Great Ormond Street Hospital for Children NHS Foundation Trust

GREAT ORMOND STREET HOSPITAL FOR CHILDREN NHS FOUNDATION TRUST

INFECTION PREVENTION AND CONTROL ANNUAL REPORT

April 14 - March 15 (Part A)

and

ACTION PLAN April 15 - March 16

(Part B)

Compiled by: Dr John Hartley - Director of Infection Prevention and 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 14 - March 15

AUTHOR: Dr John Hartley - Director of Infection Prevention and Control

Part A Executive summary

1 Introduction

Great Ormond Street Hospital for Children NHS Foundation Trust recognises the obligation placed upon it by the Health Act 2006, (updated 2008) to comply with the Code of Practice for health and adult social care on 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. This is recognised as a key Trust strategy in the Quality Statement for 2014/15:

Standard 3 Decrease and eliminate hospital acquired infections

The aim of this programme is to focus on

- prevention of exposure to and acquisition of colonisation with antibiotic resistant and other potentially pathogenic microorganisms
- Antimicrobial stewardship
- Healthcare associated infections to be eliminated - Vascular access related infection, gastrointestinal and respiratory viral infections, Surgical Site Infections (SSIs), Post intubation respiratory infection (including ventilator associated infection), *Clostridium difficile* (C. Diff) infection, urinary tract infections from indwelling catheters

The IPC programme is described in the Trust Policy 'Infection Prevention and Control Assurance Framework and Operational Policy'. 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 (such as 23,568 hand hygiene audits or 23,274 MRSA screens) but they still occur (such as 330 bacteraemias, with 76 acquired line infections, or 250 hospital onset respiratory and enteric virus infection) 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 funded a new IPC nurse (started June 2014) to increase the team's capacity to develop, educate, encourage and enforce best practice.

2) Description of infection control arrangements

Director of Infection Prevention and Control (DIPC) **-** Dr John Hartley, Microbiologist
Executive lead for IPC -The Chief Nurse, Liz Morgan during this year.
Lead Nurse for Infection Prevention and Control – 1 wte, Helen Dunn from June 2014

Deputy Lead Nurse in IP&C 1 wte; New IPC nurse 1 wte commenced June 2014; 0.4 wte Clinical Scientist in IP&C
Other consultant microbiologists – 3 PAs
IPC Administrative support and Data Management **–** 1 wte band 4; part vacant due to career break
(The CNSs for Tuberculosis and ID lead on Tuberculosis related issues;
ID consultants contribute to the out of hours advice.)
Antibiotic pharmacist - Part time post within pharmacy
Quality Improvement team – dashboard development and display

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

Divisions have chosen to structure this in different ways with an active IPC Board now formed and meeting regularly for the Surgical, Cardiorespiratory, International and Private Patients, Infection Cancer and Immunity and Neurosciences divisions, and as part of the Quality and Risk group for MDTS.

2:3 The Infection Prevention and Control Committee (ICC) meets every two months.

2:4 Reporting lines
The DIPC is accountable to the CEO and reports to the Board and Sen. Management Team.
The DIPC and Lead nurse for IPC meet weekly with Executive lead.
A highlight report of all significant IPC issues is presented weekly to the Safety Team.
An annual plan is written and included in each annual report.
***2:5 Links to Drugs and Therapeutics Committee,* Antimicrobial stewardship**
A Consultant Microbiologist and Infectious Disease Physician are members of the Drugs and Therapeutics Committee. There are antimicrobial working and stewardship groups.

2:7 **IPC advice and On call service*.*** Continuous advice service provided by IPC Team, Microbiology and Infectious Disease consultants.

3:3 Outbreak Reports
Contemporaneous outbreak reports are written by the IPCT and fed back to clinicians and managers and disseminated through the IPC Committee.

4 Budget allocation to IP&C activities

4:1 Staff
Staff budget in Department of Microbiology, Virology and IPC, Laboratory Medicine, ICI-LM
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 ***2014/15***
5:1 **MRSA bacteraemia =** 0
5:2 MSSA bacteraemia = 25 RCAs showed line infection is the most common cause.
5:3 E. coli bacteraemias = 19 episodes
5:4 ***Glycopeptide resistant enterococcal bacteraemia (GRE)*** *= 2*
***5:5 Clostridium difficile* associated disease** = 15 reported; 2 judged as lapse in clinical care (against objective of less than 8).
5:7 GOS acquired Central Venous Catheter related bacteraemia = 1.3/1000 line days. Lowest rate ever, although still 76 episodes. Effort is underway to reduce further.

5:8 Other bacteraemia episodes and antimicrobial resistance – 330 episodes (so potentially 254 non GOSACVCRB bacteraemias).
Review of the antibiotic resistance of the 20 coliforms in haematology/oncology/immunology/BMT children still shows a high level of resistance:

	Amikacin	Gentamicin	Ciproflox	Ceftaz	P/Taz	Carbaepnem
% resistant	5	15	45	35	30	5

5:9 PICU recommenced a period of ventilator related pneumonia and is reviewing how further surveillance may proceed.

5:10 Surgical Site Infection Surveillance

Surgical division – has established a regular SSIS programme including at least one procedure from each specialty. Reports at Surgical IPC Board.
Critical care and cardiorespiratory – an intermittent surveillance programme has been possible. Reports to the CCCR weekly M&M and the SSI prevention group.
Neurosciences – continuous audit is performed for permanent shunt procedures, and displayed on the dashboard. RCAs are performed for each infection and a separate audit is performed of compliance with the shunt insertion protocol.
2014/15 - 5 infections from 157 procedures at rate of 3.2

5:14 Viral infections detected while at hospital

Children, parents and staff frequently enter the Trust incubating these common infections and act as sources for localised outbreaks. GOSH Trust outbreak and prevention policy includes isolation of children with suspected viral respiratory infection or gastro-enteritis with emphasis on recognition and early intervention.

Respiratory viral infections detected:			
	Total	Community onset	Hospital onset
Total in 2013/14	252	172	80
Total in 2014/15	399	302	97
Enteric viral infections detected			
Total in 2013/14	360	229	131
Total in 2014/15	352	199	153

Over all there has been an increase in detection of viruses in children admitted to the trust. One wards was on restricted admission in 14/15.

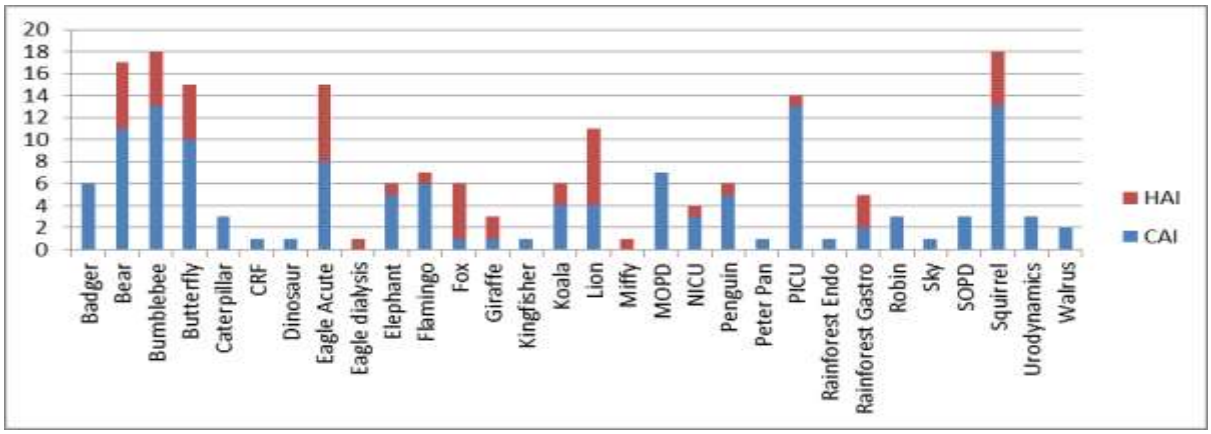
5:11 MRSA Admission Screening and rates
Nose and throat swab screening rate at 48 hours for inpatient admissions remaining in for > 48 hours, all patients. Target > 95%: 2014 screen compliance = 98%

MRSA cases of colonisation/carriage at GOSH
In 2014 there were 154 children with first detections,9 probably or possibly acquired in the hospital. Each case is investigated.

5:12 Multiple resistant 'gram negative' (MDRGN) organisms screening and rates
Faecal screening for inpatients remaining in for > 48 hours; target >75%: 2013 rate = 88%

MDR-GN carriage/colonisation - In 2014 testing revealed 186 first detections, 132 came in colonised, 54 were possible cross infection. These are found across the Trust.

Bar chart showing location of children colonised on admission or subsequently found to be colonised with multiple resistant gram negative bacteria by ward in 2014



Three cross infections clusters were confirmed, Including a serious outbreak of a carbapenemase producing *K. pneumoniae*

5:18 Serious Untoward incidents and complaints involving Infection, major outbreaks and threats (including Ebola virus)

2 SIs involving risk from *M. tuberculosis* with failure to implement appropriate control and recognise risk from symptomatic adult.
Major outbreak - transmission of a carbapenemase producing *Klebsiella pneumonia*.
Ebola – major preparation, risk assessment and education programme undertaken.
One significant cluster of infections in spinal surgery was investigated.

6 <u>Hand Hygiene, CVC on going care guidelines, National Staff Survey</u>

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.
National Staff survey scored low on the infection control question (training) and we need to understand this better to respond.

7) <u>Facilities</u>

Estates and Facilities became one Directorate from April 2014.

Environment

Additional measures have been put in place to monitor the cleanliness of the environment. External cleaning contract is up for renewal.

Decontamination

The Sterile Services provision of service for GOSH remains of site at Guys and ST Thomas Hospitals NHS Foundation Trust (since September 2013). The quality of service delivered has been monitored as deemed acceptable by the Clinical staff at GOSH

GOSH have maintained accreditation status to BS ISO 13485:2003 for Endoscopy and Medical Equipment decontamination.

8. Estates

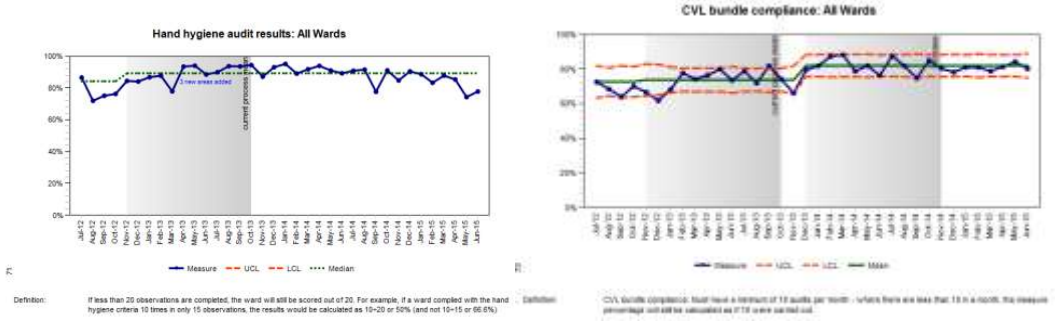
Authorised Engineers are in place for Ventilation and Water.
Verification of specialist ventilation proceeds to schedule.
Water Safety Management Group continues to develop and manage risk associated with water, with an expanded programme to control risk from *Pseudomonas aeruginosa*.

9 Trust wide audit

A Trust annual IPC audit programme is followed. Due to diversion of resources to the Ebola response, independent IPC team audit and monitoring of practice has not been carried out as planned this year.
Individual ward and 'All Trust' compliance is published monthly on the dashboards and reviewed by Divisional and Nursing boards.

