

Board of Directors (in Public)

Item 2.5

Subject: Director of Infection Prevention Annual Report 2017/18
Date of Meeting: 1st May 2018
Prepared by: Nicky Best (IPN), Lynn Trayer Dowell (IPN). Drs T Neal & C Toong (Consultant Microbiologists), Madelaine Whelan (antimicrobial Pharmacist)
Presented by: Dr Raphael Perry – Medical Director & DIPC
Purpose of Report: For Note

BAF Ref	Impact on BAF
1.1, 1.2	No Impact

1. Executive Summary

- Reportable infections remain low in numbers and there is a new internal assessment process feeding back to the divisions to ensure improvements where indicated
- Infection prevention audits show good compliance with established processes
- A new sepsis subgroup has been formed to drive forward continuous improvement in the management of sepsis

2. Background

The prevention and control of healthcare associated infections (HCAIs) is an important part of both the patient safety and clinical quality agendas. The Trust has a responsibility to ensure that appropriate arrangements are in place to protect patients, staff and visitors against the risk of acquiring a HCAI, as detailed in the *Health and Social Care Act (2008)*. There is also a requirement to produce an annual report on Trust activities, in relation to infection prevention and to make this available to the public.

This report details the infection prevention and control arrangements and discusses the achievements that have been made in reducing healthcare associated infections (HCAIs) during the financial year 2017/18. It also sets out a forward plan for the year 2018/19.

3. Key Issues

1 Infection Prevention and control Arrangements

Infection Prevention Team (IPT)

The Director of Infection Prevention and Control (DIPC) for the Trust is Dr Raph Perry.

There are 2 specialist nurses currently in post (Total 1.8wte):
Nicola Best (0.8wte) and Lynn Trayer –Dowell (1wte).

There is a designated Infection Prevention doctor, Dr Tim Neal (2 sessions per week). In addition there is clinical microbiology support provided by 2 consultant microbiologists on a rotational basis.

There is the provision for some administrative support (0.3 wte)

Infection Prevention Committee

The Infection Prevention Committee (IPC) meets quarterly and is chaired by the DIPC. Membership is multi-disciplinary and includes the governance manager, senior clinicians and nursing staff and representatives from different clinical areas. There are 3 sub-groups of the committee: Water safety, Antibiotic prescribing and Decontamination.

A separate report on the committee and its effectiveness against its terms of reference has been compiled and is included in Appendix 2.

Infection Prevention Link Staff

Every ward has nominated nursing staff who act as infection prevention 'links' for their clinical area. Meetings are held every other month.

Information Technology

A surveillance software system (ICNET) is used by the infection prevention team as part of a joint project with Royal Liverpool University Hospital and Aintree University Hospital. This has been upgraded this year to create an interface with the patient administration systems.

