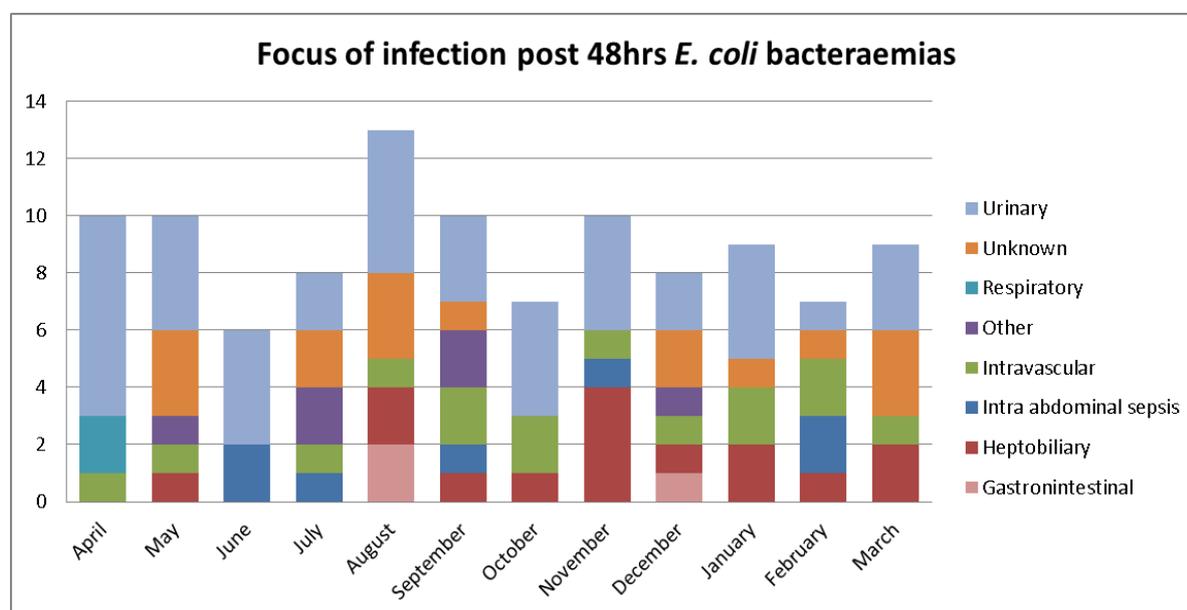
A scoping exercise carried out in 2016-17 at HGS to determine the amount of cases and probable cause, reviewed 156 cases. This information was used to steer the monitoring and management of these cases.

What were the challenges identified in 2017/18

There were a total of 642 *E. coli* bacteraemias during the 12 month period of which 105 were healthcare onset, 112 community onset healthcare associated and 425 were community onset. Review of each of the hospital (post 48hrs) onset cases revealed a predominance of urinary focus, with biliary and intravascular each having 15 cases over the year.

Review of case notes has demonstrated that there is not a common theme or failings in practice relating to *E. coli* bacteraemia. Learning has been identified through some of the root cause analysis, but no overarching themes have been identified.

The data review for 2017/18 has focused on post 48hr cases of *E. coli* bacteraemia, as obtaining information prior to admission of the patient from other health care providers is very time consuming and an administrative burden.



What measures have been put into place?

In 2017-18 a database was developed to monitor and record pre and post 48hr cases and to collect risk factor data. Each post 48hr case is reviewed by the IPCN and clinical scientist and determined if an RCA is required.

A process for selecting cases requiring RCA review was developed. Following the RCA a summary report is sent to the medical/nursing team highlighting any findings and actions to be addressed.

Data and feedback from RCA are discussed at the weekly infection prevention control operational meeting.

What have been the successes/outcomes?

Data showed that urinary is the most frequent bacteraemia source but interestingly, not due to urinary catheters. This is possibly due to the initiatives that the Trust has introduced in recent years to improve catheter care.

Joint working with the infection prevention control colleagues from the CCG has taken place to discuss and identify a process for jointly monitoring and reviewing cases of pre 48hr cases.

Trust performance team are supplying patient data to CCG in line with the national *E. coli* reporting requirements.

What's required for 2018/19?

- Reporting of all Gram negative bacteraemias to include risk factor data for *E. coli*, *P.aeruginosa* and *Klebsiella*.
- Collaborative working with the CCG to further investigate community onset Gram negative bacteraemia.
- Prompt sending of urinary samples in the appropriate containers, and reviewing of laboratory results to prompt changes in antimicrobial treatment.

6. Carbapenamase producing enterobacteriaceae

Introduction

CPE refers to Enterobacteriaceae that are highly antibiotic resistant and produce enzymes (carbapenemases) which destroy broad spectrum carbapenem antibiotics including meropenem and ertapenem. CPE infections are very difficult to treat and they are potentially life threatening. The incidence of CPE is increasing and there have been several outbreaks in hospitals throughout the country. Strict infection prevention and control measures to prevent the spread of these organisms are therefore critically important.

What were the challenges that have been identified in 2017/18?