Audit completion compliance rates have decreased in hand hygiene, although not in audits completed (97% of 26,568 observations were actually satisfactory).

Hand hygiene and CVC care bundle audit:



Central Venous Line Ongoing Care

Compliance remains static, as shown above. This is 88% compliance in 3844 audits (89% last year) so we aim to improve.

This audit process represents a lot if time in its own right.

9:5 Antibiotic prescribing and audit

Antimicrobial stewardship was included as a CQUIN target for 14/15, and this was achieved. A new plan is being developed for 2015/16.

10 Occupational Health

OH continues to provide 'new entrants' screening, "Exposure Prone Procedures" clearance, staff immunisation (including influenza, final uptake 40%, same as last year)) and blood borne virus exposure follow up (74 events, compared to 84 in previous year).

11 Targets and Outcomes	Target	Outcome
MRSA bacteraemia –	0	0
MRSA Screening for children admitted > 48 hours (total screens done = 23,274)	95%	98%
Faecal screens for children in > 48 hours	> 75%	88%
Clostridium difficile infection lapses in care	<8	2
Rate of GOS acquired line infection /1000 days	<2.1	1.3
Root cause analysis for S. aureus bacteraemias	100%	100%
MRSA colonisation acquisition	0	7
Hand hygiene audits (total audits 26,568)	95%	97%
CVL care bundle audits (total audits 3844)	90%	88%
IPC level 1 induction	95%	85%
IPC level 2 update	95%	<50%

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 and records are maintained by the Training Department, but uptake is not satisfactory.

New training modules:
A new induction 'game' has almost completed development and will be introduced.
A new online level 2 update training package has now been created and released, with focus on standard precautions, and target to achieve 95% completion.

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 and 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 but ICUs are just introducing a new bundle.

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Full report

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Part A - Full Infection Prevention and Control Report for GOSH 2013/14 Activity

1 Introduction

Great Ormond Street Hospital for Children NHS Trust recognises the obligation placed upon it by the Health Act 2006, (updated 2008 and 2012), to comply with the Code of Practice for health and adult social care on the prevention and control of infections and related guidance. Previous surveillance visits have shown that we are compliant, although there are areas where improvement can be made. A report is now awaited following the recent full CQC visit in April 2015.

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. The Trust promoted infection prevention and control as one of the 12 standards we aim to continually improve in the 2014-15 Quality Standard (Standard 3: Decrease and eliminate hospital acquired infections).

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 expressed through compliance with Health and Safety, Control of Substances Hazardous to Health (COSHH), and other legislation and regulations, applying to the safe provision of care.

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, Estates, Facilities and Redevelopment, 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 an infection control programme for active investigation, surveillance, prevention 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 Divisional IPC 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:

- Antimicrobial stewardship: 'Start smart – then focus'. Guidance for antimicrobial stewardship in hospitals (England). Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI), DH. Nov 2011, updated 25 March 2015

- Acute trust toolkit for the early detection, management and control of carbapenemase-producing Enterobacteriaceae, PHE, Dec 2013

- Water Systems. Health Technical memorandum 04-01: Addendum *Pseudomonas aeruginosa* – advice for augmented care units. March 2013

- Legionnaires' Disease. The control of legionella bacteria and guidance on regulations. Health and Safety Executive. Fourth edition 2013

- Updated guidance on the diagnosis and reporting of *Clostridim difficile.* DH March 2012

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

Older guidance is listed in previous reports.

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. Minimising infection is a key target in the trust strategy, featured as a key Strategy in the Quality Statement for 2014/15:

Standard 3	**Decrease and eliminate hospital acquired infections**

The aim of this programme is to focus on

- prevention of exposure to and acquisition of colonisation with antibiotic resistant and other potentially pathogenic microorganisms
- Antimicrobial stewardship
- Healthcare associated infections to be eliminated
    - Vascular access related infections
        - *Staphylococcus Aureus* - both Methicilin sensitive and Mticilin resistant (MRSA) bacteraemia and other infection
    - Gastrointestinal and respiratory viral infections
    - Surgical Site Infections (SSIs)
    - Post intubation respiratory infection (including ventilator associated infection)
    - *Clostridium difficile* (C. Diff) noting that this is endemic and rarely pathological

- Urinary Tract Infections from indwelling catheters

Avoid exposure to and colonisation with:

- MRSA
- Antibiotic resistant organisms, including carbapenemase resistant organisms
- *Pseudomonas aeruginosa* and other water-related organisms

The IPC programme is described in the Trust Policy 'Infection Prevention and Control Assurance Framework and Operational Policy', July 2014.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 fund a new IPC nurse who commenced work during this financial year.

When considering IPC in children it is important to remember

1. IPC activity requires energy and resources (such as 23,568 hand hygiene audits or 23,274 MRSA screens) but infections still occur (such as 330 bacteraemias, with 76 acquired line infections, or 250 hospital onset respiratory and enteric virus infection)
2. Some infections are preventable and the necessary IPC activity may impact on the patient journey for the individual and for others.
3. IPC activity is not about high profile individual actions but 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 by all staff.
4. 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.
5. 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.
6. Many of the children require vascular access devices. It is particularly important we to protect them from vascular device associated infection.
7. 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 – respiratory and enteric viruses and antibiotic resistant organisms. The latter is a major challenge as the worldwide threat from antibiotic resistance increases.

8. 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 the love, attention and toys are perfect routes for cross infection.

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, including role as Infection Control Doctor).

2:2 The Infection Prevention and Control Team (IPCT) during 2014/15

Nursing and clinical scientist establishment:

- Lead Nurse for Infection Prevention and Control - Helen Dunn started June 2014
- Deputy Lead Nurse in IP&C - Barbara Brekle
- New post IPC Nurse started June 2014 – Helen Saraqi
- Clinical Scientist in IP&C – Elaine Cloutman-Green – 2 days per week

- The Clinical Nurse Specialist for Tuberculosis and other Infectious Diseases CNSs lead on Tuberculosis.

***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 (part time)

Working with:

- Dr Vas Novelli - Consultant in Infectious Diseases
- Professor Nigel Klein – Professor of Infectious Diseases and Microbiology
- Dr Delane Shingadia – Consultant in Infectious Diseases
- Dr Karen Moshal – Consultant in Infectious Diseases

Antibiotic pharmacist

Part time post – one day a week

Administrative support and Data Management

Administrator and data analyst IPC Team – this crucial post has been difficult to fill as the incumbent has been on maternity leave until October 2013, then due to career break from Dec 2013. Fixed term post replacement started May 2014, but subsequently left and the post is not vacant.

Quality Improvement Team -,

Provides invaluable central support for audit and surveillance data display.

Executive lead for IPC
The Chief Nurse, previously Liz Morgan and now Juliette Greenwood, is the Executive lead for IPC; supported for medical issues by the Deputy medical director.

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

Units have chosen to structure this in different ways with an active IPC Board now formed and meeting regularly for the Surgical, Cardiorespiratory, International and Private Patients, Infection Cancer and Immunity and Neurosciences divisions, and as part of the Quality and Risk group for MDTS.

2:4 The Infection Control Committee (ICC) meets every two months.

Committee continues to meet bi-monthly.

Establishment:-

Chair Director of Infection Prevention and Control, Infection Control Doctor.	Dr John Hartley
Executive lead for IPC	
Deputy Medical Director	
Consultant Microbiologists	
Lead Nurse in IP&C Deputy Lead Nurse and Scientists in Infection Control	
Consultant in Infectious Disease	
Academic Representative from ICH Infection Unit	
HPU Representative - Consultant for Communicable Disease Control (or delegate)	
Estates ,	
Corporate Facilities ,	
Occupational Health Representative , Consultant in Occupational Health/ or Nurse Manager	
Head of Nursing Representative	
Pharmacy Representative	
Consultant Surgeon	

Clinical Governance and Patient Safety representative	
Theatre Representative	
Divisional Representatives (may be delegated from above)	
ICI - LM	Lead Nurse
Surgery	Head of Nursing
IPP	Consultant Physician or Head of Nursing
Medicine / DTS	Head of Nursing
Cardio-respiratory	Consultant Lead for IPC
Neurosciences	Head of Nursing

Administrative support: provided by IPC Administrator (currently vacant)
Minutes: placed on the Trust minutes library.
The committee met as planned every 2 months.

2:5 Reporting lines

The DIPC is accountable to the CEO.
The DIPC and Lead nurse for IPC meet weekly with Executive lead.
A highlight report of all significant IPC issues is presented weekly to the Safety Team.

The IPCT provide a report of all incidents dealt with by the IPCT to the ICC every two months. The IPCC previously reported to the Quality and Safety Committee, and now to the Senior Management Team, Quality and Safety session.

During management of incidents the IPC team or clinical area complete clinical incident forms returns via Datix. The QST Team (now 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.

The DIPC continued to report directly to the Trust Board.

2:6 Links to Drugs and Therapeutics Committee, Antimicrobial Stewardship

A Consultant Microbiologist and Infectious Disease Physician are members of the Drugs and Therapeutics Committee. The consultant microbiologist leads the antibiotic working party which is a sub-group of the D&T Committee, supported by a part time pharmacist. An annual plan was followed.
An Antimicrobial Stewardship group has been formed and meet regularly.

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, ICI-LM Division.

2:8 IPC advice and *On call service.*

The 3 wte IPC nurses and 0.4 wte clinical scientist provide a reactive service for IPC from 8 am to 6 pm, Monday to Friday, supported by the continuous consultant microbiologist service. The Consultant Microbiologists and Infectious Disease Consultants 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 DIPC Reports

3:1 Board Reports
2014-03-27 Trust Board regular IPC Report
2014-07-23 Trust Board, presentation of annual report
2014-11-26 Trust Board regular IPC Report
2015-03-17 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

The DIPC ensures contemporaneous outbreak reports are written by the IPCT and fed back to clinicians and managers and disseminated through the IPC Committee.

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). (1 new additional wte band 7 IPC nurse was funded from June 14)

Scientific: 0.4wte band 6 clinical scientist. The laboratory is a fully staffed and accredited NHS Laboratory.

Administrative: 1 wte equivalent post; staff member on maternity leave much of year. Fixed term replacement started May 2014 but left March 2015 and not replaced yet.

SSIS Team : Surveillance has been devolved to the Divisions in 2013 and is undertaken and funded differently. Surgery – one full time surveillance officer, supported by practice educator and Lead Nurse; CCCR – one surveillance officer supported by practice educator; Neurosciences – no dedicated team, surveillance through regular MDT audit.

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

5:1 Methicillin Resistant 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. 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 01 – Mar 02	7	9.1
April 02 – Mar 03	13	17.3
April 03- Mar 04	4	5.1
April 04 – Mar 05	7	9.6
April 05 – Mar 06	6	7.7
April 06 – Mar 07	5	6.3
April 07 – Mar 08	2	2.5
April 08 – Mar 09	8	11
April 09 – Mar 10	1	1.0
April 10 – Mar 11	1	1.1
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

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5:2 Methicillin sensitive *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. This has now been recognised nationally as all *S. aureus* bacteraemia is now reported, 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 all episodes where there may have been an opportunity for trust to influence onset. Overall there were 25 episodes (reduced from 32 last year, shown in the graphs below), 19 with onset after 48 hours. This has been reducing slightly year on year but has not been eliminated.

