GREAT ORMOND STREET HOSPITAL FOR CHILDREN NHS FOUNDATION TRUST

INFECTION PREVENTION AND CONTROL ANNUAL REPORT

April 17 - March 18 (Part A)

and

ACTION PLAN April 18 - March 2019

(Part B)

Compiled by: Dr John Hartley - Director of Infection Prevention and Control
Helen Dunn- Lead Nurse Infection Prevention Control

(Format - Modified from the template recommended in Health and Social Care Act 2008)

GREAT ORMOND STREET HOSPITAL FOR CHILDREN NHS FOUNDATION TRUST
INFECTION PREVENTION AND CONTROL ANNUAL REPORT
April 17 - March 18

Summary

There is a fully functioning Infection Prevention and Control programme established at GOSH, with involvement of all staff.

Many of the children are susceptible to infection because of their illness or the treatment and are often already infected or colonised. We strive to protect them from their own and each other's bugs – especially respiratory and enteric viruses and antibiotic resistant organisms. The latter is a major challenge as the worldwide threat from antibiotic resistance increases.

Overall this year we have continued to provide a safe passage for the majority of the 40 000+ admissions cared for, with provision of clean safe environment and equipment and the avoidance of infection. We have also reduced serious blood stream infections form gram negative (GN) antimicrobial resistance organisms to the lowest ever, which represents the outcome of an enormous control effort by patients, families, staff, labs, estates, facilities and all. However, health care associated infections still occur. We had an increase in blood stream infections (from non-resistant organisms) some of which may be explained by case mix, and we still have some preventable line infection.

We have had an increase in cross infection and colonisation, with respiratory and enteric viruses, MDR-GNs and VRE. While more children were admitted with infection, subsequent lack of control may arise from failure to consistently recognise and contain the risk early and, possibly, from less efficient cleaning.

A successful reconfiguration of hand hygiene audit process, with audit days, has been undertaken.

Team expansion will enable greater focus on AMS, but there is currently a shortage of responsible persons in estates and surgical site infection surveillance is hard to maintain.

Detailed scientific investigation is being undertaken by the department to help understand transmission, but meanwhile we continue to stress the importance of a full assessment of infection risk and implementation of standard precautions, with additional actions when a patient is symptomatic, and the maintenance of a clean environment.

Above all, children are children, with very different needs to adults that have to be sympathetically incorporated into the care environment – often with great difficulty as love, attention and toys are perfect routes for cross infection.

We strive to keep the right balance.

J C Hartley DIPC

Part A Executive summary of full report

1 Introduction

Great Ormond Street Hospital for Children NHS Trust recognises the obligation placed upon it by the Health and Social Care Act Code of Practice of the prevention and control of infections and related guidance.

2) Description of infection control arrangements
Director of Infection Prevention and Control (DIPC) and ICD Dr John Hartley
Executive lead for IPC - Chief Nurse, Alison Robertson
Lead Nurse for Infection Prevention and Control – 1 wte, Helen Dunn
Deputy Lead Nurse in IP&C 1 wte; IPC nurse 1;
Clinical Scientist in IP&C 1wte (currently 0.4 in place as scientist on NIHR fellowship 0.6)
Other 2 consultant microbiologists – 3 PAs
IPC Administrative support and Data Management **–** 0.6 wte filled May 2017
IPC Data analyst – 2 years fixed contract commenced Mar 2018
Infectious Diseases CNS leads on Tuberculosis related issues;
ID consultants contribute to the out of hour's advice
Antibiotic pharmacist **–** 1 day of time, post within pharmacy

Development of IPC Team - New antibiotic pharmacist starting July 2018
ID Consultants – new post with time allocated for stewardship, commencing June 2018
New Microbiology Consultant advertising now (July 2018). New part time IPC team member to work with Development and Property Service – as part of phase 4 business case

Data analysis - Quality Improvement team – dashboard development and display.
New data analyst to develop service and transition to new integrated system (RLSolutions)

2.3 Divisional Responsibility
Each Division has a local group to drive local planning and implementation of IPC actions. This will need to be revised when the new structure is implemented in October 2018.

2.4 The Infection Prevention and Control Committee (IPCC) meets every month (except Aug). Committee reports to Patient Safety and Outcome Committee.

2.5 Reporting lines
The DIPC is accountable to the CEO and reports regularly to the Board.
The DIPC and Lead nurse for IPC meet bi-weekly with Executive lead.
A report of all significant IPC issues is presented weekly to the Safety Team.
Significant IPC issues are entered on Datix, collated and passed through reporting line.
An annual plan is written and included in each annual report.

***2.6* Antimicrobial stewardship and Sepsis**
There is an antimicrobial steward ship committee and Surviving Sepsis QI Programme

2.8* IPC advice and On-call service*.
Continuous advice service provided by IPC Team, Microbiology and ID consultants

***3.3 Outbreak Reports*, Serious incidents and investigations**
Contemporaneous outbreak reports are written by the IPCT and fed back to clinicians and managers and disseminated through the IPC Committee. There were no IPC SI's in 2017/18. A performance review was required for cleaning services.

4 Budget allocation to IP&C activities

4.1 Staff
IPC Team Staff budget in Department of Microbiology, Virology and IPC
Divisions fund own audit and surveillance staff, including surgical site infection surveillance
4.2 Support
IT Support and hardware: is supplied within the departmental budget.
There is no separate IPC budget, but emergency outbreak funding is provided by the Trust.

5 HCAI Statistics Mandatory reporting for *2017/18*

5.1 **MRSA bacteraemia** = 1 episodes attributed to trust (3 previous year)
5.2 MSSA bacteraemia = 20 episodes (36 previous year)
5.3 E. coli bacteraemias = 18 episodes (21 previous year)
5.4 **Klebsiella species** = 19 episodes (20 previous year)
5.5 **Pseudomonas aeruginosa** = 13 (12 previousyear)
5.6 ***Glycopeptide resistant enterococcal bacteraemia (GRE)*** = *6* (2previous year)
5.7 Clostridium difficile **associated disease** = 11 reported; 3 lapse in care.

Local surveillance
5.10 GOS acquired Central Venous Catheter related bacteraemia
1.5/1000 line days (82 episodes). 1.7 last year. Highest area NICU.

5:8 Other bacteraemia episodes and antimicrobial resistance
430 clinical episodes. Similar to last year. Low rate of resistance, except to ciprofloxacin

5:10 Surgical Site Infection Surveillance and Prevention
5.11 J M Barrie -continuous active surveillance. Nationally we were an outlier for spinal surgery; variation maybe explained by the complex case mix. A specific programme has helped reduce unintentional hypothermia. Further work planned to improve standardisation
5.12 Cardiothoracic – For 445 procedures, 10 infections (one deep) at rate of 2.2%.

It is difficult for the Divisions to maintain surveillance, especially due to staff turnover, and alternative structure may be needed in the long term, for which a proposal will be developed.

5:14 Viral infections detected while at hospital
There was an increase in admitted and potentially 'acquired in hospital' infection with outbreaks requiring ward restrictions (but no closures).
Failure to identify and isolate symptomatic children is a recurrent problem.

Respiratory viral infections detected:			
	Total	Community onset	Hospital onset
Total in 2016/17	374	262	112
Total in 2017/18	526	364	162
Enteric viral infections detected			
Total in 2016/17	499	281	218
Total in 2017/18	527	287	240

5:16 MRSA Admission Screening and colonisation/carriage
We continue with a universal admission screening policy, with improved daily report to wards introduced to facilitate compliance (> 80% all wards; > 95% ICUs).
In 2016/17 there were 234 children with first detections, 18 acquired in the hospital. In 2017/18 this was 209 and 9. There were 2 linked cases and a staff member in one unit.

5:17 Multiple resistant 'gram negative' (MDRGN) organisms screening and rates
Universal admission faecal screening is advocated. Compliance has reached 45%.
MDR-GN carriage/colonisation – has increased, both on admission and acquired while in hospital. In 2017 247 children were detected, 66 acquired while in (compared to 44 in 2016).
Highly resistant, carbapenemase producing organisms, reached 23 in 2017, the highest yet.

5.18 Vancomycin resistant enterococci – an increase in carriage has been detected, cross infection has occurred this year (confirmed by whole genome sequencing). As with the increase in other cross infection, cause will be multifactorial, including cleaning efficacy.

5.19 Serious Untoward incidents and complaints involving Infection, major outbreaks and threats
No S/I's in 2017/18, although recognition and management of sepsis featured in 2.
An OCS Performance review was initiated due to concern in pan trust cleaning.

6 Hand Hygiene and CVC on going care guidelines
Appropriate guidelines are in place and audited. They will be updated in line with new national saving lives guidelines.

7) <u>Facilities</u>
Cleaning Soft FM Services are provided by Outsourced Client Solutions (OCS) (contract commenced 1 August 2016). Completion of work plans and schedules was slow; concerns regarding quality of cleaning lead to a service review and improvement plan in Feb 2018.
The recent PLACE inspection (April 26 2018) gave good verbal feedback.

Decontamination Provision of Sterile services, endoscopy and medical equipment decontamination unit (MEDU) for GOSH has been successfully transitioned to Steris IMS on 1 November 2017. Services remain compliant but risks exist over continuity planning of staff and need to address outdated endoscopy and non-compliant MEDU areas.
The CJD/vCJD Policy has been successfully implemented.

8. <u>Estates</u>
Ventilation: The Estates team continue to work closely with clinical areas and IPC in the satisfactory annual verification of specialist ventilation.
Water: The Water Safety Management Group continues to develop and manage risk associated with water. Risk from heater cooler units has been controlled.
Redevelopment / projects - PICB commissioning of water and ventilation did not go smoothly from an IPC stance. Increased work load suggests additional IPC staff, to be part of the IPC team but located predominately within DPS are needed. Job specification being developed.

<u>9 Trust wide audit</u>
A Trust annual IPC audit programme is followed with results on KPI dashboards.

Due to falling compliance, a successful reconfiguration of hand hygiene audit process, with audit days, has been undertaken. This includes generation of contemporaneous action plans. Data from the audit days showed compliance dropped further initially but now has a real improvement. CVC on going care is 86% % and requires improvement.

'Bare-below-the-elbows' component of hand hygiene remains good - at > 97%.
Central venous line care bundle audit **-** 86% and we continue to focus on this.

9:5 Antimicrobial stewardship and Sepsis

Antimicrobial Stewardship – the 17/18 CQUINS were met. A successful business case was adopted and increased staffing will enable significant AMS activity in 18/19.
9.6 Sepsis report: A Quality Improvement programme was established in September 2016 under leadership of Ms Claire Rees. This is ongoing, and now lead by Dr Karyn Moshal.

10 Occupational Health

OH continues to provide 'new entrants' screening ,"Exposure Prone Procedures" clearance, staff immunisation (including influenza, final uptake 61% (62% previous year) and blood borne virus exposure follow up (91 events, compared to 74 in previous year).

11 Targets and Outcomes	Target	Outcome
MRSA bacteraemia –	0	1
Clostridium difficile infection lapses in care	<14	3
Rate of GOS acquired line infection /1000 days	< 1.3	1.5
Analysis for S. aureus bacteraemias	100%	100%
MRSA colonisation acquisition	0	9
Hand hygiene audits	95%	85%,
with negative scoring for non-completion		68%
CVL care bundle audits	90%	86%
For substantive staff:		
IPC level 1 induction	95%	89%
IPC level 2 update	95%	82%

12. Training activities

Basic IPC training and update is provided for all staff through either e-learning, face to face teaching from the IPC team or both. Update is now only through e-learning, including assessment questions. Attendance is monitored.

New training modules:

The online level 2 update training package is due to be updated.

IPC training days: A popular training day programme continues.

Hand hygiene training for staff on wards is provided locally, and by the IPC team for staff without a ward. All episodes should be recorded by the training department.

IV and aseptic non-touch technique training an update is provided for nursing staff locally but currently there is no assurance that this is provided to all medical staff.

Training and competency assessment for intravascular catheter insertion is provided locally and all divisions should be working towards a standard policy. This is not yet completed. Vessel health programme will help this.

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AUTHOR: Dr John Hartley - DIPC
Helen Dunn – Lead Nurse IPC
Other reports as individually credited.

PART A - Full report

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Part A - Full Infection Prevention and Control Report for GOSH 2017/18 Activity

1 Introduction

Great Ormond Street Hospital for Children NHS Trust recognises the obligation placed upon it by the Health Act 2006, (updated 2008, 2012, and 2015), to comply with the Code of Practice for health of the prevention and control of infections and related guidance.

The Trust supports the principle that infections should be prevented wherever possible or, where this is not possible, minimised to an irreducible level and that effective systematic arrangements for the surveillance, prevention and control of infection are provided within the Trust.

It is the policy of the Trust to include in the individual responsibility of every member of staff the need to participate in the prevention and control of infection. This is listed directly in medical and nursing job descriptions and expressed through requirement to provide safe care by compliance with Health and Safety, Control of Substances Hazardous to Health (COSHH), and other legislation and regulations

The Director of Infection Prevention and Control is responsible for the Trusts overall programme for IPC, working closely with the IPC Team, the Executive Lead with responsibility for IPC (currently the Chief Nurse), the Divisional Teams, Occupational Health, Development and Property Services (including Estates, Facilities and Re-development), Clinical Governance and Safety Team, and Quality Improvement Team. The IPC team is embedded in the Department of Medical Microbiology, Virology and Infection Prevention and Control. The Trust requires a programme for prevention, surveillance, active investigation, and control of infection in patients, staff and visitors to the Trust. This programme is the responsibility of all staff, not just the central IPC Team, and the delegation to and acceptance of this responsibility by clinical divisional and corporate teams has increased and is key to success. The IPC team, Divisional or central, ensures the infection control programme is implemented and any risks related to or likely to cause infection are investigated and appropriate action taken.

The infection control programme aims to continuously review and build on existing activity, driven by local needs, while incorporating and complying with the latest Department of Health (DH), Public Health England or other relevant strategy and regulations as laid out in such documents as:

Strategy:

The Health and Social Care Act 2008 (updated July 2015) Code of Practice on the prevention and control of infections and related guidelines and its subsequent updates.

Older guidances listed in previous reports.

Recent guidance responded to this year or incorporated in next year's plan includes:

National intention to reduce Gram-negative bloodstream infections

New measures to combat sepsis

NICE Quality Standards QS61 Infection Prevention and Control April 2014, reviewed 2017
NICE Quality Standard QS113 Feb 2016 Healthcare-associated infections

Candida auris within the United Kingdom: updated guidance published by PHE 11/08/2017
https://www.gov.uk/government/publications/candida-auris-emergence-in-england/candida-auris-within-the-united-kingdom-updated-guidance-published

Re-issued High Impact Interventions Nov 2017
https://www.ips.uk.net/files/6115/0944/9537/High_Impact_Interventions.pdf

Infection prevention and control is a complex issue and everyone's concern; the Trust continues to support managers and clinical leaders in the drive to reduce healthcare associated infection.

The IPC programme is described in the Trust Policy 'Infection Prevention and Control Assurance Framework and Operational Policy', December 2017.

This report lists the IPC team structure and team plan, and some aspects of the policy but mainly reports the results of process (control) and outcome (infection) surveillance and audit.

The data shows that a great effort is employed to reduce HCAI, but that they still occur and some are preventable. Health care associated infection is an ever present risk for patients and staff and requires constant application of best practice to reduce to a truly unavoidable minimum. In recognition of the ever growing needs for IPC input the Trust has agreed to a significant investment in Antimicrobial Stewardship team and microbiology consultant time which will be implemented in 2018/19.

When considering IPC in children it is important to remember

1. IPC activity requires energy and commitment from all staff and resources. For example, from April 2017 to March 2018: 19438 hand hygiene observational audits were made and recorded, and 25 807 MRSA screens were collected and processed and acted on.
2. But infections still occur (such as 421 possible bacteraemias, up from 409, with 82 acquired line infections (down from 87), or 335 hospital onset respiratory and enteric virus infection (up from 242)

3. And many children are colonised with antimicrobial resistant organisms where additional efforts are required to reduce cross colonisation
4. The necessary IPC activity may impact on the patient journey for the individual and for others, with daily risk assessment necessary to optimise flow while reducing risk. This is limited by resources.
5. IPC activity is not just about a high profile hand hygiene campaign – important that it is - but is also about the continuous provision of a safe environment (clean wards, water, air and equipment), regular assessment of risk, and the use of standard precautions and specified protocols to reduce risk e.g. to prevent surgical site infection, by all staff all the time. These may be inadvertently bypassed when other activities are high.
6. IPC is embedded in the functioning of the hospital and the care provided such that many infections are prevented, the risk of them may be forgotten and the drive to continuously implement actions may wane, so constant promotion is required.
7. Many of the Nationally driven goals, such as MRSA bacteraemia, Clostridium difficile infection, urinary catheter infection and ventilator associated pneumonia, were never top priority for children, and particularly not the specialist children service provided. The inclusion of gram negative bacteraemias in national surveillance is more pertinent to children, although the main focus is probably elderly people and urinary tract infection.
8. Many of the children require vascular access devices. It is particularly important to protect them from vascular device associated infection.
9. Many of the children are susceptible to infection because of their illness or the treatment and are often already infected or colonised. We need to protect them from each other's bugs – especially respiratory and enteric viruses and antibiotic resistant organisms. The latter is a major challenge as the worldwide threat from antibiotic resistance increases.
10. Above all, children are children, with very different needs to adults that have to be sympathetically incorporated into the care environment – often with great difficulty as love, attention and toys are perfect routes for cross infection.

    We strive to keep the right balance.

This report describes the IPC programme in place, with measures of the implementation compliance and outcomes used to support current actions and direct future plans.

2) Description of infection control arrangements

2.1 Director of Infection Prevention and Control (DIPC)

- Dr John Hartley, consultant Medical Microbiologist. DIPC since August 2009 (0.3 wte- 0.1 wte allocated as DIPC. 0.2 previously allocated as Infection Control Doctor).

2.2 The Infection Prevention and Control Team (IPCT) during 2017/18

Nursing and clinical scientist establishment:

- Lead Nurse for Infection Prevention and Control - Helen Dunn
- Deputy Lead Nurse in IP&C - Barbara Brekle
- IPC Nurse – Helen Saraqi
- Principal Scientist in IP&C – Elaine Cloutman-Green – now 5 days per week (but 3 days seconded to NIHR Clinical Fellowship, currently with some backfill undertaking scientific IPC activity. Elaine has also been successful in application to be the Trust Healthcare Clinical Scientist lead.
- Infectious Diseases CNSs lead on Tuberculosis control as required

Medical Staff*:*

- Dr John Hartley - Consultant Microbiologist, Infection Control Doctor and DIPC
- Dr Garth Dixon - Consultant Microbiologist, Lead Clinician for the Department of Microbiology, Virology and Infection Control: 1PA for IPC
- Dr James Soothill - Consultant Microbiologist: 2 PAs for IPC
- Professor Judy Breuer – Consultant Virologist (advisory)

Working with:

- Dr Alasdair Bamford - Consultant in Infectious Diseases ; became lead for Antimicrobial Stewardship in
- Professor Nigel Klein – Professor of Infectious Diseases and Microbiology
- Dr Delane Shingadia – Consultant in Infectious Diseases
- Dr Adam Irwin - Consultant in Infectious Diseases (left early 2018). New consultant started June 2018
- Dr Karen Moshal – Consultant in Infectious Diseases –returned part time early 2018

Antibiotic pharmacist - Part time post – one day a week

Administrative support and Data Management
Administrator IPC Team – 0.6 wte in post from May 2017- She'miah Hastick
Data analyst – started March 2018

IPC Data management
A new data analyst started in March 2018 and will cover transition to the new IPC Data management system (RL Solutions) which will be implemented in parallel to EPIC and the new lab systems (Beaker).

Development of IPC Team: In recognition of the ever growing demands for IPC services (including antimicrobial stewardship, expansion of services with PICB opening and work with DPS on new and existing developments) the team has or will be expanding. The new fixed term IPC data analyst started in March 2018; there is a new antimicrobial stewardship pharmacist started in June 2018; the replacement ID consultant was increased to full time to include increased antimicrobial stewardship; a new consultant microbiologist post has been

funded and advertised; and a new part time IPC team member will be employed to work closely with re-development.

Quality Improvement Team -
Provides invaluable central support for audit and surveillance data display.

Executive lead for IPC
The Chief Nurse is the Executive lead for IPC; supported for medical issues by the Deputy medical director. Juliette Greenwood left in September 2017 with the Deputy Chief Nurse Janet Willis covering this role until Feb 2018 when Assistant Chief Nurse Polly Hodgson took over until the start of the permanent Chief Nurse (Alison Robertson) in April 2018.

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

The structure had changed with the divisional structure changes in 2016/7.
There are now Divisional IPC meetings for J M Barrie, Charles West and International and Private Patients. Further change will need to follow when trust restructuring is complete.

2.4 The Infection Prevention and Control Committee (IPCC)

Committee continued to meet monthly in 2017/18

Membership by role:
Chair (DIPC or Deputy DIPC)
Lead Nurse IPC
Executive lead IPC
Infection control doctor
IPC Team members, ICNs, Clinical Scientist
Consultant Microbiologists
Divisional manager Charles West
Public Health England Representative
Charles West Division:
Divisional Assistant Chief Nurse
Matron
Medical Consultant
Infectious Diseases Consultant
J M Barrie:
Divisional Assistant Chief Nurse
Consultant Surgeon
IPP Division:
Head of Nursing
Medical Consultant
Research and Innovation – Somers Clinical Research Facility
Development and Property Services:
Head of Estates
Head of Facilities
Staff and Well Being (OH): Nurse manager
Others: Academic ID physician; Chief Pharmacist
When required: Chair of Antimicrobial Stewardship Committee

Administrative support: provided by IPC Administrator

Topics discussed or ongoing projects in the year include:

Agreement reached to modify mask selection for use as personal protective equipment.
Agreement reached to change use of isolation practices in outpatients.
Agreement to change methodology of routine audit practices (see Hand hygiene audit report)
Slow completion rate of SLAs and work plans following adoption of new cleaning contract and lower than expected cleaning standards (see facilities report)
Non-isolation of children with symptoms and 'alerts'.
Increase in VRE cross transmission.

2.5 Reporting lines

The DIPC is accountable to the CEO, continues to provide regular reports directly to the Trust Board and present an Annual Report

The executive lead for IPC is the Chief Nurse, and the DIPC and Lead nurse for IPC meet bi-weekly with her.
A highlight report of all acute significant IPC issues are presented weekly to the Safety Team.

The IPCT provide a report of all incidents dealt with by the IPCT to each IPCC.
The IPCC reports to the Patient Safety and Outcome Committee.
An IPC Team action plan is included in the annual report.
During management of incidents the IPC team or clinical area complete clinical incident forms returns via Datix. The Clinical Governance and Safety Team compile a monthly report for wards/Heads of Nursing/Risk Action Groups for feedback on individual incidents and a quarterly reports for the Quality and Safety Committee, which feeds to the Clinical Governance Committee.

2.6 **Antimicrobial Stewardship and Sepsis**

Antimicrobial policies - The Consultant Microbiologist leads the Antibiotic working group, which is a sub-group of the D&T Committee, supported by the part time pharmacist, and undertakes provision and review of antimicrobial policies. A Consultant Microbiologist and Infectious Disease Physician are members of the Drugs and Therapeutics Committee.

Antimicrobial Stewardship – Dr Bamford (ID Consultant) has been chair since Oct 2016. AMS focused on review and provision of Antimicrobial Policies (Policy group), and audit of consumption and antibiotic review (in line with the 17/18 CQUIN). The Trust has supported a significant business case for additional staff time to enable expansion of AMS activity. A new wte pharmacist and additional infectious disease and microbiology consultant time will be employed during 2018. An AMS report is included below.

Surviving Sepsis – the Trust established a dedicated improvement project team to lead on implementation of the Surviving Sepsis / Sepsis 6 initiative. This was led by consultant surgeon Ms Clare Rees who has now left the trust and Dr Karen Moshal, ID Consultant, is now lead. Report below. Full report below.

2.7 Links to Trust Business Plans

Incidents are notified by the IPCT or the Divisions via the incident reporting system.
Information is supplied to the Divisions when requested and there is open access when assistance is needed.
Specialties and Divisions are advised to put IPC issues on their risk registers for review in RAG/Divisional meetings to support business plans.
IPC Team bids are made through the Department of Microbiology, Virology and IPC within the Department of Paediatric Laboratory Medicine, now part of Charles West Division.

2.8 IPC advice and *on call service.*

The 3 wte IPC nurses and 0.4 wte clinical scientist provide a service for IPC from 8 am to 6 pm, Monday to Friday, supported by the continuous consultant microbiologist service. The Consultant Microbiologists (with one night a week from ID) provide a continuous out of hours on call service. The IPCT cover Occupational Health needs related to infection control, such as inoculation injuries, which are also covered by consultant microbiologist/ID consultant during out of working hours.

3 Plans and Reports

3:1 DIPC Board Reports
2017-03-20 Trust Board regular IPC Report
2017-09-21 Trust Board, with presentation of Annual Report
2018-03-28 Trust Board, regular IPC report

3.2 Annual IPC Team Action Plan
An annual plan is written and included in each annual report.

3.3 Outbreak Reports, Serious incidents and investigation
The DIPC ensures contemporaneous outbreak reports are written by the IPCT and fed back to clinicians and managers and disseminated through the IPC Committee.

There were no IPC SI's in 2017/18. A performance review was required for cleaning services.

4 Budget allocation to IP&C activities

4.1 Staff

Medical: There are 6 specific consultant programme activities funded to consultant medical microbiologists for IPC (3 allocated to Dr John Hartley, 2 and 1 to the others)

Nursing: 3 WTE infection control nurses (ICNs) funded (Band 8b and 2 Band 7).

Scientific: 1 wte Band 8a Principal Clinical Scientist, currently 0.4 wte working in IPC and 0.6 secondment on NIHR Clinical Fellowship.
Scientific backfill employed

Laboratory: The laboratory is a fully staffed with UKAS accreditation to ISO 15189 standard on 26.07.2017. UKAS number 8675

Administrative: 0.6 wte PA to IPC Team from Oct 2017. Fixed term data analyst from March 2018

SSIS Team: Surveillance has been devolved to the Divisions in 2013 and is undertaken and funded differently.
J M Barrie -Surgery (except Neurosurgery) – one full time surveillance officer, supported by practice educator and Lead Nurse;
Neurosciences – surveillance through regular MDT audit
Charles West - Cardiothoracic - one surveillance officer supported by practice educator; surveillance incomplete in 17/18 due to staffing issues.

4.2 Support

IT Support and hardware: is supplied within the departmental budget.
Emergency outbreak funding: is provided by the Trust if and when needed.

4:3 Training of IPC team members

Resources for continual professional development (CPD) of the IPC Team are currently funded by the Trust or department.
Medical staff have an allocated study leave allowance from the Trust which may be used towards infection control training.
Nursing staff obtain funds from the nurse training budget, external sponsorship and the departmental special purpose fund.

5 HCAI Statistics

A MANDATORY SURVEILLANCE

Mandatory data can also be viewed on the PHE website
https://fingertips.phe.org.uk/profile/amr-local-indicators/

5:1 Staphylococcus aureus (MRSA) bacteraemia

Surveillance of methicillin resistant *Staphylococcus aureus* (MRSA) bacteraemia is undertaken in line with National reporting requirements. NHS England have now concluded that preventable MRSA bloodstream infections are no longer acceptable and as such there is no longer an MRSA objective as the target is zero.