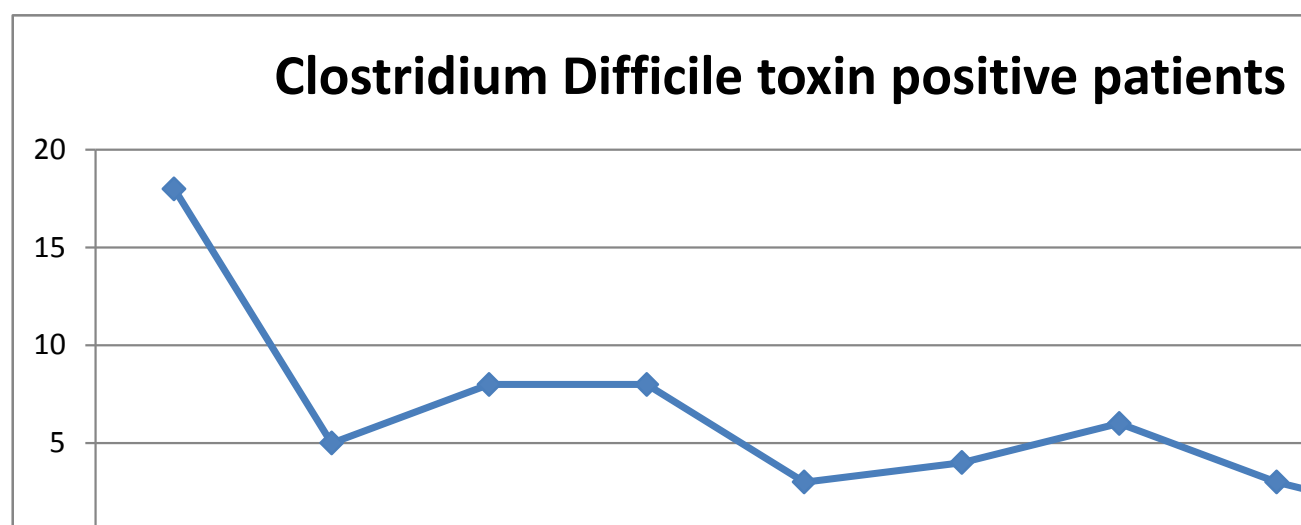
2. Surveillance

Information on all patients colonised, or infected with, specific "alert" organisms is collected and data is generated monthly and used by the Infection Prevention Committee to monitor performance and trends with regard to HCAs.

Data is also collected on patients with certain bloodstream infections (bacteraemias) and reported to a healthcare associated infection (HCAI) national system.

Clostridium Difficile- Toxin positive cases

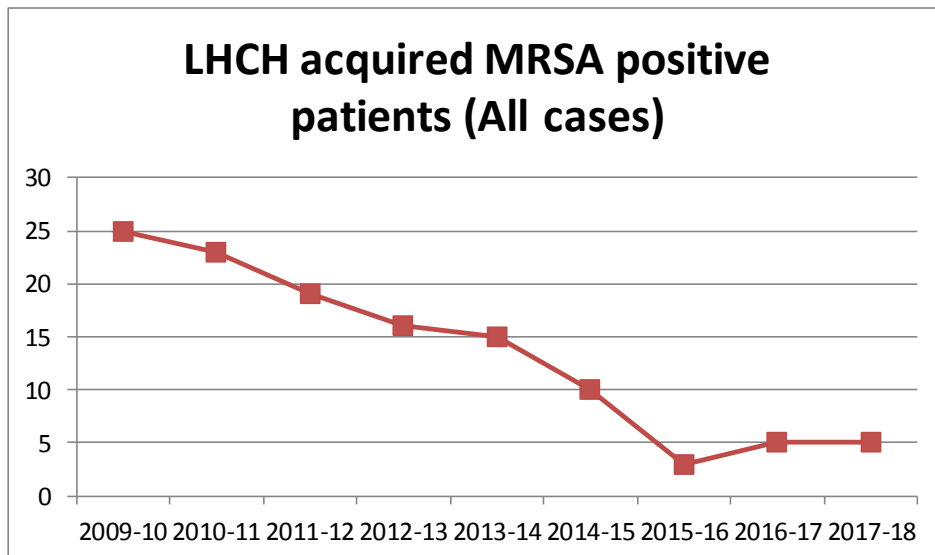
The number of Trust acquired cases of C. difficile infection (toxin positive) remains low, with 1 patient identified. This case was reported to the national surveillance scheme in line with mandatory reporting schedules. A root cause analysis was performed and action plan produced in conjunction with clinical staff to address any issues identified.



Methicillin Resistant Staphylococcus Aureus (MRSA) -All cases including non-blood stream infections.

The total number of patients with MRSA are monitored, this includes patients who are colonised with MRSA or who have an infection at any site. However reviews of all patients indicate that the vast majority of patients are admitted with MRSA i.e. they do not acquire it whilst an inpatient at LHCH.

The overall number of patients acquiring MRSA within the Trust remains at a low level (5) and generally relate to patients who are colonised, not infected.



MRSA Bacteraemias (Blood stream infections)

There was 1 patient identified with an MRSA bacteraemia. A multi –disciplinary PIR (post infection review) was completed with clinical staff and a representative from Liverpool CCG. The action plan was monitored by the Infection Prevention Committee

	2013-14	2014-15	2015-16	2016-17	2017-18
Number of LHCH attributable cases per year	1	0	0	0	1

Methicillin sensitive Staphylococcus aureus (MSSA) Bacteraemias (Blood stream infections)

There has been a slight decrease in the number of Trust attributable MSSA bacteraemias. All were reported to the HCAI surveillance scheme in line with mandatory requirements. Reviews of patients were undertaken and these indicated that generally the causes were complications following cardiac surgery or infections related to peripheral venous cannulae.