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

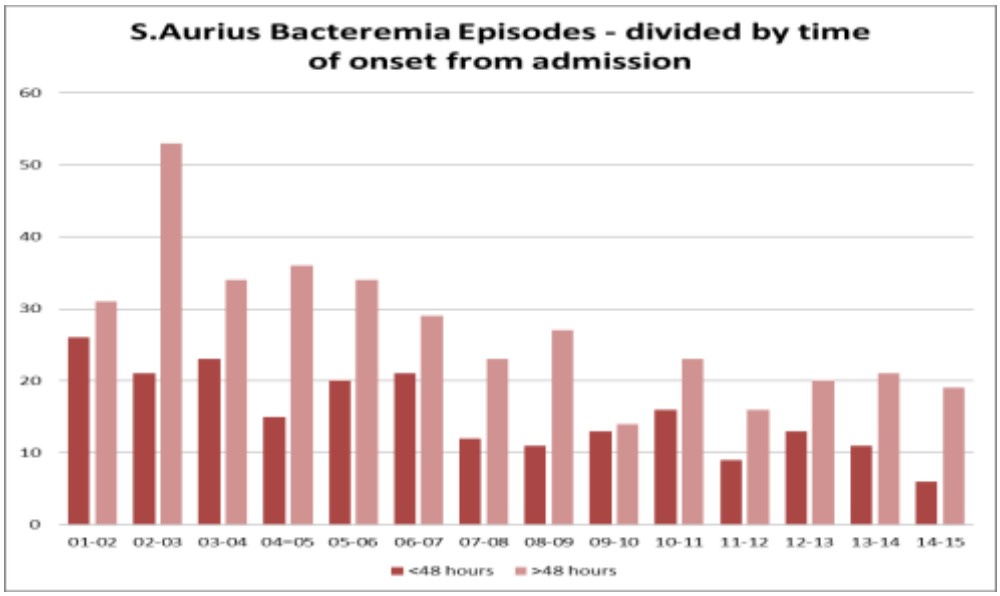
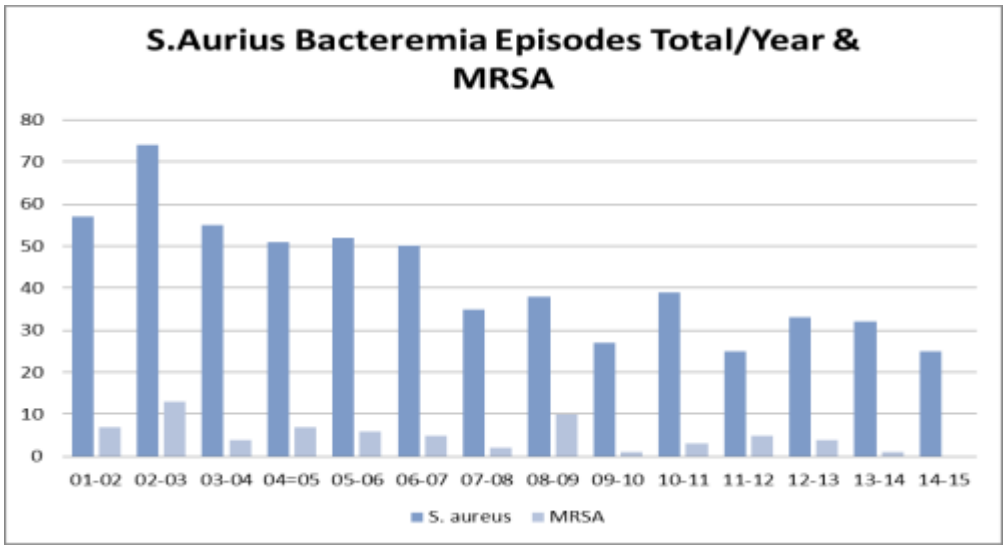


Table showing total number of S. aureus bacteraemias and MRSA bacteraemias



Root cause analysis of S. aureus bacteraemias

All S. aureus bacteraemias are reviewed, including full or mini-RCAs completed for all S. aureus bacteraemias developing after 48 hours of admission and not incubating before admission. For the 25 episodes:
12 (48%) were felt to be definitely central line related,
6 (24%) line or another cause, and
7 (28%) not central line related.
Interventions continue to focus on prevention of line related bacteraemia, as described in the line infection section.

5.3 E. coli bacteraemias

E. coli bacteraemias are reported nationally, although currently there is not national target.
There were 19 episodes in the financial year 12/13
There were 23 episodes in the financial year 13/14
There were 19 episodes in the financial year 14/15

5:4 Surveillance of Glycopeptide Resistant Enterococcal bacteraemia (GRE)

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

Typing showed they were each unique events.

5:5 Surveillance of Clostridium difficile infection*.*

The role of toxigenic *Clostridium difficile* as a pathogen in children is not well understood, although it rarely causes severe disease. 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, 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 agree with NHS England, London HCAI lead.

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. We have reviewed this advice and currently continue to use the neutralised cell cytotoxicity assay for toxin detection as this is the acknowledged reference toxin detection test. We follow up toxin detection with culture and ribotyping to ensure detailed surveillance is maintained.

Almost all positive stools represent co-incidental detection and are sporadic ribotypes, although there was one cluster this year in a high dependency bay in the cardiac unit.

	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15
C. difficile 1st detections ALL ages and any duration of admission	78	54	55	71	96	104	92	97
Number 'trust apportioned cases' (aged above 1 year and in for > 2 days when tested and reported as possible CDI on HCAI site)	11	11	12	11	9	7	13	15
Objective		11	10	9	9	8	7	7
Possible lapse in care								2

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. If the number of lapses in care exceeds the objective, a £10,000 fine would be applied per case. It was agreed that the majority of cases reported and assigned to the Trust did not represent a failing in C. difficile infection prevention and control , however 2 cases were classified as 'lapse in care', with one definite episode of cross infection in the cardiac ward.

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.

5:6 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

5:7 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 2.1. last year and has shown a significant reduction to 1.3 this year. Contributory factors are discussed below.

	Rate per 1000 line days
Financial year 14/15	1.3
Financial year 13/14	2.1
Financial year 12/13	2.1
Financial year 11/12	2
Financial year 10/11	2.6
Financial year 9/10	3.3
Financial year 8/9	3.7
Financial year 7/8	4.3

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. Review of additional

interventions was 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, moldable, 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). A small study done by Irving et al (2011) demonstrated a reduction of CRBSIs after the introduction of Parafilm to protect CV catheter hubs and connections.

References: STOTTER, A.T. et al (1987) Junctional care: the key to prevention of catheter sepsis in intravenous feeding JPEN J Parenter Enteral Nutr 11, pp. 159-162;
IRVING, S. et al (2011) Protective Barrier Reduces Central Venous Catheter Infection Nutr Clin Pract 26 (6), pp 726

Parafilm was first introduced in IPP in because surveillance data had shown IPP had experienced an increase of CVL infections during 2011/12 and because CVLs of IP patients are accessed only by GOSH staff with no Shared Care Centres involved. We introduced the use of Parafilm for all IPP patients in April 2012, and in the subsequent year they experienced a reduction (from 2.9 to 2.2 per 1000 line days). At end of 2012/13, the Infection Cancer and Immunity directorate now had the highest rate and in April 2013 Parafilm was introduced across ICI. This was a much more complex process and took longer than in IPP, because the patients have their CVLs not only accessed by GOSH staff, but also in Shared Care Centres. Uptake was poor in the first year, but is now the normal care in ICI and a noted reduction in rates was achieved.

13/14	Episodes	Rate		14/15	Episodes	Rate
CCCR	36	2.2		CCCR	24	1.5
ICI	40	2.2		ICI	17	0.8
IPP	20	2.2		IPP	12	1.4
MDTS	6	1		MDTS	11	1.7
Surgery	10	2.4		Surgery	9	2.0
Neuro	2	1.6		Neuro	3	2.4
	114	2.1			76	1.3

Using the same process of reviewing alternative interventions and identifying higher risk situations, it was decided to selectively encourage the use of biopatch for femoral lines and in children who had already experienced a S. aureus infection. Biopatch is a chlorhexidine impregnated sponge fixed over the site where the CVC breaches the skin, continuously releasing the antiseptic agent to protect the site. This has not become widespread (for a number of reasons including because it has not been mandated and there is concern over use in neonates and premature babies) but has been adopted

to a degree in IPP, CICU (within the CCCR division) and Surgical division and may account for some of the improvement. Differential reduction was achieved in the ICUs:

	2013/14 Episodes	2013/14 Rate/1000 line days		2014/15 Episodes	2014/15 Rate/1000 line days	
All CCCR	36	2.2		24	**1.5**	
CICU	**17**	**2.7**		**8**	**1.3**	
NICU	4	**2.8**		7	**4.0**	
PICU	9	**3**		7	**2.5**	

Future plan: The plan is to now include the parafilm use as part of the Trust wide standard care bundle (unless areas actively opt out) and include use in the continuous audit process. Biopatch will remain for selected cases and areas that opt in. We hope to reduce the rate further.

5.8 Other bacteraemia and gram negative resistant isolates.

As the number of bacteraemias associated with CVC related infection has 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. Episodes of contamination have not been removed and further blood cultures are classed as a new episode after 14 days.

In 2014/15 there were 330 episodes, of which 76 have been called GOSACVCRB. Below is a table showing the species detected:

	All blood cultures in 2014/15 financial year		Blood cultures from haem, oncol, immunol, BMT patients	
Coagulase negative staphylococci	**143**		**39**	
Streptococcus sp.	**30**		**15**	
S. aureus	**23**		**4**	
Enterococcus sp	**20**		**10**	
P. aeruginosa	**7**		**2**	
Other non-fermenters	**7**		**3**	
Micrococcus	**7**		**5**	
GPRs	**7**		**6**	
Haem/Mor/Neisseria	**6**		**3**	
Stenotrophomonas	**5**		**4**	
Bacillus sp	**4**		**3**	
Actinomyces sp	**2**		**1**	
Atypical mycobacteria	**2**		**0**	
Yeast	**14**		**11**	
Candida		**12**		**9**
Malassezia		**2**		**2**
Coliforms	**52**		**20**	
E. coli		**17**		**7**
Klebsiella		**15**		**5**
Enterobacter		**13**		**4**
Serratia		**4**		**2**
Proteus		**1**		**0**
Acinetobacter		**2**		**2**
Anaerobes	**2**		**1**	
Total	**331**		**127**	

A comparison of species detected in blood cultures from children under the haematology/oncology/immunology/BMT teams (where 127 episodes were detected, 21 labelled as GOSACVCRB) with previous years is shown below. The largest number are still coagulase negative staphylococci but they have fallen considerably in number; significant gram negatives, like E coli and Klebsiella, have reduced less.

Further investigation is required to understand the cause of these episodes and whether they are preventable.

Table of blood culture episodes in haematology/oncology/BMT/immunology patients in one year periods:					
		2001	2009	2011	2014 -15 FY
	Organism	Episodes	Episodes	Episodes	Episodes
GPC	Coag neg staphylococcus	187	60	71	39
	Staphylococcus aureus	14	11	8	4
	Enterococcus sp	33	7	9	10
	alpha haem strep	22	20	12	14
	beta haem strep		2	1	0
	other cocci	4	9	5	6
GNR	'coliforms'	69	28	23	20
	Pseudomonas aeruginosa	10	3	6	2
	Stenotropohomonas maltophilia	7	0	1	4
	Other non-fermenters		5	3	3
	Other gram negative rods	6	2	4	3
	Anaerobes	2	4	5	1
GPR	Gram positive rods	9	12	10	10
Yeast		6	9	4	11
Total		369	172	162	127

Antibiotic resistance:
Review of the antibiotic resistance of the 20 coliforms in this cohort still shows a high level of resistance:

	Amikacin	Gentamicin	Ciproflox	Ceftaz	P/Taz	Carbaepnem
% resistant	5	15	45	35	30	5

The choice of dual therapy amikacin plus piperacillin/tazobactam is still justified as first line empirical therapy in the antibiotic policy.