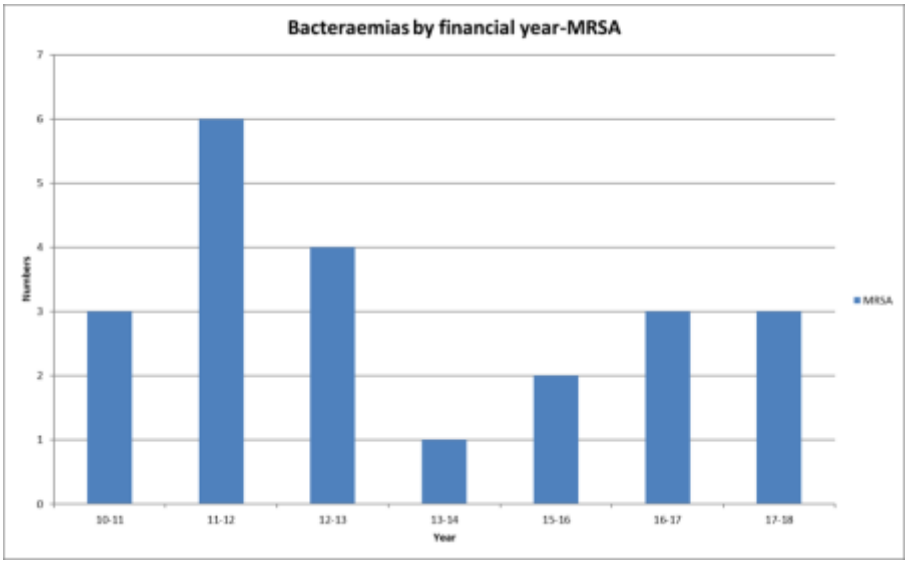
3 children had an MRSA bacteraemia, but only one was attributed to Trust.

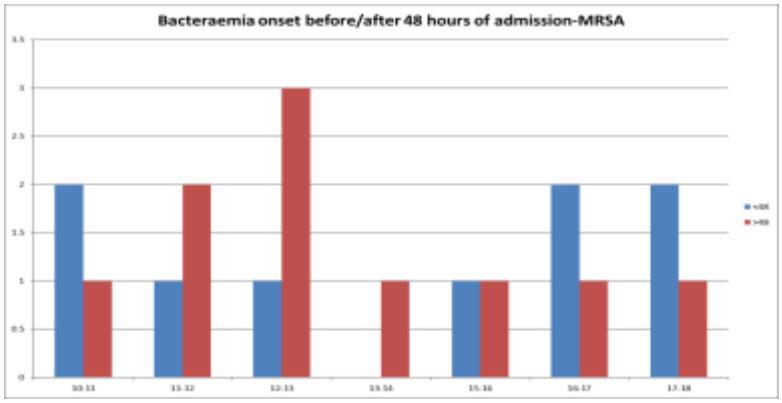
Trust attributed cases are shown below:

Annual GOSH MRSA Bacteraemia Rates (PHE Data) Trust Apportioned Cases

Year	*MRSA Bacteraemia numbers (attributed)*	*Estimated MRSA Bacteraemia rates per 100,000 bed days*
April 11 – Mar 12	4	4.3
April 12 – Mar 13	3	2.9
April 13 – Mar 14	1	0.9
April 14 – Mar 15	0	0
April 15 – Mar 16*	1 (total 2)*	1.2
April 16 - Mar 17	3	3.5
April 17-Mar 18	1 (total 3)**	1.14

*2nd bacteraemia present pre-admission therefore not attributed in PHE data
**2nd bacteraemia was present on admission (necrotizing pneumonia after influenza A), therefore attributed to 3rd party, and a 3rd was present in referring Trust so not counted on HCAI system.



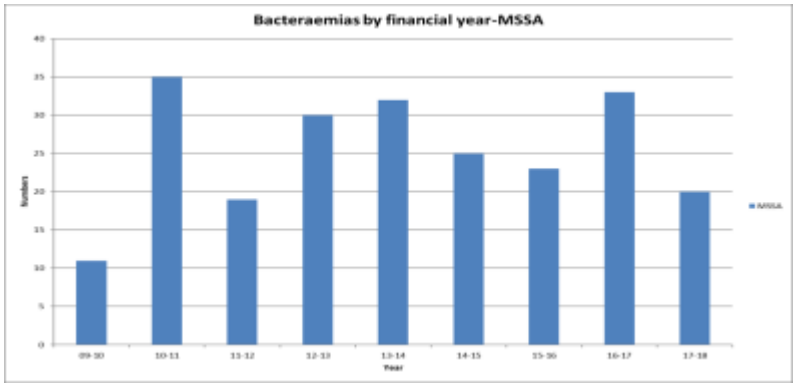


5:2 *Stapylococcus aureus* (MSSA) bacteraemia

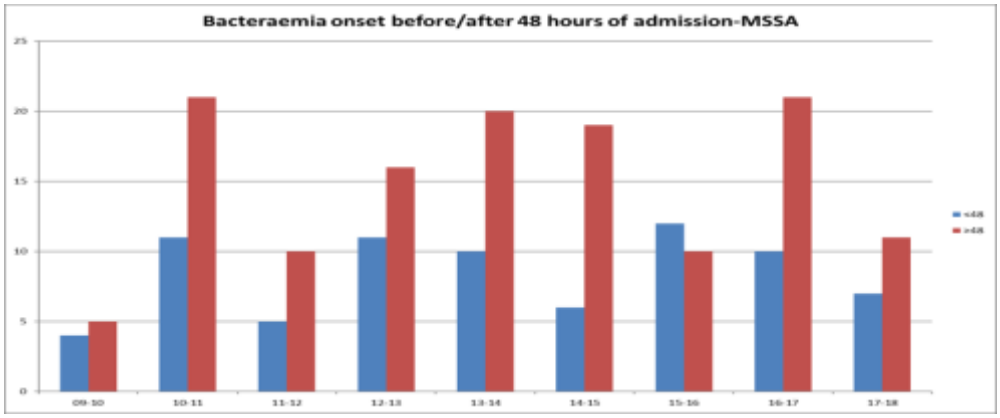
While MRSA has been the principle *S. aureus* of concern nationally, GOSH has recognised that methicillin sensitive *S. aureus* (MSSA) is a more significant issue to children. All *S. aureus* bacteraemia is reported nationally, although there are no national targets for MSSA.

Continuous surveillance is undertaken of all *S. aureus* bacteraemia and root cause analysis is undertaken to investigate episodes where there may have been an opportunity for trust to influence onset. S. aureus bacteraemia has decreased from last year: in 2017/18 there were 20 MSSA episodes, 11 with onset after 48 hours, reduced from 21 last year.

Bar chart showing number of S. aureus bacteraemias (MSSA) by financial year



Bar chart showing number of S. aureus bacteraemia episodes in patients with onset before or after 48 hours of admission:



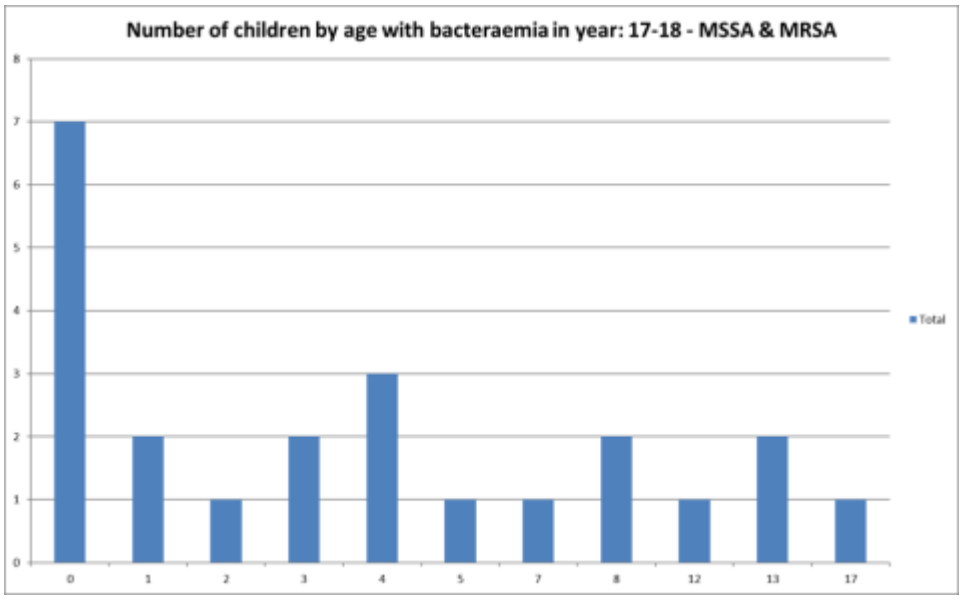
Root cause analysis of all S. aureus bacteraemias (MRSA and MSSA)

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

RCA completion by clinical teams was not complete for the year, however RCA and clinical review shows likely source.

		CVC	Surgical sites	Spontaneous in immunosuppressed but not felt to be line	Skin	Contaminant	Source not determined – young infants on NICU	UTI, respiratory, Endocarditis, Osteomyelitis, HD Fistula, PVC
< 48 hr	10	3	1	3		1		2 (PVC, Resp)
>48 hr	13	4	2	2	2	1 (or 3)		2 (or 0)

The majority of infections occur in young children.



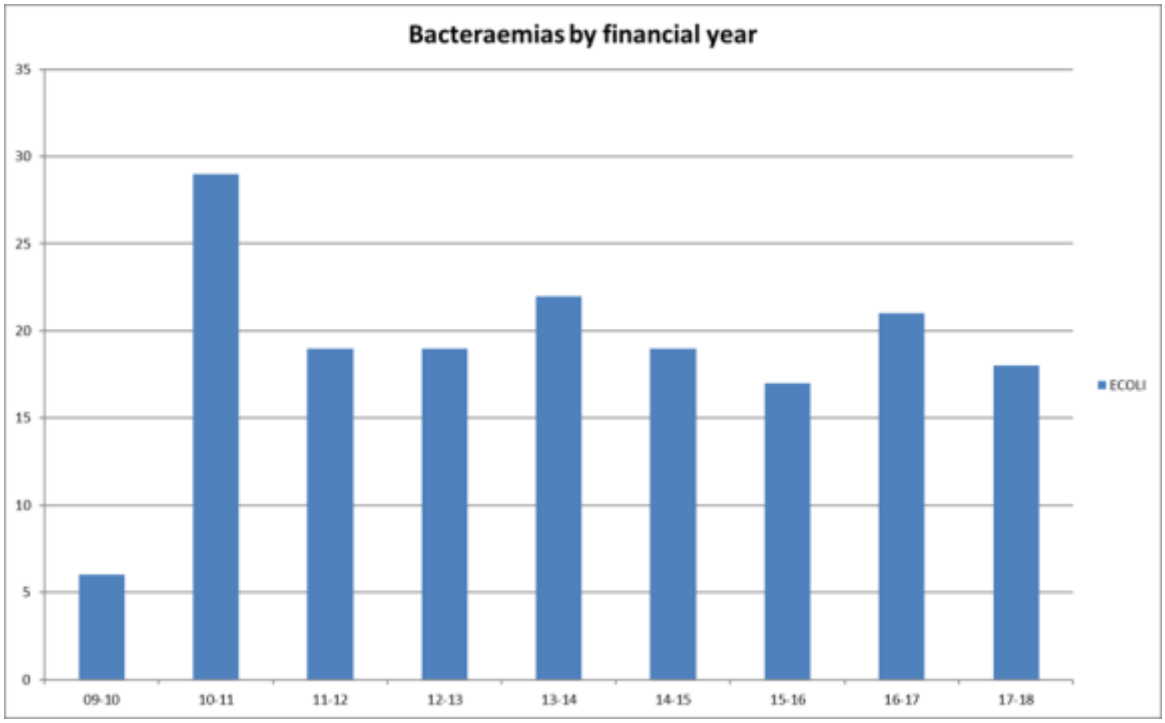
While line related infections were the main single cause, increase was seen in infections related to surgical sites (especially cardiac).

Interventions continue to focus on prevention of line related bacteraemia, and SSI prevention. Sepsis during neutropenia is harder to prevent.

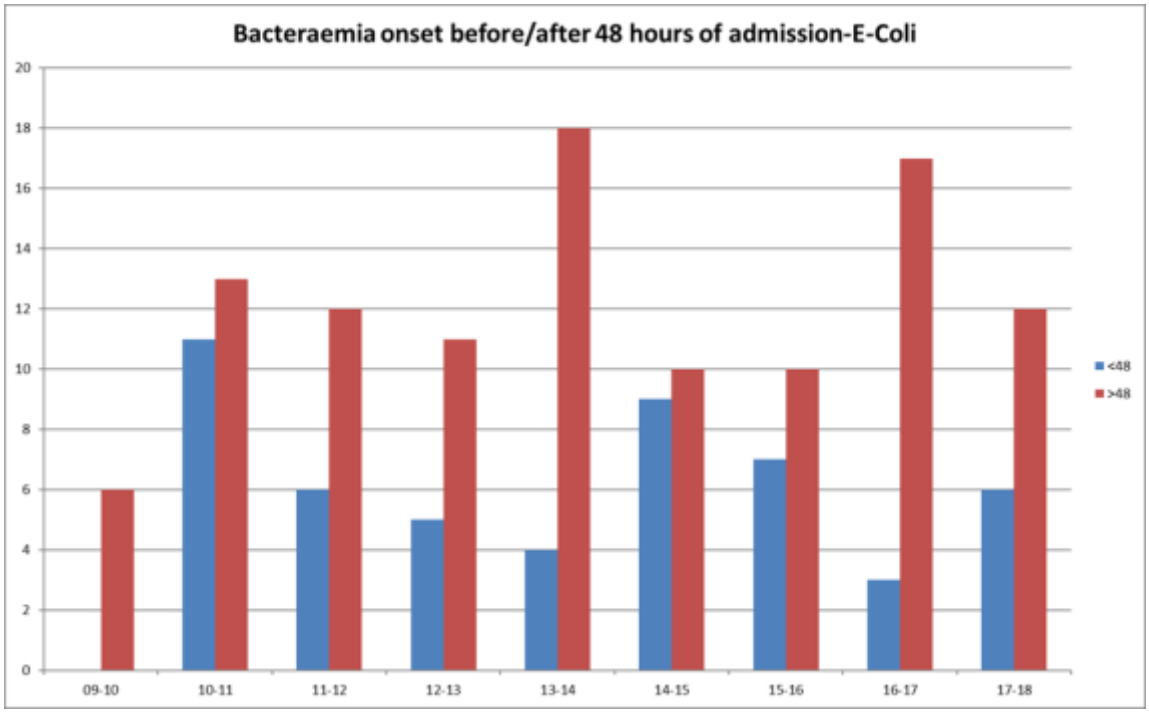
5.3 Mandatory reporting of E. coli bacteraemias

E. coli bacteraemias are reported nationally, although currently there is no target. Surveillance shows a reduction in episodes from last year, although this may be within expected variation. The majority occur in the under 2s.

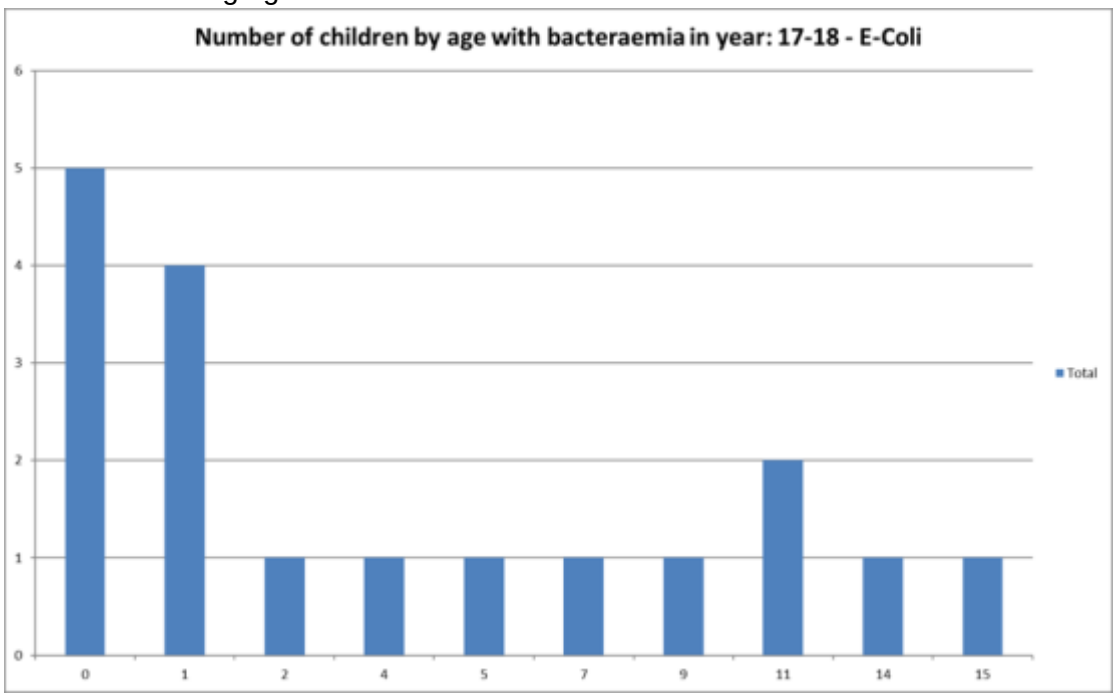
Bar chart of E coli bacteraemia episodes by financial year (please disregard 09/10)



Bar chart showing number of E coli bacteraemias with onset after 48 hours



Bar chart showing age of children with E coli bacteraemia in 17/18



Each episode is reviewed by the IPC team but not through the formal RCA process. The IPC committee agreed that RCA would be desirable but is dependent on resources locally and this was not achieved in 2017/18.

ICP Team review shows commonest cause is spontaneous bacteraemia in neutropenia, but there were episodes of urosepsis and line infection.

5:4 Mandatory reporting of Klebsiella spps bacteraemias - see table below
5:5 Mandatory reporting of Pseudomonas aeruginosa bacteraemias – see table

	MSSA	**MRSA**	**E coli**	**Pseudomonas aeruginosa**	**Klebsiella spp.**
2016/17	33	3	21	12	20
2017/18	20	2	18	13	19

Detailed analysis of each episode has not been possible this year

5:6 Mandatory Surveillance of Glycopeptide Resistant Enterococcal bacteraemia (GRE) **2017/18**

Year	Number of GRE bacteraemias
2008/09	0
2009/10	0
2010/11	1
2011/12	5
2012/13	5
2013/14	0
2014/15	2
2015/16	2*
2016/17	2
2017/18	6* (3 children; 4 in one child)

The number of children experiencing VRE bacteraemias is static and typing showed the isolates from the 3 children are not related; however, 2 of them are related to ongoing VRE transmission in the Trust (see section 5.18 Surveillance of antimicrobial resistant organisms, Vancomycin resistant enterococci).

5:7 Mandatory reporting of Clostridium difficile **infection.**

The role of toxigenic *Clostridium difficile* as a pathogen in children is not well understood, while it rarely causes severe disease, we have seen severe cases from age 16 weeks up. With a higher carriage rate than that found in adults and frequent multiple causes of diarrhoea in children, especially hospitalised children receiving intensive therapy, it is often impossible to determine clinical significance of toxin when detected.

The potential for disease has always been acknowledged at GOSH and we have performed extensive testing and surveillance for many years, allowing instigation of additional infection prevention and control actions with hand washing with soap and water and cleaning with chlorine releasing agents.

While there has been some variation in number of children with positive tests year on year, we did not experience the dramatic increase seen in adult hospitals during the 2000s and almost no cases due to the virulent endemic strain, ribotype 027, as seen in adults.

National mandatory surveillance was introduced for children aged 2 year and over in April 2007 and a nationally determined target, based on the initial year, was set for those first tested on or after third day of admission (after day of admission and next two days). We report toxin positive children with diarrhoea and no other cause present or, if another possible cause is present, where clinical opinion led to treatment as a possible case. This

strategy has been explicitly discussed and agreed with NHS England, London HCAI lead. All reported possible cases are discussed with the NHS England, London HCAI lead to determine if there has been a lapse in care.

There has been national guidance on testing, advocating that Trusts move from the 'standard EIA toxin' tests to a two stage test with antigen detection (GDH) and EIA, due to the poor sensitivity and specificity of the EIAs as a single test. We have reviewed this advice. In 2015/16 we continued to use the neutralised cell cytotoxicity assay for toxin detection as this is the acknowledged reference toxin detection test. However, it became difficult to continue cell culture and after further review, in house testing of methods, we switched to a 2 stage testing algorithm with an initial screen with toxin gene PCR, followed by the combined GDH/toxin EIA. Our goal is to identify those children with toxin competent C difficile in the gut who are at risk of disease and may contaminate the environment when they have diarrhoea.

Toxin positive cases are still reported according to the same agreed algorithm as described above.

We follow up toxin detection with culture and ribotyping where cross infection is suspected. Compared to previous years we have stopped sending all 'new toxin detections' for ribotyping, and moved to selective ribotyping to investigate specific potential clusters.

Cases

	11/12	12/13	13/14	14/15	15/16	16/17	17/18
C. difficile 1st toxin detections ALL ages and any duration of admission	96	104	92	97	103	71	111
Number 'trust apportioned cases' (aged above 1 year and in for > 3 days when tested and reported as possible CDI on HCAI site)	9	7	13	15	7	4	11
Objective (number below which we aim to keep apportioned cases._	9	8	7	7	14	14	14
Possible lapse in care				2	2	0	3

Analysis of every case is undertaken to assess the likelihood of true disease, and any avoidable risk factors or lapses in control measures. Details were presented to the NHS England, London lead for Infection Prevention and Control and the Clinical Commissioning group.

For 2017/18 there has been an increase in the absolute numbers of children identified with C difficile toxin, and the number of trust apportioned cases. Although this remains within the 'objective' it is still a concern as it may represent failure to control faecal transmission.

Ribotype analysis: Demonstrated majority of cases are sporadic, but supports the hypothesis some acquisition has occurred;

Isolates were available for 10 of the 11 'trust apportioned' cases. Results showed 8 different types - two 2 (unrelated), one 12, two 15 (same ward and likely cross infection), one each of 21, 22, 45, 46, 53, 56 and 81.

Analysis of all wards showed the greatest increase in Butterfly, Bear and Giraffe. Butterfly had the highest detection, with an increase from last year (18 new detections in 17/18, compared to 8 in 16/17); ribotyping was undertaken for this ward and 19 isolates (including one from 2/4/18) were typed. As often found, there were 11 different types but this included three potential clusters – one of ribotype 106 (5 children), one of ribotype 12 (4 children) and one of ribotype 1 (2 children). The clusters almost certainly included acquisition in hospital. Bear increased from 4 to 12 comparing the two years, 10 isolates were available for typing and showed 7 different types, but three pairs, again with cross infection suspected in some cases.

Contemporaneous data was discussed with the ward and action taken to reduce the chances of cross-infection.

As disease does rarely occur and there is a continuing risk of cross transmission we will continue to test stool to detect these rare cases and assist in control measures.

Increased numbers may have been related to less good cleaning standards, but causality is difficult to prove.

5:8 Mandatory Surgical Site Surveillance (SSI)

National mandatory surveillance only requests information on hip and knee implants and open reduction and fixation of long bones. These are rarely performed so no surveillance is undertaken.

Periodic and continuous SSI surveillance is undertaken by a number of surgical specialties and is reported in the local surveillance section below.

Additional Local Surveillance

5:9 GOSACVCRB – GOS acquired Central Venous Catheter related bacteraemia

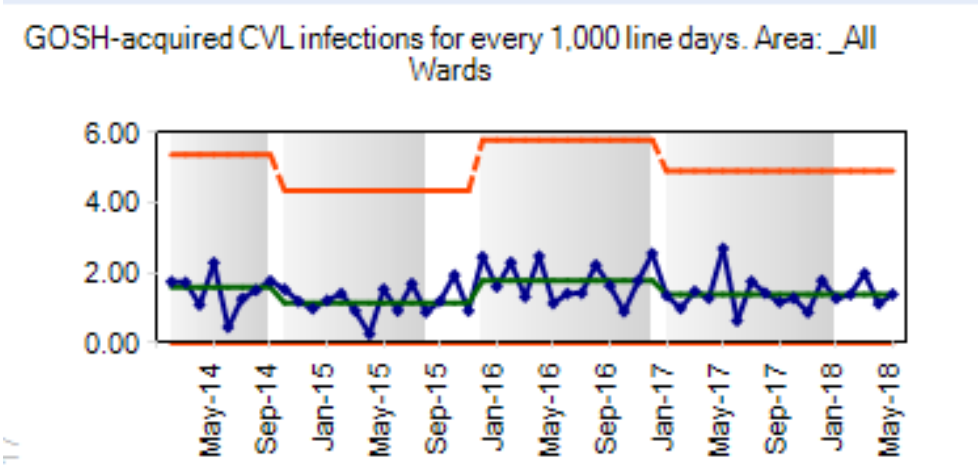
Continuous Trust wide surveillance mechanisms were introduced in Feb 2006 to identify GOSH inpatient associated central venous catheter related blood stream infection (GOSACVCRB). Surveillance requires daily recording of presence of patient lines by ward staff on an online form (audit of compliance shown in Audit section) and classification of all positive blood cultures according to a standard protocol. Outcomes measured is the GOSH acquired infection rate per 1000 line days. Compliance with line day data return is audited.

The data is displayed on the dashboard for IPC and clinical teams to review. Monthly data is broken down to 'ward where child was when blood culture taken' and each unit receives specific case data so further analysis. Root cause analysis can be performed by clinical teams.

Comparison with other hospitals is not straightforward as definitions vary. The GOSACVCRB definition was designed to have low specificity and alert units to potential cases for review. Implementation of CDC CLABSI criteria (which requires two blood cultures for common skin organisms), would reduce the apparent number.

Overall Trust rate (GOSACVCRBs per 1000 line days) was 1.5 this year. Our lowest rate was achieved in 14/15 and the small increase since then has been reversed. Annual rate, ward location, organisms and contributory factors are shown and discussed below.