	2013-14	2014-15	2015-16	2016-17	2017-18
Number of LHCH attributable cases per year	8	11	8	10	8

Gram Negative Bacteraemias (Blood stream infections)

All cases of E. coli bacteraemia have been reported to the HCAI surveillance scheme in line with mandatory requirements. Over the last year there has been an additional requirement to monitor and report on bacteraemias caused by other organisms i.e. Klebsiella species and Pseudomonas aeruginosa. Patient reviews have been undertaken to identify the probable causes of these infections. In some cases this could not be ascertained but in others was found to be due to a variety of reasons including urinary tract infections and abdominal infections.

	2014-15	2015-16	2016-17	2017-18
E. Coli	7	11	9	7
Klebsiella species	Not previously reported			4
Pseudomonas aeruginosa	Not previously reported			5

A new reporting algorithm has been developed to ensure all the reportable bacteraemias are reviewed and any learning points identified are shared across the divisional structure.

Carbapenemase Producing Enterobacteriaceae (CPE)

A number of patients, known to be CPE positive, were admitted from other Trusts and additional patients were found to be CPE positive when they were screened on admission to this Trust.

However only 5 patients were identified with CPE after admission i.e. designated as Trust acquired.

There were no apparent links between these patients.

Norovirus

Although some patients were transferred into this Trust who had had suspected Norovirus in the community or in neighbouring Trusts, no patients with new isolates of Norovirus were identified at this Trust.

Influenza

19 patients were identified with Influenza throughout the year, primarily in January and February 2018. However these were patients who were already exhibiting symptoms when they were admitted from the community or before they were transferred into LHCH from other Trusts.

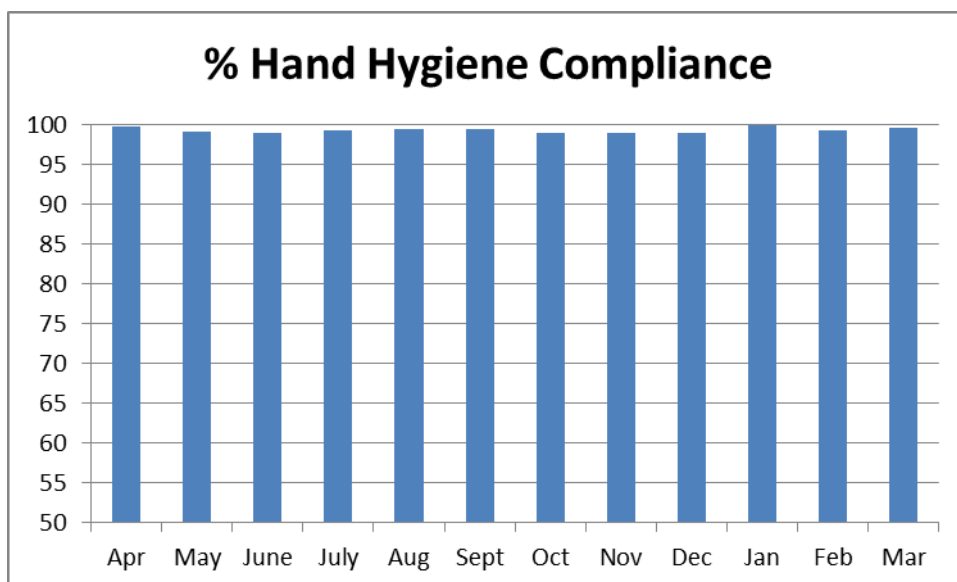
Positive and suspected patients were isolated and cared for with droplet isolation precautions. There were no outbreaks detected and no evidence of transmission between patients.

3. Audit Activity

Hand Hygiene

Clinical areas perform and submit weekly hand hygiene audits to the clinical audit department. Areas should submit 3 audits for their own area each month and one for their peer review ward. Some areas do not always complete the required numbers of audits each month and this has been fed back to the relevant managers and Heads of Nursing. Areas where non-compliance has occurred have also been highlighted to the managers and Heads of Nursing.