- The ongoing challenge is to prevent the transmission of CPE and to ensure the identification and timely screening of patients at risk of carrying these organisms.
- Colonised cases then require source isolation for the duration of their inpatient stay.
- It is proving increasingly difficult to isolate patients who are colonised with CPE particularly in renal dialysis units. This is due to a limited number of siderooms being available throughout the organisation specifically in the renal dialysis units.

What measures have been put into place?

- There is a procedure for managing CPE which was developed in line with recommendations from the national toolkit for early detection, management and control of CPE issued by Public Health England in 2013.
- Current measures to control the spread of CPE include identification and screening of patients who have had healthcare abroad in the 12 months prior to hospital admission, source isolation and enhanced cleaning for known CPE patients and screening of identified contacts of CPE patients.
- There is ongoing education of clinical staff.

What have been the successes/outcomes?

- There were 32 cases of CPE identified with 21 patients meeting a criterion for routine screening and undergoing a rectal screen and eleven having CPE identified from a clinical specimen predominantly urine specimens.
- This compares to 17 patients with CPE in the previous year although this increase is likely attributed to more robust identification and screening of patients at risk of CPE.
- There was an outbreak on ward 11 at Good Hope Hospital in August 2017 involving three patients with an indistinguishable strain of CPE identified. The index patient had CPE in a urine specimen and two further contact patients had CPE identified from rectal screens confirming that transmission of CPE had occurred. None of the patients had been identified as at risk of having CPE. An improvement action plan was developed and implemented on the ward which included enhanced cleaning particularly of touchpoints and staff education particularly hand hygiene and PVC management.

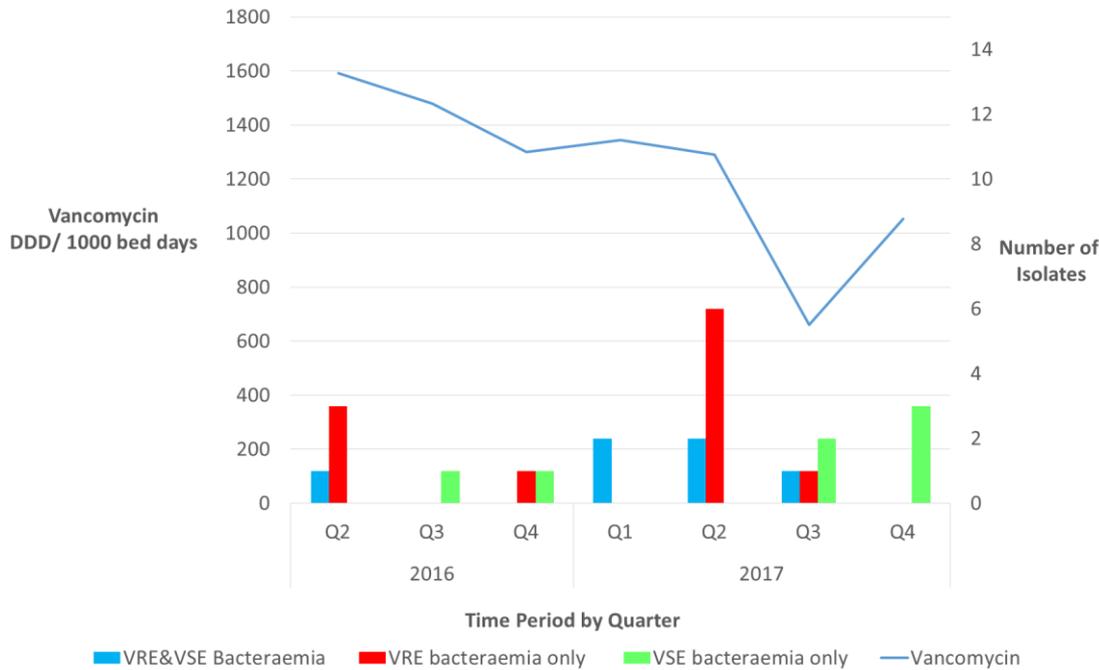
What's required for 2018/19?

- A CPE task and finish group has been established to review and update the current procedure. This is likely to include the introduction of new cleaning technologies and a revision to the criteria for ongoing isolation of known CPE positive patients.
- Education of clinical staff will continue and CPE will be included in mandatory training programmes and will feature as message of the month during 2018-19

7. Vancomycin resistant enterococci (VRE)

What were the challenges identified in 2017/18

In May 2017/18 a rise in VRE bacteraemias was observed on the BHH 19 (haematology ward). There was no corresponding increase across the rest of the Trust. Antibiotic audit data showed high level of vancomycin usage, related to both treatment of VRE bacteraemias and treatment of coagulase negative staphylococci line infections. All cases were sent for epidemiological typing, including novel whole genome sequencing in a joint collaboration with the University of Birmingham. This identified two predominant clones with evidence of cross transmission occurring on the ward.



What measures have been put into place?