Financial year	Rate per 1000 line days		
7/8	4.3		
8/9	3.7		
9/10	3.3		
10/11	2.6		
11/12	2		
12/13	2.1		
13/14	2.1		
14/15	1.3		
15/16	1.4	= 76 episodes	(52539 line days)
16/17	1.7	= 87 episodes	(52679 line days)
17/18	1.5	= 82 episodes	(55666 line days)



Ward location of children with a surveillance definition of a GOS acquired CVC RB:

Number and rate of GOSACVCRB (line infections) by ward in financial yeaar 2017/18				
		Total line days	Total GOSACVCRB 12 months	Rate / 1000 line days 12 months
Charles West				
Portfolio A	ELEPHANT	3581	5	1.4
	GIRAFFE	2190	2	0.9
	LION	3240	5	1.7
	FOX	3193	3	0.9
	ROBIN	3004	7	2.3
	Kangaroo MIFFY	279		0.0
	Leopard BADGER	2210		0.0
	BEAR	4130	7	1.7
	Pelican PENGUIN	1062	2	1.9
Portfolio B	CICU	8952	10	1.1
JM Barrie				
Portfolio A	Panther PETERPAN	267		0.0
	SKY	1128		0.0
	Chameleon (Squirrel SURG)	1866	3	1.6
	Panther (Squirrel urol)	679		0.0
	RAINFOREST Gas	1916	7	3.7
	EAGLE	1553	3	1.9
Portfolio B	KOALA	1121		0.0
	KINGFISHER	28		
	RAINFOREST Endo	1487	5	3.4
Portfolio B	NICU	1987	13	6.5
	PICU	3445	3	0.9
IPP	BUMBLEBEE	2081	1	0.5
	BUTTERFLY	5492	5	0.9
	Hedgehog	775	1	1.3
		55666	82	1.5

Organisms associated with GOSACVCRB

In 2017/18 82 episodes have been called GOSACVCRB (compared with 87 in 2016/17). See the table below for a breakdown of the organisms identified from the 82 episodes

Organisms causing GOSACVCRB in the financial year		**2015/16**	**2016/17**	**2017/18**
Gram positive	Coagulase negative staphylococci	34	37	40
	S. aureus	6	8	4
	Streptococcus sp	3	5	5
	Enterococcus sp	3	1	9
	Other gram positives	1	6	1
Gram negative				
- Enterobacteriacea	Klebsiella sp	7	10	5
	E. coli	4	4	5
	Serratia spp	3		1
	Enterobacter sp	2	2	3
	Citrobacter sp	1		
-Pseudomonas and others	Pseudomonas aeruginosa	3	3	2
	Others	4	4	4
Fungal	Candida sp	4	7	2
Total		76	87	82

Other GP 15/16 – Brevibacterium Other GN 15/16 – Acinetobacter, Chryseobacterium, Achromobacter, Bacteroides
Other GP 16/17 – Bacillus sp 4, Micrococcus, Rothia; Other GN 16/17 – Acinetobacter, Roseomonas, Stenotrophomonas
16/17 – mixed cultures have one isolate recorded; there were 2 other enterococci with S. aureus and 2 other Enterobacter with an E coli and an Enterobacter.
17/18- Other GP Bacillus sp. Rothia Other GN Moraxella, Neisseria sp, Bacteroides sp., Stenotrophomonas

GOSH CVC infection reduction programme.

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

The main control is implementation of the standard care bundle, which, despite continuous attention has not reached 100% (audit compliance of actual observations has been 86% for the last 2 years (data in section 9.3).
Review of additional interventions was also undertaken and it was decided to introduce parafilm and biopatch in areas or situations associated with the greatest risk.

Parafilm is a thermoplastic paraffin film with a paper backing primarily used in laboratories. It is semi-transparent, water-resistant, mouldable, self-sealing and cohesive. Evidence suggests that using a protective barrier around the hub and the connections of a central venous catheter might be an effective preventive measure against contamination and infection (Stotter et al, 1987).

The rollout of parafilm to the rest of the inpatient areas in the trust occurred during 16/17. With the continued persistence of line related infection, despite the roll out of parafilm, the IPC committed advocated the pan-trust use of biopatch, which has now been launched in Aug 2017. Compliance with good line care is however still important as audit does not show 100%, so focus remains of care bundle as well as the additional interventions.

Roll out of biopatch has been slow, with concern in the NICU over skin injury, but, excepting NICU, audit in April 2018 has shown high compliance we hope the rate will fall further. Full rollout was only achieved at the end of March 2018 so continued data collection will show effect.

5.10 Other bacteraemia and sensitivity data in gram negative isolates.

Blood culture surveillance is complicated due to mixed cultures and difficulty defined clinical episodes. In the year (17/18) there were 11 696 separate blood culture sets sent. 741 were positive, giving 924 isolates. Removing repeat isolates (same species within 14 days of initial) and second isolates in a set, there were 432 new episodes with 513 different first isolates. (423 last year, with 481 different first isolates);
As the number of bacteraemias associated with CVC related infection had reduced the proportion of non-line related bacteraemias has increased. Regular surveillance has been undertaken of crude bacteraemia episodes defined by any positive blood culture in a child.

The table below shows the

- 345 episodes by species detected in the financial 2015/16 year and
- 431 isolates episodes in 16/17.
- 440 isolates episodes in 17/18

Table below shows comparison year on year for all children and for the Haem/Oncol/Immunol/BMT group of patients

(Episodes of contamination have not been removed and further blood cultures are classed as a new episode after 14 days; multiple isolates are mostly removed)

		2015/16		2016/17		2017/18	
		All patients	H/O/I/B	All patients	H/O/I/B	All patients	H/O/I/B
GNR	E. coli	16	5	21	6	18	8
	Klebsiella sp	16	4	19	7	18	2
	Enterobacter sp	8	4	13	6	14	3
	Serratia sp	5	2	3	1	6	1
	Acinetobacter sp	4	2	5	1	4	2
	Citrobacter sp	2		2	1	1	
	Proteus sp,	1		1		1	
	Morganella			1		0	
	Pantoea			1	1	0	
	Others (Erwina, Leclercia)			2		0	
GNR	Pseudomonas aeruginosa	9	3	13	2	12	7 (3 in one child)
	Stenotrophomans	3	1	6	5	7 (5 in one child)	
	Other non-fermenters	8	3	8	2	8	6
	H. influenzae			1		3	
	H. parainfluenzae					1	
GNR	Anaerobic GNR	5	3	1		1	
GPC	CNS	153	42	187	60	226	49
	S aureus	25	9	36	4	23	4
	alpha haem Streptococcus	30	16	29	12	39	19
	Enterococcus sp	16	5	24	6	35	7
	Micrococcus	11	1	8	4	3	2
	S. pneumoniae	1		3	1	0	
	Group B Strep			2	1	1	
	Group A Strep					3	
	Rothia			3		2	2
	Abiotrophia			2	1	1	
	Aerococcus			1			

		2015/16		2016/17		2017/18	
		All patients	H/O/I/B	All patients	H/O/I/B	All patients	H/O/I/B
GNC	Neiserria sp	4	1			3	1
	Moraxella sp			2	2	3	1
	N meningitidis	1	1				
	Eikenella	1	1				
	Veilonella			1		1	1
GPR	Actinomyces	2		3	2	2	2
	Corynybacterium sp			6	2	7	2
	Brevibacteria	2	1			3	2
	Gordonia	1					
	Bacillus sp	3	1	8	4	6	4
	Propionibacterium	1				1	
	Nocardia	1	1				
	Microbacterium	1				1	1
	Tsukamurella sp	1					
	Mycobacterium sp					2	2
	Clostridium sp.			5	4		
Yeast	Candida albicans	8		8	3	8 (3 in one child)	2
	Candida species	6	4	6	0	6 (2 in same child as abaove)	3
	Total	345	110	431	138	441	126

Antibiotic resistance:
Review of all the 82 most significant gram negative coliform blood culture isolates (E coli etc) and P. aeruginosa from patients shows a sustained low rate of resistance to our empirical antibiotic policy choice

	Amikacin	Gentamicin	Ciproflox	Ceftaz	P/Taz	Carbapenem
82	1	4	16	9	5	3 (2 P aer)
%	1.2	4.9	19.5	11	6	3.7

Multidrug resistant isolates in blood -

	Amik/PTAZ Also resistant to Gent, Ceft, Mero - a CPE	Gent, Ceft and Cip resistant	Cip and PTAZ	Gent and PTAZ
	1	1	2	1 – the CPE

This is very different to the situation 16 years ago when there were resistant isolates found, especially in the immunocompromised patients. Gentamicin resistance was common (over 30%) and combined with ceftazidime or piperacillin/tazobactam in 30 and 15% of isolates.

The significant resistance drove the choice of dual therapy amikacin plus piperacillin/tazobactam, and it is still probably justified as first line empirical therapy in the antibiotic policy.

There were 2 isolates resistant to ciprofloxacin and piperacillin/tazobactam, which is being used more to avoid aminoglycoside use but has a slightly increased risk of being inadequate.

The increasing detection of carbapenemase resistance has not yet transferred to blood isolates but is a concern should the Trust acquire transmissible and virulent strains (as in 2014).

5.11 Ventilator associated pneumonia / Ventilator associated events.

The PICU Ventilator Associated Pneumonia (VAP) study: VAP was shown to be low in PICU and systematic surveillance was stopped in 2011. (See earlier annual reports.)

Continuous central surveillance is currently not performed. PICU / Microbiology have undertaken surveillance using different surveillance definitions in PICU between July - December 2014. VAP incidence was 1.8/1000 ventilator days using 2015 criteria (onset > 2 days after ventilation) and 2.4/1000 ventilator days using 2008 criteria (irrespective of duration of ventilation- early onset intubation associated).The different definitions pick up different patients.

With the new VAE-with infection – called infection related ventilator condition (iVAC), there is seemingly no requirement for chest x-ray changes and the condition is defined by acute ventilatory deterioration plus inflammatory changes and then proceeds through a diagnostic criteria for infection, for which are graded according to strength of evidence from protected BAL, quantitative culture, semi quantitative, to clinician decision to treat.

The difficulty in applying the standard set of definitions currently available has been highlighted by the PICU and microbiology department nationally through a letter in the Journal of Hospital Infection.

Care plans are in place in the ICUs for the reduction of risk of ventilator associated events but the ICUs do not undertake any systematic surveillance.

5.12 Surgical Site Infection Prevention and Surveillance

Prior Trust Base line:

From 2011 to 2013 there was a SSIS team based in the IPC team, however, subsequent surveillance has been performed by the individual specialty or Divisional teams. Trust wide rates were established (using the Public Health England SSIS scheme definitions and 30 day home follow up) and are summarised for the total surveillance below:

Summary of data collected by SSIS Team 2010 - 2013

Number of Operations	3966	% infection
Total of Infections	245	6.2
Superficial	87	2.2
Deep	16	0.4
Organ Space	36	0.9
Patient Reported	106	2.7
Lost to Follow Up	481	12.1

The data was drawn from all neurosurgery, cardiorespiratory, spinal implant and a selection of procedures from plastics, general and neonatal, craniofacial, and other orthopaedic, without any day cases. The area with the highest rate of organ space infection was neurosurgery. After the cessation of the central surveillance scheme the divisions continued and in different formats, described below.

In parallel with surveillance there has been development of prevention bundle, with particular emphasis on preoperative wash, skin preparation, antimicrobial prophylaxis, temperature control, wound closure and dressings.

Surveillance and prevention reports are included below from the J M Barrie Division and for Cardiothoracic surgery in C West.

Data is feedback at the Divisional and specialty meetings.

Dashboards were generated for audit of antimicrobial prophylaxis, temperature control and pre-operative wash.

5.13 J.M Barrie Division Report below from Leo Morgan, Surgical Site Surveillance Officer.

- Surgery (excluding Neurosurgery): one full time surveillance officer under the structured management support of the tissue viability nurses, modern matron and assistant chief nurse has undertaken surveillance of designated surgical procedures in each specialty. This is reported locally and spinal implant surgery reported to the PHE National SSIS scheme.

Surgical Site Surveillance Programme

Introduction

The Surgical Division (reshuffled within J.M Barrie Division) at Great Ormond Street Hospital for Children NHS Foundation Trust comprises 9 clinical specialities, providing care to around 22,000 children a year. The trust has a long history of Surgical Site Surveillance which was conducted centrally as part of the Infection Prevention and Control Team until April 2013 when the responsibility transferred to the relevant individual clinical divisions.

Within Surgery a Surgical Site Infection Surveillance Officer (SSISO) was appointed to work with the assistance of the tissue viability team under the direction of the modern matron and assistant chief nurse. This paper sets out a review of the service to date and details the plans and objectives for the SSIS programme in the financial year 2018-19.

2017 -18 Aims:

- For SSIS Service to present SSI reports to senior management on 'Medical + Surgical Infection Prevention' and 'Theatres, Interventional Radiology, Radiology + PACU Infection Prevention' monthly meetings or any meeting eventually required;
- To further develop the exception report; this will highlight deviations from the care bundle and give some explanatory narrative;
- To assist the surgical teams to standardise areas of the patient pathway.

Speciality Surveillance procedures

Speciality leads were involved in discussions regarding which procedures were suitable and useful to carry out surveillance. Procedures that are undertaken by laparoscopy, are a diagnostic theatre based test (such as biopsy) and where the primary wound closure does not occur in theatre were excluded in line with PHE guidance. It is important to note that spinal surgery at GOSH is reported to PHE.

The procedures and surveillance protocols for each speciality are listed below:

Speciality	**Procedure**	Surveillance
Spines	All (excluding plaster jackets and injections)	SO Post op D1, D2, D3 30 day phone call + 1 year follow up
Orthopaedics	Insertion of 8 plates	SO post op D1 30 day phone call

Orthopaedics	Open reduction and internal fixation	SO post op D1 30 day phone call
ENT	Cochlear implant	SO post op D1 30 day phone call
ENT	LTR graft	SO post op D1 30 day phone call
ENT	Excision of thyroglossal cyst	SO post op D1 30 day phone call
Urology	Open pyleoplasty	SO post op D1 30 day phone call
Urology	Wilm's tumour / nephrectomy	SO post op D1, D3 (weekly if still here) 30 day phone call
Cleft	Cleft lip repair (+/- palate)	SO post op D1 30 day phone call
General Surgery	Neonatal laparotomy	SO post op D1, weekly until 30 days (telephone if transferred out)
General Surgery	Excision of neuroblastoma	SO post op D1, D3 (weekly if still here) 30 day phone call
General Surgery	General laparotomy	SO post op D1, D3 (weekly if still here) 30 day phone call
Plastic Surgery	Non-buried K wires	SO post op D1 30 day phone call extend to 6/52 if required
Plastic Surgery	Tissue expander insertion	SO post op D1 30 day phone call
Plastic Surgery	Tongue reduction	SO post op D1 30 day phone call
Dental & MaxFax	ABG	SO post op D1 & 30 day phone call
Ophthalmology	No data required	

Ophthalmology was excluded as no procedure was able to be identified which met the inclusion criteria and could be easily surveyed.

Where appropriate, an information sheet about SSIS is given to children and their families undergoing monitored procedures at the pre-operative appointment. The SSIS team identifies children from the daily theatre list and then ensure the following data collection protocol:

- Base line data collected on all patients on day 1 post op;
- All children have a 30 day post discharge follow up telephone call;
- Spinal patients are seen on post op day 1, 2 and 3 until the post-operative wound check. Once the IVABx have stopped, the surveillance is discontinued and the patients then receive the 30 day phone call and follow up at one year, for any spinal patient with metal work implantation.

Data Collection

For 2017-18 financial year, all specialities have one full calendar year (2017) of data for their identified procedure or procedures.

Monitoring and recording data

The SSIS team have utilised the S4 database (Surgical Site Surveillance System) to enter all data including follow up and have a robust system in place for ensuring that all children are followed up as per the protocol outlined above.

The data collected for the year of 2017 is detailed below:

Spinal Surgery

Procedure	Lost to follow up	Parent Reported Infections	SSI			Annual total	Infection %
			Superficial	Deep	Organ space		
All spines	1	5	3	4	0	231	5.2%
Posterior fusion	1	3	3	3	0	140	6.4%
Anterior fusion	0	0	0	0	0	15	0%
Hemi vertebrae/ decompression/ short fusion	0	1	0	0	0	13	7.6%
Combined fusion	0	0	0	0	0	9	0%
Extension of fusion/revision	0	0	0	0	0	3	0%

Growth rod insertion: **-traditional** **-MAGEC** **-SHILLA**	0	1	0	0	0	16	6.2%
Growth rod lengthening: **-traditional**	0	0	0	0	0	15	0%
Growth rod revision: **-traditional** **-MAGEC** **-SHILLA**	0	0	0	1	0	18	5.5%

Orthopaedics

Procedure	**Lost to follow up**	**Parent Reported Infections**	**SSI**			**Annual total**	**Infection %**
			Superficial	**Deep**	**Organ space**		
8 plates	1	0	0	0	0	30	0%
Open reduction*	0	0	0	0	1*	23	4.2%

* IPP patient (Jul 2017). This case was investigated accordingly through route cause analyses (RCA) by the IPP and IPC teams/departments, as required.

ENT

Procedure	**Lost to follow up**	**Parent Reported Infections**	**SSI**			**Annual total**	**Infection %**
			Superficial	**Deep**	**Organ space**		
Cochlear implant	0	0	0	1	0	38	0%
LTR Graft	0	1	0	0	0	18	5.5%
Thyroglossal cyst	0		0	0	0	12	0%

Dental/Maxillofacial

Procedure	Lost to follow up	Parent Reported Infections	SSI			Annual total	Infection %
			Superficial	Deep	Organ space		
ABG	0	2	0	0	0	48	4.1%

Urology

Procedure	**Lost to follow up**	**Parent Reported Infections**	**SSI**			**Annual total**	**Infection %**
			Superficial	**Deep**	**Organ space**		
Open pyeloplasty	0	0	0	0	0	26	0%
Nephrectomy	0	0	0	0	0	28	0%

Cleft

Procedure	**Lost to follow up**	**Parent Reported Infections**	**SSI**			**Annual total**	**Infection %**
			Superficial	**Deep**	**Organ space**		
Cleft	1	0	0	0	0	52	0%

General Surgery

Procedure	**Lost to follow up**	**Parent Reported Infections**	**SSI**			**Annual total**	**Infection %**
			Superficial	**Deep**	**Organ space**		
Laparotomy	5	1	5	0	0	76	7.8%
Neuroblastoma	0	0	0	0	0	10	0%

Plastic Surgery

Procedure	Lost to follow up	Parent Reported Infections	SSI			Annual total	Infection %
			Superficial	Deep	Organ space		
Non-buried K wires	0	1	0	0	0	38	0%
Tissue expander	0	0	1	0	0	11	10%
Tongue reduction	0	0	0	0	0	30	0%

Please note that -with the exemption of posterior fusions- some infection rates for yearly reports could appear either considerably too high or two low due to low amounts of procedures performed per speciality.

Process dashboards

In addition the team have a real time dashboard looking at the four main areas of the care bundle for theatres which the DoH recognise as having the highest impact on surgical site infections. The areas are antibiotic protocol adherence, pre-operative wash, temperature control, MRSA screen.

Divisional and specialty run charts are produced and displayed on the Dashboard.

Investigating infections and sharing of learning

The on-going monitoring of both infection rates and compliance with the care bundle are discussed at the divisional and theatres infection control monthly meetings. In addition, the division carry out an RCA for any child who meets the following criteria:

- Prolonged inpatient stay or readmitted to GOSH for wound management (including administration of IVAB);
- Has an organ space infection (including return to theatre for management);
- All deep and organ/space spinal surgery infections.

Indications for an RCA are monitored through the 30 day phone call by the surveillance officer. When called an RCA is led by the child's consultant or the speciality lead. Findings are presented to the infection control committee with a summary of key learning and should feed into local M & M meetings.

Cluster of infections in spinal implant surgery

The infection rate in spines for 2017 was 5.2%, this is a 2.2% noteworthy decrease from 7.4% 2016 data and a further 2% reduction from the rate of 9.4% from 2015 data, although still higher than PHE benchmarks. GOSH remains an outlier in comparison to other participating Hospitals through the PHE Surgical Site Surveillance programme.

The wounds were more easily classified given the improved documentation implemented, such as the wound review vignette sticker. However, there are still significant poor documentation on medical notes and fragmentation of the data required when conducting an RCA, as the information is stored across many different systems, making the process lengthy and time consuming. The SSIS team is currently working with the EPR team so the future system Epic should minimize this negative impact from data stored across multiple systems.

Each SSI case is investigated following actions from the MDT and each incident is looked at individually and comparatively. After investigation, it was noted through the surveillance process that there are rarely no single risk factors to explain the occurrences as SSI's, like most infections can be multi-factorial in causation.

Moving forward

The SSIS team have is currently reviewing the present list of procedures under monitoring with speciality leads in discussions regarding which procedures would remain suitable and useful to carry out surveillance or if they should be discontinued and replaced by a new procedure considered valuable to undertake systematic monitoring.

The team has generated speciality exception reports and have productively worked with the Quality Improvement team to reduce data duplication and it was able improve processes by moving parts of the time-consuming data collection routine from paper sheets to a portable electronic device, allowing faster and dynamic data capture. The team worked with the Quality Improvement team to support the revamp of the Outcomes Hub for SNAPS and Urology.

Following the current work being undertaken to build the new system Epic, the SSIS team contacted the EPR team and is currently working with them to promote the potential replacement of the S4 system that will likely become obsolete and the continuity of a dynamic and paperless surgical site surveillance service post Epic.

Antibiotic protocol adherence and Temperature control are recognized by DoH as having high impact on surgical site infections. The SSIS team has continuously monitored these two risk factors and reported back to the relevant teams, where an optimal compliance with expected antibiotics protocol and temperature control remain a significant issue.

Antibiotic protocol: the SSIS team worked successfully with Theatres and Anaesthetics to accomplish '2017-2018 aim' to devise a Surgical Site Surveillance (SSS) Tab for PIMs to capture more accurate data of the time of the surgical incision and the Antibiotics administration, as per pharmacy policy in order to monitor and report evidence of optimal antibiotics prophylaxis compliance as well as feed backing deviances to promote improvement. However, the current usage of the SSS tab remains significant low and work is currently being undertaken by theatres/anaesthetics to improve compliance.

Temperature control: following 2017-2018 aims for reduction of high rates of core temperatures below 36 degrees Celsius intra-operatively that significantly affected spinal surgery on previous

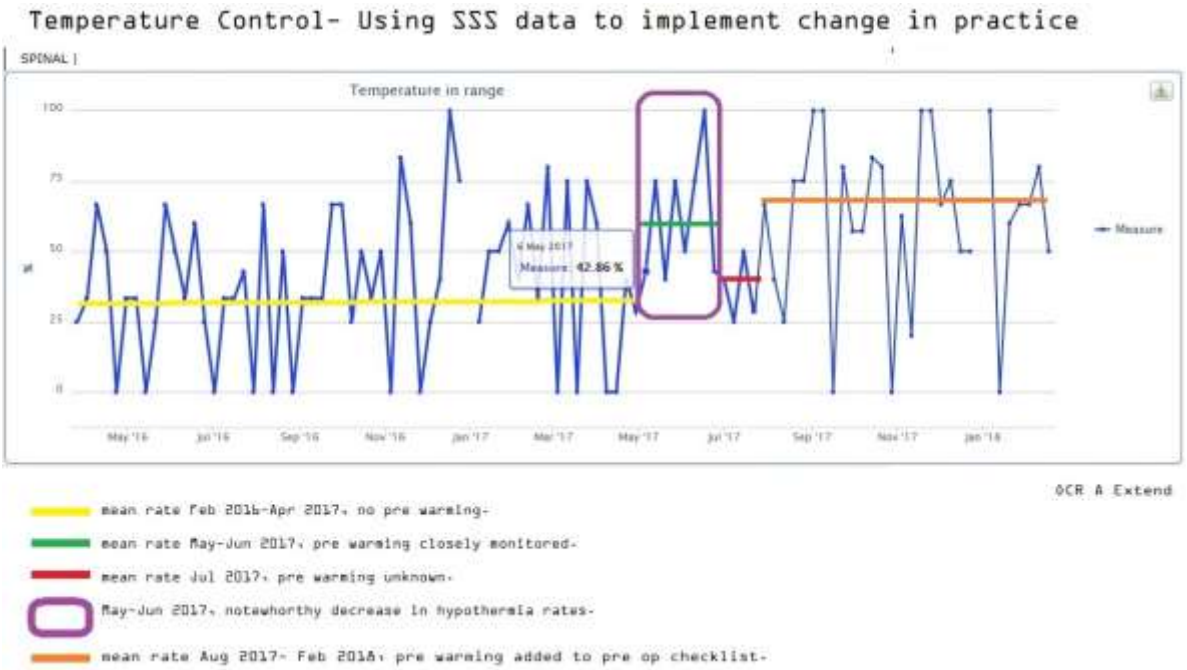
years, the SSIS team successfully implemented the pre warming at ward level, pre operatively, based on the aforementioned One Together project recommendations (please refer to page 3, **5:10 Surgical Site Infection Surveillance and Prevention of this document).**

Data collected from the SSIS team database and presented using GOSH Quality Improvement live dashboards demonstrated that hypothermia affected around 70% of patients operated from Feb 2016 to Apr 2017. Pre warming trialling was discussed and agreed to start on IPC meetings and data measured between May-Jun 2017, with a noteworthy decrease in hypothermia rates from 70% to approximately 40% of the patients operated.

Pre warming trialling results were reviewed on Jul 2017 and agreed under Assistant Chief Nurse direction to roll out pre warming for all spinal patients pre operatively and added to amended pre-operative checklist. Sky and Woodpecker teams were prepared by the SSIS team and Matrons to accommodate this new practice accordingly and to begin from Aug 2017. Data captured after the introduction of the pre warming until Feb 2018 showed a further reduction on hypothermia rates affecting about only 35% of all patients operated.

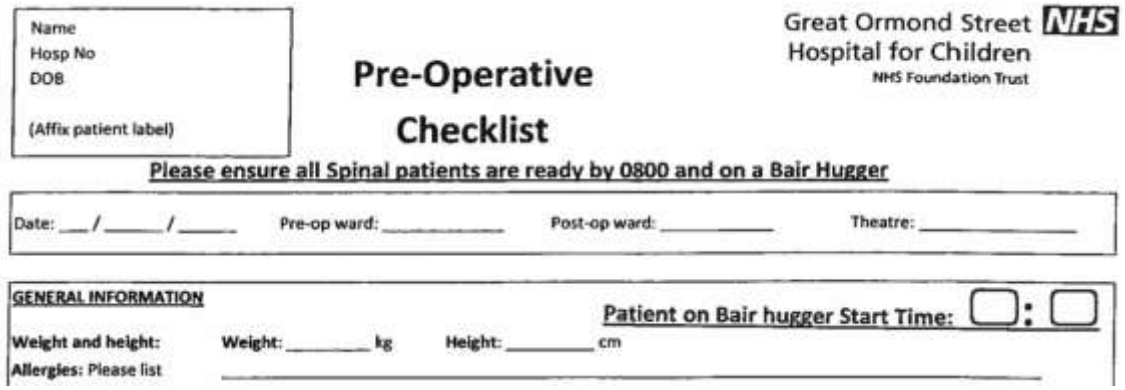
The SSIS team prepared a timeline graphic slide presentation for Matrons+IPC meeting on Mar 2018, showing all moments of the project from "no pre warming", "trialling" to "post implementation" results, based on One Together programme recommendations and data measured via GOSH S4 system and live dashboards. Results were discussed, well received and further presentations to diffuse the positive outcome of the project and to promote the continuity of the good practice on the wards involved as well as theatres/anaesthetics and JM Barrie Board meeting.