5.9 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.

Data is under review data and further surveillance recommendations will be made.

5.10 Surgical Site Infection Prevention and Surveillance

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 followup) 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.

In recognition of need for further standardisation, the IPC is assisting the Surgical division audit the surgical care pathway this year (in IPC annual plan).

5.11 Surgical Division: one full time surveillance officer working with Practice Educator and Lead Nurse has undertaken surveillance of designated procedures in each specialty. This is reported locally and spinal implant surgery reported to the PHE National SSIS scheme.

Report from Karen Rowson, Practice Educator Surgical Division

Clinical Division of Surgery
Surgical Site Surveillance

Surgical Site Surveillance Programme

Introduction

The Surgical 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 the Surgical Division a SSIS officer was appointed to work within the education team under the direction of the Lead 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 2014-15.

2014 -15 Aims

- To increase the surveillance in each speciality to two procedures by December 2014 (where appropriate)
- To generate a speciality level report giving infection rate per procedure by consultant and also an overview of that speciality compliance with the perioperative care bundle by September 2014
- To develop an exception report which will highlight deviations from the care bundle and give some explanatory narrative on this by September 2014
- To develop a process for monitoring children who are found to be MRSA positive and to co-ordinate their on-going screening within the community, actively seeking to remove their alerts where possible by April 2015

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 the HPA guidance. It is important to note that no surgical category falls in the mandatory group, but spinal surgery at GOSH is reported to the HPA.

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

Speciality	Procedure	Surveillance
Spines	All (excluding plaster jackets)	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 + 1 year follow up
ENT	LTR Graft	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
Dental & MaxFax	ABG	SO post op D1 & 30 day phone call
Ophthalmology	No data required	

Ophthalmology were 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 appropriate procedure at the pre-operative appointment. The SSIS team identify 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.
- Any child with an implant, such as spinal and cochlear, will receive a 1 year follow up in addition to the 30 day phone call.

Data Collection

For the 2014-15 financial year all specialities have at least one full year of data for their identified procedure. Unfortunately the SSIS officer in post left the trust at the end of July, data was still collected until the new surveillance office started in September.

Monitoring and recording data

The SSIS team have utilised the S4 database 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 financial year 2014-15 is detailed below:

Speciality		Lost to Follow Up	Parent Reported Infections	SSI			RCA	Annual Total	Infection %	RCA's %
				Superficial	Deep	Organ Space				
Cleft	Cleft lip repair (+/- palate)	-	-	-	-	-	-	53	-	-
MaxFax	Alveolar bone graft – donor site	1	-	-	-	-	-	68	-	-
ENT	Cochlear Implant	-	1	-	-	-	-	67	1.5%	0%
Orthopaedics	Insertion of 8 plates		2	-	-	-	-	40	5%	0%
Plastics	Non-buried K wires	-	-	-	-	-	-	43	-	-
General	Neonatal	-	-	-	-	-	-	23	-	-

Surgery	Laparotomy									
Urology	Open Pyleoplasty	-	-	-	-	-	-	27	-	-
Spines	SSS	-	-	6	4	1	11	181	6%	6%

Process dashboards

In addition the team have commenced 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 division infection control meeting monthly. In addition the division carry out an RCA for any child who meets the following criteria:

- Readmitted to GOSH or a local service for wound management (including administration of IVAB)
- Has an organ space infection (including return to theatre for management)
- Prolonged stay at GOSH for wound management

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

An increase in infections was seen through the surveillance process, through the returns to PHE and observed by the Surgical team. A detailed investigation was undertaken with analysis of each procedure and, while no single cause was found, a new care bundle has been produced and implemented.

Moving forward

The SSIS team have increased surveillance in specialities where there are 2 procedures that fit into the criteria, SNAPS now have 3 procedures monitored.

The team has generated speciality exception reports.

The SSIS team propose the following aims for the 2015-16 financial year:

- To use the data gathered and report it back to each speciality in their m&m. Work together to use the data and add any explanatory narrative to the data.
- To develop a process for monitoring children who are found to be MRSA positive and to co-ordinate their on-going screening within the community, actively seeking to remove their alerts where possible by April 2016

Conclusion

The SSIS team have achieved 3 of their objectives form year one and will now move to ensure that in the current financial year the data recorded in as useful as possible to the speciality teams when delivering their service. More of an emphasis will now be on reviewing exceptions to the care bundle and patient pathway to improve the patient outcomes.

5.12 Report for Cardiorespiratory Surgical site infection surveillance

Cardiorespiratory continue to undertake surveillance by one surveillance officer. There is also an active SSI prevention group.

Feedback – discussed weekly at CCCR M&M and at the SSIP meeting.

5.13 Neurosurgery SSI surveillance

Neurosciences: The Division 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 rate is accurately obtained 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.

Shunt insertion bundle – there is a specific shunt insertion care bundle with audit compliance.

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.

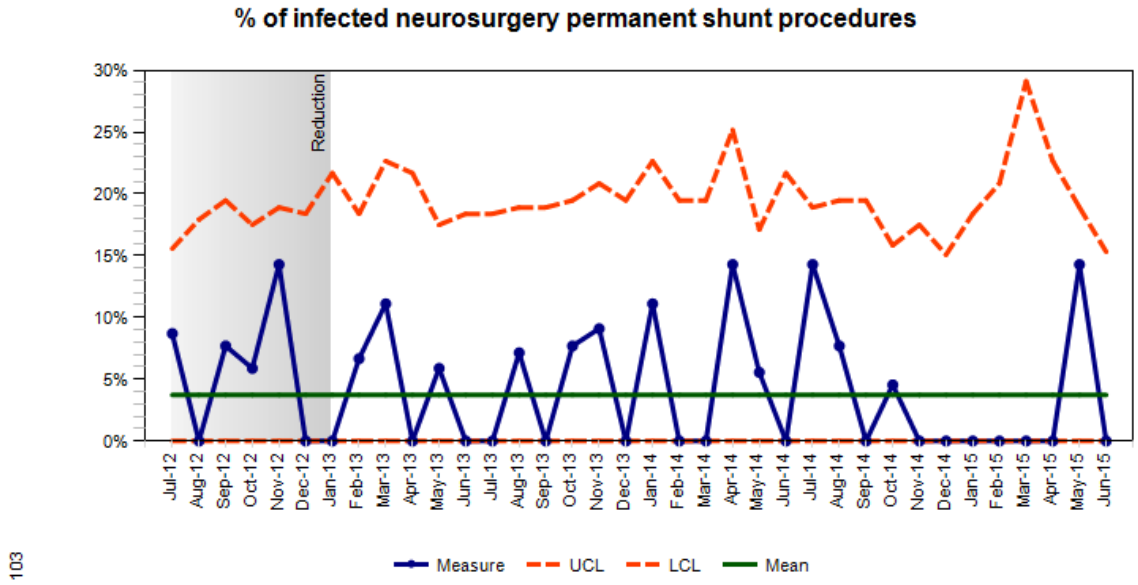
RCAs are performed for each infection and a separate audit is performed of compliance with the shunt insertion protocol.

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

The continuous dashboard is shown below:



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Viral infections detected while at hospital

5.14 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. 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 two years, with the exception of widening the panel in some children to include rhinovirus and coronavirus. 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 two years, see below, shows that the number of potential hospital acquired cases has increased from 80 to 97 (21% increase) but there was a greater increase in community onset cases (172 – 302; 76% increase) representing a greater burden of cross infection risk.

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

	Respiratory viral infections detected in 2013/14:				Respiratory viral infections detected in 2014/15:		
	Total	Community onset	Hospital onset		Total	Community onset	Hospital onset
Influenza	21	15	6		55	45	10
Influenza A					40	34	6
Influenza B					15	11	4
RSV	23	17	6		99	81	18
Parainfluenza	83	56	27		75	51	24
Parainfluenza 1					6	2	4
Parainfluenza 2					13	7	6
Parainfluenza 3					53	41	12
Parainfluenza 4					3	1	2
Adenovirus	92	57	35		104	75	29
HMPV	29	23	6		51	37	14
Rhinovirus	4	4	0		10	8	2

Human coronavirus					5	5	0
Total	252	172	80		399	302	97

5.15 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 deep 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 2 financial years all faeces have been tested by PCR (so numbers cannot be compared to previous years).

The number of enteric viruses detected in 2014/15 was similar to 2013/14 (352 v 360) but the number with apparent hospital acquisition increased from 131 to 153.

	Enteric viral infections detected in 2013/4			Enteric viral infections detected in 2014/15		
	Total	Community onset	Hospital onset	Total	Community onset	Hospital onset
Adenovirus	125	71	54	106	63	43
Astrovirus	24	14	10	16	10	6
Norovirus	120	79	41	147	77	70
Rotavirus	27	24	3	20	16	4
Sapovirus	64	41	23	63	33	30
Total	360	229	131	352	199	153

Despite this large number of cases admitted or with onset in the hospital, disruption to clinical services have been kept to a minimum in last 2 years. In 14-15 there were 10 episodes of acquisition reported as incidents however we restricted admission was implemented in only one area. This was achieved through the implementation of standard infection prevention and control procedures with prompt recognition of cases,, isolation of affected patients, and ensuring that domestic staff were cleaning the clinical areas with the correct concentration of chlorine.

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 from 3-9 days)
April 05 – Mar 06	Rotavirus / Norovirus	11 wards (range from 3-7 days)
April 06- -Mar 07	Norovirus	9 wards (range from 3-10 days)
April 07 – Mar 08	Norovirus	5 wards (range from 2-26 days)
April 08 – Mar 09	Norovirus	8 wards (range from 2-10 days)
April 09 – Mar 10	D and V (no organism detected)	3 wards (range from 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* admissions (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

Surveillance for antimicrobial resistant organisms

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

The Trust MRSA Screening Statement is located in the Admission Screening Policy located on the GOSH Web.
We monitor compliance by

- review of screening rate of those who stay in for at least 48 hours and are screened within 48 hours of admission (Target 95%)
- screening of all inpatient admissions; all wards are provided with an online update of patients not screen within 24 hours of admission, and we fed back numbers not screened by 24 hours. We aim for 100% on ICUs, but there are always a few cases where this is not appropriate due to clinical condition. Surveillance of this standard was not available during 2014/15.

Individual ward screening rates were displayed on the Infection Control web page and discussed at the Divisional IPC meetings (although this was not available this yeardue to data management issues).