- All areas were deep cleaned, including using Bioquell hydrogen peroxide vapour (HPV) in the side rooms where the routine use of HPV is not possible due to the ventilation in the rooms.
- Trial of UV cleaning for side rooms where we are unable to routinely use HPV cleaning, including microbiology sampling to demonstrate impact was commenced.
- The cleaning specification for the ward was increased.
- Development of patient and staff information leaflets and training
- Hand hygiene education and audit
- Identification of patients colonised with VRE through weekly rectal screening of all patients.
- Antibiotic stewardship, including the reduction in the use of vancomycin, especially in patients known to be colonised with VRE.
- Ongoing whole genome sequencing of isolates to investigate the transmission of VRE on the ward through securing research funding.
- Funding secured for a new unit based at Solihull hospital for day cases.

What have been the successes/outcomes?

- Epidemiological typing using whole genome sequencing demonstrated the polyclonal nature of the increased incidence, but also showed clear evidence of cross transmission occurring on the ward. Patients with highly related strains had overlapping stays on the ward.
- Screening of patients identified >25% of patients to be colonised with VRE, with patients acquiring VRE on the ward.
- Following the introduction of infection control measures and antimicrobial stewardship no new VRE bacteraemias were identified for a seven month period.
- The usage of vancomycin in patients known to be colonised with VRE reduced.

- Preliminary results from the UV trial have shown significant reductions in the number of bacteria in the environment following use.
- There has been an increase in the domestic hours on the ward.

What's required for 2018/19?

- On-going antimicrobial stewardship, which needs to involve audit of antimicrobial usage, including vancomycin, tazocin and meropenem. This would be aided by the transfer of the ward onto EP to allow auditing in real-time.
- Review of line infection data – there is currently a piece of work in progress that will address this.
- Long term plan for the environmental fabric of the ward.

8. Virology

Introduction

Infection Control is an important aspect of Virology as many of these viruses are capable of causing hospital and community outbreaks, associated with increased morbidity and mortality.

What were the challenges that have been identified in 2017/18?

Main challenges have been the measles outbreak from November 2017 to date, which included inpatients, HCW and nosocomial transmission. Hospital departments were not adequately engaged in contact tracing and responsibility for management of significant exposure amongst their patients. The onus for contact tracing and issuing of post-exposure prophylaxis fell on the infection control nurses and the duty virologist. There were no clear lines of responsibility and accountability amongst the other hospital departments. Occupational Health did not have adequate records of the pre-employment vaccination status of the HCW within the hospital.

The influenza outbreak from December 2017 till end of March 2018 in which the main challenges including patient isolation and timely prophylaxis and treatment. The CMO guidelines for management were not consistently adhered amongst the hospital department, as well as poor uptake of influenza vaccination by the staff. There was an additional burden of providing NHSI daily with influenza admissions within the hospital, a burden mainly undertaken by the infection control nurses and the duty Virologist on the weekend in their absence.

Increased testing for MERS-CoV in returning pilgrims during the Ramadan and Hajj seasons 2017, which included heightened awareness and increased isolation requirements for these patients.

What measures have been put into place?

Regular multidisciplinary outbreak meetings during the measles outbreak with daily communication between the IC nurses and the duty Virologist and the local Health Protection Team. In suspected cases of measles, the infection control nurses pre-emptively collected lists of exposed contacts. All diagnostic testing for measles and influenza were prioritized in the laboratory to ensure a timely result was available to act upon, which include introducing an additional testing run for influenza

(twice per day) at the height of the season to allow proper management of patients and resources such as bed availability. All prioritized testing for measles and influenza was carried 7 days a week, with infection control nurses available 6 days a week and a duty Virologist oncall 7 days a week.

What have been the successes/outcomes?

Prevention of hospital outbreaks of both measles and influenza during the height of the outbreaks. An increased number of HCW have subsequently received measles vaccination and/or booster.

What's required for 2018/19?

Ideally the infection control nurses are oncall on the weekends throughout the year, as well as the introduction of rapid, point-of-care PCR testing to allow early cohorting of patients and/or patient discharge.

9. Antimicrobial usage

What were the challenges that have been identified in 2017/18?

Antibiotics are the essential tools required to treat bacterial infections, but the global increase in antibiotic resistance threatens their clinical utility. In response to this, four ambitions are part of the UK government's commitments: (i) halving inappropriate antibiotic prescribing in humans by 2020; (ii) halving the number of healthcare-associated bloodstream infections caused by Gram negative bacteria; (iii) reducing antibiotic use in animals; and (iv) incentivizing the development of new antibiotics. The local strategy at HEFT has involved robust antimicrobial stewardship coupled with heightened clinical surveillance. Antimicrobial stewardship may be defined as a series of processes which permit effective use of antimicrobials with the purpose of improving clinical care, reducing complications and, most importantly, slowing the incidence of antimicrobial resistance. Traditionally, antimicrobial resistance has focussed on antibiotics alone, but now all anti-infectives must be considered as part of this strategy. The cornerstone of a robust antimicrobial stewardship strategy is a dynamic and responsive diagnostic laboratory. The appropriate use of testing can assist clinicians in targeting therapy as well as curbing prolonged courses of treatment. All antimicrobial prescribing, either within primary or secondary care should fall within a framework, which is governed by the prescribing formulary. It is this document that allows governance and challenging of prescribing within the organisation.

What have been the successes/outcomes?

The antibiotic CQUIN data as submitted to PHE is summarised in Table 1 for 2017/18. Carbapenem reduction has been consistent through the year. The overperformance in Q3 in the total antibiotic expenditure is a reflection of a response to the ongoing shortages in the antibiotic pipeline.