The continuous dashboard, data from S4 system and adapted pre op checklist (only top relevant section added for pre warming) are shown below:



Data					
Week of Operation	Measure	Mean	Median	Met Protocol	Total Operations
24/02/2018	75%	0%	0%	3	4
17/02/2018	50%	0%	0%	1	2
10/02/2018	80%	0%	0%	4	5
03/02/2018	67%	0%	0%	2	3
27/01/2018	67%	0%	0%	2	3
20/01/2018	60%	0%	0%	3	5
13/01/2018	0%	0%	0%	0	1
06/01/2018	100%	0%	0%	2	2
30/12/2017		0%	0%		
23/12/2017	50%	0%	0%	1	2
16/12/2017	50%	0%	0%	1	2
09/12/2017	75%	0%	0%	3	4
02/12/2017	67%	0%	0%	2	3
25/11/2017	100%	0%	0%	3	3
18/11/2017	100%	0%	0%	4	4
11/11/2017	20%	0%	0%	1	5
04/11/2017	63%	0%	0%	5	8
28/10/2017	0%	0%	0%	0	1
21/10/2017	80%	0%	0%	4	5
14/10/2017	83%	0%	0%	5	6
07/10/2017	57%	0%	0%	4	7
30/09/2017	57%	0%	0%	4	7
23/09/2017	80%	0%	0%	4	5
16/09/2017	0%	0%	0%	0	1
09/09/2017	100%	0%	0%	4	4
02/09/2017	100%	0%	0%	2	2
26/08/2017	75%	0%	0%	3	4
19/08/2017	75%	0%	0%	3	4
12/08/2017	25%	0%	0%	1	4
05/08/2017	40%	0%	0%	2	5
29/07/2017	67%	0%	0%	2	3
22/07/2017	29%	0%	0%	2	7
15/07/2017	50%	0%	0%	3	6
08/07/2017	25%	0%	0%	1	4
01/07/2017	40%	0%	0%	4	10

Data					
Week of Operation	Measure	Mean	Median	Met Protocol	Total Operations
24/06/2017	43%	0%	0%	3	7
17/06/2017	100%	0%	0%	2	2
10/06/2017	75%	0%	0%	3	4
03/06/2017	60%	0%	0%	3	5
27/05/2017	75%	0%	0%	3	4
20/05/2017	40%	0%	0%	2	5
13/05/2017	75%	0%	0%	3	4
06/05/2017	43%	0%	0%	3	7
29/04/2017	29%	0%	0%	2	7
22/04/2017	40%	0%	0%	2	5
15/04/2017	0%	0%	0%	0	2
08/04/2017	0%	0%	0%	0	2
01/04/2017	60%	0%	0%	3	5
25/03/2017	75%	0%	0%	3	4
18/03/2017	0%	0%	0%	0	1
11/03/2017	75%	0%	0%	3	4
04/03/2017	0%	0%	0%	0	4
25/02/2017	80%	0%	0%	4	5
18/02/2017	33%	0%	0%	1	3
11/02/2017	67%	0%	0%	4	6
04/02/2017	40%	0%	0%	2	5
28/01/2017	60%	0%	0%	3	5
21/01/2017	50%	0%	0%	2	4
14/01/2017	50%	0%	0%	2	4
07/01/2017	25%	0%	0%	1	4
31/12/2016		0%	0%		
24/12/2016	75%	0%	0%	3	4
17/12/2016	100%	0%	0%	2	2
10/12/2016	40%	0%	0%	2	5
03/12/2016	25%	0%	0%	1	4
26/11/2016	0%	0%	0%	0	3
19/11/2016	60%	0%	0%	3	5
12/11/2016	83%	0%	0%	5	6
05/11/2016	0%	0%	0%	0	3
29/10/2016	50%	0%	0%	3	6



Name
Hosp No
DOB

(Affix patient label)

Great Ormond Street Hospital for Children NHS Foundation Trust

Pre-Operative Checklist

Please ensure all Spinal patients are ready by 0800 and on a Bair Hugger

Date: ___ / _____ / _____ Pre-op ward: _____ Post-op ward: _____ Theatre: _____

GENERAL INFORMATION

Patient on Bair hugger Start Time: ☐:☐

Weight and height: Weight: _____ kg Height: _____ cm

Allergies: Please list _____

In addition to all the current work done in-house, the SSIS team within Surgery-JM Barrie, under the direction of the assistant chief nurse, was also pleased to welcome directors, lead IPC nurses and SSI officers from other institutions such as Chelsea & Westminster and Alder Hey hospitals, assisting them with ideas and new ways of working to improve SSI data collection processes and supporting them to establish, expand and/or improve their SSI Services, following our regarded expertise.

The SSIS team propose the following aims for the 2018-19 financial year:

- Antibiotics prophylaxis, where applicable: poor documentation and evidence of compliance remains highlighted as a risk factor. To continue to support and work with Theatres and Anaesthetics to promote the use of the PIMs Surgical Site Surveillance (SSS) Tab to capture

more accurate data of the time of surgical incision and the antibiotics administration, as per pharmacy policy;

- Hypothermia noted as another risk component, including spines. To continue to work with Anaesthetists to audit when hypothermia is occurring, and factor if there are changes that can be made to improve temperature control as well as to review other specialities that could benefit from the implementation of the pre warming following the successful pilot done for spines and noticeable further infection rate reduction. It was decided to continue the pre warming for spinal patients and to monitor if the hypothermia rates/trend would remain as a 'controlled behaviour' or at least lower than before when there was no "pre warming";
- To continue to use the data gathered and report it back to each speciality. Work together to use the data and add any explanatory narrative to the data;
- For SSIS Service to present SSI reports to senior management on Medical + Surgical Infection Prevention and Theatres, Interventional Radiology, Radiology + PACU Infection Prevention monthly meetings or any other meeting required;
- To assist the surgical teams to standardise areas of the patient pathway, where pertinent;
- To review the present list of procedures under monitoring with speciality leads, aiming that the list is regularly reviewed at least every 2-3 years or as required;
- To continue to work with the Quality Improvement team to reduce data duplication and to improve processes. After work done for SNAPS and Urology Outcomes Hubs, to collaborate and to support the undergoing revamp of the Outcomes Hub SSI tab for the remaining surgical areas;
- Following the current work being undertaken to build the new system Epic, to continue to work and collaborate with the EPR team during the duration of the project to promote the potential replacement of the S4 system that will likely become obsolete and the continuity/maintenance of a dynamic and as paperless as possible surgical site surveillance service post EPIC.

Spines

- CNS team to continue to complete wound review and document in clinical notes;
- To monitor and report deviances of standardisation of skin prep and dressings.

Conclusion

More of an emphasis will now be on reviewing exceptions to the care bundle and patient pathway to improve the patient outcomes.

5.14 Report for Cardiorespiratory Surgical site infection surveillance by Ruth Umney and Liz Smith

SURGICAL SITE SURVEILLANCE 2017-2018 CARDIAC SURGERY AND INTERVENTIONS Charles West Division report 3rd May 2018

By Ruth Umney- cardiac nurse practitioner and the SSS West Division SSS team, 8 page report.

Introduction

The cardiac surgery and interventions (CSI) surgical site surveillance (SSS) is undertaken for all children and young people (CYP) that have had surgery or an intervention under the cardiothoracic service. The SSS within Charles West division is based on the cardiology ward (Bear ward), Level 6, The Morgan Stanley Building. The local divisional surveillance program was established in 2013 following the end of the centrally funded SSS team within Infection Prevention and Control. The programme follows the cardiac pathway for each CYP, across intensive care, high dependency, ward, day ward and community services.

Due to a staffing challenges around recruitment and retention to the SSS officer role during 2016-2017 there was minimal data collection and we did not publish in the Infection Control annual report. During 2017 our SSS team had additional staff added to ensure full time coverage, along with the introduction of a Cardiac Nurse Practitioner to take a clinical lead for the day to day support of the SSS officers and their work. Monthly SSS Meetings have been greatly improved with enhanced effectiveness by a dedicated cardiothoracic surgeon in attendance, supporting classification of wounds and the quality of service. This demonstrates the importance of having a multi-professional approach to SSS. This structure has been in place and for 6 months. Due to these fluctuations in service provision a seven month period of data June – December 2017 will be presented as it is robust and high quality data.

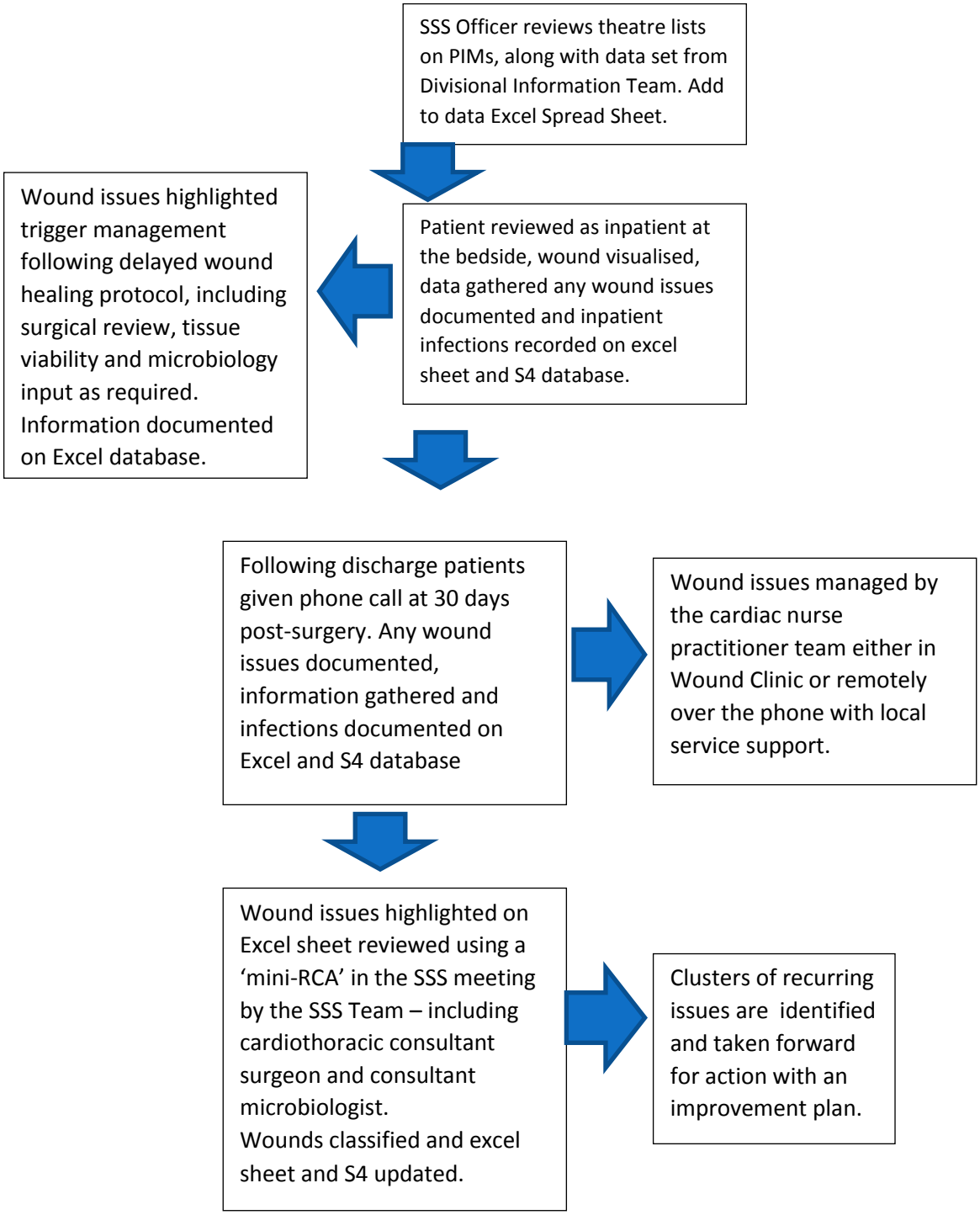
Staffing

The SSS service within the cardiothoracic services is run on a day to day basis by 2 part time band 3 Health Care Assistants/Surgical Site Surveillance Officers who collect the data 'on the ground', visiting the patient bedsides, liaising with nursing staff and completing the data collection tools. They also manage the 30 day follow up calls and complete this crucial information collection of data. They are supported by a Cardiac Nurse Practitioner, who is allocated 7.5 hours a month directly to the SSS, however the SSS officers are able to ask for help and support whenever this is required from any of the Cardiac Nurse Practitioner team.

Process

Patients are monitored throughout their inpatient stay and once they are discharged within a 30 day time frame.

Flow diagram 1 - How patients are identified for SSS monitoring



The following table explains the service of 4 different patient groups CSI SSS and the surveillance led by 4 clinical leads:-

Table 1 – Group of patients under SSS April 2017 – April 2018

Specialty	Surveillance Protocol Pre-Admission	Surveillance Protocol Inpatient	Surveillance Protocol Outpatient	Review Process
Congenital Cardiac Surgery **Ruth Unmey**	Planned surgical patients have pre-admission wellness call (Not able to do for emergency cases)	At least one review by SSI Officer following cardiothoracic surgery. Any other wound issues seen whilst inpatient will trigger further review.	30 day post op telephone call	• 24-48 hour follow up phone call from ANP or CNS. • Wound issues highlighted at any point following admission trigger review with cardiac ANP Team. Photos taken by family are saved to EDM. • If required wound issues reviewed in GOSH Nurse Practitioner Wound clinic. • Cases reviewed at monthly SSI meeting, decisions made on classification of wound and further reporting.
Heart and Lung Transplantation **Helen Latch**	This is normally emergency surgery. Patients consulted regarding infection risk when allocated to transplant list.			
Thoracic Surgery **Denise McIntyre**	Planned surgical patients have pre-admission wellness call (Not able to do for emergency cases)			
Device Implantation (Pacemaker / ICD) **Helen Walsh**			30 day post op telephone call 12 Month post op telephone call	

Due to the nature of some cardiothoracic diagnosis's and surgical techniques, some of the NICE guidelines standards are not met. These are:-

- Maintain patient temperature in line with 'Inadvertent perioperative hypothermia' (NICE clinical guidelines 65) – this is due to cooling being required in intraoperative in theatre. Certain groups of patients are now not cooled or have reduced cooling due to advances in surgical techniques
- Maintain optimal oxygenation during surgery – due to the nature of the patient's diagnosis saturations above 95% may not be achievable

Lost to Follow Up

All the 30 day post-operative calls are added in the shared SSS calendar and organized by date of surgery. Each patient identified for SSS, three calls are attempted and if a parent/carer cannot be reached, a voicemail will be left, with the information about why we are calling, where from and a contact number for them to return the call. After one week with no return call the patient would be classified and documented as lost to follow up. Patients can also be 'lost to follow up' if they do not have contact details listed on PIMs or other electronic system (escalated to Matrons, ward managers and service managers for local support and action) or if there is a language barrier or the family live overseas.

Table 2 – Lost to follow up June – December 2017

Lost to SSI	3 calls	Overseas	No Contact	Language barrier
June	9	5	1	0
July	4	8	6	0
August	4	6	1	1
September	12	5	1	0
October	14	3	0	2
November	9	5	0	2
December	3	5	0	0
Total	55	37	9	5
%	**12.64%**	**8.51%**	**2.07%**	**1.15%**

Developments for 2017 – 2018

- Additional SSS Officer appointed to ensure full time coverage of the service, including annual and sick leave cover
- Cardiac Nurse Practitioner Clinical lead nominate – Ruth Umney
- Dedicated named lead in each clinical area and service
- Surveillance now covers a wider spectrum of cardiothoracic surgical and intervention patients. Including:
    - Implanted devices (Helen Walsh)
    - Transplant patients (Helen Latch)
    - Thoracic surgery (Denise Mcintyre)
- Protocols updated for wound management
    - Dressings changes (CNPs)
    - Wound swabbing guideline (CNPs)
- Clinical Nurse lead wound clinic
    - Cardiac Nurse Practitioner team expanded (CNPs)
    - New tissue viability nurse appointed and service expanded
- Cardiothoracic Surgeon representative attends SSS meetings for wound classification
- Monthly SSS meetings arranged to maximise attendance by SSS team
- A new discharge booklet being developed to give patients and families more information on wound care and the follow up process
- Antibiotic protocol adherence – 30 minutes knife to skin and improved PIMs recording
- Trust improvement dashboards – optimise data entry

Data Reporting – 2017

The service has successfully captured all surgeries and interventions for 7 months of 2017-2018. A well trained robust team increases the standard of data collection and entry to support follow up patients to 30 days.

Table 3 – Percentage of Surgical Site infections June – December 2017

2017	Surgeries	Infections	Implants	Infections	Running total	Total Infections	%
June	59	2	6	0	67	2	2.98%
July	55	0	4	0	59	0	0.00%
August	63	2	8	1	74	3	4.05%
September	60	2	5	0	67	2	2.98%
October	60	0	4	0	64	0	0.00%
November	52	1	5	0	58	1	1.72%
December	47	2	7	0	56	2	3.57%
Total	**396**	**9**	**39**	**1**	**445**	**10**	**2.2%**

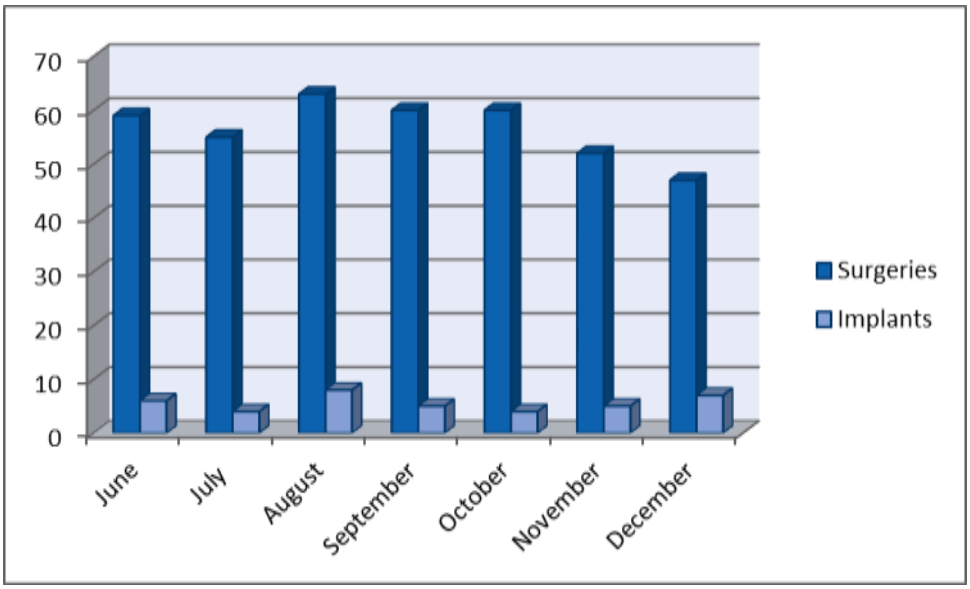
Table 4 - Surgical Patients - Break down of 9 Infections in SSI Categories

Patient Reported	Superficial Incisional Infections	Deep Incision Infections	Organ Space Infections
1 – June	1 – June	1 - Aug	x
1 – Aug	2 – Sept	x	x
1 – Nov	2 – Dec	x	x

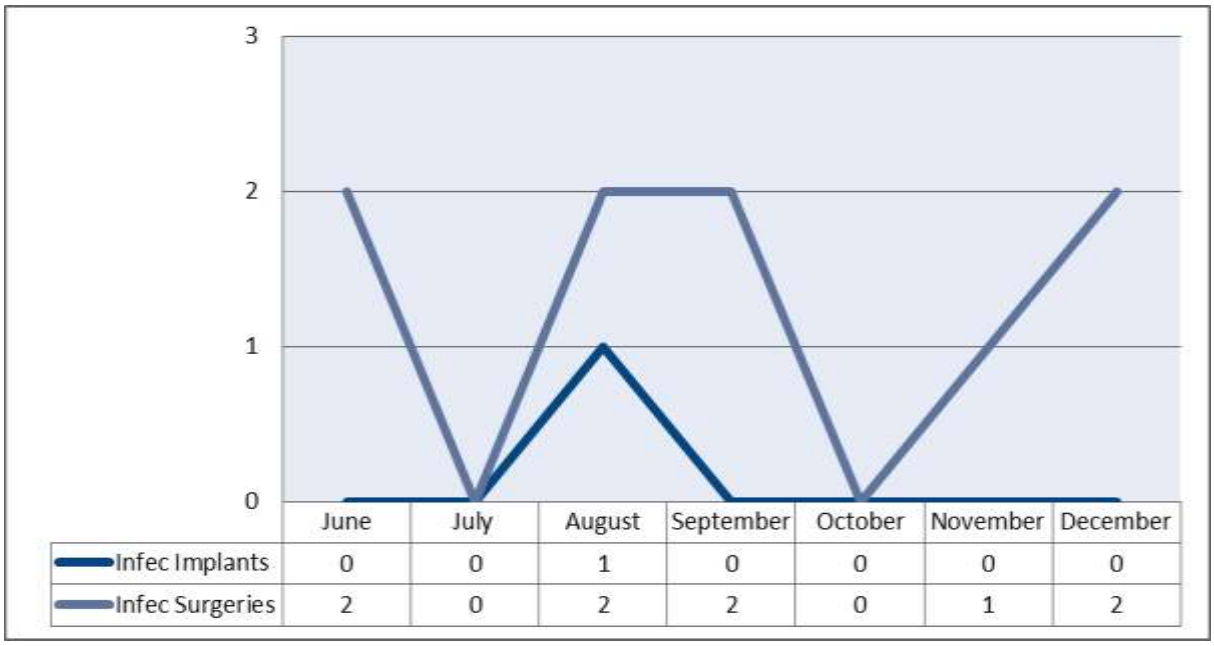
Table 5 - Implant Patients – Break Down of 1 Infection into SSI Categories

Patient Reported	Superficial Incisional Infections	Deep Incision Infections	Organ Space Infections
x	x	x	1 - Aug

Graph 1 - Number of Surgeries/Implants June – December 2017



Graph 2 - Number of Infections per month June – December 2017



	June	July	August	September	October	November	December
Infec Implants	0	0	1	0	0	0	0
Infec Surgeries	2	0	2	2	0	1	2

Clusters

Whilst there have been no specific clusters of wound infections which require reporting, there has been a continued theme of patients who have an initial stitch abscess which progresses to a superficial wound infection. This is as the initial inflammation starts at the stitch point and then subsequently seems to spread along the wound line.

This is of concern, as the suture technique used is one of a buried running suture which has been employed to reduce wound infections. Surgical registers are given specific training during their

orientation by a dedicated surgical team on arrival in the trust and unless the patients have delayed chest closure, all sternotomies and thoracotomies are closed in this manner. Ongoing monitoring is in place.

Families are given specific advice on wound care and monitoring for signs of infection prior to discharge home. They are also asked to contact the Cardiac Nurse Practitioner team should they have any concerns regarding the wound. They will then also receive the 30 day call from the SSS Officer.

Whilst reporting of stitch abscesses is not required as they are not part of SSS (if inflammation is localised to the puncture point) reporting of superficial incisional infections, is reported as part of SSS. Superficial incisional infections can lead to desistance of the wound with increased risk of scarring, and for one patient re-suturing from wound dehiscence.

Forward Planning and Future Developments for 2018 – 2019

Due to personal circumstances we are losing the current SSS officer team and are now working with our Assistant chief Nurse and the Ward Manager on Bear to recruit to this role and maintain support for the current part time position and to maintain service provision. There is also ongoing consideration of whether SSS should move out of the divisions into the trust wide microbiology service and standardise trust wide approach to monitoring and resource management. This is supported by our Assistant Chief Nurse Dagmar Gohil.

The SSS group is planning in the next year to look not just a monitoring numbers, but also the impact and work of teams around SSS and to follow development themes, this could be by area or aspect of the care pathway or feedback from service users such as patient and families.

Table 6 - Future developments

Future developments	Time line	Whom is responsible
Recruitment to SSS office role vacancy	3/12	Anne MacNivan Cardiac Nurse Practitioners Dagmar Gohil
Ensure continuous running of SSS despite staffing changes and movement	Ongoing	Dagmar Gohil Carolyn Akyil Anne MacNivan SSS team Cardiac Nurse Practitioners
Re-launch and update the cardiology SSS service, with refreshed contact details and protocols, to ensure that there is a culture of reporting issues to the SSS team and ensuring a unified approach to wound care and management across the departments	12/12	Cardiac Nurse Practitioners Team Microbiology team SSS team
M & M discussions about deep and organ space infections	Ongoing	SSS M & M team Divisional lead Cardiac Surgical leads
Surgical update on guidelines for infected	6/12	Cardiac Nurse practitioner team

	wounds		Tissue viability
	Continue support for surgical team induction to the Trust	Ongoing	Cardiothoracic surgeon Surgical teams Microbiology team SSS team
	Update local web page	12/12	Cardiac Nurse Practitioners
	Parent information of SSS updated	6/12	Cardiac Nurse Practitioners
	Continue to consider the effectiveness of the split divisional SSS, and whether a unified, trust wide approach may be more effective and robust. This would include a dedicated work space which is something the current SSS team do not have and would greatly benefit from	Ongoing	Trust team Microbiology team Dagmar Gohil

Table 6 - West Division Surgical Site Surveillance Team

Team members
Microbiologist
Infection Control team
SSS officers
Cardiac nurse practitioner team
Ward manager Bear
Practice Educators
Matron
Cardiothoracic surgeon
Operating theatre representative
Plastics team
Tissue viability CNS
Assistant Chief Nurse
Anaesthetics
CICU representative
Bear Ward representative
Day Ward representative
Cardiologist

5.15 Neurosurgery SSI surveillance by Mr. Martin Tisdall

Neurosciences does not have a dedicated SSIS officer. Surveillance is undertaken through the weekly audit meeting and complication entry onto a bespoke Neurosurgery database with specific classification for SSI. Permanent shunt procedure CSF infection deep or organ space craniotomy infections are likely to be detected as re-admission is inevitable. Superficial incisional infections of shunt and other procedures is not likely to be complete as there is no out of hospital data collected.

Permanent shunt infection surveillance

The Neurosurgical team maintain a dedicated audit data base with accurate recording of shunt related infections. Since 2010 this will be used to provide monthly data for inclusion on the Neurosciences Safety dashboard.

The permanent shunt procedure infection rate (all types of shunts, primary insertions, internalisation and revisions) was:

2013/14 - 6 infections from 170 procedure at rate of 3.5

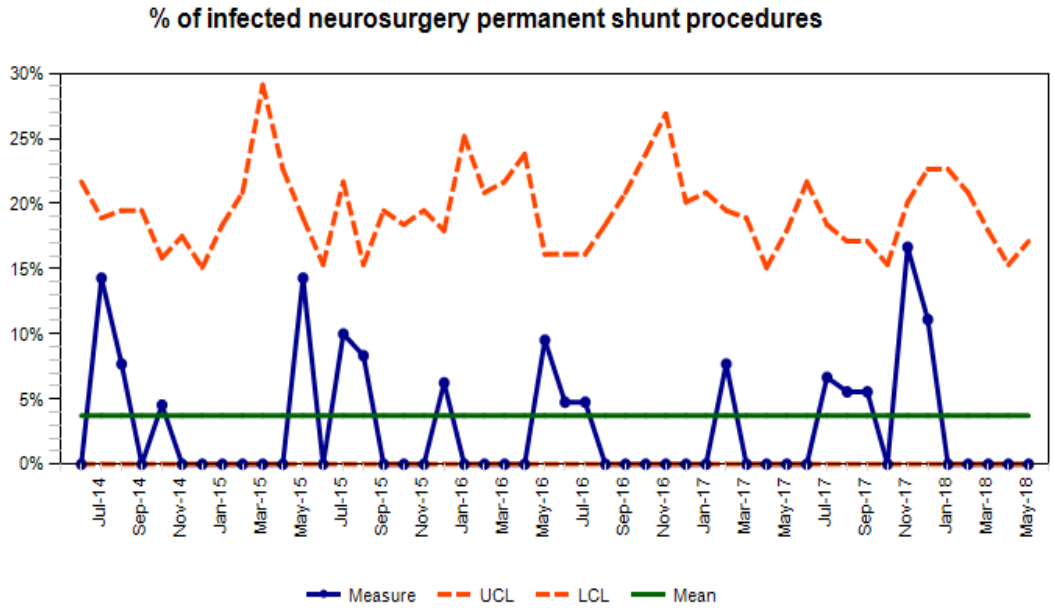
2014/15 - 5 infections from 157 procedures at rate of 3.2

2015/16 - 6 infections from 165 procedures at a rate of 3.6

2016/17 – 5 infections form 161 procedures at a rate of 3.1

2017/18 - 6 infections from 183 procedures at a rate of 3.3

The continuous dashboard is shown below:



n: Shunt infection determined to have occurred if: CSF microscopy/culture demonstrated an organism or there was CSF pleocytosis associated with fever, shunt malfunction or neurological symptoms, requiring shunt removal and subsequent antimicrobial treatment.

