

Infection Prevention and Control Annual Report 2018/19

Prepared by:
Nicola Best (Infection Prevention Nurse Specialist)
Lynn Trayer-Dowell (Infection Prevention Nurse Specialist)
Dr Tim Neal (Consultant Microbiologist/Infection Prevention Doctor)
Dr Raph Perry (Director of Infection Prevention & Control)

Date: April 2019

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 2018/2019. It also sets out a forward plan for the year 2019/2020.

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 a consultant microbiologist on site 3 days a week. This was additionally provided by 2 microbiologists on a rotational basis although in the latter quarter of the year this was changed to the same microbiologist providing the cover.

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 2 sub-groups of the committee : Water safety and Decontamination.

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.

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 HCAIs.

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

2.1 MRSA Bacteraemias (Blood stream infections)

0 cases against a target of 0.

	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Number of LHCH attributable cases per year	1	0	0	0	1	0

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

The number of bacteraemias has remained the same however reviews indicate that the causes of the bacteraemias have altered, with the majority caused by chest infections or line related infections and not surgical site infections, as seen in previous years. Reviews of individual cases have been performed and shared with the relevant divisions to improve practice where indicated.

	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Number of LHCH attributable cases per year	8	11	8	10	8	8

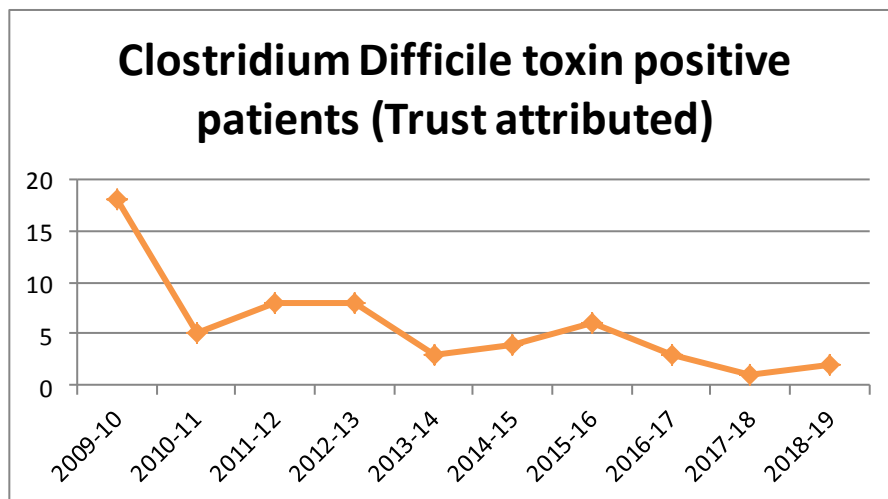
2.3 Gram Negative Bacteraemias (Blood stream infections)

Overall there has been a reduction in the numbers of this group of bacteraemias caused by this group of bacteria. 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. The patient reviews have been shared with the relevant divisions to improve practice if indicated.

	2014-15	2015-16	2016-17	2017-18	2018-19
E. Coli	7	11	9	7	7
Klebsiella species	Not previously reported			4	2
Pseudomonas aeruginosa	Not previously reported			5	1

2.4 Clostridium Difficile Toxin positive cases

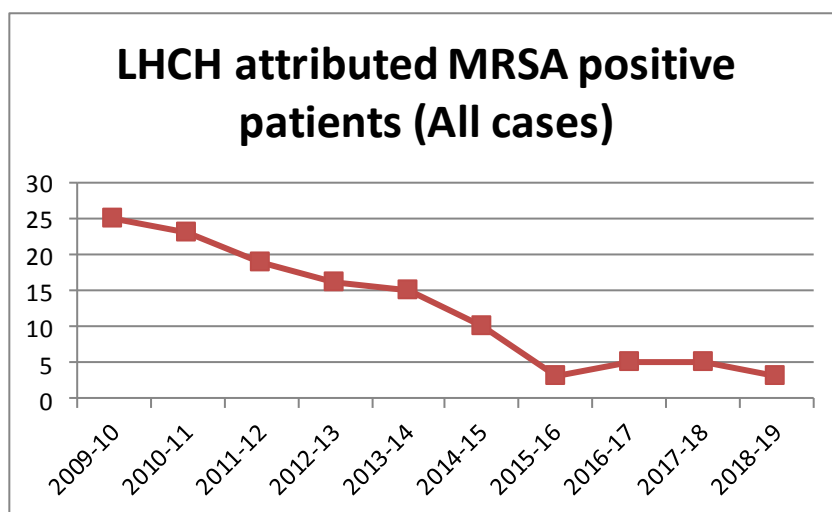
The number of Trust attributed cases of C. difficile infection (toxin positive) remains low, with 2 patients identified, against a trajectory of 3. The patients were not connected. Patient reviews were performed and action plans produced in conjunction with clinical staff to address any issues identified.