Reduction in total antibiotics, piperacillin/tazobactam and carbapenam

CQUIN 4a	Target reduction	Q1	Q2	Q3	Q4	TOTAL
All antibiotic	-1%	-5%	-8%	+2.7%	-1%	+6%
Piperacillin/tazobactam	-1%	+1.8%	-5%	-4.9%	-4%	-10%
Carbapenam	-1%	-3%	-6%	-1.9%	-12%	-10%

Other notable achievements in 2017/18 include:

- In the field of antibiotic governance, we have refreshed the Trust Antibiotic Group (TAG), with a new logo and terms of reference. TAG has delivered numerous new guidelines and made several recommendations for new agents to be added to the formulary. We have also continued the work of the Birmingham Antibiotic Action Group (BAAG), developing a regional framework for antibiotic use and monitoring.
- Participation in the European Antibiotic Awareness Day (EAAD). Through the use of a local hashtag (#Doit4Das) on social media, we demonstrated local relevance of the campaign.
- The delivery of Microguide, which is smartphone app that contains our antibiotic formulary has allowed an increasing level of awareness and compliance with prescribing. The system allows changes to be made to the formulary in real time.
- The delivery of antimicrobial stewardship also has a focus outside secondary care. Through a partnership with the local CCG and the University of Aston, we are delivering an AMR in schools project. This is a suite of educational tools for children of all ages to instruct them of the problems faced as a result of antimicrobial resistance today.

What's required for 2018/19?

The most significant challenge for 2018/19 will be an alignment of common guidelines between HGS and QEHB. This work is already underway through a collaboration of the two antibiotic groups, considering the common patient pathways across all four sites.

Other key objectives for the 2018/19 financial year include:

- Delivery of robust antimicrobial stewardship across the sites through the introduction of PICS and E-prescribing at HGS
- Review of laboratory diagnostics as the cornerstone of stewardship
- Development of Trust-Wide campaigns for education and awareness of antibiotic resistance and stewardship.
- Deployment of smartphone solutions to support clinical decision making and prescribing on the ground.

10. Line Infection

What were the challenges identified in 2017/18

Anecdotally it was felt that there was an increase in number of central line associated blood stream infections (CLABSI). We realised there was no uniform data to confirm if this was true, what pathogens were associated with the line infections and what were the possible risk factors.

What measures have been put into place?

The IPC team now have a presence on the Trust's Line group (Heartlands, Good Hope Solihull hospitals (HGS)) and we have advised on new guidelines for the insertion, use and maintenance of Central venous catheter (short and long-term), PICC and Midline catheter.

We have worked closely with our colleagues in the team and we are currently conducting the first HGS surveillance study of central venous lines to ascertain the number of lines inserted their indication and infection rate. We have documented every line inserted in for the month of April 2018 (n= 150) and we are currently analysing the 30 day outcome.

What have been the successes/outcomes?

Galvanising all the stakeholders to take part in this first study has been a success.

What's required for 2018/19?

We hope that this study will inform methods for a further study, indicate improvement activities for preventing and detecting line infections and also highlight if the HGS sites require any new resources to improve access to line insertion and maintenance.

We are planning to develop a vascular passport to help keep track of line use and empower patients with the knowledge to help ensure high quality care of their lines.

11. Surgical site infection

Introduction

A surgical site infection is an infection which develops within 30 days of surgery related to the surgical procedure and can range from a discharging wound to serious complications causing disability and even death. Despite SSIs being largely preventable they are estimated to make up 20% of all healthcare associated infections (HAI). SSIs pose a significant financial burden to healthcare providers with patients who develop a SSI having increased length of hospital stay, are more likely to be readmitted to hospital following discharge and are twice as likely to die.

What were the challenges that have been identified in 2017/18?

- Measures to limit the occurrence of a surgical site infection can be taken in the pre-operative, intraoperative and post-operative phases of the patient pathway.

- During 2017-18, there was an initiative to introduce a care bundle to reduce the incidence of SSI. The bundle is based on guidelines from the World Health Organisation and focuses on pre-operative and intra-operative elements of the patient pathway. This has proved challenging to initiate given the range of surgical specialities and the number of operating theatres located across three hospital sites and within the community.
- Some elements of the bundle have cost pressure and a business case is being developed to support the implementation of antimicrobial sutures, chloraprep skin preparation and negative pressure dressings.
- Whilst there has been some surgical site infection surveillance carried out during the year, it has been difficult for the infection prevention and control nurses to support this activity in addition to their existing workload.

What measures have been put into place?

- A working group has been established comprising of senior medical and nursing staff from divisions one and five and representatives from procurement and infection prevention and control. The aim of the group is to ensure implementation of the SSI bundle across the organisation.
- Division five have supported the engagement of nurse to work between one and two days each week to carry out SSI surveillance for colorectal patients undergoing surgery at Heartlands Hospital.
- There has been considerable work carried out with the podiatric surgical team in the community to review the procedures for pre-operative screening and antibiotic prescribing and to train and assess nursing staff in aseptic non-touch technique.

What have been the successes/outcomes?