Viral infections detected while at hospital

5.16 Surveillance of Respiratory virus infection

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

The advent of PCR testing a few years ago increased the test sensitivity and apparent numbers increased, but this has been unchanged in the last few years, with the exception of widening the panel in some children to include rhinovirus and coronavirus. Extended panel testing is not performed on all acute admission and data will underrepresent 'community infection' (virus present on admission). First detections are called hospital acquired if the symptoms onset in hospital or if the first test was after 48 hours; some detections will have been incubating. Some children have 2 or 3 viruses so the total number of positive patients is less than the number of viruses.

Comparison of the last three years, see below, shows that the number of potential hospital acquired cases has increased slightly again, as did the overall number of respiratory viral infections compared to last year.

The data unsurprisingly shows that the highest number of admissions with acute respiratory virus infection is to the PICU and CICU; however this leaves non-infected children admitted to these units at risk of exposure and transmission is detected. Probable virus transmission detected during admissions (labelled HAI) is obvserved across the hospital, disproportionately higher than the ICUs and reflecting transmission from unrecognised reservoirs, which are common in children and their carers and staff, or long stay susceptible children likley to be tested.

Implementation of standard precautions are designed to mitigate the risk of transmission but it has not been eliminated. We intend to keep focus on all staff, patient and family involvement with prevention.

Numbers of respiratory viral infections detected in patients by financial year:

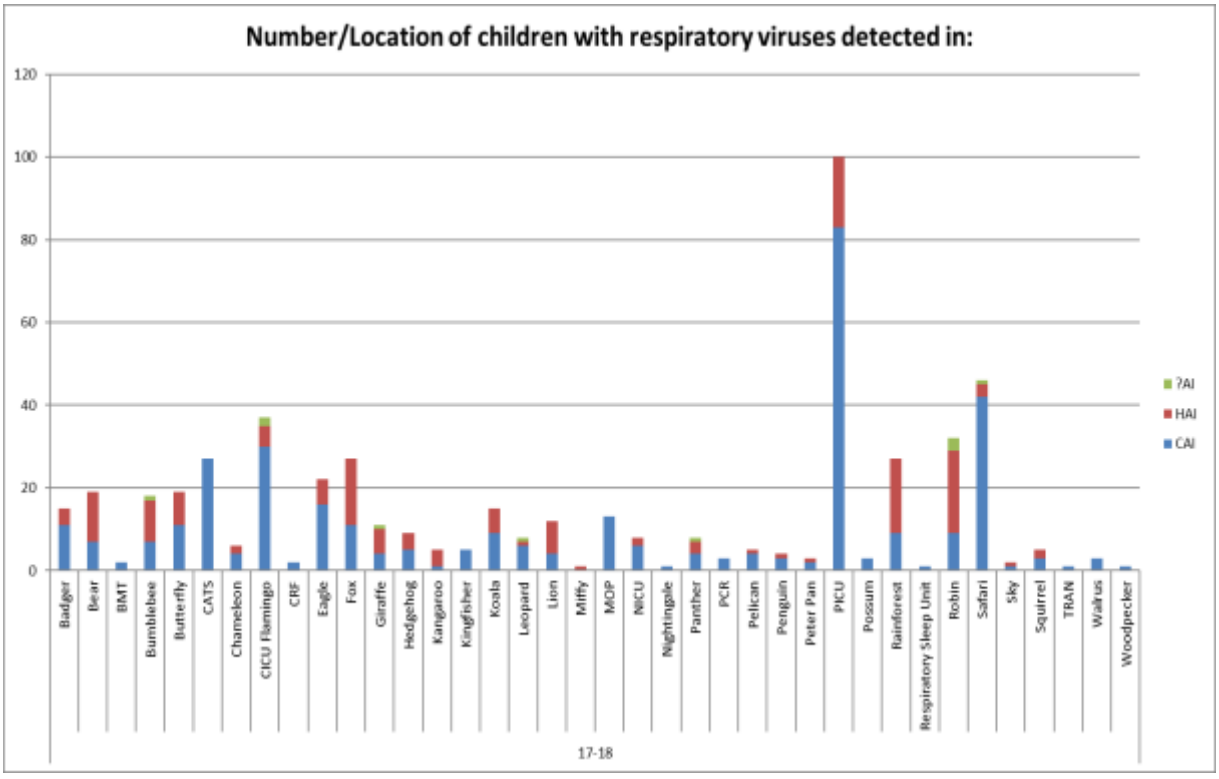
(Data has been collected by an automated electronic search of data base (as opposed to a manual count in previous years, using a coded algorithm, and has given a slight change for absolute numbers for previous years shown in previous reports.)

Tables and graphs are shown below detailing the number of viruses detected, whether they were present on admission or after 48 hours and location of children.

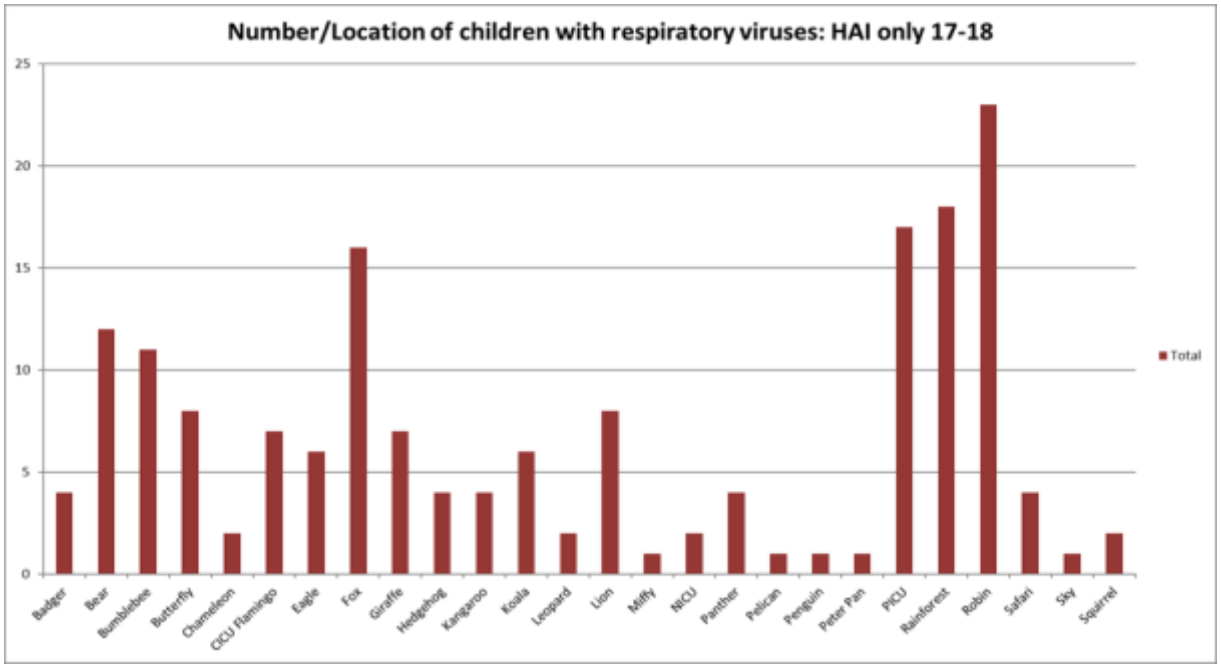
	15-16			16-17			17-18		
	CAI	HAI	?AI	CAI	HAI	?AI	CAI	HAI	?AI
⊞Adenovirus	46	21	0	53	32	1	77	41	2
⊞Bocavirus	0	0	0	0	0	0	0	0	0
⊞Coronavirus	0	1	0	2	9	0	0	6	2
⊞Enterovirus	0	0	0	2	1	0	1	0	0
⊞hMPV	12	6	0	23	5	0	34	9	0
⊟Influenza	32	7	0	39	10	0	59	11	1
⊞A	16	4	0	26	7	0	25	2	0
⊞B	16	3	0	13	3	0	34	9	1
⊟Parainfluenza	42	34	0	56	24	0	60	40	0
⊞1	15	9	0	6	0	0	18	6	0
⊞2	7	5	0	10	8	0	9	8	0
⊞3	20	20	0	40	16	0	33	26	0
⊞Rhinovirus	2	1	1	16	18	3	33	27	2
⊟RSV	64	31	0	79	34	0	90	28	3
⊞A	45	24	0	35	20	0	50	18	2
⊞B	18	7	0	42	13	0	40	10	1
⊞	1	0	0	2	1	0	0	0	0
Grand Total	198	101	1	270	133	4	354	162	10

Bar chart showing numbers of children with newly detected respiratory viruses and location at diagnosis during 2017/18

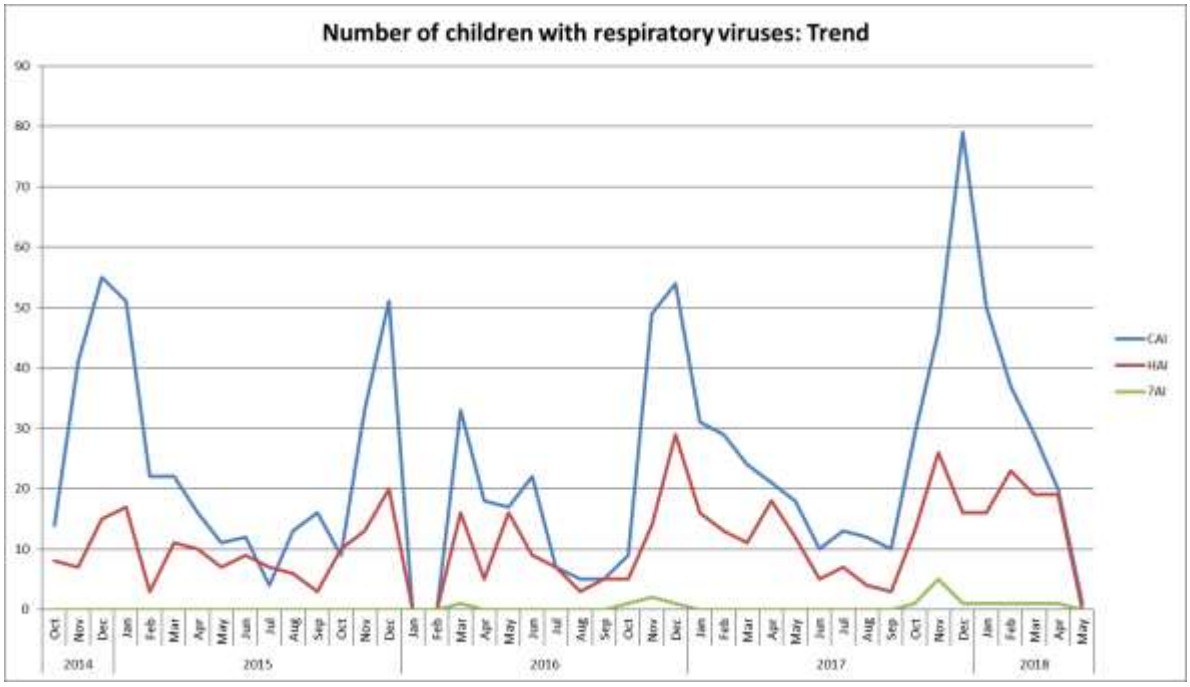
CAI – 'Community acquired' = present on admission
HAI - 'Acquired in hospital' – for convention this is taken as onset after 48 hours, however in reality this will include some incubating on admission as incubation varies.
?AI – where unable to assign due to uncertain history or delayed testing.



Bar chart showing numbers of children with newly detected hospital acquired respiratory viruses and location at diagnosis during 2017/18



Graph showing season trends in respiratory virus infection over last 5 years at GOSH



5.17 Surveillance of Viral Gastro-enteritis

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

As in respiratory infections, children, parents and staff frequently enter the Trust incubating these common infections and act as sources for localised outbreaks. Control of these explosive outbreaks may require closure or restriction of admission to units, along with additional environmental cleaning, as attack rates are high and secondary cases occur.

Detailed investigation of these outbreaks and numbers of reported patients, staff or visitors affected are kept by the IPC team and the decision to close wards is based on risk assessment and epidemiological data.

Change in methods: For the last 4 financial years all faeces have been tested by PCR (so numbers cannot be compared to years before then).
HAI = Hospital acquired (maybe relapse in immunocompromised) – based on 'epidemiological' definition of onset after 48 hours.

The number of enteric viruses detected in 2015/16 was similar to 2014/15 (351 v 352) but the number with apparent hospital acquisition decreased from 153 to 139.

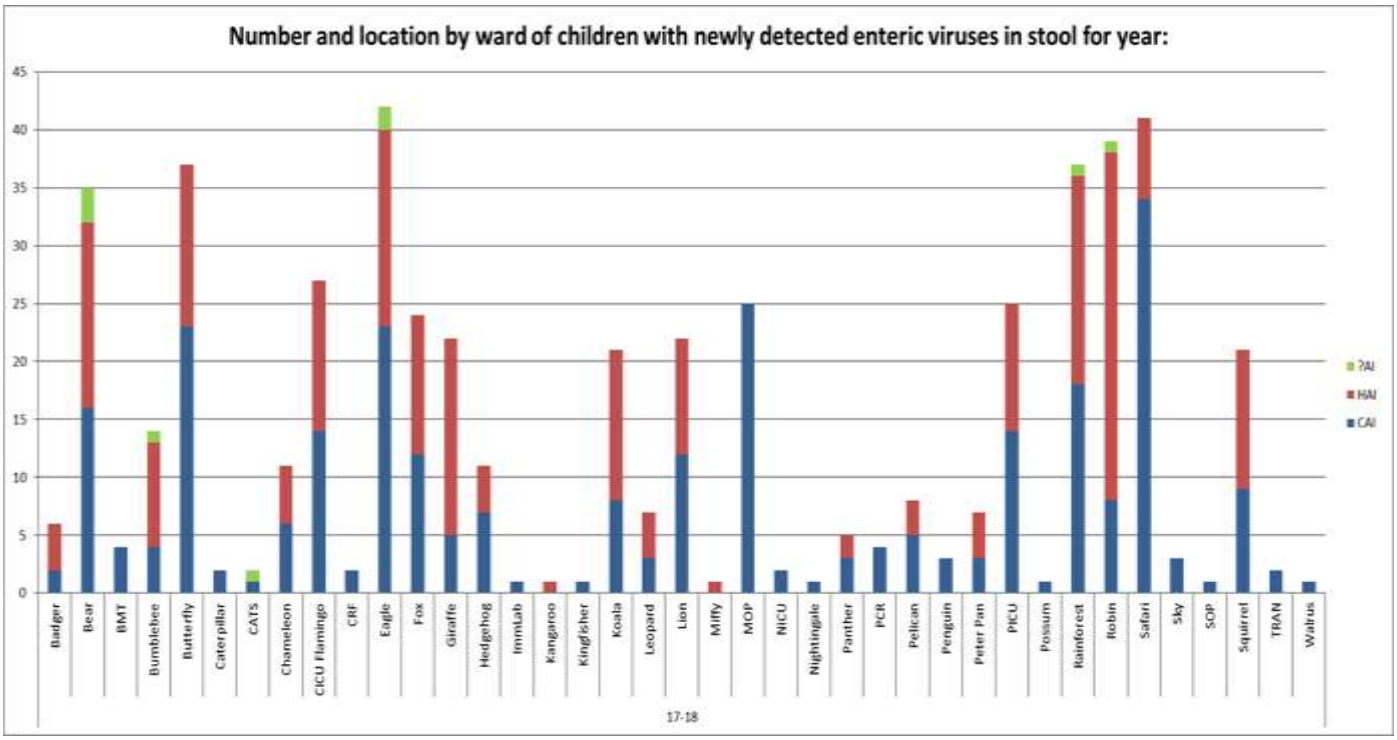
The number detected in 2016/17 had increased significantly to 499, with 218 recorded as acquisitions and remained at this level in 2017/18 – total virus detections 511, with 228 felt to be acquisition.

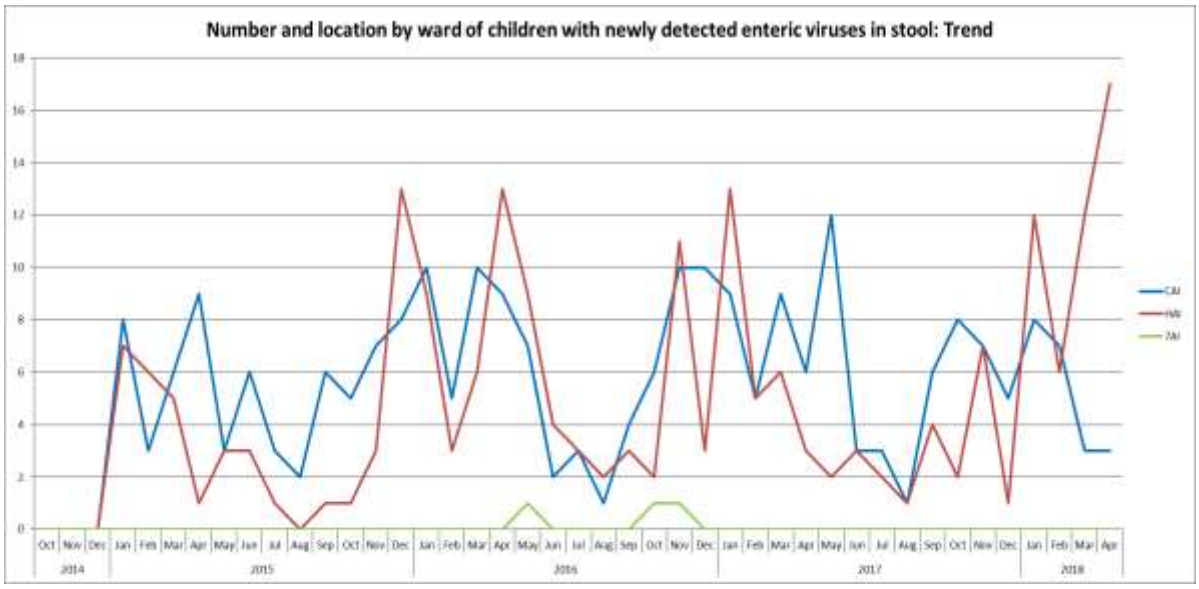
Table showing number of enteric viruses detected by financial year

17-18 Totals			
	CAI	**HAI**	**?AI**
Adenovirus	118	89	6
Astrovirus	27	37	2
Norovirus	69	55	0
Rotavirus	20	8	0
Sapovirus	49	39	1
Grand Total	**283**	**228**	**9**

As a result of this large number of cases admitted or with onset in the hospital, disruption to clinical services have been the most intense for years. Outbreaks are managed where possible without ward or bed closure, but through restrictions on visitors, increased chlorine cleaning and avoidance of 'bed management' cases wherever possible. Ward closures were avoided this year.

Number of detections is shown by virus and onset in the table and by ward child was on in the bar chart below.





Reasons for outbreaks are multifactorial, but frequently include failure to recognise and react appropriately to an initial infectious child and difficulty managing clinical services such that environmental control is not achieved rapidly. At times staff have also found difficulty maintaining good personal protection while working, especially in relation to water supplies.

There was a slow adaptation of cleaning work plans and policies and a less than expected standard of cleaning was observed with an internal root cause analysis and improvement plan required from OCS.

Number of Ward closures Year on Year due to confirmed or presumed viral gastroenteritis

Year	***Predominant organism***	***Ward Closures or admissions restricted to emergency***
April 04 – Mar 05	Rotavirus	17 wards (range 3-9 days)
April 05 – Mar 06	Rotavirus / Norovirus	11 wards (range 3-7 days)
April 06- -Mar 07	Norovirus	9 wards (range 3-10 days)
April 07 – Mar 08	Norovirus	5 wards (range 2-26 days)
April 08 – Mar 09	Norovirus	8 wards (range 2-10 days)
April 09 – Mar 10	D and V (no organism detected)	3 wards (range 3 – 4 days)
April 10 – Mar 11	Rotavirus, Norovirus and Astrovirus	3 wards on restricted admission (6 – 19 days)
April 11 – Mar 12	Norovirus, Rotavirus, Adenovirus, or D&V cause not found Mixed viruses	10 wards on restricted admission*(4 – 14 days) 1 ward was closed for 1 week**
April 12 – March 13	Norovirus, staff and patients affected	One ward was closed for three days
April 13 – March 14		No ward was closed.
April 14 – March 15	Norovirus staff and patient	1 ward on restricted admission
April 15 - March 16	D and V (sapovirus & norovirus)	1 ward closed (8 days) 3 ward on restricted admissions
April 16 – March 17	Norovirus, astrovirus	8 ward outbreaks with 4 ward or bed closures
April 17-March 18	Norovirus,Astrovirus,VRE, RSV and Parvovirus	11 ward outbreaks with no wards or beds closed 7 wards under restrictions

Surveillance for antimicrobial resistant organisms

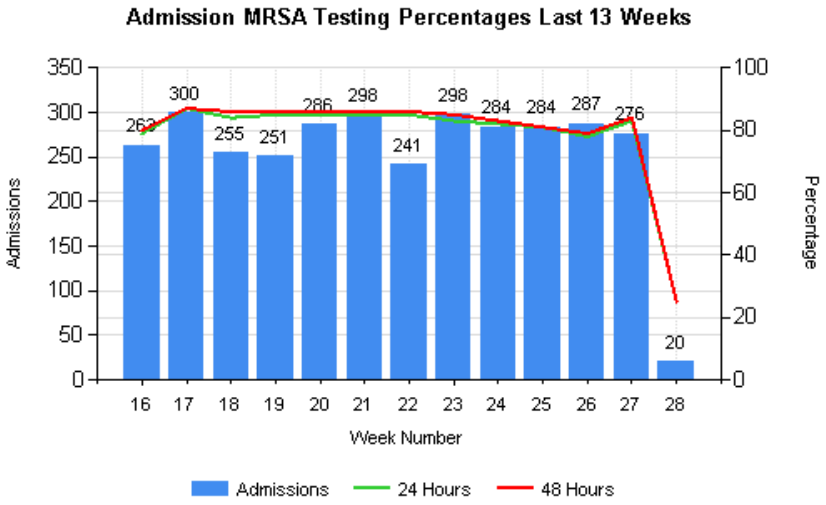
5.18 MRSA Admission Screening and acquisition, carriage rates and ward location

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

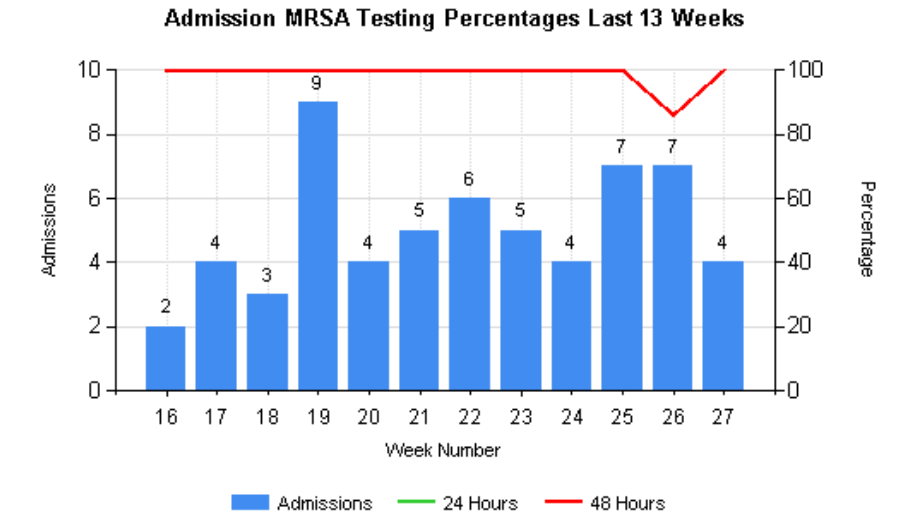
Wards are provided continuous feedback on completion of screening through the Infection Control Report page (which wards monitor daily) and reminders from the IPC team.

A new automated admission screening compliance report has been created (30 day prior to within 24 hr) linked to the Nursing KPI dashboard for ease of access.

Screening compliance: Screening for all admissions is monitored weekly; data for the last 12 weeks (up to July 2018, week 28 is incomplete), shows > 80%



Screening compliance for NICU, data for last 12 weeks to July 2018

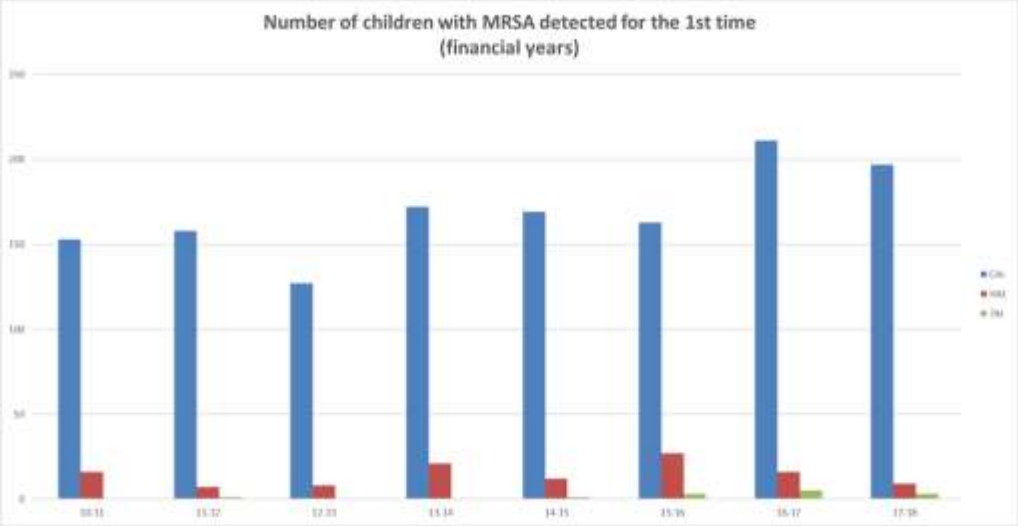


MRSA cases of colonisation/carriage and infection at GOSH

Details of newly detected MRSA carriage is shown in the chart below

In the financial year 16/17 there were 234 first detections, with 18 possible acquisitions. In 2017/18 there were 209 first detections with 9 possible acquisitions.