2.5 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.

98 patients were identified with MRSA however the vast majority were identified prior to admission or as part of the admission screening programme. The number of patients acquiring MRSA within the Trust remains at a low level (3) and generally relate to patients who are colonised, not infected.



2.6 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.

Only 5 patients were identified with CPE after admission i.e. designated as Trust acquired. There were no apparent links between these patients.

2.7 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 and there were no outbreaks.

2.8 Influenza

11 patients were identified with influenza throughout the year. Most were patients who were already exhibiting symptoms when they were admitted from the community or before they were transferred into LHCH from other Trusts. However 3 patients apparently acquired influenza whilst inpatients, they were all nursed on one particular ward at the same time. Following diagnosis they were all isolated and cared for with droplet isolation precautions and no further patients were identified.

3. Audit Activity

3.1 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 feedback 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.

Observational	percent	number
Hand hygiene performed at appropriate time and correct method used	99.5%	7255
Hand hygiene performed at appropriate time but incorrect method used	0.2%	18
Hand hygiene not performed at appropriate time	0.2%	15

3.2 Other audits

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

Audit	Performed by:
MRSA and S. aureus screening	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
Bedspace cleanliness	IPNs and Domestic supervisors

Peripheral Intravascular line insertion & care	Ward staff
Urinary catheter insertion & 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- Updated annually Face to face sessions as requested
Nurse preceptorship programme	2x per year Face to face session
Care Certificate programme	4 x per year Face to face session
Volunteer induction programme	3 x per year Face to face session
Medical Staff Induction programme	3 x per year Face to face session
Access to medicine & Medicine taster session	2 x per year Face to face session
Anaesthetist induction programme	3 x per year Face to face session
Ward based updates	As required
Fit Testing	1 Face to face session
Safe from Harm – degree module	1 Face to face session
Advanced Nurse practitioner	1 face to face session

A study day was arranged for health care assistants to provide education on infection prevention and control (and also included sessions on diabetes and tissue viability). The study day was very well received by attendees.

5. Environmental Hygiene

Monitoring scores

Monitoring of environmental cleanliness is performed by the hygiene supervisors on a monthly basis and results are feedback to IPC. Results are generally very good (usually exceeding the stated target of 95%) with any identified problems rectified immediately.

PLACE assessment

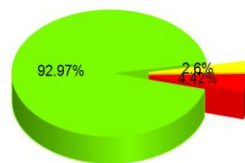
The PLACE (Patient Led Assessment of the Care Environment) inspection was performed in May 2018. A multi-disciplinary team consisting of patients/volunteers and members of staff, including the infection prevention nurse, assessed the hospital environment according to criteria laid out by the NHS commissioning board. The results were good with the Trust performing above the national average the areas related to both cleanliness and the condition and appearance of the environment.

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 programme is co-ordinated 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:1651. Pass:1535. Caution:43. Fail:73

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 new piece of equipment was purchased which uses Ultraviolet-C to decontaminate the patient environment. This has only been used intermittently in Critical Care and the Theatre department but has not been utilised as widely as initially planned due to availability of staff to operate the equipment. Additional training is planned and a programme for the coming year is currently being reviewed.

National Cleaning Standards Pilot project

The Trust enrolled in a project to pilot the new National Standards for Cleanliness. A working group was convened to review the standards and perform a number of audits. This was led by the Infection Prevention Nurse and the Support Services Manager. Feedback and results have been provided to the NHS improvement team.

6 Antimicrobial stewardship

A number of audits have been performed by the antimicrobial pharmacists this year including: Antibiotic prescribing audits, audits of non-compliance and surgical prophylaxis. Data has also been collected and submitted as per CQUINN requirements. Antibiotic order sets for specific infections and surgical prophylaxis have been developed for the electronic patient record system. Regular antibiotic ward rounds were completed throughout the year until January 2019 when they were discontinued due to changes to microbiologists' rotas.

Education has been provided by the antimicrobial pharmacist to junior doctors as part of their induction programme and by the microbiologist to medical staff on audit days

7. Surgical Site Infection prevention

As part of the plan to reduce surgical site infection after cardiac surgery, a new practice of universal decolonisation was introduced in August. Patients are now given a nasal gel and antimicrobial wash to take home with them to use prior to cardiac surgery. Inpatients are given this on the wards prior to surgery. New documentation and a patient information leaflet have been produced. Audits have been performed which show good compliance for elective patients attending pre-operative clinics but poorer compliance for patients admitted as an emergency or urgent transfer. Further work will be ongoing to monitor this and improve practice.