- Chloraprep has been introduced for surgical skin preparation and this has been supported by an educational programme to train theatre and surgical staff in the correct use and application of the product.
- SSI surveillance has been undertaken in colorectal and podiatric surgery along with staff training and education relating to the care bundle.
- A theatre audit has been developed and tried in operating theatres at Heartlands Hospital. The audit is based on the “OneTogether” toolkit and is designed to check compliance with the care bundle.

What's required for 2018/19?

- The SSI working group will continue with implementation of the bundle with one of the main activities being staff education and engagement to ensure that all staff are aware of the rationale for its introduction.
- The revised audit tool should be introduced throughout all operating theatres to provide assurance of full compliance with the care bundle.
- A SSI surveillance team should be employed within the infection prevention and control team. Initially this will comprise of a qualified nurse and an assistant practitioner.

12. Outbreaks

There were ten outbreaks of infection during the year, with four being due to norovirus. Detailed below are the specific outbreaks and the issues and learning from each.

In addition the Trust dealt with a large community outbreak of measles, with numerous presentations to the Trust.

Month	Ward	Organism	Length of Closure	Number of patients affected	Number of staff affected	Issues
June 2017	BHH 19	VRE	NA		0	Poor environment, unable to deep clean siderooms due to air flow, over capacity in day unit, lack of clinical leadership, antibiotic prescribing
July 2017	BHH NNU	<i>Klebsiella oxytoca</i>	NA	3	0	Six babies affected 3 with indistinguishable PFGE. Issues identified were environment, cleaning, patient capacity and staffing levels.
August 2017	GHH 11	CPE	NA	3	0	Cloud screening of entire ward carried out – all negative. Lack of staff awareness regarding CPE, poor hand hygiene compliance
August 2017	BHH 19	<i>Para-influenzae</i>	23 days (bays only)	6	0	Unable to isolate symptomatic patients and difficulty closing bays and siderooms to facilitate deep cleaning. Poor understanding of correct PPE to use
Nov 2017	SHH 8	MRSA	NA	3	0	CSU not being obtained as part of MRSA screen, octenisan not being used, several members of staff with skin lesions, unable to isolate patients due to bed capacity and clinical reasons
Jan 2018	BHH 12	Mupirocin resistant MRSA	NA	3	0	Poor compliance with hand hygiene and inappropriate use of PPE, unable to complete deep clean due to capacity issues
Feb 2018	GHH 3	Norovirus	7 days	12	2	Poor communication between staff on ward and failure to complete outbreak paperwork. Index case was likely to be a symptomatic family member

Feb 2018	GHH 11	Norovirus	7 days	14	1	No issues identified. Likely index case was a visitor
March 2018	GHH 12	Norovirus	10 days	14	4	PPE not adhered to and poor sending of stool samples. Likely index patient was an inpatient as many of the patients were admitted from nursing homes.
March 2018	GHH 14	Norovirus	9 days	13	10	No issues reported. Index case was a visitor who was visiting a wandering patient and therefore mobilised round the ward

13. Renal infections

Introduction

There were 4 meticillin-sensitive Staph aureus bacteraemias (MSSA), the same as in 2016/17 and one meticillin-resistant Staph aureus bacteraemia (MRSA). All patients with MSSA had tunnelled-line and it was the source of infection in 3 out of 4 patients. RCAs were conducted in all patients to investigate any issues and one patient was escalated to Executive RCA because of significant communication issues between renal ward and Glaxo renal unit.

As the numbers of patients being dialysed by PD have increased it has corresponded to the rise in peritonitis infections. The causative organisms are multiple and needs analysis of measures to be taken to reduce them.

What were the challenges that have been identified in 2017/18?

- The percentage of lines in dialysis patients have risen from 14.7% to 17.1% and this increases the at-risk population for MSSA bacteraemias as presence of vascular catheters are risk for infection.
- Increasing PD population and an increasing number of infections.

What measures have been put into place?

- The renal team is liaising with Vascular department to bring the numbers of catheters down by inserting fistula.
- Meetings were held to look at actions to reduce PD infections. One Training day was held in March to patients who have had peritonitis as ongoing training to these patients was identified as one preventable factor.

What have been the successes/outcomes?

- Improved communication between renal ward and Glaxo unit
- Consistent engagement with renal team in managing infections in both haemodialysis and PD patients

What's required for 2018/19?

- To continue the sustained maintenance of reduction in MSSA bacteraemias by ensuring that actions taken in past few years are maintained and continue to RCA them
- Reduction in PD peritonitis numbers by data analysis, revising guidelines, implementing measures as necessary
- Continue to work in partnership with the renal team to include Renal Infection meetings to pick up trends and actions

14. Decontamination of Reusable Medical Devices

Introduction

The Trust is required as far as reasonably practicable to ensure that all reusable medical devices are properly decontaminated prior to use in accordance with published, National standards and that the risks associated with decontamination facilities and processes are appropriately managed.

Endoscope Decontamination Standard is the Health & Technical Memorandum 01-06 (HTM 01-06)

Responsibility for ensuring the Trust's continued compliance with local decontamination standards is held by the Trust Decontamination Group at HGS sites. The Decontamination Group meets quarterly and has been chaired by Consultant Gastroenterologist, Dr Alexandra Daley, since January 2013. Dr. Daley resigned this position in August 2017 and has yet to be replaced.