Every apparent GOSH acquired case is investigated. There was one small outbreak this year of 2 linked cases and one staff member, plus two other possible linked pairs; although single acquisitions occur, without obvious source. The degree of contact precautions used for known cases appears to be adequate.
Long term colonised patients are always present and represent ongoing risk.

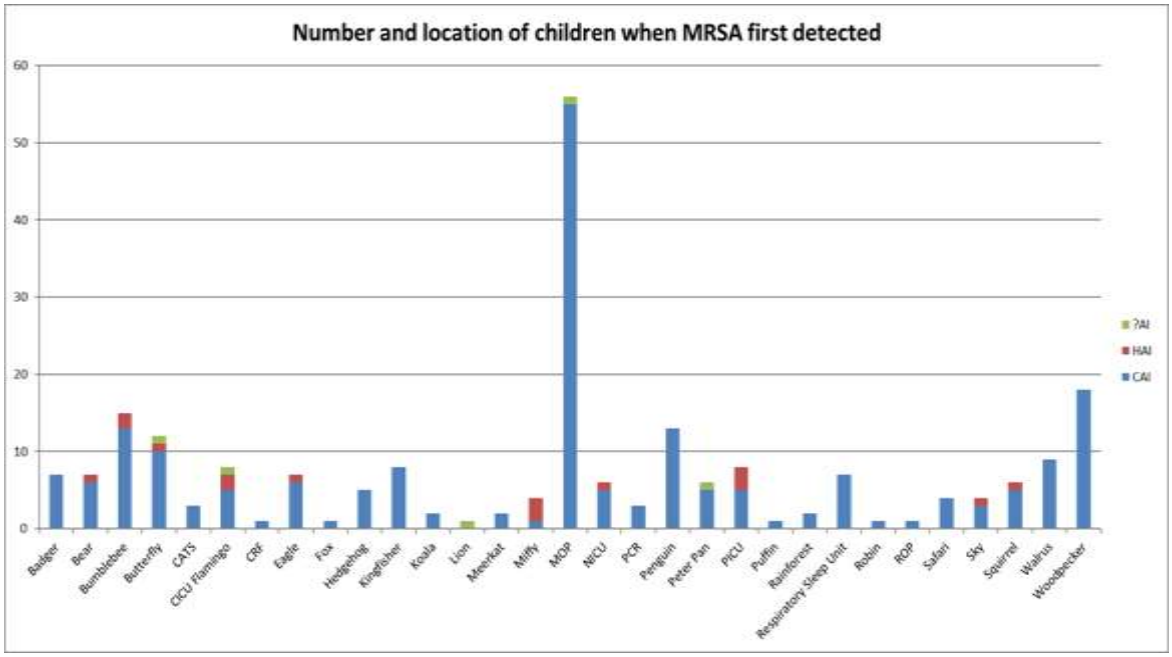


GOSH Hospital MRSA acquired colonisation by financial year:

(Data has been abstracted electronically from a new data base and numbers differ slightly from previous years published in annual reports.)

Financial Year	CAI	HAI	?AI
10-11	138	15	0
11-12	148	7	1
12-13	121	8	0
13-14	171	21	0
14-15	169	12	1
15-16	163	27	3
16-17	210	16	5
17-18	197	9	3

Bar chart showing location of child when MRSA first detected in 2017/18



5.19 Multiple resistant 'gram negative' organisms (including transmissible carbapenemase producing organisms

Routine admission faecal surveillance is performed to allow

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

We also detect colonised or infected children during processing of clinical samples and weekly faecal screening of inpatients in high risk areas (haematology, oncology, immunology and bone marrow transplant). Additional isolation procedures at instigated at considerable organisational, financial and individual cost.

Screening/testing shows an increase in number of colonised children detected, both on admission and acquired in hospital.

This high level is due to the continuing national and international increase in antimicrobial resistant organisms but was also due to cross infection. Children are located in most wards (see bar chart below), with predominance in the International and Private Patients unit.

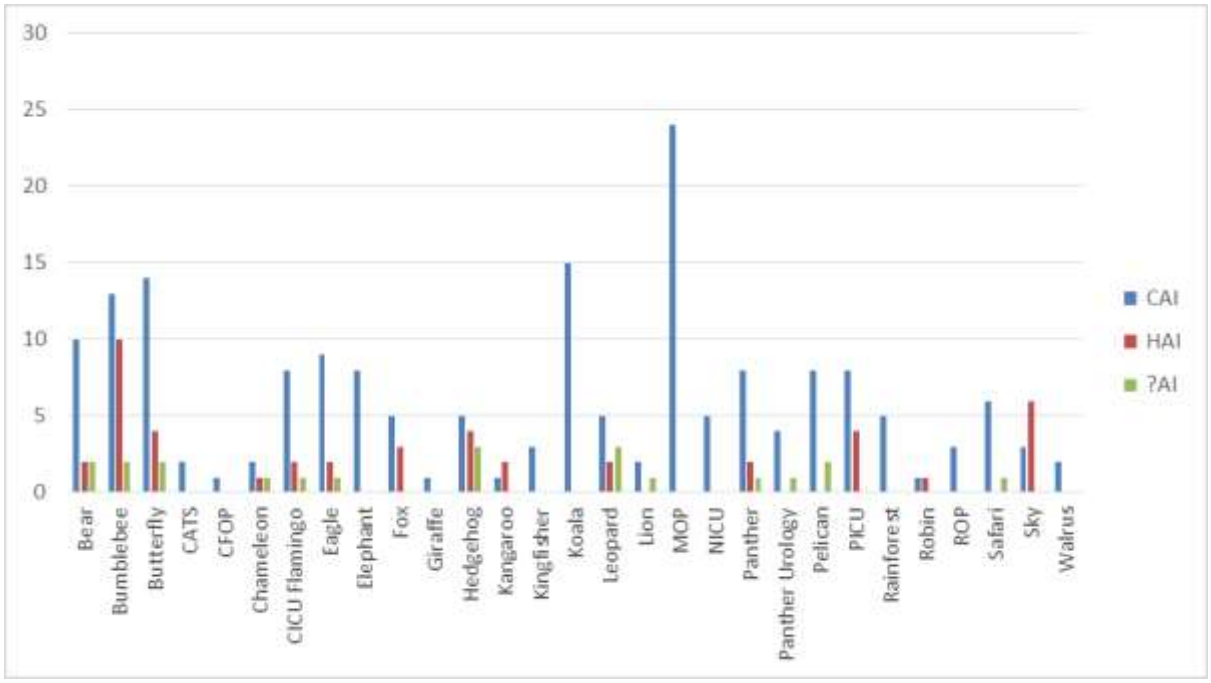
Potential acquisitions occur throughout the year and not all isolates can be investigated through detailed typing, so complete analysis of source is not possible. Where the initial epidemiological analysis strongly suggests cross infection further typing is undertaken and linked cases were confirmed in a number of wards. Undetected cross infection will be occurring. Detailed research is underway to answer help understand the epidemiology of these isolates.

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

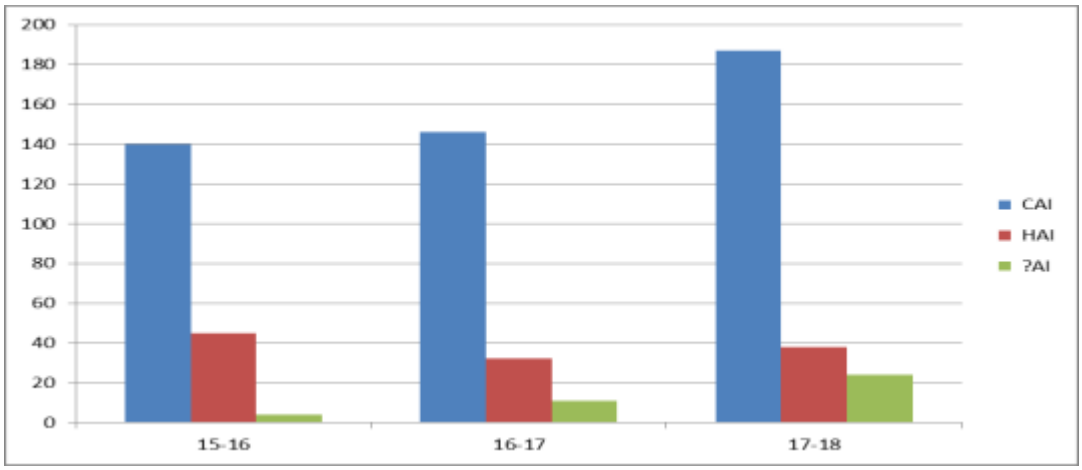
Total number of admissions and acquisitions of MDR-GNs by calendar year:

	HAI	CAI	Total
2006	60	77	137
2007	50	77	127
2008	34	145	179
2009	40	79	119
2010	33	91	124
2011	62	118	180
2012	46	137	183
2013	39	116	155
2014	54	132	186
2015	50	136	186
2016	44	143	187
2017	66	181	247

Location of children when new MDRGN detected in year 2017



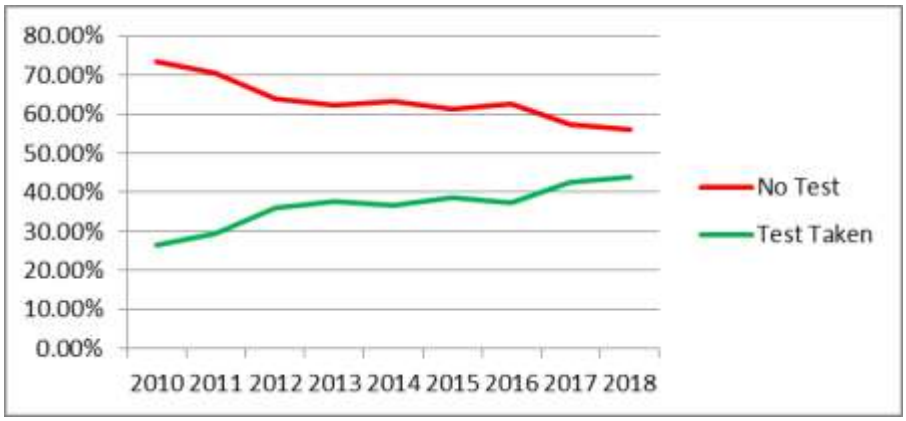
Numbers detected by financial year:



Screening compliance: The aspirational goal is universal admission screening, however, this is diffiuclt to achieve. We have implemented additional feedback to wards to enable identification of non-screened children and complinace is slowly increasing.

We are working on automated data collection and analysis, collating PIMS data with lab data to estimate complinace. Below is the complinace rate for children admitted for > 48 hours. In 2017 45% of 7000 identified admissions were screened.

Graph showing faecal screening complinace for admissions of > 48 hours.

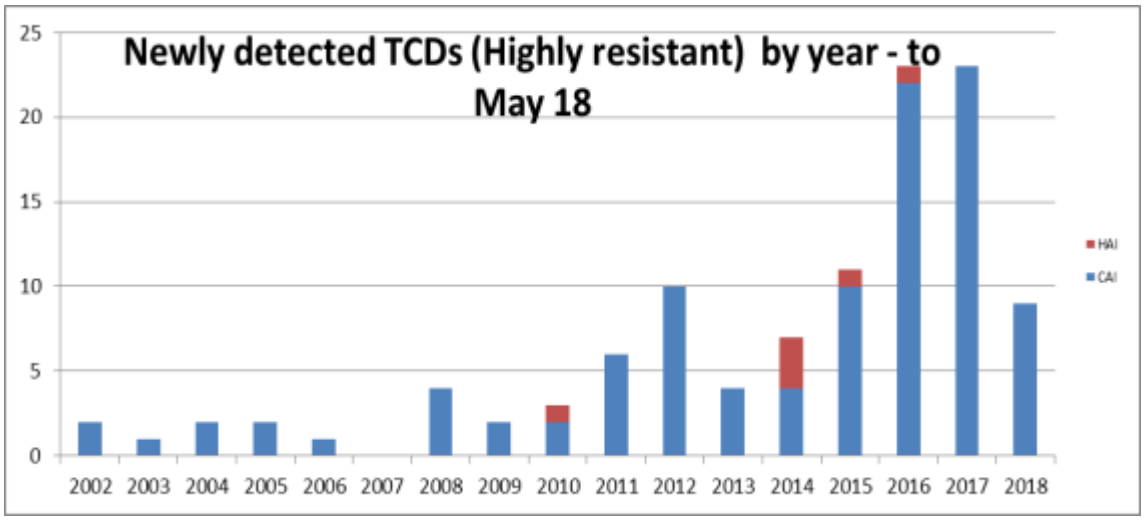


From an IPC view we strive to increase screening compliance. However, the improved uptake has already had a significant impact on laboratory capacity and further 'success' may actually be beyond current staffing. We will need to review policy and methodology to accommodate this demand.

Carbapenemase resistant gram negatives

The transmissible carbapenemase resistance determinants (TCDs; blaNDM, KPC, oxa48, VIM and IMI especially) represents the most serious threat to treatment yet. Organisms carrying this mechanism may become truly untreatable. They are becoming more prevalent in various countries and regions within UK and have been responsible for major outbreaks. We screen for carriage and implement strict control mechanisms when found. There had been an increase in detection of children colonised with carbapenemase over the last 10 years, with an initial peak in 2012, but increasing again since 2015.

Bar chart showing the number of children newly detected as colonised with significant **transmissible carbapenemase carrying organisms** (Enterobacteriaceae, Acinetobacter spps, Pseudomonas aeruginosa) , by financial year:



Carbapenemase producing enterobacteriaceae (CPEs) Within the group of carbapenenase producing organisms there is a particular focus on CPEs (organisms which are part of the normal human gut flora and frequently associated with HCAI e.g. *E. coli, Klebsiella pneumonia*), with a control Tool Kit introduced by PHE.

We have seen an increase in the number of patients with this type of organism.

Review of the first 92 children we identified isolates of CPOs showed:

Age		
<12 months	28	30.4%
12 - 23 months	20	21.7%
2 - 5 years	19	20.7%
6 - 10 years	12	13.0%
11 - 18 years	13	14.1%
Sex		
Female	39	42.4%
Male	53	57.6%

Provenance (in first time isolates)		
Home	48	52.2%
Hospital - NHS	24	26.1%
Hospital - private	9	9.8%
Outpatient	5	5.4%
Temporary residence	6	6.5%

Previous contact with GOSH		
Yes	54	58.7%
No	38	41.3%

Residency		
London	20	21.7%
Essex	16	17.4%
Middlesex	6	6.5%
Home counties	9	9.8%
UK (other)	4	4.3%
Europe (Malta, Portugal, Cyprus, Macedonia, Ireland)	9	9.8%
Middle East (Kuwait, UAE, Oman, Doha, Bahrain, Saudi, Qatar, Jordan, Iran, Egypt)	24	26.1%
South Asia (India, Pakistan)	2	2.2%
Other (Nigeria, Venezuela)	2	2.2%

60% of children would not have met the PHE criteria for isolation and testing.

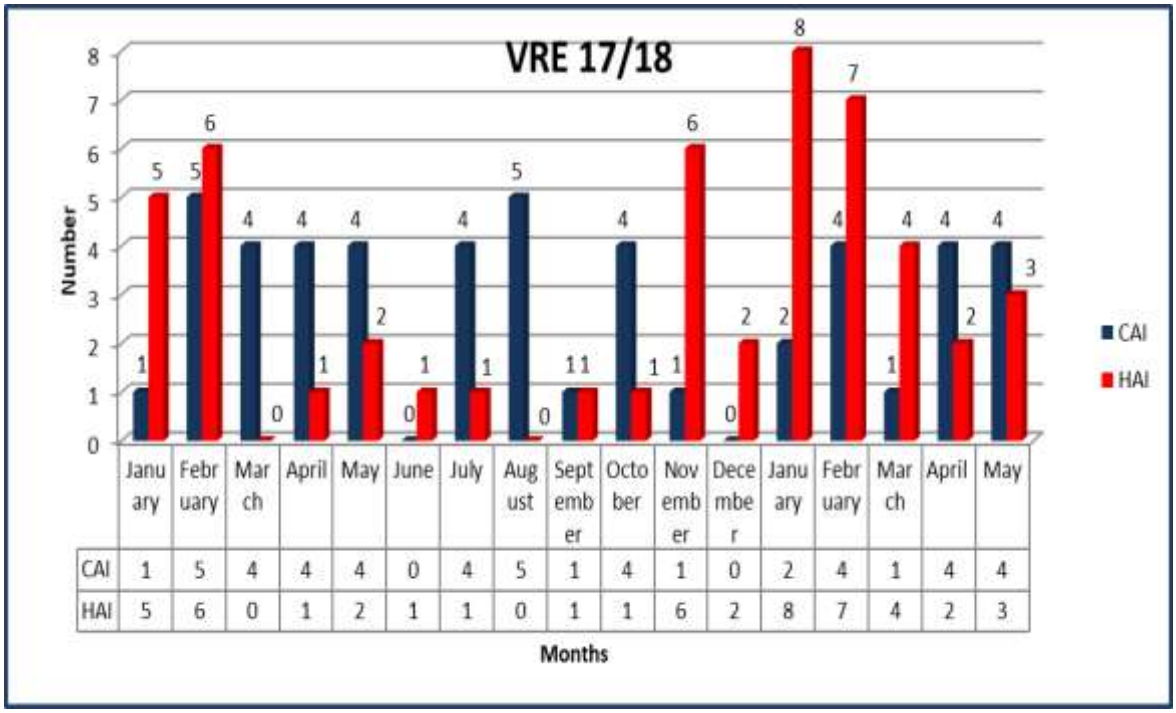
As this is such a serious risk we will continue our policy towards universal screening.

5.20 Vancomycin resistant enterococci (VRE)

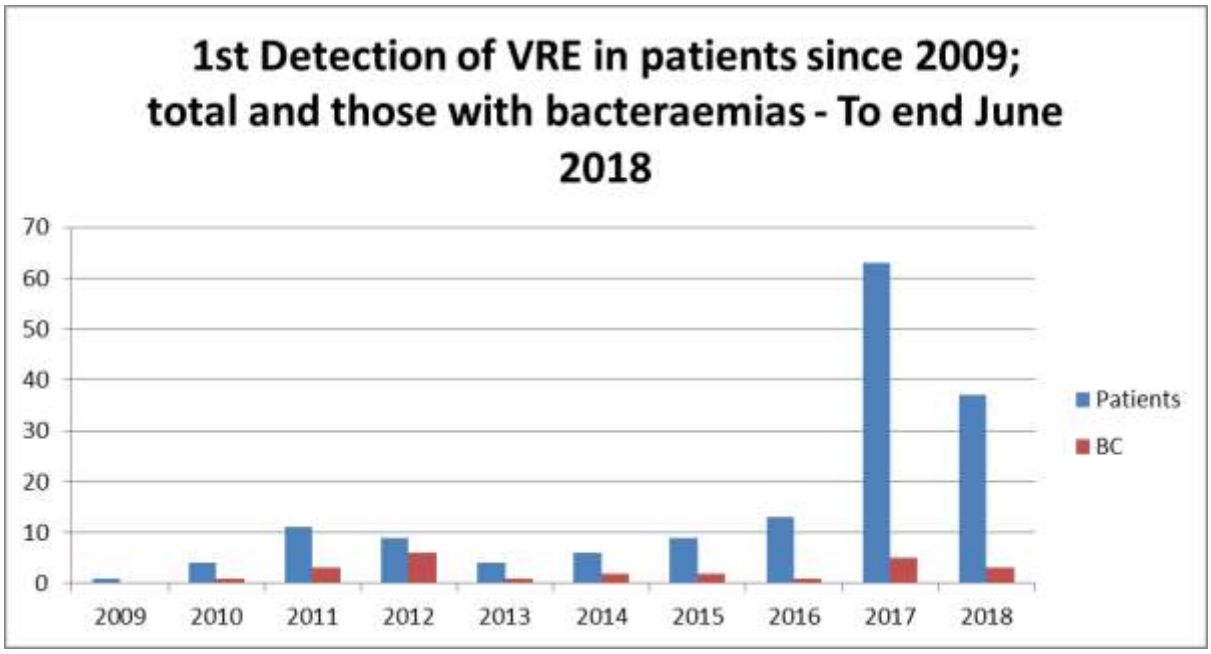
There has been an increase in detected colonisation with VRE.

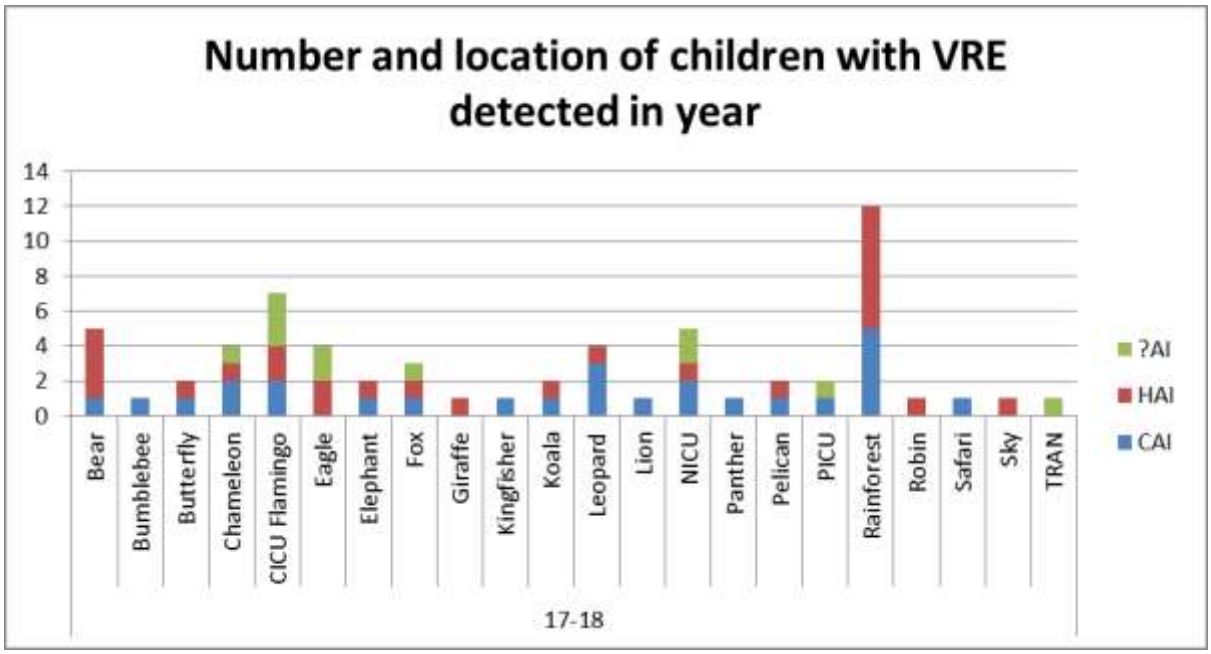
Initially we were alerted to an increase in VRE as the screening media introduced for CPE detection also reveals VRE detection. The increase may have been due to the increased detection of colonisation on admission, however, continued testing and detailed typing (with PFGE at national reference lab, Colindale, and whole genome sequencing in house) has shown cross transmission has taken place.

Number of newly detected VRE colonised children during financial, from Jan 2017:



	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May
CAI	1	5	4	4	4	0	4	5	1	4	1	0	2	4	1	4	4
HAI	5	6	0	1	2	1	1	0	1	1	6	2	8	7	4	2	3





As a result of the increase in cross transmission we have increased terminal cleaning after room occupancy and, combined with actions on general cleaning, we hope to reduce transmission.

To date there has not been an increase in serious infection, the increase in bacteraemia shown resulting from recurrent infection in one child.

5.21 Serious Untoward incidents and complaints involving IPC, major outbreaks and threats

Serious Incidents: In the 2017/18 financial year there were no SIs declared involving IPC, although there were two where infection was a significant contributor to poor outcome. Actions relate to the recognition and management of suspected sepsis.

Pan-trust concern with standards of cleaning Feb 2018 – this was not made an SI but datix issue raised and an OCS Performance Review undertaken by Facilities. An extensive action plan has been formulated and implemented.

Major outbreaks: as listed under 5.15 Viral Gastroenteritis, ward restrictions were necessary in the control of 4 outbreaks this year but no ward was shut.

6 Hand Hygiene and Aseptic Protocols

6:1Hand Hygiene and CVC on going care guidelines

The emphasis on carrying out hand hygiene at the 'point of care' through the '5 moments' campaign has been adopted across the organisation.

The Trust clinical practice guidelines are available on the GOSH Web within the Infection Control link. Alcohol gel hand hygiene products are placed inside all ward areas to encourage staff, visitors and patients to decontaminate their hands within the clinical area. Compliance with the CVL ongoing care bundle is essential for the prevention of line infections.

Regular audit is undertaken (see section 9).

6.2 Other Saving Lives High Impact Interventions

In addition to auditing hand hygiene compliance and compliance with the CVL care bundle the following areas are audited regularly and they results are on the Trust intranet dashboard against the relevant ward / department as part of the 'Saving Lives' programme:
- Peripheral line care bundle (insertion and maintenance)
- Urinary catheter care bundle (insertion and maintenance)
- Renal dialysis care bundle audited
- Isolation precautions audited annually

The savings lives bundles will be updated in line with national update.

7) Facilities IPC Annual Report from Keith Norris, Head of Facilities

Environment

The cleaning service is provided by OCS under a contract that commenced in August 2016. The cleaning standards are monitored through a comprehensive audit process involving OCS and joint working by the facilities, IPC and ward teams. The audit scores are reported at the monthly OCS performance meeting and posted within clinical areas.

The average audit scores for the year show that the cleaning regime meets the recognised required national standards. Where an audit identifies any lapse in standards these are recorded and the rectification is completed and recorded. All audit results are published in the monthly contract meeting.

OCS have been working closely with the Trust over the last few months to review and refresh the way in which domestic staff are trained.

It has been recognised that training is often completed in a modular way and there is a need to find a way of putting all of the elements together to form an easy to understand guide of how to clean a room in the right way, following the correct procedure.

OCS are currently working on producing a pictorial guide to the flow of cleaning. OCS would also be keen to work with the Trust to produce a video training guide.

There has also been an increased focus on policy compliance and OCS have been working to ensure that domestic staff comply with the GOSH uniform policy.

Following discussion with IPC, OCS have recently removed all microfiber cloths from the Trust and all areas are now cleaned using disposable cloths. We are now working on a project to assess the feasibility of removing the microfiber mops and replacing them with disposable, this project is in the early stages at the moment.

OCS have been working through the issue of placing incorrect soap cartridges into the dispensers. To assist with this the dispensers which require foaming soap are currently being marked on the inside of the dispenser to make it easier for the domestic staff to know which soap should be used where.

There has been a determined effort to improve the validation auditing process and the attendance by OCS, FM and clinical staff has improved considerably. This is proving to be very valuable to all concerned and allows issues to be dealt with very quickly.

OCS have purchased a number of trollies to be used by the domestic staff to remove waste from the wards. This has resolved the previous issue of the domestic staff using the linen trolley for this purpose. There does however remain the issue of removing used linen from the sluice rooms to the waste holds for collection. This task is currently performed by domestic which is out of scope of the domestic contract. On average this takes about 45 minutes per ward per day This is effectively reducing cleaning time available for each ward.

OCS have been working with the FM team to find a way to send audits to ward managers in real time, these include the overall score for the area and also divides the score into; nursing, domestic and estates scores.

The helpdesk operators now have access to the PIMS system and we can now arrange for training so that the operators are able to cross check information to validate that a level 4 is required.