8. Risk of Mycobacterial infections in Cardiac Surgery

Testing of the water from heater coolers used in cardiac surgery has been ongoing since the initial alerts and guidance from Public Health England were issued, regarding the risk of Mycobacterial infection. Samples from all machines had repeatedly tested negative since September 2016. However a positive sample occurred in August 2018 and since then there have been intermittent positive samples from a number of machines, which when retested were negative.

New guidelines were issued by the company regarding decontamination and these have been implemented by the perfusion department. Some machines have been returned to the manufacturer for full decontamination. Testing and ongoing monitoring of the water and machines continues.

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.

A regional water safety group has been convened with representation from this Trust as well as Royal Liverpool University and Broadgreen hospital, Aintree University Hospital and Liverpool Women's Hospital. The group was convened in order to provide standardisation and efficiency between the Trusts and to oversee and provide guidance to the individual Trust Water Safety Groups.

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. A new endoscope washer disinfectant and RO(reverse osmosis) plant have been installed to improve the decontamination facilities.

11. Sepsis

The lead for sepsis Dr Al-Rawi continues to lead the sepsis group to ensure continuous improvement of the care of patients with sepsis at LHCH. The group comprises Dr Al-Rawi, Dr Nistal de Paz, (consultant microbiologist), the sepsis audit analyst, outreach nurses, EPR representation and ITU staff

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 preferably using the sepsis bundle. Two consecutive MEWS ≥ 3 and suspicion of infection need the screening tool completing and if high risk treated within one hour. There is a national drive to use NEWS2 scoring rather than MEWS however the sepsis group and the infection prevention committee consider that this is not the best tool for our specific patient population. Discussions with commissioners have led to LHCH continuing to use MEWS with NEWS2 being monitored and applied to transfer patients.

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.

The drive now is to use the screening tool and ensure all KPIs can be measured via EPR. The mortality from sepsis remains low.

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.

Summary

There has been some progress made within the field of infection prevention and control during 2018/19 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 2019/2020 has been developed (Appendix 1) and progress against this plan will be monitored throughout the year by the Infection Prevention Committee.

Appendix 1 Infection Prevention and Control – Forward Plan 2019-2020 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 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 and review bacteraemias caused by urinary tract infections To comply with new reporting arrangements and assignment categories detailed in the new Clostridium Difficile national objectives 	<p>IPT</p> <p>IPT</p> <p>IPT</p> <p>IPT</p>	<p>Monthly</p> <p>Monthly</p> <p>Monthly</p> <p>Monthly</p>
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 audit the new decolonisation protocols To participate in a Quality Improvement programme for photos at discharge, in conjunction with the Tissue Viability service To participate in the GRIFT (getting it right first time) programme related to surgical site infection 	<p>IPT/ Tissue viability nurses</p> <p>IPT</p> <p>IPT/Tissue Viability nurses</p> <p>IPT/Surgical Division</p>	<p>Ongoing</p> <p>30th June 2019</p> <p>31st December 2019</p> <p>30th November 2019</p>
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 	<p>IPT</p>	<p>15th of every month</p>
5. Environmental Hygiene	<ul style="list-style-type: none"> To continue system of monitoring environmental cleanliness To continue Clean Trace monitoring programme 	<p>Support services manager</p> <p>IPT/Ward Managers</p>	<p>Monthly</p> <p>Monthly</p>

	<ul style="list-style-type: none"> To review and standardise all monitoring and audit programmes 	IPT/Matrons/Support services manager	31 st August 2019
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 2020
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 To provide input into the regional 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 2020
11. Antibiotic stewardship	<ul style="list-style-type: none"> To re-institute a formal antimicrobial stewardship group overseeing an annual stewardship programme including audit and education To review the Antimicrobial policy and also protocols related to OPAT (Outpatient parenteral antimicrobial therapy) 	Consultant microbiologist/pharmacist	31 st December 2019 30 th November 2019
12. Gram negative bacteraemias	<ul style="list-style-type: none"> To participate in regional programmes related to the reduction in Gram negative bacteraemias, as advised by Liverpool CCG To convene a working group to improve practices related 	IPT	31 st December 2019

	to urinary catheterisation and care across the Trust	IPT/HONs	
--	--	----------	--

IP and C Audit Programme 2019-20

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 insertion and 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