GOSH Annual % Compliance to Infection Control Admission Screening Policy
Screening rate at 48 hours for inpatient admissions remaining in for > 48 hours – target 95%

Date	**MRSA (nose and throat) screen compliance %**
2002 Jan - Dec	91%
2003 Jan - Dec	86 %
2004 Jan - Dec	89 %
2005 Jan – Dec	92%
2006 Jan – Dec	95%
2007 Jan - Dec	95%
2008 Jan - Dec	95%
2009 Jan - Dec	96%
2010 Jan - Dec	95%
2011 Jan - Dec	96%
2012 Jan - Dec	97%
2013 Jan - Dec	95%
2014 Jan - Dec	98%

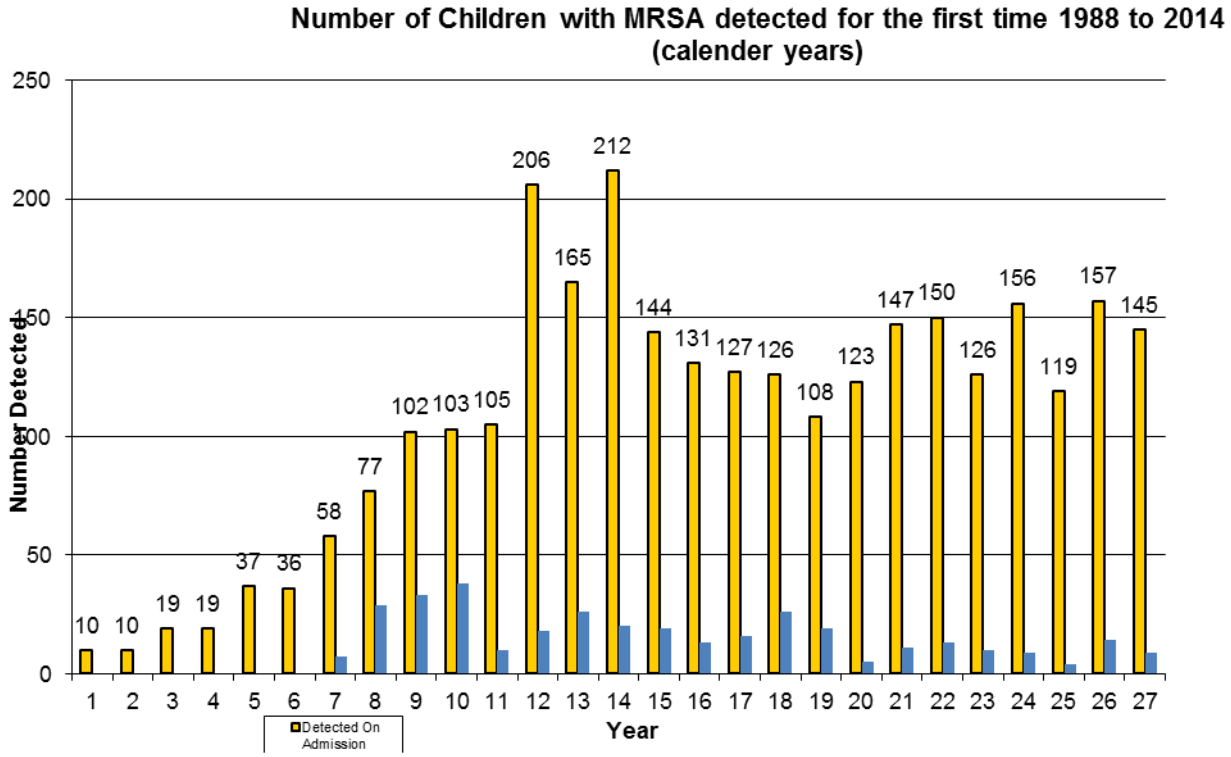
Admission screening compliance for admissions (30 day prior to within 24 hr)

– not available for 2014/15.

MRSA cases of colonisation/carriage and infection at GOSH

Details of newly detected MRSA carriage is shown in the chart below by calendar year; in 2014 there were 154 new detections, with 9 probably or possibly acquired in the hospital.

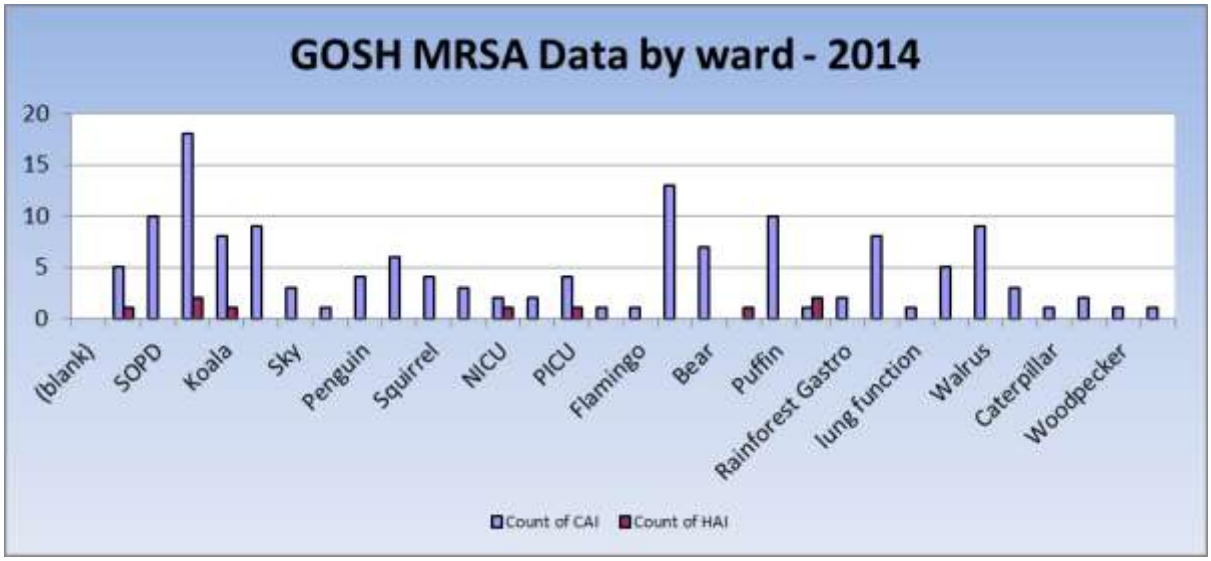
Every apparent GOSH acquired case is investigated. The source is rarely found and cases are not usually linked. There were no outbreaks.



GOSH Hospital MRSA acquired colonisation by financial year:

	Number acquired colonisations
April 04 - March 05	19
April 05 – March 06	29
April 06 – March 07	9
April 07 – March 08	4
April 08 – March 09	16
April 09 – March 10	9
April 10 – March 11	10
April 11 – March 12	7
April 12 – March 13	6
April 13 – March 14	12
April 14 – March 15	7

Distribution of MRSA 1st detections acquired in hospital in 2014



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

Routine admission surveillance is performed to allow instigation of isolation procedures in patients who are colonised with multiple antibiotic resistant organisms; knowledge of the presence of Gram negative organisms carrying linked resistance mechanisms between an aminoglycoside and other first line antibiotics is used to guide antibiotic choice for empirical treatment of serious sepsis. We aim to achieve > 75% in stool screens for all children in for greater than 48 hours (see table below).

GOSH Annual % Compliance to Infection Control Admission Screening Policy
For inpatient admissions remaining in for > 48 hours; target >75%

Date	Faeces screen compliance %
2002 Jan - Dec	72%
2003 Jan - Dec	74 %
2004 Jan - Dec	77 %
2005 Jan – Dec	75%
2006 Jan – Dec	81%
2007 Jan - Dec	83%
2008 Jan - Dec	80%
2009 Jan - Dec	82%
2010 Jan – Dec	82%
2011 Jan – Dec	86%
2012 Jan - Dec	87%
2013 Jan - Dec	86%
2014 Jan - Dec	88%

We detect similarly colonised or infected children during procession of clinical samples and weekly faecal screening of inpatients in high risk areas (haematology, oncology, immunology

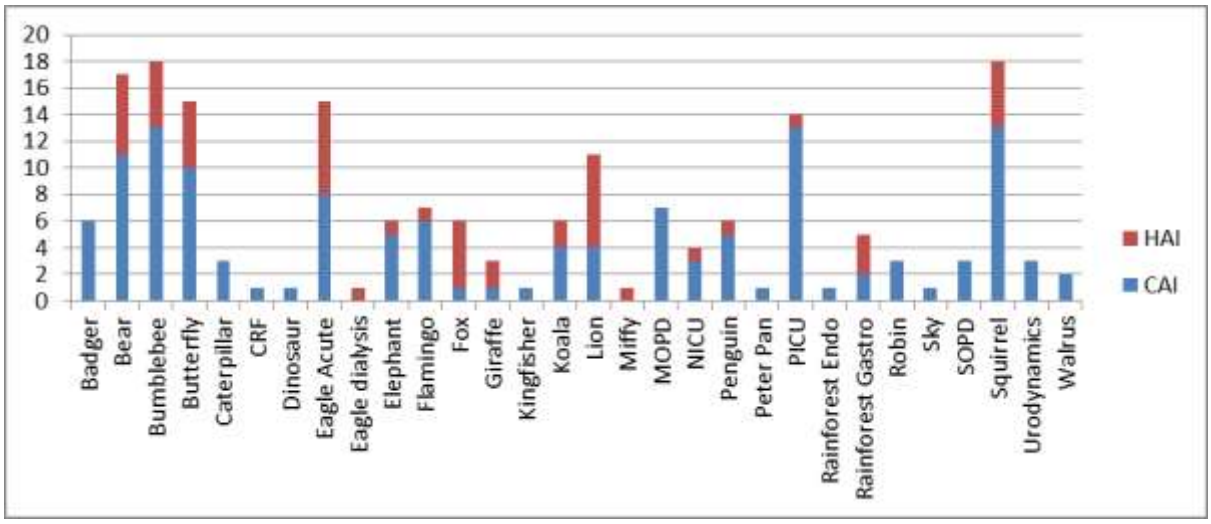
and bone marrow transplant) and instigate additional isolation procedures at considerable organisational, financial and individual cost.

Screening/testing in 2014 revealed 186 first detections (up from 158 in 2013), of which 132 definitely came in colonised and 54 were either cross infection or detected as result of antibiotic selection with previous negative or unknown (as not screened on admission). This increase is partly 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 three wards, including a very serious outbreak of a carbapenemase producing *Klebsiella pneumonia* (described below). Additional resources were required for cleaning in the first two; major interventions were implemented for the carbapenemase producing *K. pneumonia*.

The organisation is at its limit in 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.

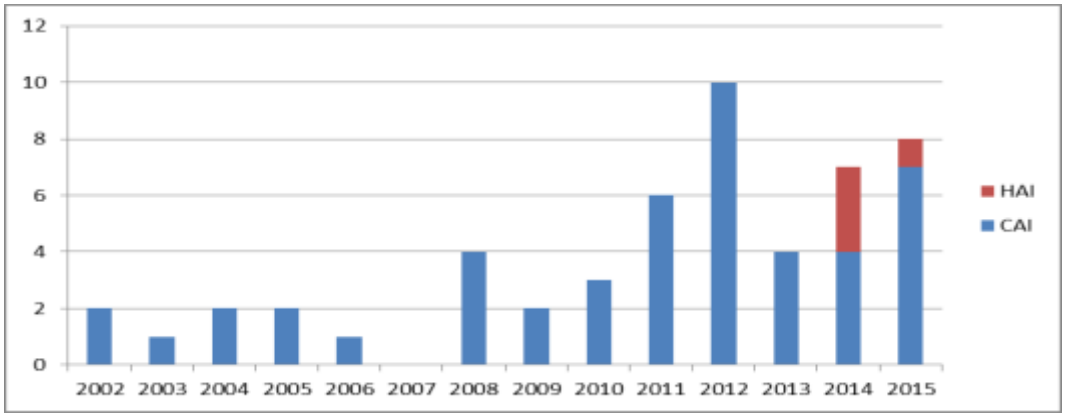
Bar chart showing location of children colonised on admission or subsequently found to be colonised with multiple resistant gram negative bacteria by ward in 2014



Carbapenemase resistant gram negatives

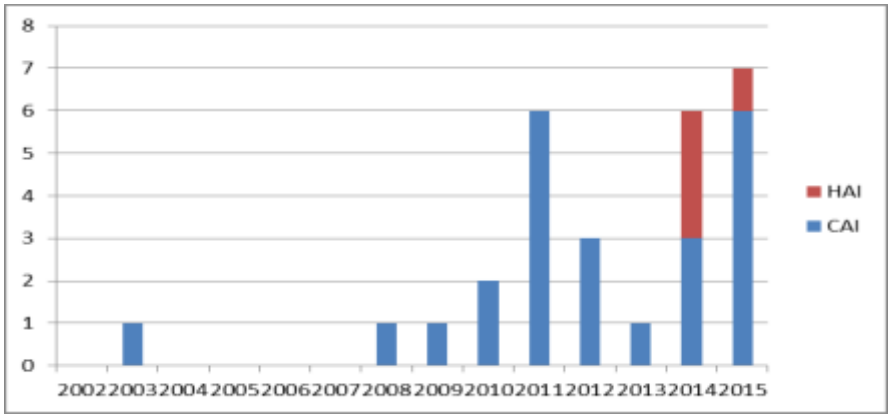
This antibiotic resistance mechanism represents the most serious threat to treatment yet. Organisms carrying this mechanism may be truly untreatable. They are becoming more prevalent in various countries and regions within UK and have been responsible for major outbreaks. We screen for carriage and implement severe control mechanisms when found. There had been an increase in detection of children colonised with carbapenemase over the last 10 years, peaking for us in 2012 see bar chart.