OCS have recently taken control of the entrance mats, this will enable us to have more control when trying to deal with adverse weather situations.

OCS have recently taken control of the feminine hygiene waste stream. Feminine hygiene will now be processed through the offensive waste stream which has provided some financial savings for the Trust.

Decontamination

The Trust currently outsources its decontamination services to a third party provider. They are responsible for providing an offsite service for reusable medical devices (excluding flexible endoscopes) whilst also providing on-site staffing and management services for both the flexible endoscope decontamination unit as well as the Medical Equipment Decontamination Unit. A new provider was successfully awarded the contract during 2017/18 with services transferring 1st November 2017. The Trust is working in partnership with the new provider to look to put in place improved traceability systems in place for both medical equipment and individual instruments as well as a shared IT instrument traceability system with the Trust having the ability to access the system and view processing data.

Keith Norris Head of Facilities 14 May 2018

Additional report written by J C Hartley

Cleaning

Soft FM Services are supplied by Outsourced Client Solutions (OCS). The contract commenced 1 August 2016. Many aspects of service are continuously under review and audit as described above. However, during the year concern arose regarding the implementation of this service and a Service Review was initiated in Feb 2018; an improvement action plan has been generated and implemented. Definite improvement has been seen.

The recent PLACE inspection (April 26 2018) gave good verbal feedback; full report to follow.

Decontamination

Decontamination Services - Sterile Services, Endoscopy decontamination and Medical Equipment cleaning and disinfection (MEDU) has undergone a tender process through PPS Procurement. The successful provider was Steris IMS with the new contract starting 1 November 2017; services have been successfully transferred to the new provider and are managed through contract review and service user meetings.

Endoscopy service remains fully accredited, but there is a major risk as the endoscopy decontamination is undertaken in a unit that is at the end of its expected life. Also, the physical environment of the current MEDU is also not adequate for all services, including mattress decontamination and cardiac bypass heater cooler unit cleaning. A number of business cases have been written proposing solutions but not yet agreed. Contingency plans for offsite endoscopy processing needed to be developed for business continuity.

The Head of Decontamination retired and is currently replaced by an excellent member of staff who is only a short bank contract. Planning for continuity of this role is needed.

The CJD/vCJD Policy has been successfully implemented and the separate pool of instruments are now used for children born after 1 Jan 1997.

Risk from cardiac bypass heater cooler units
The HCUs were previously found to be colonised with Mycobacterium chimera but actions were in placer (good theatre ventilation) or put in to place (positioning) to minimise risk and justify continued use. Modified or new machines are now in place to reduce risk further. Decontamination is undertaken by MEDU staff but in a poor environment, pending successful implementation of proposed business case.

8. Estates IPC report summary

No report received, Summary from J C Hartley

Ventilation.
Verification of specialist ventilation: The Estate team continue to work closely with the IPC and clinical teams in improving the maintenance and monitoring of ventilation systems. A successful extensive programme of verification is followed in all theatres and ward areas with specialist ventilation. This has been prioritised in 2017/18 with ward closures undertaken to accommodate plan, although some areas have been risk assessed and delayed to make use of decant space with the opening of the PICB.

Commissioning of PICB specialist ventilation: PICB contains new theatres and 13 specialist positive pressure ventilated lobby rooms. Final commissioning of the PPVL rooms for protective isolation has not yet completed although they have been opened for routine occupancy.

8.2 Water Safety:
8.3 Water safety is now managed through the Water Safety management Group. Chaired by the DIPC, this committee meets quarterly and continues to develop its role in in the assessment and management of water risk.
An authorised engineer water (AE (Water)) has been appointed. The Trust has a number of fully trained Authorised Persons who will now be certified by the AE.
8.5 Legionella: All building systems continue to be tested and results and remedial works monitored in the Water Monitoring Group (Chaired by the Head of Estates). Legionella remains under control in the Estate (with Frontage Building contamination considered an acceptable risk). Communication and cooperation with the end users is improving as the importance of water risks are appreciated.
MSCB continues to be closely monitored as the building uses low temperature hot water with silver copper as primary control. Legionella has never been detected in this building.
Commissioning of PICB water – as part of the Mittal Centre, the PICB operates with the same water system as the MSCB. Prior to hand over legionella control was achieved, but with occupancy difficulties were experienced achieving recommended levels of silver at outlets and high total viable counts were measured (not a risk on their own, but a sign of poor control). Water flushing and system balancing has been modified to achieved siver and copper distribution, and TVCs are falling. Legionella control has always been maintained (none detected).

8.4 Pseudomonas aeruginosa risk - risk from water cannot be eliminated but continues to be controlled, through monitoring of patients, control of water use from colonised outlets and extension of testing to other areas with at risk patients.

8.6 Risk from heater cooler units has been controlled with replacement of all contaminated units and ongoing monitoring. (See comment on decontamination under facilities)

IPC input into development / projects
A great deal of time and knowledge has been required for IPC input into development / projects and, in the view of DPS, has not always been available in a timely or consistent fashion. Clearly this is a very significant area requiring specialist paediatric IPC knowledge but the amount of work required has surpassed the available IPC Team resource. With further major input required with the current and planned projects funding has been agreed for additional IPC staff, to be part of the IPC team but located predominately within DPS. A job specification is currently being written and is a priority.

9 Trust wide Audit

The infection control Trust-wide audit plan is well embedded in the Trust's overall audit programme and registered with audit department. This plan is based on the internal and external infection control strategy which includes elements of High Impact Interventions from the "Saving Lives" programme.

The infection control link personnel in the clinical areas take responsibility, with guidance from the IP&CT, for performing planned audits. All data is displayed, by the QI Team, on continuous dashboards.

Following on from work in 2016/17, highlighting a difference in audit undertaken by IPC Team and local team, J M Barrie division has undertaken work to develop a new audit process.

9:1 Hand Hygiene Results

Hand hygiene audit has been undertaken in different ways.

Ward based audit: There is a continuous audit process for compliance with hand hygiene requirements. This is traditionally undertaken by ward based staff and recorded on an online tool; total number per month is shown below, usually greater than 1200.

Each area is asked to undertake a minimum of 20 observations a month and if they do not complete this number the missing observations are recorded as a failure. There are therefore two compliance dashboard data displays, either including negative scoring for non-completed minimum (Audit type 1) or taking into account only the actual observations (audit record 2).

Developments: During 2016/17 (data in 2017 report) it was noted

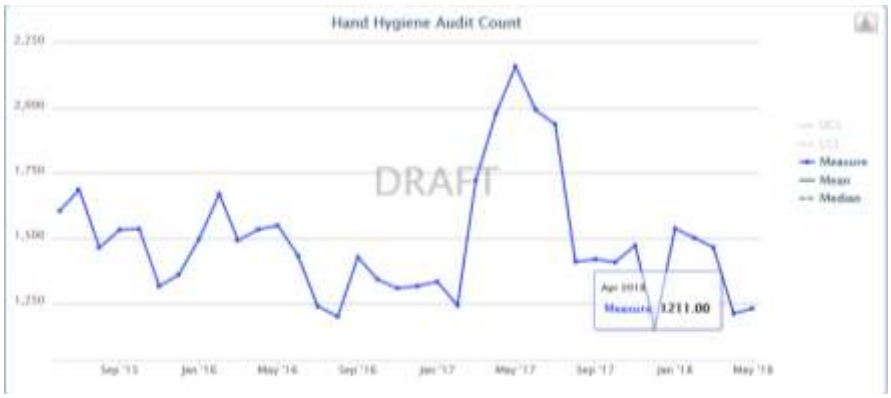
- that IPC Team conducted audit showed lower compliance
- there was a drop in audit completion (audit fatigue)

so in 2017/18 there was an re-invigorated approach to audit, in particular with J M Barrie division undertaking intense audit days every 3 months, and C West asking more senior staff

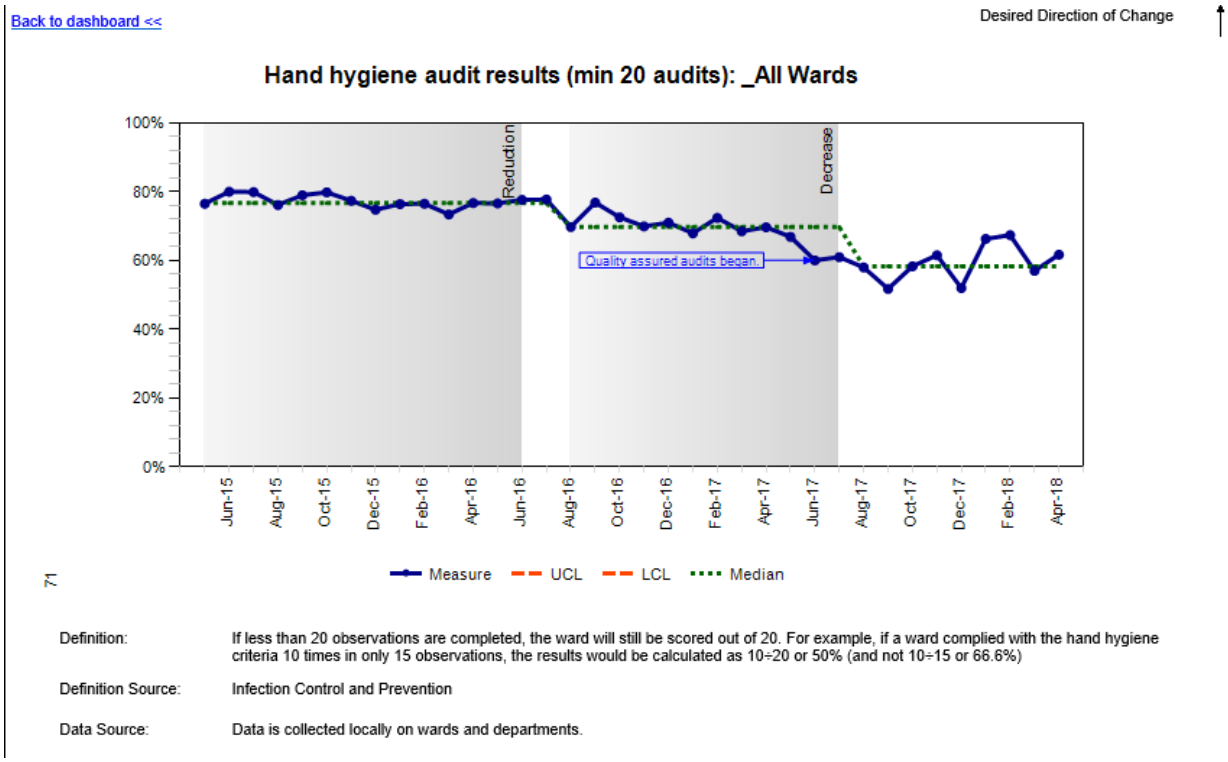
to undertake audit. The supported audit days were very successful with staff developing action plans during the day, and feeling better supported and able to challenge poor behaviour then or at other times.

As a result we felt there was a more complete audit picture and, in line with the previous IPC audit, compliance initially fell. However, continuing with this model the compliance is now improving and the IPC Committee has decided to ask all divisions to adopt the quarterly audit day model, when the latest re-structure is finalised. Separate reports detailing the specific successes of this audit are included in the minutes of the IPCC.

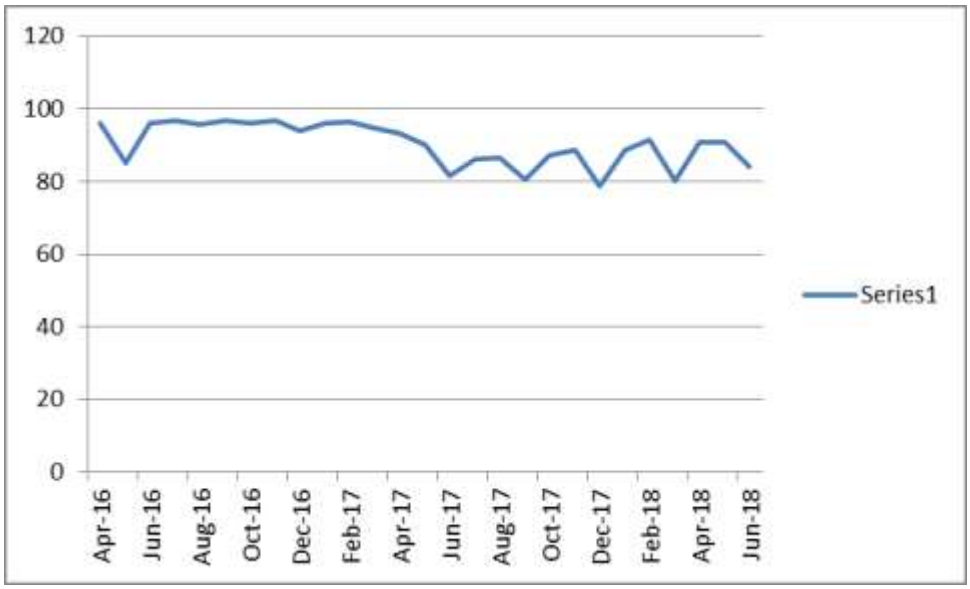
Total number of hand hygiene audit observations recorded by month



Ward based Hand Hygiene - All Trust compliance (with zero score for non-returns) (audit type 1 as above):



Audit display 2 – showing compliance for all completed observations

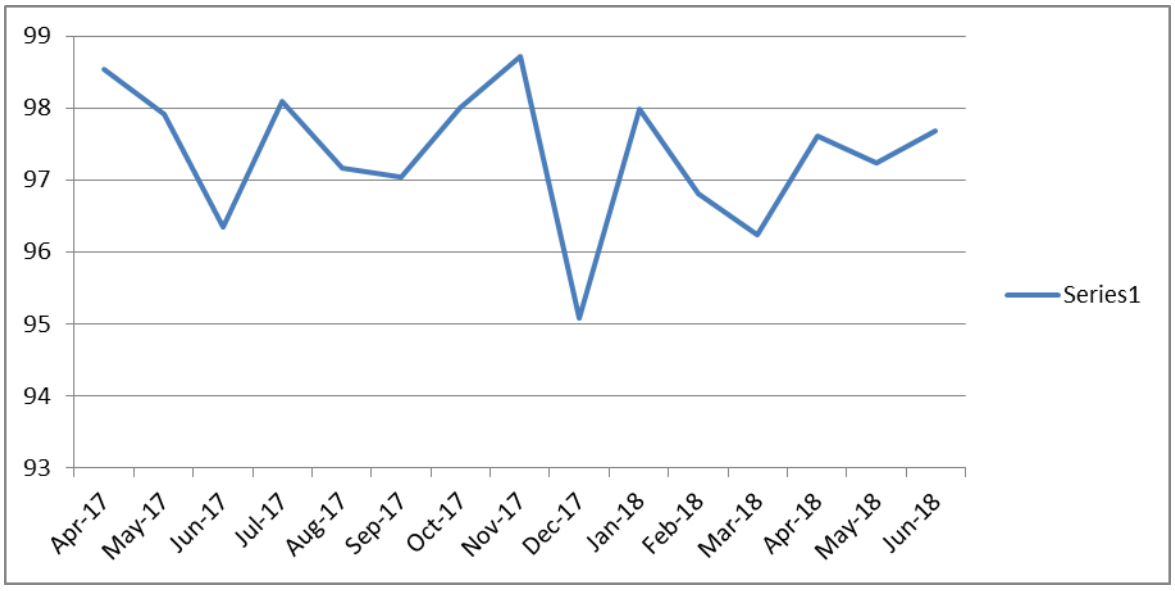


'Bare-below-the-elbows' audit

Since April 2017 the audit tool has incorporated a specific measure for the component regarding 'Bare-below-the-elbows' (hands prepared for decontamination by removal of watches, bracelets, stoned rings etc. and sleeves elevated so wrists can be decontaminated).

Considering only the actual observations, compliance is high:

Compliance with 'Bare-below-the-elbows' preparation for hand decontamination from monthly hand hygiene audit (all observations; number per month range from 2160 to 1157).

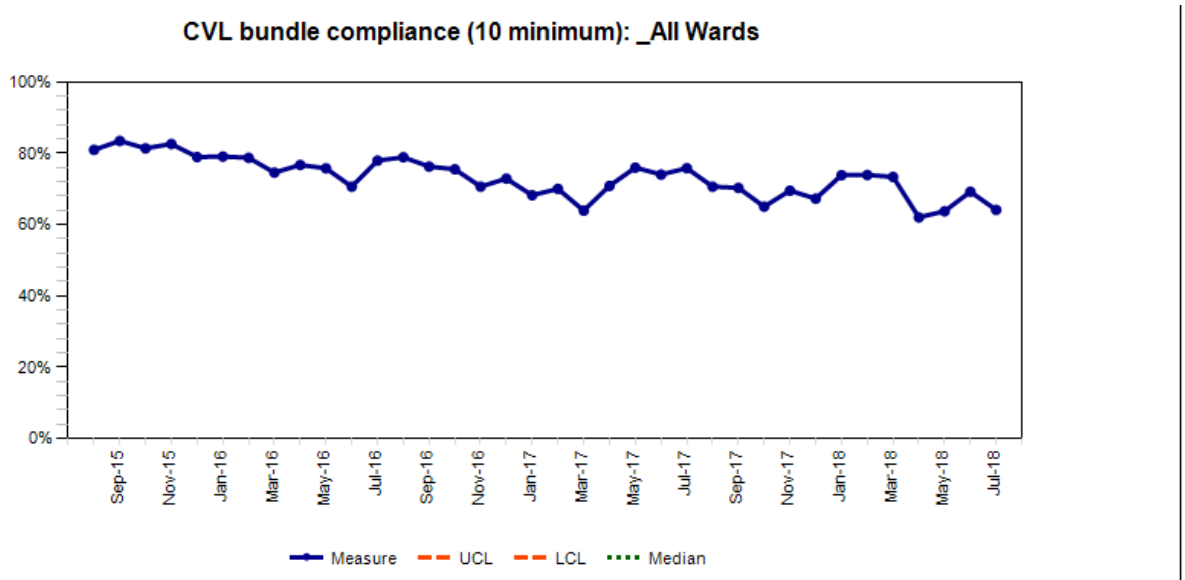


9:2 Central Venous Line Ongoing Care

Audit of the Saving Lives HII CVL care bundle is performed monthly from all areas with frequent CVLs. As with hand hygiene, it is reported as All Trust and individual ward data on the Transformation Dashboard with negative scoring for less than 10 audits.

Compliance dashboards are shown below.

CVL ongoing care bundle audit – compliance of observations expected (areas not providing a return are scored as zero.)



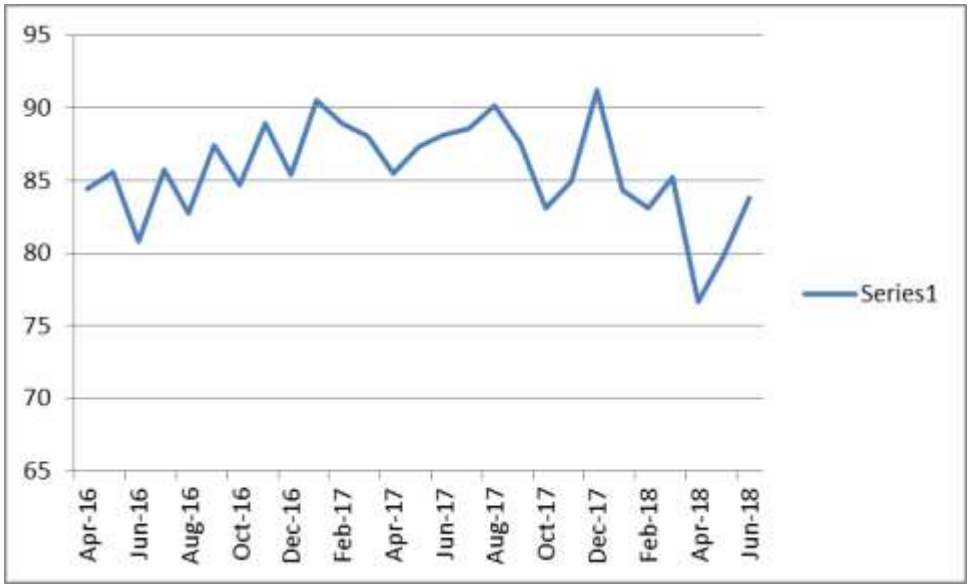
Definition: CVL bundle compliance. Must have a minimum of 10 audits per month - where there are less than 10 in a month, the measure percentage will still be calculated as if 10 were carried out.

Definition Source:

Data Source: Infection Control

Month start date	CVL bundle compliance	Upper Control Limit	Lower Control Limit	Median	Compliant	Observations
Jul-18	64%				35	55
Jun-18	69%				196	234
May-18	64%				202	253
Apr-18	62%				177	231
Mar-18	73%				247	290
Feb-18	74%				192	231

CVL ongoing care bundle audit – compliance of all observations (monthly number ranges from 176 – 309).



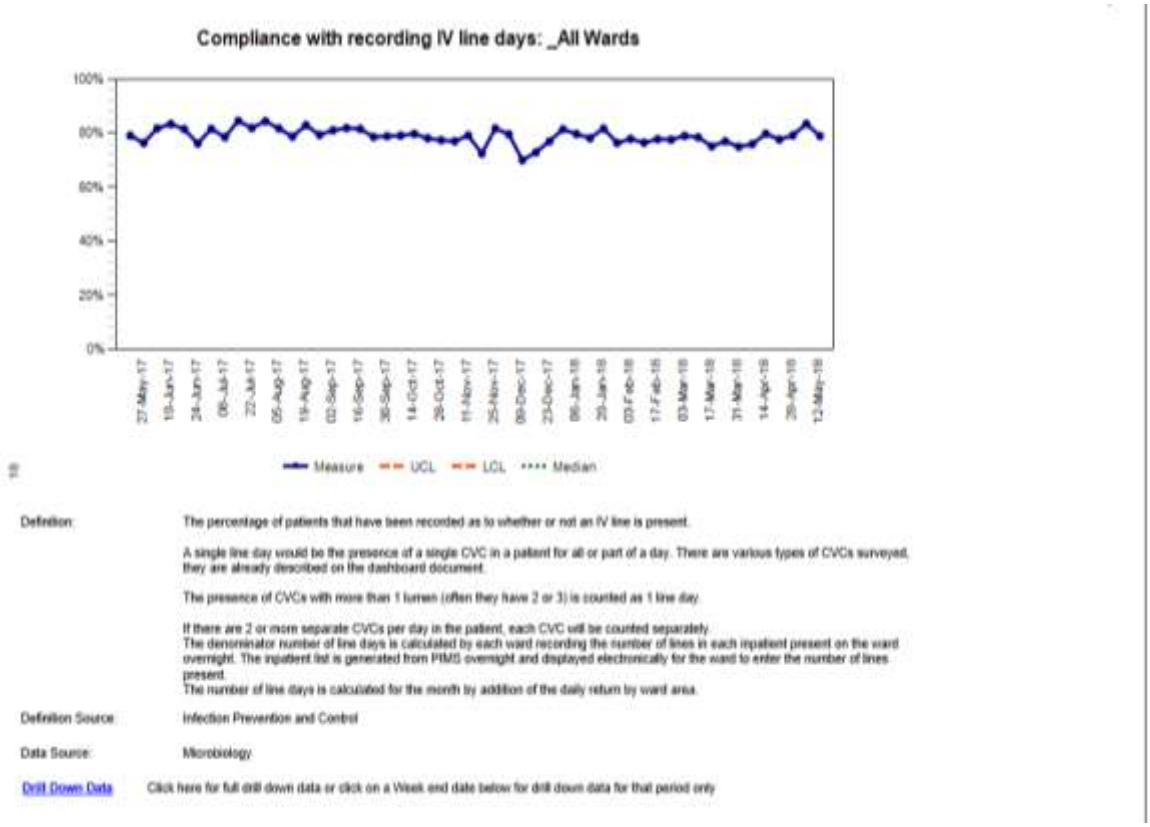
Completion of audit has increased in the financial year, with 3107 audits (compared to 2890 last year) with overall compliance of audits undertaken the same, 86%.

All dashboard data is discussed at each division's infection control board. The divisions must develop a plan to ensure compliance against these audits.

The actual compliance is below the target for CVC bundle compliance and both divisions need to focus on this in their action plans.

9:3 'Line days' data entry for CVC surveillance

To enable the continuous surveillance of GOSACVCRB related bacteraemia, denominator data is entered on a daily basis by wards. Compliance with data entry is audited.



Individual wards are provided with specific line infection outcome data and encouraged to maintain high line day data entry, so denominator data is accurate.

9:4 Antibiotic prescribing, audit and antimicrobial stewardship.

9.4 Antimicrobial Stewardship Committee report 2018 – Report from Dr Bamford

The AMS committee is currently chaired by Dr Alasdair Bamford, ID consultant. The terms of reference and membership have been finalised. This is in line with NICE guidance on antimicrobial stewardship and continued response to the previous patient safety alert on AMS. The purpose and strategy of the committee are under ongoing review.

The first 3 meetings of the new committee format took place on 7th April, 28th July and 15th November 2017 with next meeting pending in April/May 2018. The committee has been expanded to include IT and EPIC/JAC representation. There continues to be 4 main work streams identified (Policy, Resistance reporting, Education, Audit) each of which have a lead. The membership and terms of reference will be reviewed after the 4th meeting. Main themes currently highlighted in each work stream include:

- Policy:

o accessibility of policies has been highlighted as an area for improvement. Mobile phone apps have been considered but in light of EPIC implementation programme, efforts to ensure policy are more accessible within EPIC have been highlighted as an area of focus.

o Prescribing practices relating to surgical prophylaxis have been reviewed and have been subject to audit – results to be presented. Signposting to policies was highlighted at a recent departmental anaesthetic teaching session on AMR.

o Trainee involvement in policy review process is proving difficult to implement and new strategies for this are under consideration.

o Review of febrile neutropenia policy (Pan-London supportive care guidelines) is underway. Alasdair Bamford is on the review panel and is ensuring that stewardship themes are maintained at a high profile throughout the documents.

o An antifungal stewardship programme is currently under development (BMT – lead by BMT, All other areas – lead by ID/micro). This will take on more concrete format with commencement of the new AMS team.

o GOSH has taken part in a national audit of antifungal use, the results have been presented at national meeting and are being prepared for publication.

o Delays in DTC processes relating to minor updates to policy has been highlighted as an issue.

- Prescribing audits:

o Quality of prescribing and 72 hour review are ongoing areas of focus

o Liaison between AMS team and EPR/EPIC planning team is ongoing

o Electronic solutions to pharmacist monthly audit is to be developed (trainee/pharmacy)

o Dashboard has been developed relating to prescribing and CQUIN targets (see below screenshots) in collaboration with QI. This has been rolled out and used for targeted AMS communication and feedback to prescribers.

- Resistance reporting

  - Further work to delineate which will be the key outcomes of use to report to the AMS committee

  - Trends in resistance patterns in relation to colonising and invasive organisms will be reported in the first instance

  - With achievement of CQUIN targets 2017/2018 it will be essential to monitor for an correlation with resistance rates acknowledging that factors rates of invasive and colonising resistant organisms are multiple.

  - Education

  - Work to raise the profile of AMS activities throughout the trust is ongoing. Highly successful antimicrobial awareness week strategy was completed with excellent feedback.