Compliance levels for the Trust, by month are given below.



Other audits

A number of other audits have been performed throughout the year. Results and actions/recommendations have presented to the Infection Prevention Committee (IPC) and also given to individual areas where relevant. The audits include.

Audit	Performed by:
MRSA and S. aureus screening	Infection Prevention Nurses (IPNs)
MRSA care pathway	IPNs
Screening for CPE	IPNs
Weekly Critical Care screening	IPNs
Hand gel availability	IPNs
Isolation	IPNs
C difficile policy	IPNs
Compliance with clean trace monitoring	IPNs
Waste management in clinical areas	IPNs with Ward staff
Sharps disposal	IPNs with Ward staff
Decontamination of equipment	IPNs with Ward staff
Linen handling	IPNs with Ward staff
Kitchens	IPNs with Ward staff
Compliance with decolonisation treatment	IPNs
Pre-op preparation	IPNs
Dressing changes	IPNs and Tissue viability nurses
Peripheral Intravascular line care	Ward staff
Urinary catheter care	Ward staff
Endoscope decontamination	Theatre staff
Compliance with water safety procedures including: Governance and Management responsibilities Water Sampling Planned preventative maintenance Usage Evaluation Operational procedures	Independent contractors on behalf of the estates department

4. Education and Training

Education and training with regard to infection prevention and control was provided by the Infection Prevention Team as part of:

Session	Input from IP Nurses and Frequency
Corporate Induction	Face to face session Every month
Mandatory Training	Electronic Workbook Update annually Face to face sessions as requested
Nurse preceptorship programme	2x per year Face to face session
Care Certificate	3x per year Face to face session
Volunteer induction	2 x per year Face to face session
Doctor Induction	2 x per year Face to face session
Access to medicine & Medicine taster session	2 x per year Face to face session
Anaesthetist induction	4 x per year Face to face session
Aseptic non touch technique	4x per year Face to face session
Ward based updates	As required
Fit Testing	5 x per year Face to face session

5. Environmental Hygiene

Monitoring scores

Monitoring of environmental cleanliness is performed by the domestic staff monthly and results are fed back to IPC.

Results are generally very good (usually exceeding the stated target of 95%) with any identified problems rectified immediately.

PLACE assessment

The PLACE (Patient Led Assessment of the Care Environment) inspection was performed in April 2017. A multi-disciplinary team consisting of patients/volunteers and members of staff, including the IPN, assessed the hospital environment according to criteria laid out by the NHS commissioning board. The results were good with the Trust performing above the national average in all areas

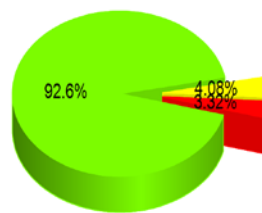
Clean Trace System

The Clean trace system is throughout the Trust. This provides an objective measurement of cleanliness in the clinical area using a swabbing system and is used to monitor equipment cleanliness rather than the general environment.

The program is coordinated by the IPNs and performed monthly by the ward staff in conjunction with the IPNs.

Trustwide results for all area/equipment monitored over the year have been compiled below.

Pass Caution Fail



Measurements:1839. Pass:1703. Caution:75. Fail:61

When a problem is identified i.e. the expected standard of cleanliness has not been reached this is rectified immediately. Results are feedback to ward managers and the relevant Heads of Nursing in a monthly report so that they can identify any trends.

Enhanced Environmental Decontamination

A business case was presented to the Capital Control Group to purchase equipment to generate Ultraviolet –C, which has been proven to improve decontamination of the patient environment. The business case was agreed and a multi-disciplinary group was convened to agree the purchase and the implementation process. The equipment has now been purchased and the implementation agreed.

6. Antibiotic Prescribing

An antimicrobial stewardship group has been established and meets bi-monthly to discuss and deal with day-to-day stewardship activities. Weekly antibiotic ward rounds conducted by the microbiology consultant and antimicrobial pharmacist are undertaken 3 times a week on alternate months to ensure antibiotics are appropriately prescribed with appropriate antibiotic plans.