Bar chart showing the number of children newly detected as colonised with significant carbapenemase carrying organisms (Enterobacteriaceae, Acinetobacter spps, Pseudomonas aeruginosa) , by year (2015 data to end June)



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 kit introduced by PHE. We have seen an increase in the number of patients with this type of organism.

Bar chart showing the number of children newly detected as colonised with significant carbapenemase carrying organisms Enterobacteriaceae (CPEs) by year (2015 data to end June)



Until the end of 2014 we had successfully controlled all introductions but there was a significant outbreak in the haematology oncology wards. A full investigation was undertaken as transmission occurred to 4 children. Outbreak management included communication with parents and all shared care units, restriction in patient movements and non-essential ward visits and additional screening. The cross infection was actually identified and controlled before the presence of the oxa-48 gene was seen, as the strain was not initially detected as carrying this gene. Subsequently we have modified the screening process to improve detection of this type of organism. Children are still attending this, and other trusts, with this strain and the threat requires continuing attention to control.

5.18 Serious Untoward incidents and complaints involving Infection, major outbreaks and threats (including Ebola virus)

Serious Incidents: In the 2014/15 financial year there were two SIs involving IPC and one major outbreaks. The SIs related to

- risk arising from M. tuberculosis infection, with omission of the use of appropriate infection prevention and control procedures when a child was admitted with possible infectious tuberculosis
- exposure from a symptomatic staff member.
- The major outbreak was the transmission of a carbapenemase producing Klebsiella pneumoniae as described
- In addition one major cluster of post-operative infections in spinal implant surgery was investigated. While no single cause was found, a new care bundle was introduced.

Complaint: A complaint was received regarding information supplied to parents regarding the presence of antibiotic resistant organisms in their child's screening samples. This resonated with other issues which did not result in formal complaints but reflected deficiencies in communication, especially when a child may have left hospital. The IPC team have produced a new information leaflet for this and will be working to improve staff understanding and delivery of this information while in or out of hospital.

Response to the Ebola virus threat

While this was not declared a major incident it was managed as such. Development of a care pathway to detect and manage suspected cases, along with training in use of enhanced personal protective equipment was a significant use of Trust resources. The report produced for the Learning Implementation Board is included below:

This report summarises the organisational response to the current Ebola outbreak.

This report was requested to be submitted to Learning Implementation Monitoring Board (LIMB) by the previous co-medical director. It was felt that the response which was put in place for Ebola by the organisation could provide wider learning which should be disseminated.

In August 2014 the World Health Organisation (WHO) declared a major outbreak of Ebola in three West African countries; Sierra Leone, Guinea & Liberia. Countries across the world responded to the outbreak by sending aid and healthcare professionals to assist with the control of the outbreak. In addition there was a requirement to put in place plans to assess any symptomatic individuals who may have visited these countries in the previous 21 days or had direct contact with known or suspected case of Ebola. Public Health England (PHE) asked trusts to ensure they had appropriate plans in place to assess any symptomatic patients or patients who had been to affected countries and had the facility and appropriately trained staff to look after any suspected cases until they were confirmed, when they would be moved to the High Security Infectious Diseases Unit (HSIDU).

In October 2014 Great Ormond Street NHS Foundation Trust (GOSH) was required to provide assurance at a high level that the organisation had robust systems in place to assess the risk of patients/carers for Ebola, one of the viral haemorrhagic fevers (VHF).

The early stages of the response included the Infection Prevention Control Team (IPCT) (medical & nursing) assessing the personal protective equipment (PPE) that would be required should a suspected case of Ebola be identified from an individual presenting a GOSH. This was a challenging area as the majority of the advice and equipment was designed for hospitals with Emergency Departments (ED). The IPCT carried out a complete and robust review of all the PPE available within GOSH and available from procurement to the NHS. At the same time guidelines in place for the donning (putting on) and doffing (removal) of PPE both in the United Kingdom (UK) and across the world were reviewed. This was a challenging piece of work as protocols were still under development. Another challenge was the restriction placed on trusts to procure the required PPE due to ring-fencing of stock to go to West Africa.

At the same time as the protocols for donning and doffing were being developed there was a requirement to identify a holding area to look after patients who met the criteria to be tested for Ebola. Having no ED was yet again a significant challenge here as most organisations would hold patients in their ED while awaiting results. After a full site evaluation the respiratory sleep unit (RSU) was identified as a promising holding area. It was felt that any patients at risk of having Ebola would more than likely be identified during the day; the RSU is an area that does not generally have patients during the day (after 1100). Stock was identified that would be needed to care for a potential patient with suspected Ebola should they need to go to the RSU. Kit was held with the IPCT and a box of medicines with pharmacy. The RSU staff worked with the IPCT to create a plan that ensured a respiratory sleep service could be provided in another area of the trust and the RSU would be operational to receive patients within 60 minutes of identification of a suspected patient.

Work was carried out with the laboratory team to ensure any specimens for a suspected case were tested using the national guidelines and appropriately packaged and secured for transit to the Rare and Imported Pathogens Laboratory, Porton Down. Plans were reaffirmed with Facilities for the management of Category A waste and a clear protocol was revised.

Due to the extent of training and the requirement to raise awareness about their responsibilities with regard to assessing patients an assessment was made by the Chief Operating Officer (COO) that a specialist group, locally known as the ‘Ebola Taskforce’ needed to be set up to oversee the GOSH response to the Ebola epidemic in West Africa; Liberia, Sierra Leone and Guinea. The group was initially large but was then reduced to a core membership

The core membership of this group was as follows:

- COO
- Deputy COO
- Head of communications
- Director of Human Resources
- Consultant intensivist
- Director Infection Prevention Control (DIPC)
- Lead Nurse Infection Prevention Control (Deputy DIPC)
- Co-Medical Director
- Chief Nurse
- Deputy Chief Nurse

The purpose of the group was to make key decisions around the trusts response to Ebola and provide the Chief Executive and Board that the response provided was measured, appropriate and resourced.

The Taskforce identified a cohort of staff that would require additional training; staff who were already Fit tested for respiratory masks and were familiar with using PPE. Areas where nurse and medical staff were trained are as follows:

- International Private Patients (IPP)
- Robin & Fox Ward (Infectious Diseases including medical team)
- Clinical Site Practitioners (CSP's)
- Intensive Care Units: Paediatric Intensive Care Unit (PICU), Neonatal Intensive Care Unit (NICU)Cardiac Intensive Care Unit (CICU)

To facilitate training the IPCT worked with GOSH online learning and development team (GOLD) to create a training programme which would not only provide the training the organisation had decided was needed for staff but also to record and evidence the training. The training for staff who would care for a patient with suspected Ebola consisted of two elements; online and face to face practical training. The online training was a video produced by the IPCT and the GOLD team which demonstrated to staff how to don and doff PPE. There was also background information provided as part of the online training. Completion of this training was monitored through the training database.
The face to face training allowed participants the opportunity to don and doff PPE and familiarise themselves with the processes. Face to face training was manually entered on the training database and also on a shared drive which allowed the CSP's to access training records should a suspected case be identified and staff be required to care for the patient. In order to facilitate an initial cohort of trained staff the IPCT provided face to face training every weekday for three months. This gave staff from the identified areas the flexibility to attend the training with as little as possible impact on clinical services. To date 180 staff have been trained. Training continues on PICU/NICU team days.

The taskforce also instructed the IPCT to carry out refresher training for all clinical staff on standard precautions and risk assessment. Whilst Ebola was recognised to be a risk the actually likelihood of getting a case was assessed as low. It was however recognised that a proportion of hospital acquired infections/colonisations could be reduced by the better implementation of standard precautions by all staff and the use of risk assessment.

All staff needed to be made aware of their roles and responsibilities regarding Ebola assessment for patients and families. The taskforce tackled this in a number of ways. To ensure all staff knew their about the outbreak and any responsibilities they may have an all user email was sent out and followed up by the group. The Chief Nurse and Lead Nurse for Infection Control met with the heads of nursing to ensure they were aware and cascaded information to staff appropriately. The co-medical director appropriately informed medical colleagues. In addition the IPCT met with keys areas including Children's Acute Transport Service (CATS) and all outpatient and inpatient reception staff. Screensavers and banners on the trust intranet were also created to act as a prompt to staff, as well as it being a regular item on all relevant trust meetings. There were regular updates and information provided for trust brief and the newsletter. An assessment screen to record the answers to the two Ebola exposure questions that needed to be asked was created by the PiMS team. Assessment stickers for notes were created for areas which did not use PiMS including the diagnostic services areas. Compliance was monitored for the recording of the questions and data fed back to clinical areas on a regular basis.

The taskforce met on a bi-weekly basis to review the situation internationally, assess where we were as an organisation in terms of our response and ensure that required actions were completed. As the cases of Ebola decreased in West Africa and the Public Health England

(PHE) management of travellers returning from affected countries improved, the meeting frequency decreased to monthly.

Key learning point(s) for Trust-wide dissemination

- Early formation of taskforce or steering group to inform decisions and provide trust wide guidance, led by a senior member of the organisation which met regularly.
- Importance of working jointly with key individuals.
- Released time for Specialist Matter Experts (SME), in this case this was facilitated by an administrative assistant being employed.
- Using the specific agenda of Ebola to inform and create on-going learning for staff in terms of risk assessment and the importance of the use of PPE and standard precautions.
- Clear early guidance being issued on the organisations response to minimise staff anxiety and ensure safety for patients is maintained.
- It is important to ensure a cohort of staff are trained in the use of enhanced PPE to ensure an adequate response to outbreaks both nationally and internationally.

Helen Dunn 10/7/2015

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 National Staff Survey hand hygiene

The 2012 and 2013 national staff surveys reported lower than desired satisfaction of availability of facilities for all staff at all times for hand hygiene.
The facilities team have placed stickers on soap & alcohol hand gel dispensers in clinical and non-clinical areas, alerting people who to contact, should they find an empty dispenser.
The 2014 survey did not ask this question.

However, our score dropped in another IC question on training.