The Decontamination Group is a sub group of the Medical Devices Group which meets quarterly. The Trust has access, when required, to the services of an external Authorised Engineer (Decontamination), to provide an expert opinion and external audit of local decontamination practice. Further assurance and expert advice has also been available from the Trust DIPC (Director of Infection Prevention & Control), Dr Abid Hussain, and Consultant Microbiologist, Dr Susan Alleyne, who also have direct access to other local & national experts through their links within PHE (Public Health England).

Surgical Instruments

Decontamination of surgical instruments is outsourced to B.Braun Sterilog and the Scantrack IMS system is currently used to track instruments through the various stages of the decontamination process. Traceability of instrument sets used on individual patients is assured, currently, by the manual insertion of instrument set production labels into patient notes. However, this information is difficult and time-consuming to retrieve in the event of a look-back exercise or audit.

Following an options appraisal, it was decided to incorporate an instrument traceability module into the new, electronic Theatre Management Information System (TMIS) which is being developed within the Trust. This will enable rapid & accurate tracing of instruments & the patients on whom they were used. No date has yet been set for this module to be introduced.

Local Decontamination

All decontamination of heat sensitive items is undertaken in strict adherence to the Trust Decontamination Procedures, Infection Control Policy and with the guidance of the Infection Control Team

Local decontamination is focussed on the reprocessing of flexible endoscopes in Automated Endoscope Reprocessors (AERs), which is carried out in the following specialist units across the Trust:-

- Urology, Ward 10 at Heartlands
- Main Theatres at Heartlands
- Endoscopy on all 3 sites

Scope decontamination facilities within Endoscopy on both Solihull & Good Hope sites operate as a centralised decontamination facility for the respective sites and are operated by trained endoscopy staff. The Solihull facility was upgraded in 2016 with the addition of a third AER machine and a new Endoscopy procedure room.

An additional Vanguard Endoscopy Unit with an integrated decontamination facility continues to operate following its introduction in 2015 on the Heartlands site. This unit is audited as part of the same process for Trust owned and operated facilities. This unit is supported by a separate designated Authorised Engineer for Decontamination who is contracted to Vanguard.

Decontamination using Tristel 3 stage disinfectant wipes is carried out in the clinical specialities listed below:-

- Ear Nose & Throat, Out Patients Dept. on all 3 sites (Nasendoscopes (TNE))
- Cardiology on all 3 sites (Trans Oesophageal Echo (TOE probes))
- Radiology on all 3 sites (Invasive ultrasound probes)

What were the challenges that have been identified in 2017/18?

Historically there has been a poor understanding of the guidelines and regulations surrounding the decontamination of endoscopes, particularly amongst non-specialist staff. In some part this is due to the lack of clarity within the guidelines themselves, but it has not been improved by the introduction of the more complex HTM 01-06. To address this issue key staff have been designated with lead responsibility for decontamination in their areas and have completed a programme of external training in decontamination.

What measures have been put into place?

A regular & robust audit process continues to be in operation to confirm that the required testing is completed for all AERs and to confirm efficacy of decontamination. These audit results are reported on a quarterly basis to the Decontamination Group, where they are reviewed. Assurance is also provided to the Medical Devices Group

External testing & maintenance contracts for Trust AER machines, and drying cabinets, Trust wide have been combined to facilitate better management and to provide economies of scale across Endoscopy, Urology & Theatre Directorates

The Trusts authorised engineer has completed an external audit of local decontamination practice in the Trust and has provided feedback of how each department can improve which will be worked on over the next 12 months.

What is required for 2018/19?

To ensure compliance with decontamination standards within Trust.

Ensure Decontamination Procedures are reviewed with Queen Elizabeth Hospital Birmingham (QEB) equivalent documentation and that these are aligned into appropriate and safe best working practices for decontamination across the newly merged UHB Trust

The Trust Decontamination Group needs a new chair if it is to continue in the same format within the new organisational structure. The Trust Decontamination Group has had no chair since Dr Alexandra Daley, resigned this position in August 2017, due to other commitments within the Gastroenterology Department. This concern has been raised to the Gastroenterology Clinical Lead and escalated by the Medical Devices Group Chair.

Plans to incorporate Theatre, Urology, ENT and Endoscopy scope reprocessing into a centralised decontamination facility within the new build Ambulatory Care & Diagnostic (ACAD) Unit at Heartlands, are being progressed after receiving approval to go ahead this year. This is expected to be completed in May 2020.

15. Water Safety

Introduction

The Water Management Group for HEFT meets quarterly and is chaired jointly by Dr Katie Hardy and Nick Rudge.

What were the challenges identified in 2017/18?

All three hospital sites have water outlets routinely monitored for Legionella, and any legionella isolates from these water supplies are investigated and preventative action taken. The sites for monitoring of Legionella have been rotated to ensure widespread coverage. Legionella has not been isolated from any sites in 2017/18.