Audits performed this year include:

- Antibiotic prescribing audits (including compliance with formulary, review dates and indication)
- Surgical prophylaxis
- Gentamicin monitoring

CQUIN data on antibiotic consumption and empiric review has also been collated 3 monthly and submitted to Public Health England

Education has been provided by the antimicrobial pharmacist to junior doctors as part of their induction program.

There has been a national shortage of a number of antibiotics over the last year which has meant that the antimicrobial policy and protocols have had to be reviewed and amended accordingly.

7. Surgical Site Infection working group

A multi-disciplinary working group was convened to examine all aspects of the prevention of surgical site infection and a number of meetings took place throughout the year. An audit program was agreed and completed. An action plan was developed and monitored by the Infection

Prevention Committee; some actions have not been fully completed but have been added to the forward plan for this coming year.

8. Risk of Mycobacterial infections in Cardiac Surgery

A national notification exercise to inform specific patients of the risk of infection with *Mycobacterium chimaera*, following cardiac surgery, was initiated by Public Health England and commenced in March 2017. Following this notification exercise a number of referrals were received by the Trust for patients requiring further assessment. A screening system was initiated and an outpatient clinic set up to assess these patients. This was done by the Clinical Nurse Practitioners in conjunction with the Infection Prevention team. 40 patients have been assessed throughout the year but no further cases of *M. Chimaera* have been identified.

9. Water Safety

The Water Safety Group is a sub-group of the Infection Prevention Committee and meets quarterly. Audits have been performed by independent contractors who are experts in the field of water safety and a number of areas of non-compliance with current guidelines have been identified. These include governance and management responsibilities, planned preventative maintenance, operational procedures and usage evaluation and flushing. An action plan has been developed and will be monitored by the Water Safety Group.

10. Decontamination

A multi- disciplinary decontamination group, including members of the infection prevention team, meets quarterly. An audit of compliance with national standards related to endoscope decontamination showed high levels of compliance, with an overall score of 96%. An action plan has been developed to address issues raised. An endoscope replacement programme is being undertaken and a business plan for the replacement of the theatre washer- disinfectant has been developed.

11. Sepsis

The following actions have been developed to continue improving the Trust's management of sepsis.

The lead for sepsis, Dr Al-Rawi, has drawn together a working group on sepsis to address the issues highlighted above and improve further the care of patients with sepsis at LHCH. The group comprises Dr Al-Rawi, Dr Toong, (consultant microbiologist), the infection prevention nurses, the sepsis audit analyst and the outreach nurses.

The objectives have been clarified and simplified using MEWS scoring. MEWS ≥ 5 and suspicion of infection do not need screening and should be treated within one hour on the sepsis bundle. MEWS ≥ 3 and suspicion of infection need the screening tool completed and if high risk treated within one hour on the sepsis bundle. There is a national drive to use the National Early Warning Score (NEWS) rather than Modified Early Warning Score (MEWS) however the sepsis group and the infection prevention committee consider that this is not the best tool for our specific patient population. Discussions are ongoing with commissioners.

There is a plan for optimisation of EPR workflow. This includes making the collection of blood culture timing to be a mandatory field; pop up reminders for the screening tool when trying to prescribe sepsis antibiotics off bundle; a tick box for MEWS greater than 5 to eliminate the need for the screening tool; automatically open the sepsis bundle on completion of high risk screening.

There is a continued education program. To deliver teaching sessions for junior doctors, outreach and hospital coordinators. Trust wide reminders through screen savers and desktop backgrounds continue. There is a new sepsis eLearning package which is included in mandatory training for clinical staff.

4. Conclusion

There has been good progress made within the field of infection prevention and control during 2017/18 however further work is required to improve in some areas.

In order to continue to maintain progress and reduce the risks of HCAI a forward plan for 2018/2019 has been developed (Appendix 1) and progress against this plan will be monitored throughout the year by the Infection Prevention Committee.

5. Recommendations

The Board of Directors is asked to note the contents of the report and note continued good performance in infection prevention and control.