  - Standard training for ID/Immunology training now and will be rolled out to nursing teams, initially on Fox/Robin then other high antibiotic use wards.

  - Should be increased emphasis in the medical/nursing/pharmacy induction which is being explored. Strategy of streamlining AMS, IPC, policy and sepsis educational activities is being prioritised.

  - AMR/AMS themed anaesthetics departmental teaching session was completed by an anaesthetics fellow. Very well received and has resulted in commencement of an audit of timing of surgical prophylaxis according to Start Smart then Focus.

  - AMS was part of the Visible Leadership project surveying staff and parent knowledge in relation to AMS and Start Smart then Focus. Deficiencies in general awareness and knowledge were identified and will be focus of future educational activities.

  - Screensaver and message from the Medical Director was utilised in Q4 to push the AMS agenda and achievement of the CQUIN.

CQUIN targets on antimicrobial consumption continued in to 2017/18 and are likely to do so in to 2018/2019 (this is currently under negotiation with NHSE). CQUIN targets for AMS (Part 2c and 2d) are on track for Q1-4 (see attached report), thus we are likely to have achieved all of these targets for 2017/2018.

AMS committee continued to work alongside the Sepsis 6 committee to ensure that stewardship is a major element of new strategies for timely empiric antibiotic therapy in sepsis in GOSH. With the reformatting of Sepsis 6 services, this collaborative approach will need to be maintained.

A business case in support of the antimicrobial stewardship programme (full time band 8a antimicrobial pharmacist, 6PA ID consultant and 10PA microbiology consultant) was approved. The

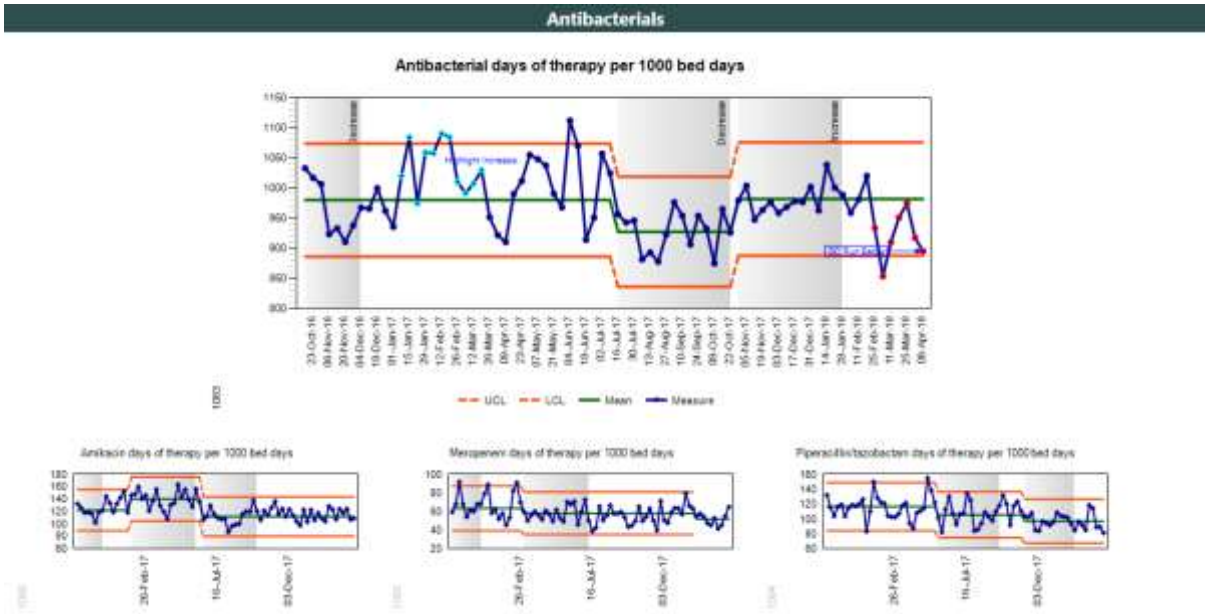
ID consultant has been appointed and will start in June 2018. The pharmacist posts interviews are currently underway and should be appointed May 2018 to start August 2018. Microbiology consultant post has been approved by the Royal College and will be advertised next month.

AMS spreadsheet for use in rounds is now in use by microbiology and ID teams and is proving to be highly valuable in increasing efficiency of rounds and also when reviewing complex patients. The aim is to recreate and improve on this within EPIC.

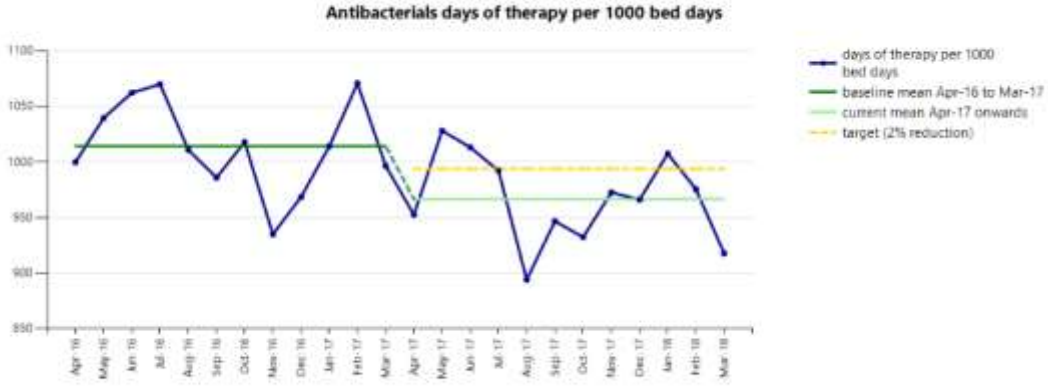
Below examples of dashboard for antimicrobial consumption available on the intranet a) weekly reports and b) monthly reports with current CQUIN targets:

a)

b)



Antibacterials



9.5 Sepsis

Sepsis Report by Karyn Moshal

Sepsis is a life-threatening condition which occurs when the body's response to infection causes injury to its own tissues and organs, leading to shock, multiple organ failure and death, if not recognized and treated promptly.

The work done on improving recognition and treatment of sepsis in a timely manner, in the year 2016/2017, has been consolidated in the second phase of the QI project in the year 2017/2018. The sepsis 6 protocol, initially a paper-based tool, has been improved by the introduction of an in-house Sepsis 6 app which has been developed, allowing it to be completed electronically in an easier and more streamlined manner by ward staff, while also facilitating more efficient collection of data across the trust. This app was launched across the Trust in September of 2017. Since its launch, there has been an improvement of the timeliness of the delivery of the Sepsis 6 protocol within the one hour window, and also the documentation of decision making by the clinical teams.

A further piece of work was done to support staff in the timely recognition of patients who might be septic. Using patient observation data available through the Nervecentre, an algorithm was developed and tested, which auto searched the observation data for risk factors for sepsis. When a combination of signs signify the possibility of sepsis, this is flagged on the Electronic patient status at a glance (EPSAG) boards, to notify the clinical team to initiate review of that patient for sepsis, immediately. The alert is linked to data inputted on the Sepsis 6 app, so it could be revised or removed once the patient had been assessed and relevant clinical management interventions instituted as appropriate. After a successful pilot programme, this was rolled out across all wards in the hospital in November 2017. This has increased the visibility of at risk patients, and also allowed a Trust-wide 'sepsis list' to be generated for the CSP team.

Additionally, all first-line antibiotics required for the treatment of sepsis are stocked and easily accessible on every ward. A comprehensive training package is now part of the required competencies for all clinical staff, and facilitated simulation training sessions are available to ward staff on request. Ward and specialty level dashboards have been developed to enable teams to review how they are doing and institute improvements as required based on this. All patients discharged from GOSH now receive an information leaflet on the recognition of signs and symptoms of sepsis, to heighten awareness of sepsis in the general population.

The data shows that 62% of patients who met the criteria for sepsis were screened for it on the ward. Of the patients screened, 72% were found to be septic and received the Sepsis 6 bundle of care within the required one hour. Although, there is of course room for improvement, this data compares favourably with nationwide data on sepsis.

The sepsis programme, established as a QI project, is now in a new phase, embedded in individual departments and managed by each of the clinical divisions. Reporting will be on a monthly basis within each division, which then feeds into the Trust Board.

Clare Rees has now left the Trust, and Karyn Moshal has taken over as Sepsis lead. The programme will now be integrated into normal working practices. A steering committee is being set up which will meet at regular intervals through the year to review the Trustwide data, the systems currently in place, the training offered and national requirements, to ensure we remain up to date and that we continue to improve our response rates and our outcomes. A part-time post for a Sepsis Improvement Nurse, has been improved, and this post will be advertised shortly. This role will provide clinical advice, support and education to clinical staff caring for septic patients. Additionally, the post-holder will be responsible for providing feedback to frontline staff and act as a liaison with the IP&C and AMS teams and the Sepsis lead.

9.6 Surviving sepsis and antimicrobial resistance: report to CQC Sept 2017

The below update is drawn from the clinical lead of the Sepsis Committee, AMS Committee Chair and DIPC as submitted for Update provided for CQC Sept 2017

Details of any actions you have undertaken in the last 12 months to improve management of sepsis.
Include your current use of assessment tools; use of national guidance; management of 'Red flag sepsis' patients & screening and treatment using the 'Sepsis Six' care bundle where relevant.

In September 2016 a Quality Improvement programme was set up to improve the timely recognition and treatment of sepsis. This programme has overseen the development of a Sepsis 6 protocol, suitable for use across all specialties at GOSH, based upon NICE guidance, UK Sepsis Trust paediatric resources and learning from other paediatric centres. Following an initial pilot across four wards, the Sepsis 6 protocol was implemented across all specialties in January 2017. The protocol clearly defines the amber and red flag signs for sepsis and supports staff to escalate a suspicion of sepsis appropriately, delivering the six core interventions in one hour to patients with a high suspicion of sepsis. The Sepsis programme has worked closely with the AMS team in ensuring that advice is consistent and any improvement actions taken by either programme is cognisant of an effect on the other. Since the implementation of the Sepsis 6 protocol, staff have been supported through nursing and medical training programmes, including access to simulation sessions, development of a Sepsis 6 app which allows opportunity for real-time data collection of sepsis recognition and management and project support for local improvements to systems and processes which facilitate recognition and treatment of potential sepsis within one hour.

We have also provided parent and family information leaflets to educate and raise awareness about sepsis out of hospital. We have shared the learning from this programme at national and international conferences and are in communication with other hospitals and regional networks to share best practice.

What is your trust doing to reduce the impact of serious infections e.g. sepsis and antimicrobial resistance (AMR)?

Reduction of sepsis -trust infection prevention and control programmes for prevention of sepsis. Recent focus on prevention of vascular access infection (parafilm and biopatch) and improved SSI surveillance and prevention (One together project).

Reduction of likelihood of sepsis with antimicrobial resistant organisms

- Reduce cross transmission through universal inpatient screening for AMR organisms with implementation of additional controls. Current focus on compliance, speed of detection and patient communication.
- Reduce AMR selection through antimicrobial stewardship
  - Quarterly AMS committee, reports to IPC committee.
  - Twice weekly ID/micro/virology clinical rounds including stewardship covering ICUs and neurosurgery. Weekly rounds covering BMT/Haem/Onc/IPP/Heart and lung transplant.
  - New AMS-round tool developed summarising infection related information
  - Daily email to ward pharmacists and ID/micro team regarding Tazocin and Meropenem prescriptions.
  - Developing Antifungal stewardship programme.
  - Monthly Antimicrobial Policy group meeting, polices on intranet
  - Establishing system for reporting antimicrobial consumption and local resistance rates
  - Meropenem use requires authorisation.
  - AMR/AMS/Sepsis covered in trust induction.
  - Completion of prevalence studies and work with other children's hospitals on AMR/AMS and Sepsis to facilitate benchmarking and collaboration.

Reduction of harm resulting from sepsis - The implementation of Sepsis 6 bundle on all inpatient wards to improve the recognition and timely management of patients with sepsis, using a detailed antibiotic protocol developed in conjunction with the AMS team. All patients on the pathway are reviewed to tailor antibiotic prescriptions appropriately. We have designed an electronic prescription tool to enable clinicians to deliver this pathway promptly and trigger appropriate review.

Provide details of the outcomes of patients managed within your trust with both presumed and confirmed sepsis

All patients with presumed sepsis are screened using clearly defined triggers. Patients with suspected sepsis are treated with the Sepsis 6 protocol and 65% of patients receive the Sepsis 6 bundle within one hour of recognition. We are tracking longer term outcomes

including intensive care admissions and mortality, but it is too early to see if there are any trends in the data. There has not been an increase in the overall use of broad spectrum antibiotics since the protocol was instigated. Parents and staff report increased satisfaction and confidence in patient safety since the protocol was introduced.

Who is responsible for reporting on sepsis management and antimicrobial prescribing to the trust board?

Sepsis management: As the Sepsis programme is still in implementation phase, it is reported to the Quality Improvement Committee (chaired by the Medical Director) on a monthly basis by Clare Rees (Locum Consultant Paediatric Surgeon) and Rhiannon Follett (Quality Improvement Manager). Each of the Trust's Divisions are currently creating plans for reporting through their Divisional Board meetings on a monthly basis which feed into Trust Board.

Antimicrobial prescribing: committee reports to the Infection Prevention and Control Committee which reports to the Patient Safety and Clinical Outcome committee. The DIPC is the chair of the IPCC and includes AMS in the regular reports given directly to the board.

9.7 Hospital cleaning

See Facilities report.

10 Occupational Health

Information from Lisa Liversidge, Head of Staff Health and Wellbeing

10:1 Occupational Health new starters

The Occupational Health Service is run in house. All applicants offered a post are assessed in OH prior to commencement to ensure that they fulfil the requirements around immunisation status for healthcare workers as per the Green Book. Applicants are not cleared as fit to commence in post until we have received this information.

Staff Immunisations

The need for continued screening and immunisation for measles has been highlighted by a number of outbreaks in the general population and amongst healthcare staff nationally. Employees who are unable to provide evidence of MMR vaccination or positive serology prior to commencement in post continue to be vaccinated. This includes administrative and clerical staff and other staff if they work in clinical areas.

Screening for immunity to varicella zoster virus (chicken pox) is equally important as adult immunity is not guaranteed and staff are frequently exposed to infectious cases.

A pertussis a booster vaccination continues to be offered to staff working in what is deemed to be a high risk area.

Influenza Vaccine

The Flu Immunisation group co-ordinated an active vaccination programme for all staff using vaccinators from OH as well as peer vaccinators. Occupational Health provided daily roving clinics in the clinical areas which were well receive.

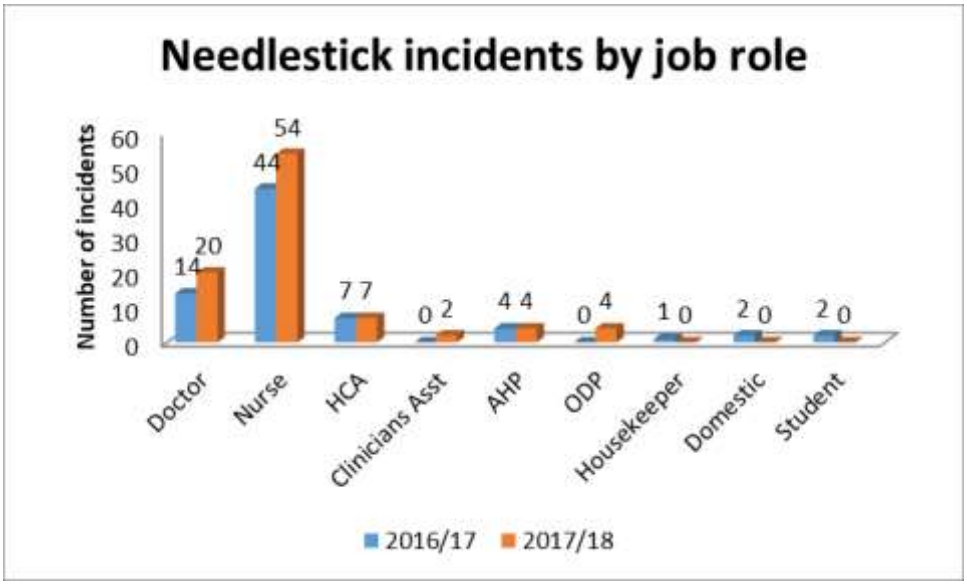
Final flu uptake figures for 2017/18 were 61% for all staff both clinical and non-clinical, compared to 62% 2016/17 and 48% 2015/16.

10.2 *Exposure to blood borne viruses*

From April 2017 – March 2018 there were 91 attendances at OH following a needle stick injury, compared with 74 attendances the previous year. Of these 91, 4 staff members attended on two occasions for separate injuries.

Needle stick injuries are occurring across the Trust. The highest incidence unsurprisingly is within theatres with 18 incidents occurring, followed by Koala ward which had 4 incidents.

The number of post exposure OH attendances for each job role is identified in the chart below:



59% of needle sticks were sustained by nurses, however this is unsurprising due to the nature of their work, potential to exposure and numbers of nurses employed in comparison to other staff groups.

It would appear that attendees who visit occupational health are following the correct procedure, carrying out appropriate first aid, informing the nurse in charge of the incident, contacting OH and recording the incident on Datix.

There were 7 incidents last year where the source was unknown. Appropriate follow up occurred.

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

11 Targets and Outcomes in 2017/18

See section 5 A for full details on mandatory and internal surveillance targets

	Target	Outcome	Comment
MRSA bacteraemia	Zero	1	
C. difficile infection	Less than 14 lapse in care	Lapse in care = 3	C difficile infection remains rare but surveillance suggested an increase in cross colonisation.
MRSA screening within 24 hours	80%	>80%	New audit for last 13 weeks shows 80-85%
MRSA admission screening ICUs	100% (where screening appropriate)	Near 100%	New automated audit tool - Screening audit weekly by ward, most weeks 100%
MRSA colonisation acquisition	Zero	18	One definite linked cluster of 2 children and a staff member; 2 other possible pairs.
GOS acquired CVC related bacteraemia	< 1.3 / 1000 line days	1.5	Reduced from last year, but still some avoidable infections
CVC care bundle compliance	90%	86%	Below expectations, and not improved from last year
Hand hygiene compliance	95%	85% absolute. 68% with negative scoring	New approach used in 17/18 has shown reduced compliance; with improvement.
Ventilator associated pneumonia	No target		Limited surveillance on PICU
Root cause analysis of S. aureus bacteraemia	100%	100% by IPC team and clinical	Not all had full RCA by team. Need to review RCA policy in IPCC and PSOC to agree level of coplinace expected.
Surgical site infection surveillance	Some surveillance to be undertaken in all areas	Both divisions achieved	Proving difficult to run by Division (difficult to maintain with staff turn over) and a central service to be proposed
Compliance with L1 induction training	95%	89%	Data for substantive staff
Compliance with level 2 update	95%	82%	Data for substantive staff
GOSH Non- Payroll reporting audience Level 1	95%	66%	
Level 2	95%	35%	

12. Training activities

12:1 Infection Prevention and Control Training for all hospital staff

Infection prevention and control teaching is given to all groups of staff, including medical consultants and junior medical staff, on induction. All staff are required to complete the Infection Prevention and Control Level 1 Training which includes the completion of the level 1 e-learning programme, the reading of supporting materials and the answering of the assessment questions. Clinical staff receive the Infection Prevention and Control Level 2 face-to-face session as part of their induction programme. This teaching session is delivered by a member of the IPC team.

As part of the mandatory updates, all staff are required to complete the Infection Prevention and Control Level 1 e-learning programme, including the assessment questions every three years. In addition, all clinical staff are required to complete the Infection Prevention and Control Level 2 e-learning programme, including the assessment questions every year.

Attendance is monitored and records are maintained by the Training Department through the GOLD system. The level 1 and level 2 e-learning programmes were designed by the IP&CT at GOSH and are based on the Skills for Health Core Skills Framework.

GOSH Payroll reporting audience (Substantive staff,)

	IPC L1 (Valid for 3 years)	IPC L2 (valid for 1 year)
Staff compliant up to 31/March 2018	1369	2585
Total Staff Required	1541	3157
Compliance	89%	82%

Level 1 compliance has decreased from 96% the previous year and level 2 increased from 80%.

GOSH Non- Payroll reporting audience (honorary, agency, in-house bank, volunteers and students)

	IPC L1 (Valid for 3 years)	IPC L2 (valid for 1 year)
Staff compliant up to 31/March /201817	837	469
Total Staff Required	1238	1166
Compliance	66% (down from 69)	35% (up from 23%)

Non-substantive staff rates have significantly improved, but still lag behind substantive staff.

Hand hygiene training (initial training and yearly update training) for clinical staff and non-clinical staff working on the wards (e.g. house keepers and ward administrators) is delivered locally on each ward/department by the either the practice educators or IPC link practitioners. Hand hygiene training for non-clinical staff not affiliated to a specific ward/department (e.g. porters, linen room staff) is delivered by a member of the IP&CT. All episodes of training and update should be recorded by the training department.

Other training carried out by the infection control team includes participation in delivery of the University Care Certificate, Newly Qualified Nurse training and the induction of student nurses. The team also provide teaching at local level to the wards when requested.

12:2 Infection Prevention and Control Training Days

From October 2013, in addition to the mandatory induction and update training, the IPCT team run quarterly Infection Prevention and Control Training Days. These days are open to all clinical staff, including medical staff. They provide staff with an overview of infection prevention and control specific to the paediatric setting, including an introduction to basic microbiology and virology. In addition, emerging infection control issues such as the increasing threat of antimicrobial resistance and the role of the environment, especially in relation to water- and air management are also discussed. This day continues to be held quarterly and is well attended.

12:3 IV training, including aseptic non-touch technique (ANTT)

All nursing staff are trained and assessed in the administration of intravenous (IV) therapy and ANTT by either a practice educator or a member of the IV team. The mandatory be-annual update assessment of the administration of IV therapy is undertaken locally on the wards by either a practice educator or a member of the IV team. Currently there is no assurance that training for medical staff happens or is recorded (especially for peripheral cannula insertion and ANTT)

12.4 Intravascular catheter insertion

Vascular access devices are significant source of risk, including infection, in the health care environment. All staff inserting devices should be trained and competent and all Divisions should be working towards implementing a standard policy.

Shown here are the 10 essential from the Code of Practice. Work programmes are linked to these codes.

Code of practice criteria	
1	Systems to manage and monitor the prevention and control of infection. These systems use risk assessments and consider how susceptible service users are and any risks that their environment and other users may pose to them.
2	Provide and maintain a clean and appropriate environment in managed premises that facilitates the prevention and control of infections.
3	Ensure appropriate antimicrobial use to optimise patient outcomes and to reduce the risk of adverse events and antimicrobial resistance.
4	Provide suitable accurate information on infections to service users, their visitors and any person concerned with providing further support or nursing/ medical care in a timely fashion.
5	Ensure prompt identification of people who have or are at risk of developing an infection so that they receive timely and appropriate treatment to reduce the risk of passing on the infection to other people.
6	Systems to ensure that all care workers (including contractors and volunteer) are aware of and discharge their responsibilities in the process of preventing and controlling infection.
7	Provide or secure adequate isolation facilities.
8	Secure adequate access to laboratory support as appropriate.
9	Have and adhere to policies, designed for the individual's care and provider organisations that will help to prevent and control infections.
10	Providers have a system in place to manage the occupational health needs and obligations of staff in relation to infection.

Part B - Infection Prevention & Control (IPC) Team Annual work plan 2018/19 Submitted by Lead Nurse

Programme of work: New projects

Programme of Work of new project	Lead	Time frame	Progress to date	Action required	Hygiene code
Audits- conduct regular audits with the facilities and clinical users to assess the environment and standard of cleaning	IPC Team/Facilities	Commence June 2018			1, 2
Audits- work with the senior nursing and medical teams across the divisions to create an audit programme that provides assurance and demonstrates learning and sharing of practice based on the feedback from the Barrie audit trial	IPC team	Commence May 2018			1, 9
Audits- work with QI to create a dashboard related to the nursing quality indicators and matrix of measures that reflects IPC information.	IPC Team	Further work required to ensure transferred onto EPR	Data now available for MRSA/ stool sample screening		1, 6, 9, 10
Audit- the team will audit compliance against	IPC team	To be carried out at least bi-annually.			1, 7

policies in place across the trust should be monitored through audit. Examples of this include the isolation audit.					
Training- The team will review IPC level 1 & 2 training and create a training package for non-clinical patient facing staff	IPC Team	To be discussed with L&D	On hold- no funding available from L&D		6
Surveillance- creation of a trust wide surveillance oversight group which will monitor all aspects of the surgical pathway .	IPC Team	Commence May 2018			1, 6
Ventilation- the team will work closely with the estates/ commissioning teams to create a standard user manual relating to ventilation for ward staff to use on occupation of wards	IPC team/ Commissioning	commence April 2018			1, 9
Cleaning- to work with	IPC team	Commence May	Plan to create training programme for clinical		2

the education team to create a training package so that staff know their responsibilities with preparing rooms for cleaning and how to check that rooms have been appropriately cleaned		2018	staff: • Band 7 development programme • NIC • Matron training Non-registered staff: • Floor managers • Housekeepers/ HCA		
Re-development- the team will actively be involved with the redevelopment works carried out within the trust as well as any refurbishment that takes place ensuring infection control standards are adhered to.	IPC team/ redevelopment	Commence April 2018	Currently working to create a JD to have an IPC nurse funded centrally from Redevelopment to assist with this		7, 2
Review the structure, make up and hours of the IPC team to ensure that an effective, timely service can be provided	Helen Dunn/ Chris Longster	Commence April 2018			1, 9

Work with the EPR teams to ensure the successful development and rollout of EPIC and RL solutions	IPC team/ EPR	Commenced 2017			1, 2, 4, 9
Review the electronic filing system to ensure the system is clearly labelled and data is robustly stored	IPC PA	Commence Aug 2018			1

Programme of work: Ongoing

Programme of ongoing Work	Lead	Time frame	Progress to date	Action required	Hygiene code
Audits- monitor wards/departments compliance with the annual audit plan for hand hygiene. Support divisions with improving compliance as and when needed.	IPC Team	On-going			1, 6, 9, 10
Audits- High impact and CVL infections are monitored on a monthly basis. Update the care bundles to reflect any improvements made in care since they were introduced	IPC Team	Commence July 2017			1, 6, 9, 10
Training- The IPC team will monitor and feedback training compliance with level 1 & 2 training	IPC Team	On-going			6
Information dissemination- The team will update/create patient/staff infection	IPC team	On-going			3

leaflets pertinent to infection prevention control					
Information dissemination- the team will review and update policy and guidelines to ensure they reflect new evidence and best practice	IPC team	On-going			
Surveillance- The team will continue to report and collect information on mandatory surveillance categories required by PHE. Where the infections are healthcare associated a root cause analysis +/- RCA review meeting will take place.	IPC Team	On-going			1, 5, 9
Water management- the team will co-ordinate the testing and management of appropriate water outlets for pseudomonas aeruginosa and legionella in close collaboration with the estates	IPC team	On-going			1, 8, 9

department. In addition the team will access and provide guidance on any other waterborne pathogens which may cause disease in patients/staff.					
Divisional IPC support- the team will provide infection control support to the divisions at divisional infection control meeting and on a day to day basis. In order to facilitate this, the team will each lead on certain divisions.	IPC Team	On-going.			1