Water sampling is undertaken every six months for *Pseudomonas aeruginosa* from all outlets in augmented care areas. Routine sampling this year identified small numbers of positive sites, in HDU4, NNU, BHH3 and GHH ITU. Following remedial work and chlorination all sites were negative. There was no increase in the number of isolates from clinical samples.

There have been continued problems with the cold water temperature in the Good Hope treatment centre, rectification work has been completed.

Both the hydrotherapy and birthing pools are now included in the remit of the water management group and water sampling and cleaning has been reviewed.

What measures have been put into place?

A trial of the software system (L8 guard) which monitors flushing of low usage outlets was successfully completed and additional water sampling in these areas did not identify Pseudomonas or Legionella. The system enables risk assessments to be undertaken to establish the requirement for flushing, to record when flushing has been undertaken and to monitor compliance. There has been a partial roll out at Heartlands, which needs to be completed in Q1 2018/19 and then subsequent roll out at Solihull and Good Hope. Currently there remains ward areas on all sites that are maintaining weekly water flushing records, which is a risk.

What have been the successes/outcomes?

A review of the water management in HGS was undertaken by Deloitte. Areas of good practice were highlighted and recommendations made. All of the findings from the audit are being monitored and reported to both the water management group and the audit committee.

What's required for 2018/19?

There is a requirement for full roll out of L8 guard to ensure all water outlets are risk assessed and water flushing is being completed.

Water dispensers across HGS have been identified as a risk and it has been recommended that a water dispenser policy and asset register are developed.

16. Audits

Introduction

HGS has conducted monthly audits of the saving lives high impact interventions audits. These comprise of:

- Central venous catheter (CVC) ongoing
- Peripheral venous catheter (PVC) insertion
- Peripheral venous catheter (PVC) ongoing
- Care of ventilated patients
- Renal dialysis patients
- Urinary catheter insertion
- Urinary catheter ongoing

These audits are carried out by staff in clinical areas and are then inputted into a database. The results can then be downloaded via the local web based system. These audits provide assurance that standards are being maintained within these areas.

Hand hygiene audits are an important aspect of the audit programme. These audits are carried out monthly with a pass rate of 85%.

The community team at Solihull carry out community audits from the Essential steps programme for the following:

- Hand hygiene
- Environment
- Sharps safety
- Urinary catheter

What are the challenges that have been identified in 2017/18?

Issues have been identified with the IT system that supports the collection and reporting of the high impact interventions, but it has not been possible for any development. This has resulted in being unable to move to the new versions of the high impact interventions or to commence the antimicrobial prescribing audit.

What measures have been put into place?

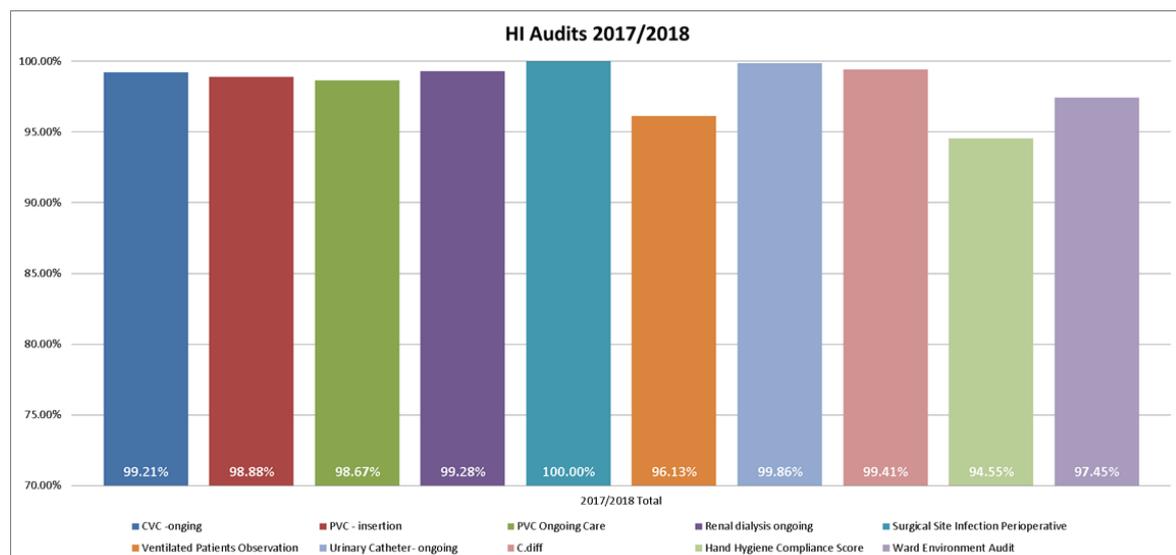
A hand hygiene audit for clinic and community teams was introduced. Departments email the result to the Infection prevention secretary and scores are then collated. This audit is designed for lone workers where it is not possible to carry out an observational audit.