Appendix 1 Infection Prevention and Control – Forward Plan 2018-2019 Liverpool Heart and Chest hospital NHS Foundation Trust

		Person(s) Responsible	Target Date
1. Surveillance	<ul style="list-style-type: none"> To continue with continuous alert organism surveillance and generate monthly reports of figures against trajectories To report to mandatory surveillance scheme in accordance with national requirements To monitor bacteraemias caused by MRSA, MSSA, E.coli Pseudomonas aeruginosa and Klebsiella species and ensure reports and patient reviews are performed in accordance with the algorithm that has been developed To monitor central line related infections 	IPT IPT IPT/Clinical staff IPT IPT	15 th every month 15 th every month 15 th every month Monthly Monthly Monthly
2. Surgical Site Infection (SSI)	<ul style="list-style-type: none"> To continue the ongoing surveillance project on rates of SSI following coronary artery bypass graft surgery and valve replacement surgery To introduce new decolonisation protocols To review all scrub procedures in theatre To improve compliance with hair removal protocols using new educational materials and competency framework To introduce new dressing change guidelines 	IPT/ Tissue viability nurses IPT Theatre Matron Matrons/IPT Tissue Viability nurses/IPNs	Ongoing 30 th September 2018 31 st September 2018
4. Assurance framework	<ul style="list-style-type: none"> To assess the Trust using the HCAI assurance framework and generate monthly reports to the Clinical Commissioning group 	IPT	15 th of every month
5. Environmental Hygiene	<ul style="list-style-type: none"> To continue system of monitoring environmental cleanliness To continue Clean Trace monitoring programme To develop an electronic audit, reporting and monitoring programme for ward/department managers 	Support services manager IPT/Ward Managers Heads of Nursing	Monthly Monthly 31 st August 2018

6. Education and training	<ul style="list-style-type: none"> To provide training for all new staff and annual updates for staff in IP and C according to Trust's Learning Needs Analysis 	IPT	Ongoing
7. Policies	<ul style="list-style-type: none"> To review and update all policies as necessary 	IPT	Ongoing
8. Theatres	<ul style="list-style-type: none"> To ensure ventilation is monitored annually in each theatre and reported to the IPC To carry out planned preventative maintenance and replacement of air handling units as scheduled 	Estates Manager	31 st March 2019
9 Water Safety	<ul style="list-style-type: none"> To continue with the Water Safety plan and to address outstanding actions from previous audits To ensure appropriate education is delivered to members of the water safety group 	IPT/Estates manager	Ongoing
10. Sepsis	<ul style="list-style-type: none"> To ensure comprehensive data is collected regarding compliance with sepsis screening and management To improve compliance with the sepsis screening tool and the sepsis bundle 	Information team Sepsis lead	Monthly 31 st March 2019
11. Antibiotic stewardship	<ul style="list-style-type: none"> To continue to develop antimicrobial stewardship ward rounds and develop new EPR pro-formas To review the antimicrobial policy and protocols as antibiotic shortages resolve To develop the antimicrobial stewardship education programme, to include the newly appointed teaching pharmacist To collect and disseminate antibiotic resistance data for bloodstream infections To review OPAT (Outpatient parenteral antimicrobial therapy) policy to ensure it meets British Society of Antimicrobial Chemotherapy standards 	Consultant microbiologist/pharmacist	31 st December 2018
12. Gram negative	<ul style="list-style-type: none"> To participate in regional programmes related to the 	IPT	31 st December 2018

bacteraemias	reduction in Gram negative bacteraemias, as advised by Liverpool CCG <ul style="list-style-type: none"> To review all practices related to urinary catheter insertion and care. 		
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IP and C Audit Programme 2018-19

Audit	Person(s) Responsible	Schedule	Reporting to
Hand hygiene (1) Observational (2) Facilities and standards	Ward managers	Weekly	Infection Prevention Committee (IPC)
Isolation	IPT	Annually	IPC
Cleanliness (Domestic)	Domestic Supervisors	Monthly	IPC
Decontamination process -endoscopy	Decontamination Lead	Annually	Decontamination Steering Group
Waste disposal Sharps disposal Linen handling Decontamination of equipment Environmental cleanliness	IPT/Link staff	6 monthly	IPC
Antimicrobial prescribing	Antimicrobial pharmacist/Microbiologist	As detailed in the antibiotic stewardship programme	Drugs and Therapeutic Committee.IPC
MRSA screening	Clinical Audit /IPT	6 monthly	IPC
MRSA pathway	IPT	Annually	IPC
Clostridium difficile policy	IPT	Annually	IPC
Compliance with central line bundle	Theatre staff/Critical care staff	Quarterly	IPC
Peripheral line and urinary catheter care	Ward managers/IPT	Monthly	IPC
Water safety	Estates manager	6 monthly	IPC and H&S committee
Environmental decontamination – Use of Ultraviolet -C	IPT	6 monthly	IPC
Decolonisation prior to cardiac surgery	IPT	6 monthly	IPC