STAFF SURVEY (2012 to 2014): INFECTION CONTROL RESPONSES

TRAINING SURVEY SCORES

Infection control (e.g. guidance on hand-washing, MRSA, waste management, disposal of sharps / needles)	**2014**	**2013**	**2012**

Trust Score	58 ▼	65 ▲	60
Average (median) for acute specialist Trusts	74	75	74

The Trust regularly scores significantly below NHS acute average with regards to Infection Control training availability. The 2014 score has dropped 5% from previous year.

We need to understand this better so we can assist staff in this training need.

6.3 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

7) Facilities Annual Report Summary – 2015

Corporate Facilities continue to provide cleaning services through an external contract with Mitie, although the contract due for renewal and is out to bid. Following investigation in to the response to one of the investigations of MDR-gram negative cross transmission, a deep cleaning team was introduced that is undertaking systematic cleaning and able to redeploy to assist in outbreak situations. This has been very helpful.

Decontamination

The Sterile Services provision of service for GOSH transferred to Guys and ST Thomas Hospitals NHS Foundation Trust September 2013. The quality of service delivered has been monitored as deemed acceptable by the Clinical staff at GOSH
GOSH have maintained accreditation status to BS ISO 13485:2003 for Endoscopy and Medical Equipment decontamination. Accreditation status demonstrates that service provision meets all external mandatory standards and Department of Health guidance documents

8. Estates The Estate team continue to work closely with the IPC team in improving the practices of maintenance and monitoring on the both the ventilation and water systems.

The appointment of both an Authorised engineer in both disciplines (Ventilation and Water) now bring a more positive approach to the experience in both developing the safe working practices and the few issues when then have arisen.

- There is a programme now in place for annual verification of all areas with critical ventilation. This programme is overseen by the Ventilation Committee (Chaired by Senior Compliance Officer, Estates)
- Water safety is now managed through the Water Safety management Group, chaired by DIPC. All systems continue to be tested, monitored and reported on in liaison with the IPC. The remedial works have been acted on quickly from notification, with excellent

communication and cooperation with the end users that now understand more clearly the work that goes into the maintenance of the safe deliverability of water to their areas.

MSCB continues to be closely monitored as being operated outside of the guideline under derogation, at the lower temperature of 43^0C without any problems. A lot of work in rebalancing the water system throughout the building has been undertaken since the last report and concern which has provided excellent results and removed the concerns from continued poor readings from several areas.

Pseudomonas aeruginosa continues to be tested for, with extension to other areas with at risk patients, Presently it does not present itself as a risk under the on-going control measures be undertaken by the Estates team.

9 Trust wide Audit

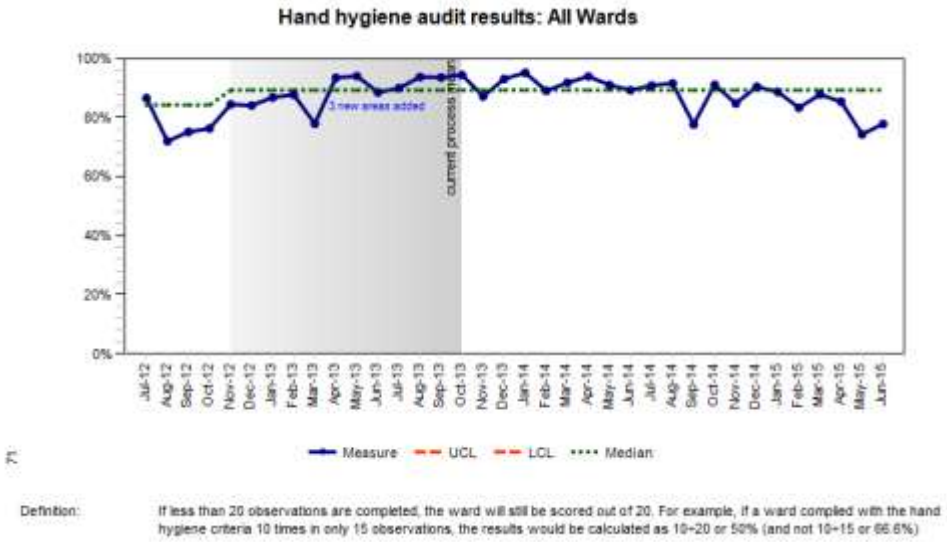
The infection control Trust-wide audit plan is now well embedded in the Trust's overall audit programme and registered with audit department. This plan is based on the internal and external infection control strategy which includes elements of High Impact Interventions from the "Saving Lives" programme. The infection control link network personnel in the Trust take responsibility, with guidance from the IP&CT, for performing planned audits. Additional audits are often carried out by interested personnel.

Antibiotic prescribing – the Trust has continued to fund a part time antibiotic pharmacist who is working one day per week, with the Antibiotic Subcommittee of Drugs and Therapeutics Committee (Chaired by Dr Soothill), on antibiotic policy. The Antimicrobial Stewardship group now meets regularly and has commenced an audit programme of three key indicators.

9:1 Hand Hygiene Results

Individual ward/department and All Trust Hand Hygiene compliance is published monthly on the Transformation dashboards and reviewed by Divisional Boards and Nursing.

Hand Hygiene - All Trust compliance (with zero score for non-returns) is shown in the graphs below.



The time point for March 2015 represents 2244 satisfactory observations out of 2307 performed, giving a rate of 97%. Completion of audit has fallen off in this financial year, although compliance when assessed is still high – time point for June 2015 represents 1519 satisfactory observations out if 1565 performed, giving a rate of 97%.

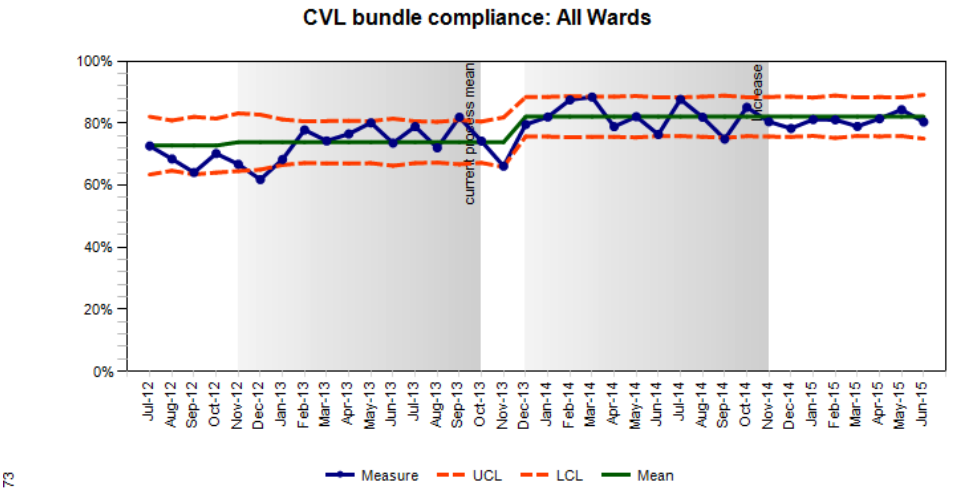
Hand hygiene audit – all observations: For the year there were 26,568 observations and 97% were satisfactory.

Compliance with completion of audit usually falls when the wards are more busy with clinical care.

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. It is reported as All Trust and individual ward data on the Transformation Dashboard. Compliance seen as % of audit observations done is shown on graph.

CVL ongoing care bundle audit – compliance of observations expected (areas not providing a return are scored as zero and bring down the overall Trust audit.)



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.

The time point for March 2015 represents 315 satisfactory observations out of 344 performed, giving a rate of 92%. Completion of audit has fallen off in this financial year,– time point for June 2015 represents 233 satisfactory observations out if 265 performed, giving a rate of 88%.

The total line care audits in the year was 3844, with 88% compliance. This drop needs to be addressed.

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

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

Individual wards are provided with specific data and encouraged to maintain high data entry.

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

9:4 Antibiotic prescribing,audit and antimicrobial stewardship.

One microbiologist has dedicated time (1PA) for specific work on antibiotic policy. This microbiologist sits on the drugs and therapeutics committee and chairs the antibiotic sub-committee – responsible for updating all policies. An antibiotic policy, devised to increase the likelihood of adequate antibiotic cover during empirical treatment of infection, limit the development of antibiotic-resistant bacteria at GOSH and reduce costs, continues to be observed.

The Trust now has an antibiotic pharmacist who spends one day per week working in the organisation.

A new Antimicrobial Stewardship group was formed and met for the first time in July 2012, to implement the DH guidance and antimicrobial stewardship was included as a CQUIN target for 13/14 and 14/15.

Report from AMS committee (chair James Soothill) for activity in financial year 2014/15 in relation to the CQUIN target and AMS:

QUARTERLY MONITORING AND PAYMENT REQUIREMENTS	
Quarter	**Payment arrangements**
Monitoring requirements for end Q1.	Develop audit questions for measuring compliance with policy.
Monitoring requirements for end Q2.	To hold 1-2 spot audits by end of September to get 'snapshots' of compliance.
Monitoring requirements for end Q3.	Based on the audit implement improvement plan and set improvement target
Monitoring requirements for end Q4.	Audit to determine improvement plan has met target

Quarter 1 of 2014-15

Audit questions were developed:

They are:

For each prescription for an antimicrobial agent:

1. Was the indication stated on either the electronic prescribing system or the drug chart?
2. Was the indication stated in the patient's medical notes?
3. Was the prescription in accordance with an antibiotic policy that has been approved by the Antibiotic Policy Group?
4. In cases where prescriptions were not in accordance with an antibiotic policy that has been approved by the Antibiotic Policy Group was the prescription in accordance with a policy of the ward or specialty caring for the patient?

5. In cases where prescriptions were not in accordance with a GOSH policy did the prescription have the approval of the Microbiology and infectious diseases team.

Quarter 2 of 2014-15

Two spot audits have been carried out, one in June 2014 and one in September 2014. The evidence for these is in two files of anonymised audit data.

Quarter 3 of 2014-15

Improvement Plan

The proportion of prescriptions in line with policy was very high in each audit, but differed considerably between audits so setting a target for improvement in adherence to policy that we could be confident of achieving was impossible. However there is room for improvement in reducing the number of prescriptions that are in line only with a local policy (and not with a central GOSH policy, and not advised by Micro/ID). In June 2014 41/334 (12%) policies were according to local policy only, in September the figure was 36/287 (13%). We therefore propose a CQUIN target of a 20% reduction in the proportion of prescriptions that are in line only with a local policy (and not with a central GOSH policy, and not advised by Micro/ID).

Improvement Target

The % age in the March 2015 audit would need to be 20% lower than the mean % age from [June 2014, September 2014 (and if no changes had been made before the Jan 2015 audit) the Jan 2015 audit].

Quarter 4 of 2015

Our target for the March 2015 audit was that the proportion of prescriptions in line only with a local policy (and not with a central GOSH policy, and not advised by Micro/ID) needed to be 20% lower than the figures for June (12%) and September (13%) averaged= 12.5%. 20% lower than 12.5 % is 10% so we needed the figure for March to be below 10%. In the March audit 17/336 5% of prescriptions were in line only with a local policy (and not with a central GOSH policy, and not advised by Micro/ID) so we have more than achieved our CQUIN target.

9.5 Hospital cleaning

See Facilities report.

10 Occupational Health

10:1 Occupational Health new starters

The service is run in house. All 'new entrants' are screened in OH within the first week of commencement of employment. Employees in patient contact who require serology and/or vaccination are asked to attend OH on the first day of employment. The OH Manager has

worked had to ensure to improve attendance and will be introducing a new monitoring system in 2015 to aid improved compliance.