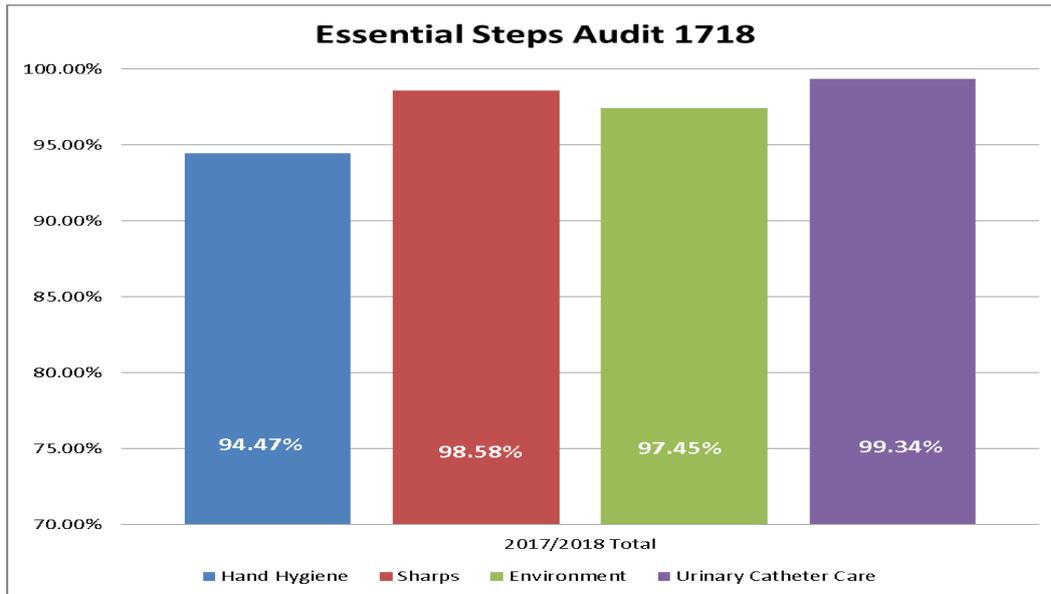
The infection prevention control team undertake peer review of the saving lives audits in each quarter of some of their areas. Feedback is then given to the area and if low compliance actions are agreed.

Paper return copy is used for essential steps audits.

What are the successes and outcomes?

Overall compliance as remained over 90%. For the essential steps, the environmental audit is completed quarterly in clinic premises which are used by a number of community teams.





What is required in 2018/19?

There is a requirement for development of the IT to support new audits and to ensure the quality of the data being entered onto the system in clinical areas.

Introduce updated version of high impact interventions.

Launch antimicrobial prescribing audit across wards.

17. Research

Introduction

The IPCT have introduced a new way of working to develop specific areas, each project group contains a diverse staff group including IPCNs, clinical scientist and consultant microbiologists. The project groups meet bi-monthly and use the plan, do, study, act (PDSA) cycles. Progress and outcomes are then discussed at team meetings. The areas that have been developed in 2017/18 are as follows:

- Surgical site infection
- MRSA
- CPE
- C. difficile
- CAPD
- Hand hygiene
- Lines

What were the challenges that have been identified in 2017/18?

- Covering all sites on an on call basis
- Vacancies and sickness impacting on IPC team
- Prioritising workload

- Community outbreak of measles impacting on workload due to vast patient contacts

What measures have been put in place?

Summer working hours allowing team to concentrate on project work
 'Plan Do Study Act' groups to address projects within the team

What have been the successes and outcomes?

- Appointment of clinical scientist to IPC team
- Mandatory training
- Hand hygiene programme which included visitor's stands
- Flu vaccination programme
- Team training
- Active infection prevention intranet page
- Message of the month for ward notice boards
- Research by senior team members:
- Doctors induction programme

Presentations at local, National and International Meetings



1. Are we missing cases of *C. difficile* cross transmission due to ward movements -Authors Jean Harker IPCN, Katie Hardy IPCN clinical scientist, Jane Codd IPCN, Carolyn Lewis, IPCN, Susie Alleyne Consultant Microbiologist
2. To screen or not to screen for VRE in immunocompromised patients - Author Katie Hardy clinical scientist, Gill Abbott IPCN, Carol Drugan IPCN, Susie Alleyne Consultant Microbiologist, Abid Hussain Consultant Microbiologist.
3. Methicillin Resistant *Staphylococcus aureus* (MRSA) screening audit- leading to cost and quality improvement projects - Author Susie Alleyne Consultant Microbiologist
4. Oral Presentation on managing Salmonella – Gill Abbott Lead IPCN
5. Prevention of *Staphylococcus aureus* Bacteraemia in Haemodialysis patients - Authors: Madalaine Holland IPCN, Itisha Gupta Consultant Microbiologist
6. Vancomycin resistant *Enterococcus faecium* bloodstream infection outbreak in a haematology tertiary referral centre, a case series review- ECCMID 2018 (it was accepted in 2017-8, but conference was in April 2018)
7. Oral presentation on achieving reduction in *Ecoli* – Jane Codd Deputy Lead IPCN at Infection today conference July 2017

What is required for 2018/19?

- Continuation of Gram negative bacteraemia work
- Urinary tract infections collaborative work
- Proposal developed to appoint Surgical surveillance nurse
- Sepsis nurse to be appointed to carry out data in sepsis sequin
- *Clostridium difficile* post infection review document to engage medical staff
- Joint working with Queen Elizabeth IPC team
- Aligning IPC policies with Queen Elizabeth IPC team