CPE screening	IPT	Quarterly	IPC
Transfer of patients with alert organism	IPT	Annually	IPC

Appendix 2

Subject: Annual Report of Infection Prevention Committee 2017/18

1.Executive Summary

The committee has met 4 times in the past year. Details of work overseen by the Committee is provided in the preceding report and annual forward plan.

2. Delivery of Objectives

A summary of progress against each of the agreed objectives is shown below.

ToR Ref	Objective	Evidence to Support Delivery
3.1	To provide strategic direction and planning pertaining to all issues related to infection prevention & control within the Trust.	Annual plan, audit programme, reporting systems.
3.2	To support the infection prevention team and the ADN's in their activities.	Audits as detailed in attached report
3.3	To ensure infection prevention and control policies and protocols are developed, implemented, monitored and updated by the appropriate leads within the Trust.	Policies updated and approved at IPC
3.4	To advise the Trust on the best means for the education and training of hospital staff to ensure successful implementation of policies and protocols and that staff are aware of their roles and responsibilities relation to infection prevention and control	Training provided as detailed in attached report
3.5	To develop and implement an annual programme of work against which progress will be report to the Committee, as per the agreed reporting schedule.	Annual plan attached
3.6	To produce quarterly DIPC reports and annual infection prevention report, and submit these to Trust Board	Quarterly DIPC reports produced Annual Infection Report attached
3.7	To receive regular reports on surveillance, key quality indicators and any serious untoward incidents related to infection prevention and	Surveillance reports produced for each IPC meeting.

	control and ensure that robust delivery plans are in place to address emerging issues.	
3.8	To co-operate with the other Trust Committees e.g. Health and Safety to ensure that exemplary infection prevention and control practices are applied consistently across the Trust.	Joint membership of IPN and Senior Nurses at both IPC and Health and Safety Committee
3.9	To monitor and evaluate infection prevention and control practice and performance at divisional level receiving quarterly divisional reports on related issues	Some reports received by divisions. To be reviewed by Heads of Nursing.
3.10	To develop the appropriate partnerships with external agencies necessary for improving infection prevention and control practice	Meetings with commissioners and other Trusts

3. Membership

The attendance of a number of members has not met the required standard. The chair will contact relevant members to reiterate the importance of attendance at these meetings and review the Terms of Reference with the divisional leads.

Attendance	Attendance (%)
Members :	
Chair: Medical Director/DIPC	100%
Infection Prevention Doctor/Consultant Microbiologist (IPT)	100%
Infection Prevention Nurse Specialists (IPT)	100%
Deputy Director of Nursing or Head of Nursing	100%
Support Services Manager	25%
Pharmacist	100%
Matron for Theatre	50%
Estates Manager	50%
Critical Care Unit Manager or deputy	50%
Lead clinicians for: Chest Medicine	25%
Cardiac Surgery	50%
Thoracic Surgery	0%
Cardiology	0%
Anaesthesia & Critical Care	50%
PHE representative	50%

4. Sub Committees

There are three sub-groups that report to the Infection Prevention Committee, the Water Safety Group, Antibiotic group and Decontamination Steering Group.

5. Conduct of Meetings

A workplan agreed at start of year and meetings / agenda are appropriately scheduled to meet the work plan

Reports and papers are consistently issued ahead of the meeting, although sometimes not within 5 working days.

There is an action logging process maintained to ensure actions clearly recorded and followed through.

6. Terms of Reference

The Committee has reviewed its Terms of Reference

7. Recommendations

The Board of Directors is asked to receive assurance that overall the Infection Prevention Committee has operated effectively during 2017/18