Staff Immunisations

Staff immunisation is described in the Immunisation and Screening of Healthcare and Laboratory staff policy stored on the Document Library (revised but not uploaded).

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 and have no clear history of disease are vaccinated. This includes administrative and clerical staff and other staff if they work in clinical areas.

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

This programme is monitored by the Occupational Health Department and any incidents reported to the IPCT.

Influenza Vaccine

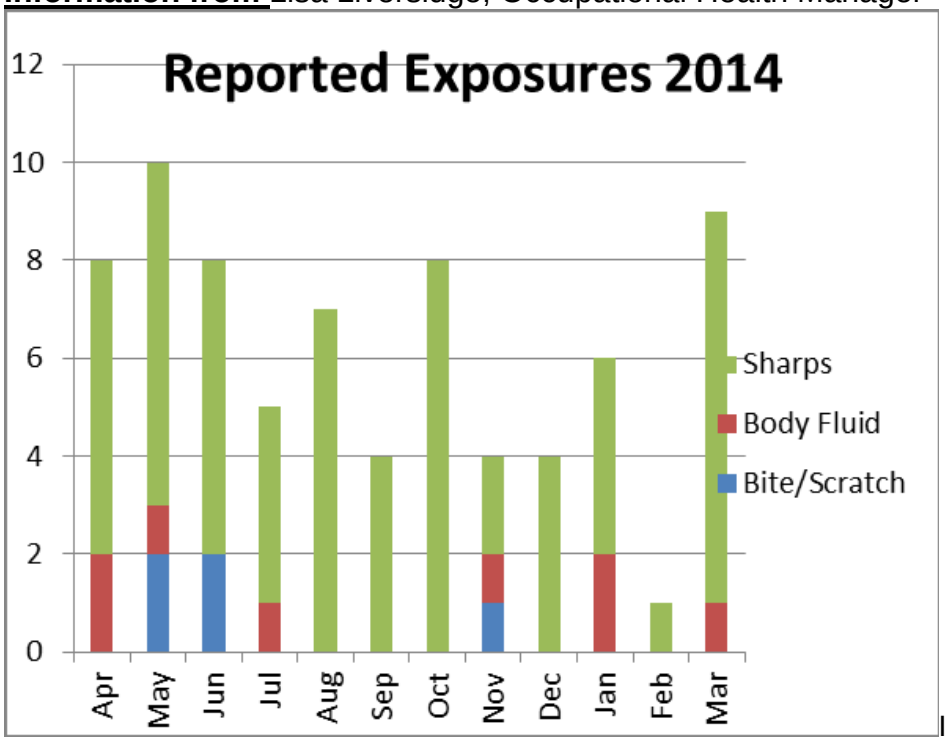
Health care worker influenza uptake is not high, although GOSH has done well compared to national figures. The Flu Immunisation group co-ordinated an active vaccination programme again for all staff.

The active programme will include a static station available for all staff and ward based stations provided by both local staff and OH. The local staff would form an essential part of the campaign and this is the approach we want (which worked well in the initial swine flu campaign).

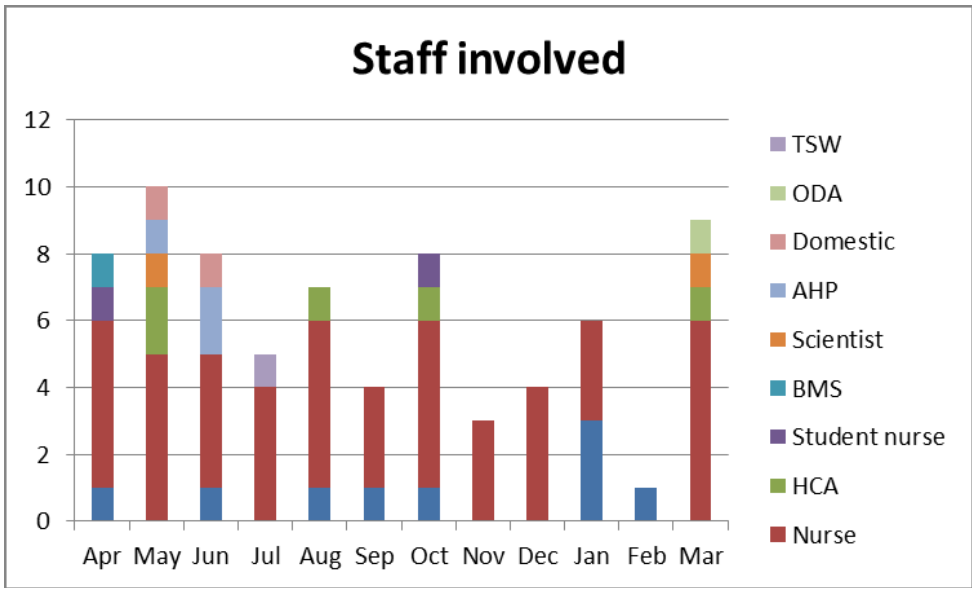
Final flu uptake figures for 2013/14 were 40%, an 8% increase on 2012/13. The uptake in the 2014/15 season was also 40%.

10.2 Exposure to blood borne viruses

Information from Lisa Liversidge, Occupational Health Manager



In 2014/15 OH saw 74 attendees following body fluid exposure injuries, down from 84 in previous year.



Unsurprisingly nurses are the main recipient of exposure injuries, 47 out of 74 incidents, due to the nature of their work and numbers of nurses employed in comparison to other staff groups.
All of the exposures this year have been with different staff members and spread across the different areas with no hot spots identified.

Table 3: Exposure incidents recorded by how injury was sustained from 01.04.2014

Reason	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Clearing away equipment		2				1	1	1					5
Struck by diathermy needle												2	2
Post venepuncture	1		2	1	3		2		2	1		2	14
Splash	3	1		1				1		2			8
Cleaning equipment					1								1
Assisting colleague	1			1						1	1	2	6
Shaving patient				1									1
Post injection					2								2
Accessing port					1								1
Sharps bin too full						1							1
Post procedure	1					1	2			1		1	6
Cut with scalpel	2	2	1					1					6
Scratched by patient		1											1
Bitten by patient		1	2					1					4
removing portocath		1	1										2
left lying around		1	2										3
Insulin pen							3		1				4
Not known		1		1		1			1	1		2	7
Total	8	10	8	5	7	4	8	4	4	6	1	9	**74**

Summary

On average 6 exposures occur every month within the Trust. Exposure incidents appear to be most common post venepuncture. This appears generally to be related to the patient moving suddenly causing the recipient to scratch themselves with the used needle.
Where appropriate, management action has led to an on-going decline in related incidents.
Accurate data recording and regular analysis of data enable trends to be picked up and enables central documentation of management action to ensure compliance with Health and Safety standards and the Trust's objective of 'zero harm'.

11 Targets and Outcomes in 2014/15

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

	Target	Outcome	Comment
MRSA bacteraemia	Zero	Zero	
C. difficile infection	Less than 7 lapse in care	Lapse in care = 2	
MRSA screening Within 48 hours	95%	98%	
MRSA admission screening ICUs	100% (where screening appropriate)	Not available this year	
MRSA colonisation acquisition	Zero	7	
GOS acquired CVC related bacteraemia	< 2.1/1000 line days	1.3	
CVC care bundle compliance	90%	88%	Based on all observations in year (3844)
Hand hygiene compliance	95%	97%	Based on all observations in year (26,568)
Ventilator associated pneumonia	No target		Limited surveillance on PICU
Root cause analysis of S. aureus bacteraemia	100%	100%	
Surgical site infection surveillance	No target	Some data for each division	
Compliance with induction	95%	85%	
Compliance with level 2 update	95%	<50%	

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 bi-annually. 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. 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.

A new level 2 update has been developed to promote implementation of standard precautions and has been launched through the Gold Site. Our aim is to achieve >95% coverage over the next 18 months.

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.

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 has been run regularly and well attended. Next year additional days focusing particularly on the physical environment will be developed.

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 yearly 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. Progress has been made in all Divisions and a new bundle will be introduced in the ICUs in 2015.

Part B - Infection control Action Plan for the year 2014/15

Infection Prevention & Control (IPC) Team Annual work plan 2014/15

Shown here are the 10 essential from the Code of Practice. Work programmes are like 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	Provide suitable accurate information on infections to service users and their visitors.
4	Provide suitable accurate information on infections to any person concerned with providing further support or nursing/ medical care in a timely fashion.
5	Ensure that people who have or develop an infection are identified promptly and receive the appropriate treatment and care to reduce the risk of passing on the infection to other people.
6	Ensure that all staff and those employed to provide care in all settings are fully involved 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	Ensure, so far as is reasonably practicable, that care workers are free of and are protected from exposure to infections that can be caught at work and that all staff are suitably educated in the prevention and control of infection associated with the provision of health and social care.

Programme of Work	Lead	Time frame	Progress to date	Action required	Hygiene code
Audits- develop an environmental monitoring tool for use by the IPC team across the organisation.	IPC Team	Ongoing	Provisional tool complete, need to add more detail	Complete on next team day	1, 2
Audits- review the hand hygiene audit tool used across the organisation to ensure it is fir for purpose.	IPC Team	March 2016			1, 6, 9,10
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. . These results and any improvement processes which are put in place will be discussed at divisional infection control meetings.	IPC Team	On-going			1, 6, 9, 10
Audits- work with the divisions and Practice Educators to develop a standardised process for using parafilm and assist with the roll out across the trust.	IPC Team	Start Sep 2015			1, 6, 9, 10
Audit- the team will audit	IPC team	To be carried			1, 7

Programme of Work	Lead	Time frame	Progress to date	Action required	Hygiene code
compliance against policies in place across the trust should be monitored through audit. Examples of this include the isolation audit.		out at least bi-annually.			
Training- The IPC team will launch the updated level 2 standard precautions training and the level 1 induction game.	IPC Team	Dec 2015			6
Training- The team will also host a quarterly infection control study day which all clinical staff can attend.	IPC Team	On-going			6
Information dissemination- The team will update/create patient/staff infection leaflets pertinent to infection prevention control	IPC team	On-going			3
Information dissemination- the team will develop patient letters for those patients who have an antibiotic resistant organism identified after they have left GOSH.	Helen Dunn	October 2015			3, 5
Surveillance- The team will continue to report and collect information on mandatory surveillance categories required by PHE. Where the infections are	IPC Team	On-going			1, 5, 9

Programme of Work	Lead	Time frame	Progress to date	Action required	Hygiene code
healthcare associated a root cause analysis +/- RCA review meeting will take place.					
Admission screening- to monitor compliance with MRSA admission screening.	IPC Team	To commence ASAP when IT support acquired.			1
Surveillance- To be involved with RCA into deep/organ space wound infections which will be led by the divisions and reported back through the divisional infection control meetings.	IPC Team	On-going			1, 6
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 department. In addition the team will access and provide guidance on any other waterbourne pathogens which may cause disease in patients/staff.	Elaine Cloutman-Green	On-going			1, 8, 9
Ventilation- the team will work closely with the estates department to ensure rooms with specialist ventilation are managed and maintained in an appropriate	Elaine Cloutman-Green	On-going			1, 9

Programme of Work	Lead	Time frame	Progress to date	Action required	Hygiene code
manner.					
Cleaning- the team will work with clinical areas to develop specifications around cleaning for the upcoming tender.	Helen Dunn	April 2016			2,
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.	Helen Dunn	On-going			7, 2
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	Allocate divisions by Aug 2014 & support on-going.			1